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Forest Land Ownership Change in Europe

COST Action FP1201 FACESMAP Country Reports

Joint Volume

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COST Action FP1201
Forest Land Ownership Change in Europe:
Significance for Management and Policy
(FACESMAP)

Forest Land Ownership Change in Europe

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Joint Volume

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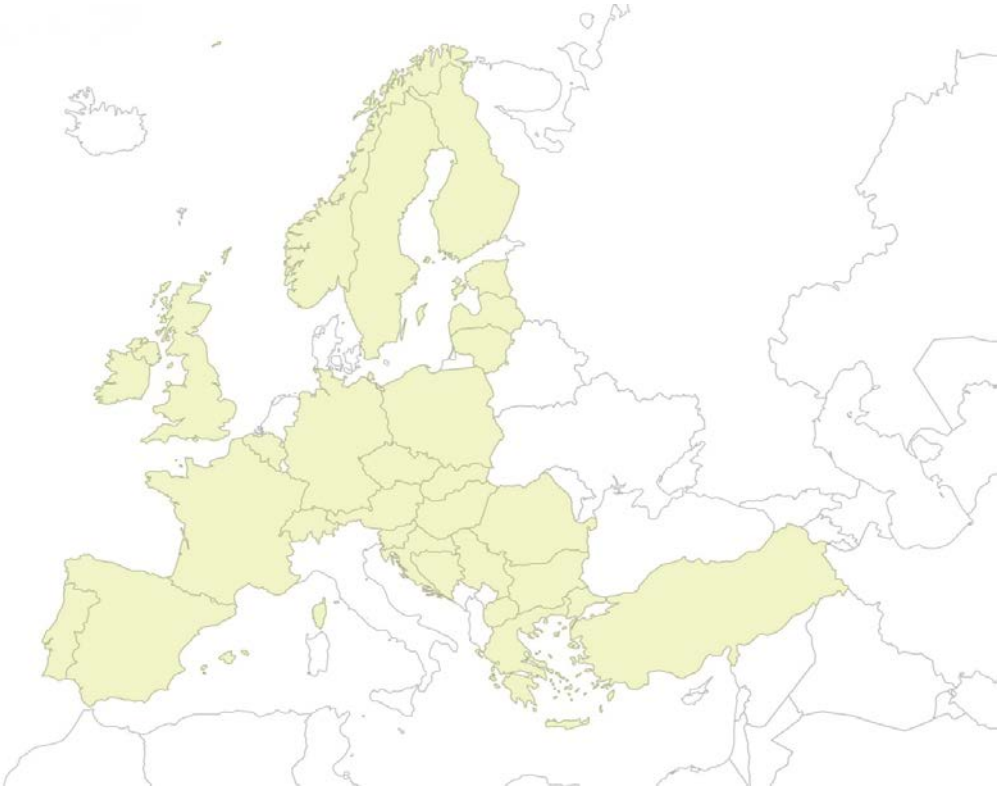

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COST (European Cooperation in Science and Technology) is a pan-European intergovernmental organisation allowing scientists, engineers and scholars to jointly develop their ideas and initiatives across all scientific disciplines. It does so by funding science and technology networks called COST Actions, which give impetus to research, careers and innovation.

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Background and summary

Ivana Živojinović, Zuzana Dobšinská, Gerhard Weiss

Background of the project

Forest ownership is changing across Europe. In some areas a growing number of so-called "new" forest owners hold only small parcels, have no agricultural or forestry knowledge and no capacity or interest to manage their forests, while in others, new community and private owners are bringing fresh interest and new objectives to forest management. This is the outcome of various societal and political developments, including structural changes to agriculture, changes in lifestyles, as well as restitution, privatization and decentralization policies. The interactions between ownership type, actual or appropriate forest management approaches, and policy, are of fundamental importance in understanding and shaping forestry, but represent an often neglected research area.

The European COST Action FP1201 FOREST LAND OWNERSHIP CHANGES IN EUROPE: SIGNIFICANCE FOR MANAGEMENT AND POLICY (FACESMAP) aims to bring together the state-of-knowledge in this field across Europe and can build on expertise from 30 participating countries. Drawing on an evidence review across these countries, the objectives of the Action are as follows:

(1) To analyse attitudes and constraints of different forest owner types in Europe and the ongoing changes
(2) To explore innovative management approaches for new forest owner types
(3) To study effective policy instruments with a comparative analysis approach
(4) To draw conclusions and recommendations for forest-related policies, forest management practice, further education and future research.

Part of the work of the COST Action is the collection of data into country reports. These are written following prepared guidelines and common structure, in order to allow comparisons across the countries. They also stand by themselves, giving a comprehensive account on the state of knowledge on forest ownership changes in each country.

The common work in all countries comprises, first of all, of a qualitative description of relevant issues related to forest ownership change, being supported by quantitative data as far as available. The country reports serve the following purposes:

- Give an overview of forest ownership structures and respective changes in each country and insight on specific issues in the countries;
- Provide data for some of the central outputs that are planned in the Action, including the literature reviews;
- Provide information for further work in the Action, including sub-groups on specific topics.

A specific focus of the COST Action is on new forest owner types. It is not so much about "new forest owners" in the sense of owners who have only recently acquired their forest, but the interest is rather on new types of ownership – owners with non-traditional goals of ownership and methods of management. For the purpose of the Action, a broad definition of "new forest owner types" was chosen. In a broad understanding of new or non-traditional forest ownership we include several characteristics as possible determinants of new forest owners. The following groups may all be determined to be new forest owners:

(1) individuals or organizations that previously have not owned forest land,
(2) traditional forest owner categories who have changed motives, or introduced new goals and/or management practices for their forests,
(3) transformed public ownership categories (e.g., through privatisation, contracting out forest management, transfer to municipalities, etc.), and
(4) new legal forms of ownership in the countries (e.g. new common property regimes, community ownership), both for private and state land.

This embraces all relevant phenomena of changing forest ownership, including urban, absentee, and non-traditional or non-farm owners as well as investments of forest funds or ownership by new community initiatives, etc. Although the COST Action wants to grasp all kinds of ownership changes it has to be noted that the special interest lies on non-state forms of ownership.

The reports

We have been able to collect 28 Country Reports[1] (22 EU and 6 non-EU countries). The reports comprise of qualitative and quantitative data of a broad range of relevant issues, spanning from a literature analysis on forest ownership change to management and policy implications. The reports have been written by country research teams that participate in the COST Action FACESMAP, by following a common template which was jointly developed in and for the COST Action. The data were collected during the year 2014 and the reports were written with including two reviewing rounds until 2015. Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-the-art report. Case examples, provided throughout the report, are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types.

The reports are structured as follows:

- Literature review on forest ownership in change
- A description of forest ownership structure and trends of change
- Forest management approaches for new forest owner types
- Policies influencing ownership development and policy instruments targeting for new forest owner types.

For the purpose of the joint volume, the detailed description of the 10 most relevant country references have been excluded for practical reasons. However, these references have been used for writing country's literature review chapter. The full data are still available in the annexes to the original full single country reports which can be found on the Action website under the following website: *http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports*.

The Country Reports are the basis for further analytical work in the Action. The analyses are thus not included in this report but will be published by various means, for instance, research articles. Furthermore, it is planned to use the data for producing a number of thematic maps of forest ownership in Europe. Some of the report questions were used as well in the ongoing joint enquiry on forest ownership led by UNECE/FAO, to be published in a separate report in 2016.

[1] Austria **(AT)**, Bosnia and Herzegovina **(BA)**, Belgium **(BE)**, Bulgaria **(BG)**, Switzerland **(CH)**, Czech Republic **(CZ)**, Germany **(DE)**, Estonia **(EE)**, Greece **(EL)**, Spain **(ES)**, Finland **(FI)**, France **(FR)**, Croatia **(HR),** Hungary **(HU)**, Ireland **(IE)**, Lithuania **(LT)**, Latvia **(LV)**, fYR Macedonia **(MK)**, Norway **(NO)**, Poland **(PL)**, Portugal **(PT)**, Romania **(RO)**, Serbia **(RS)**, Slovenia **(SI)**, Slovakia **(SK)**, Sweden **(SE)**, Turkey **(TR)**, United Kingdom **(UK)**

Summary results

In course of the **literature review on forest ownership in change**, all in all, we collected around 250 reports/publications, which were identified as the most important sources on this topic on the national level. From these 250 sources, there are 60 papers published in SCI journals. Most of the references cover topic of motivation and behaviour of different ownership types. Forest ownership change, new management approaches and policy instruments are also fairly covered in the selected sources.

So who are the owners of those private owners? Literature shows that there is increasing diversity of forest owner types. In an effort to categorize forest owners according to actual or expected management behaviour, typologies have been developed by the researchers, with a more or less explicit ambition to inform policy design and communication between authorities, forest owner representatives and the individual forest owners. The typologies, however, differ and use the following terms to characterize different owner types: 'resident owners' vs. 'non-resident owners', 'farmers' vs. 'non-farmers', 'associated owners' vs. 'not associated owners', or characterizing them as 'economist owners', 'multi objective owners', 'self-employed persons', 'recreationists', or 'passive/resignated owners'.

In order to describe the **forest ownership structure** in each country, we asked for the data according to the national statistics and to the global forest resource assessment (FRA). The data show complex and diverse classifications of forest owner types, which makes it difficult to compare across the countries. The main differences that arise between the national statistics are in relation to the following three aspects:

- different definitions and methodologies used in terms of categories of forest owner types (e.g. in some countries municipality forests are considered as a private, in others as a public ownership category);
- different definitions of forest area (what is forest);
- differences in terms of the time gap between data collection and publication of the *statistics.*

Furthermore, we have looked at various factors or measures that might influence the development of **the forest ownership structure**:

- Cases of **unclear or disputed ownership** exist, for example as a result of: unfinished restitution processes in Eastern European countries, or in other countries in relation to a weak land register and cadastre (e.g. in *Portugal* there is limited cadastre on forest holdings, and only 40% of municipalities and 50% of the national territory is covered by cadastral survey; disputes arising due to the mistakes in previous cadastres in *Czech Republic*, etc.), or due to specific issues, such as the rights of access granted by Everyman's Rights ('Freedom of Public Access') and issue of the Sami land ownership in Northern Lapland (the ILO Convention No. 169 concerning the rights of the indigenous and tribal people has not been ratified in Finland or Sweden) in *Finland*.
- **Restrictions related to buying or selling the forests**, which in some cases aim to limit fragmentation (e.g. in *Austria* farms are not allowed to sell off parcels if the remaining farm holding would be too small to be profitable; in *Slovakia* dividing of forests lands into parcels with an area of less than 0.5 ha is forbidden by the law); some prescribe pre-emptive rights (e.g. priority of buying is often given to the neighbours e.g. in *Austria*, *France*, *Lithuania*, *Slovenia*, etc., or according to the criteria of knowledge and experience of forest management of new buyers, e.g. in *Austria*, *Estonia*, etc), and some of them limit buying the forest by foreigners (e.g. in *Hungary*). In most countries, restrictions exist in relation to selling state forests (e.g. in *Serbia* and *Bosnia and Herzegovina* it is strictly forbidden to sell state forest land (except in cases of the consolidation, according to the spatial plan), and in *Croatia* the legal restrictions are applying only for public owned forests and they cannot be sold (according to the Constitution and Forest Act) but they can be given in long – term leases, etc.). In some countries there are specific rules applied to community forests (e.g., *Austria and Romania*).

Specific **rules related to inheritance**, aim in some countries to limit fragmentation (e.g. In *Austria* traditional farm holdings ("Erbhöfe") should not be divided but given as a whole to only one heir; in *Slovakia* existing forest land can be divided into several parcels between heirs. If the area of new plot is less than 2 ha, the inheritor is obligated to pay a fee of 10% of the value of the land. In case of an area of less than 1 ha, the amount of the fee is 20% of the value of the forest land; or in *Spanish province of Catalonia*, where the most of the families respect the old rule "El hereu", which is the informal institution that establish the inheritance rights to the eldest son to avoid the division on the properties). And in some countries there are specific rules applied to inheritance of community forests.

Common property regimes, such as rural common ownership/rural communities have been identified to exist in 16 countries. Aside of the traditional form of rural common ownership which dates back to pre-modern times, community ownership exists also as a new development, e.g. in the *United Kingdom*, or in the *Czech Republic,* and in *Sweden* where so called "new Swedish forest commons" have been established in the late 19th century, as response to the remained unallocated land in the interior of Northern Sweden, and in connection to a widespread land tenure reform.

Furthermore, **gender issues** have been explored in the frame of our Action. The proportion of female forest owners ranges in the different countries from 3% in *Bosnia and Herzegovina* to almost 52% in *Lithuania* or 48% in *Slovenia*. In general, due to changes in heritage practices and other societal changes, the group of female forest owners has increased across Europe, currently estimated to be about 30% in average of all small-scale forest property holders. Yet, in many countries gender disaggregated data do not exist at all, while in others to be rather incomplete, which makes this issue very challenging for studying. The question if gender matters in forest ownership and in forest management, is a question which had been dealt with in a few countries but still not in the most of the Action countries.

A growing number and proportion of private forest owners, boosted by societal trends such as economic globalisation of agricultural and forest products, labour market change, population increase and urbanisation had the most apparent and direct impact on the transformation of forest ownership structure across Europe. In some countries these changes can be attributed to the structural changes in the European agricultural sector in general and the family farming system in particular, as much of the small-scale forest ownership historically has been associated with small-scale farming. While in other countries these changes have been boosted by various political forces and circumstances (e.g. restitution, privatisation, etc.). These changes together with very different conditions in terms of forest ownership structure across Europe, as well as various and diverse ecological, socio-economic and market conditions have influenced the forest owners perception on forestry, thus changing their objectives and attitude toward forest management, and in many cases influenced to what extent owners see forest as a source of income or not. Many of these changes are suspected to lead to an increasing number of forest owners having other objectives than wood-production, which is seen as a threat or challenge from the view point of current forestry practices.

One of the primary focuses in the Action was to get a more comprehensive overview of existing **trends of forest ownership change in Europe.** Thus we identified the four main types of ongoing trends and explored them in detail in each country. These trends are as follows:

1. Restitution and privatization of forest land is one of the important trends: In EE and SEE countries **restitution** processes took place since 1990s and is still unfinished in many of these countries. This process assumes giving back the forest land to private forest owners from whom it was taken during communist times. **Privatization** is also important to some extent in *United Kingdom*, *Norway* and *Sweden*.
2. Trend of new forest ownership through **buying forest** (from private to private)is important in some countries, such as *Estonia* where many foreign investors are buying forest. This is also assessed as a rather important trend in *Romania* and *Latvia* where investment funds buy forest land.

3. **Afforestation** can bring new ownership as formerly agricultural land is converted into forest. This trend is rather important in *Ireland* and *Poland*, but also in *United Kingdom*, *Norway* and *Latvia*.
4. Trends of **lifestyle change and changes in the motivation and attitudes** of the owners seem to be particularly important in the western and northern part of Europe. Some of the indicators identified that cause these changes are: less farming, aging population, depopulation of rural areas, as well as changed or new objectives and goals for forest management. It must be said, however, that these trends are particularly difficult to measure in a standardized way across countries.

In the Country Reports, we tried to identify examples for **new or innovative forest management approaches that might be particularly relevant for new forest owner types** (such as urban or absentee forest owners). As a fact, in most countries no new forest management approaches were identified which would be specifically applied by "new" forest owners. Besides of traditional forest management for timber production there is an emerging trend to secure conservation and social functions of forests (e.g. recreation) and in cases it may be that new forest owners are more open to these new goals.

The most reported innovative approach in forest management is cooperation in forest management which can take various forms such as forest owners associations, cooperatives, associations for joint management, etc.

There seem to be a quite significant trend of changing silvicultural practices in many countries, which is thus considered as innovative. Examples are, e.g. more close-to-nature management, increased use of autochthonous tree species, improving species mix in the stands, etc. We notice, however, that this trend is independent from ownership changes as such.

The following **opportunities for innovative forest management** have been suggested by the researchers:

- energy wood or forest biomass is seen as one of the main opportunities for innovative forest management (BE, HR, CZ, EE, FR, EL, HU, IE, UK); followed by
- the establishment and collaboration of forest owners associations (BE, HR, EE, DE, HU, LT, RO);
- payments for ecosystem services (BE, EE, FR, HU, IE, SK, ES); and
- improving the knowledge of forest owners through strengthening the role and quality of advisory services (BG, HR, HU, IE, RO, RS, SE).
- non-wood forest products and services are also mentioned (BE, RS, CZ, EE, EL, SI).

Other themes are:

- to improve policy tools for private forest owners (EE) or forestry legislation (RO; HU, ES – mainly fragmentation);
- to use financial support from EU funds (BG, LT, RO);
- recreational use (BE, FR, RS);
- certification (CZ, GR); and
- wood mobilization (SI, CH).
- forest owners´ peer-to-peer learning as an innovative concept, not to replace the guidance given by forest professionals but to support and complement the prevailing extension practices when the aim is to inform, engage and inspire forest owners (SE).

Obstacles for innovative forest management were diverse, but we found some topics which were repeated in many countries. The main obstacle lies in lack of knowledge amongst private forest owners and among the related advisory system that should provide information to private forest owners. It is often perceived that "new" forest owners do not have the knowledge to manage their forests. Here the advisory system plays an important role (AT, BG, CZ, EE, FR, MK, HU, IE, LV, LT, RO, RS, CH, UK-small owners). Closely linked is the knowledge of advisory services, managers and forest workers which often appears to be very traditional and does not reflect the management goals and needs of new forest owners (AT, MK, FI, RS, SE, GB). Lack of entrepreneurial thinking ('business thinking') was recognized as lacking in many countries

and thus constraining the management. This has strengthened over the last years, and may be seen already in the forest related policies and the contemporary discourse in the Nordic countries.

The following specific obstacles for innovative forest management have been collected:

- lack of incentives and/or financial support (BE, EL, HU, IE, LV, LT, NO, PT, RS, SK, UK)
- fragmentation issues (AT, BE, BG, HR, EE, FR, HU, EE, PT, CH)
- limited profitability of forest management (AT, BE, BG, EE, LV, NO, PO, SK)
- accessibility to forest (BE, HR, GR,NO, RO, SK)
- problematic legislation (BA, HR, CZ, EL, RO) or forest policy (HU, RS, SK, ES)
- low coordination between actors (FR, NO, RS)
- private forest owner do not have role in decision making (BA, CH, RS)
- lack of new technologies & lack of willingness to use innovative techniques (MK, PO, UK – investment companies)
- distrust/limited knowledge of how to work in forest owner's organisations (FOOs) (BG, CZ)
- absence of forestry market (HR, ES)
- some country specific cases
  - poor cadastre and land-registry & insufficient road infrastructure (HR)
  - availability of land (UK – environmental NGOs)
  - illegal logging (RO)
  - inactive forest owner's organisations (BA).

We have asked, in how far **policies exist that directly influence on the development of forest ownership** in the countries. Quite different kinds of policies exist that, for instance, create new forest ownership (such as through afforestation) or that aim to limit fragmentation or that react to increasing fragmentation of ownership. Many countries report problems related to fragmented ownership (BE, BA, BG, HR, EE, CZ, FI, FR, HU, MK, LT, RO, CH). Overall, the following relevant policies were identified:

- In many countries, measures to support afforestation are applied which in effect may create new forest owners (AT, BE, BA, CZ, FI, IE, LV, LT, NO, PT, RO, RS, SK).
- In some countries the restitution process or denationalization process of returning property to former owners has not finished yet (BA, EE, HR, LT, LV, MK, RS, SK, RO).
- In a few countries specific inheritance rules aim to limit fragmentation (AT, SI, NO), or other legislation (e.g. related to buying and selling) exists that limits fragmentation (LT, SE).
- Support for the creation of forest owner's organisations (FOOs) aims to help in the management of fragmented forests (CZ, BE, FI, RS, SE), or activities of FOOs are generally supported (HR, NO, RS).
- Delivering specific policies aiming for allocation of funds/financial incentives for forest related activities (BG, FR, UK).
- In a few countries, new legal forms of ownership have been created recently: In Belgium, family forest associations; in the UK, community interest companies (which started in Scotland as an off-shoot of the Land Rights movement and was facilitated by the Land Reform Act) and charitable incorporated organisations (between 1963 and 1996 around 6-7% of the estates responding to their survey were owned by a charity but by 2005 this has doubled with 12-14%).

  In Finland, it was decided to quit the forest management fee system in order to enable increased competition of forestry services in the market by revising the law concerning Forest Management Associations. The change is aimed to increase forest owners' freedom of choice and to improve the competitive position of other forest service providers. Furthermore, the Ministry of Agriculture and Forestry has put efforts into improving the forest holding size structure. The policy aim, declared in the Finland's National Forest Strategy 2025 (2015), is to increase the land area share of over 50 ha holdings from 56% to 70% between 2013 to 2025. This is actually a noteworthy change in

policy, which has the focus on total land area of "large" holdings, while the number of smallest fragmented parcels are not fought against so hard any more.

The reports furthermore deal with the question, in how far **policies specifically address different ownership categories** or in how far policy instruments exist that are targeted at new forest owners. Overall we can conclude that there are hardly any specific policies that target different and/or new types of private forest owners. Forest policy and legislation is usually the same for all ownership categories. Specific policies apply to state forests and in some countries for rural common ownership.

According to the country reports, there are hardly specific policies that target **new forest owners**:

- the most utilized policy instruments are the advisory services (CZ, FI, FR, DE, EL, IE, LV, LT, RO, UK) and forestry extension (HR, LV) but it is difficult to find specifically targeted programmes or actions
- provision of subsidies for forest management (BA, EE, MK, PT, GB)
- policies supporting creation of small-scale forest owners associations (BE, CZ, LV, SK)
- improvement of National Forest Policies (BG, LT)
- obtaining EU Funds for forestry (CZ, SK).

We have identified in the country reports three specific programmes addressing new or non-traditional forest owners that are worth mentioning:

- The Metsään.fi online service that offers opportunities for city-dwellers and other absentee forest owners to be better able to manage their forest ownership (FI);
- Specific courses offered for female forest owners (FI);
- A national actions plan for e-information and pedagogical tools, which is in progress and will take in consideration new forest owners. The aim is both to better identify and know who new forest owners are, and to better meet their expectations (FR).

Finally, we have asked the national experts to give the most important **factors that according to their view affect innovation in the national forest policies**. In summary, they following factors have been identified:

- lack of forest owners associations (BE, BA, FR, MK, SK, PL)
- top-down policy formulation (FR, SI, RS, SK)
- lack of funding (public) for forestry (LT, SK, CZ, EE)
- strictly regulated private forestry (BA, LT, RO, SI)
- forestry plays a minor role in the economy and policy (BE, NO, RS, CH)
- traditional orientation of forest policies and advisory services (AT, HR, LT)
- lack of political lobby (FR, SK, PL)
- lack of different market mechanisms and regulations (FI, SK, UK)
- challenge of small-scale and fragmented properties (HR, PO)
- country specific cases:
  - different needs of different ownership types (AT)
  - lack of political will and cadastral problems (HR)
  - strong political lobby (FI).

Reflections

The twenty eight Country Reports collected in this joint volume clearly show that there are significant changes of forest ownership patterns across Europe, impacting forest management and policy goals. The drivers of these changes are various societal and political developments, somewhat differing across Europe. They range from structural changes of agriculture and connected lifestyle changes dominating in western, central and northern Europe, to restitution processes in eastern and south-eastern Europe, and privatization and decentralization policies in a few countries in different regions (e.g. in United Kingdom). These changes are often simultaneous or connected to each other and mostly lead to an increase of the number of private forest owners and a smaller size of the estates. In the view of many stakeholders, this high fragmentation of forest parcels creates challenging conditions for forest management. It seems that together with various changing ecological, socio-economic and market conditions across Europe it resulted in a change of forest owners' perceptions and attitudes towards forest management. Thus, in the last years a range of new types of forest owners have been identified in many studies across Europe. These studies mostly aim to identify the objectives of these various forest owner types and they sometimes study which implications this has on forest management and policy. Many of these identified, so-called "new" forest owners, are holding only small parcels, have no agricultural or forestry knowledge and no capacity or interest to manage their forests. This increase in number of forest owners having other objectives than wood production challenges the current forestry practices.

Furthermore, the country reports aim to describe what are the responses of management and policy to these challenges and "new" conditions. With regard to management no new forest management approaches were identified which would be specifically applied to "new" forest owners. Many obstacles are identified for innovative forest management approaches that could potentially respond to these challenges. The obstacles mainly relate to a lack of knowledge amongst private forest owners and among the related advisory systems. Quite often the knowledge of advisory services, managers and forest workers appears to be very traditional and does not reflect the management goals and needs of new forest owners. Furthermore, a lack of entrepreneurial thinking is as well recognised. It seems that this situation is currently changing, and new solutions for forest management are sought for in different countries. While in some countries more traditional approaches are seen as innovative (e.g. associations or forest owners, change of silvicutural measures, etc.) others are exploring new options (e.g. certification, payments for ecosystem services, wood mobilisation, etc.). Even though these new forest management approaches are often not specifically developed for new forest owner types, they still may be relevant for them to some extent.

Situation is similar in terms of policies that specifically address different ownership categories and in general we can see that there are hardly any specific policies that target different and/or new types of private forest owners across Europe. Forest policy and legislation is usually the same for all ownership categories. Some of the countries, such as France and Finland are more advanced in this terms, and have developed specific programmes addressing new or non-traditional forest owners. Although explicit policies targeting new forest owner types hardly exist, some policy changes (e.g. the forest policy overhaul in Finland) have acknowledged the changing ownership and aim at (among other things) tackling the challenges induced by changing forest ownership patterns.

The changing patterns are better visible when looked at national or even local scale. Therefore, the detailed descriptions on specific country conditions, as well as specific case studies (national/regional/local) explaining certain phenomena, change or trends provided in the collected Country Reports, illustrate changing patterns of forest ownership identified in this Action. These Country Reports are serving as a basis for further detailed analysis and work in the Action.

Contents

AUSTRIA

Gerhard Weiss, Filip Aggestam, Karl Hogl, Robert Jandl, Ivana Živojinović, Alice Ludvig, Bernhard Wolfslehner

1. Introduction

Forests cover around 47.6% of Austria's territory (3.99 mio ha out of 8.4 mio ha land). Forest area has been increasing since the first inventory period (44% forest cover in the 1960's) (BMLFUW 2015). This trend is caused by afforested agricultural land and it is decreasing (growth rate of 4.300 ha/year recently). With a total population of around 8.1 mio citizens, it means roughly 0.5 ha of forests per citizen. Two thirds of Austria's population is living in cities.

Much stronger than the increase in forest area is the increase in growing stock: While in the 1960's, Austrian forests had 780 mio m^3 of wood (over bark), this is around 1,135 mio today.

Half of Austria's forests are properties below 200 ha, many of them farmers. Private forest owners hold 80% or 2.6 million ha of the forestland. Public forests are mostly owned by the Republic of Austria, managed by the Federal Forests SC (around 15% of total forest land in Austria). There is a mix of traditional and non-traditional small scale forest owners in Austria. One aspect of the ongoing structural change in the agricultural sector in Austria is the increase of non-farm forest owners, also called absentee, urban, non-traditional or "unknown" forest owners (UFOs) – as the forest extension services often have no contact with them.

There are approximately 145.000 forest owners in Austria. 1.5% of these own more than half of all forestland, with an average size of about 1.200 ha, about 99% of all proprietors hold less than 200 ha of forestland and almost 40% hold less than 3 ha.

In a representative forest owner survey and by applying a cluster analysis, Hogl et al. (2005) have found seven types of private owners, ranging from more traditional and agriculture-connected to less traditional owners with less agricultural background: farmer forest owners (some 20% of owners), part-time farmers (also 20%), small-towners with rural background (12%), forest owners previously employed in agriculture (16%), farm leavers (10%), urban forest owners (9%) and owners without connection to agriculture (13%). In sum, one third of owners have practically no connection to agriculture or forestry. For them, working in and deriving income from their forests is of little importance. The authors summarise these under the term of "new forest owners".

In professional debates, the trend for increased shares of new forest owners is seen as being problematic in the view of underutilisation of the forest. If owners are not interested or have no time and capacities for management, wood is not utilised for industrial use with implications for the strong Austrian timber and paper industry as well as for producing wood energy.

Fewer implications are seen for recreational use or for nature conservation goals.

2. Methods

2.1. General approach

The country report aims to give a comprehensive overview of forest ownership issues in the country, based on a mix of methods. These include a review of literature and secondary data and the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review describes the state-of-knowledge in Austria and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. The data and case study analyses provided in the

country reports will be analysed in subsequent stages of the COST Action.

2.2. Methods used

In the data collection, a mix of appropriate methods is applied. For practical reasons the methods of data collection are divided into three groups:

1) Literature reviews to answer qualitative data and give overview assessments;
2) Statistical data, e.g. from national forest inventories
3) Data from previous national or regional studies on forest ownership as far as they exist, for answering quantitative questions on new forest ownership
4) Expert interviews/consultation for answering qualitative data, give overview assessments, and provide case examples; own expert knowledge.

Besides of scientific studies and statistical data, also own expert knowledge was used for writing this report as well as expert consultations. In addition, the following parts were written on the basis of expert consultations: part II, chapters 3 and 4 (Prof. Gottfried Holzer, BOKU; Dr. Stephan Probst, Neudorfer Rechtsanwälte; Dr. Christian Urban, LBG and BOKU; Mag. M. Erasimus, NÖ Landwirtschaftskammer; Mag. Mario Deutschmann, Land- und Forstbetriebe Österreich; Dr. Peter Herbst, Kärntner Agrarbehörde), chapter 7 (Martina Dötzl, Statistik Österreich) and chapter 9 (Dr. Peter Herbst, Kärntner Agrarbehörde).

3. Literature review on forest ownership in change

The COST Action national representatives undertook a review and compiled information on changes in forest ownership in their countries based on peer reviewed and grey academic literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review was as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The 8 most relevant publications were selected from the collected literature and described according to a pre-determined format and included in the Annex to the full single country report available at the COST Action FP1201 FACESMAP website (http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).

The literature review considers the following questions:

- Which research frameworks and research approaches are used by researchers?
- What forms of new forest ownership types have been identified?
- Do any of these have specific forest management approaches?
- Which policies possibly influence ownership changes in the country and which policy instruments are directed at the needs of new forest owner types?

3.1. Research framework and research approaches

Forest ownership has traditionally been studied from a business economics perspective (e.g. Sekot, 2001). Only recently also other approaches discovered private forest ownership as a study object, including sociological and policy science (e.g., Hogl et al. 2005), market studies (e.g., Schwarzbauer, 2005a and b) and innovation research (e.g. Rametsteiner et al. 2003). While business economics still focus their work on traditional large and small forest holdings, the newer social science approaches also look at new forest owner types, their motives and behaviour. A certain special focus thereby is put on their attitudes towards wood production and related forest management services by service organisations because national and EU policy has a strong interest in wood supply (wood mobilisation).

Studies are almost exclusively done at the University of Natural Resources and Life Sciences, Vienna. Contributions are done at the Department of Economics and Social Sciences and by various institutes: Institute of Forest, Environmental and Natural Resource Policy (forest owners motives and behaviour, policy instruments), Institute of Agricultural and Forest Economics (business economics), Institute of Marketing and Innovation (market studies), and Institute of Production Economics (wood logistics). An important impulse was given by a research group at the Institute of Forest, Environmental and Natural Resource Policy which is also part of the European Forest Institute. This research group started as EFI Project Centre INNOFORCE and is now institutionalised as EFI Regional Office for Central-East European Countries (EFICEEC). Other organisations include the joint research centre Kompetenzzentrum Wood K-plus GmbH (market studies) and the University of Applied Sciences Wiener Neustadt (marketing strategies for forest management services).

The funding is partly national (national studies as well as the financing of the EFI Regional Office EFICEEC), partly European (EC DG AGRI for the tender on Prospects for the market supply of wood and other forest products from areas with fragmented forest-ownership structures).

The research approaches include sociological, policy science, economics and market studies (for an overview see Weiss et al., 2007). Quantitative surveys of forest owners as well as qualitative methods (in-depth interviews, focus group discussion) are used. The surveys mostly cover the whole of Austria but include also regional case studies.

The major results are typological studies of private forest owners that include non-traditional owner types (Hogl et al. 2005). These types form a sequence, ranging from forest owners with a strong agricultural background to forest owners with no agricultural background at all. The types without agricultural background markedly differ in their behaviour in various respects, e.g. in their use of the forest or in their interest in forest-related information. When looking at private forest owners' attitudes towards wood production and the possible use of forest management services from service organisations, they fall into two rough groups: farmers and non-farmers (Weiss et al. 2006). The main instruments applied by policy practice to reach and influence small forest owners are advice and cooperation models. The institutional actors, however, hardly orient their public relations activities towards new/non-traditional forest owner types and their different characteristics in comparison to the traditional owners (Rametsteiner et al. 2003; Weiss et al. 2010; Stern et al. 2013).

For a critical assessment, it can be said that all themes of the COST Action FACESMAP are covered by previous studies in Austria, however, not all in detail. One result of the previous studies is that little is known about new or non-traditional forest owner types, both in research and practice. The main gaps seem to be the following:

1. New management approaches with a view to non-traditional owner types hardly exist in practice.
2. There are hardly any policy instruments oriented at new or non-traditional owner types. In general, there is little knowledge about new types of forest owners, which kind of forest management they would wish, and which instruments would effectively reach them.

3.2. New forest ownership types

A main result is the detailed typology from Hogl et al. (2005) which based on a representative survey and by means of cluster analysis presents seven types of forest owners: Farmer forest owners 20%, Part-time farmers 20%, Small-owners with rural background 12%, Forest owners previously employed in agriculture 16%, Farm leavers 10%, Urban forest owners 9%, Forest owners without connection to agriculture 13%.

Unfortunately, and because of the method used, the forest area cannot be given for these types, nor a trend or regional differences. The study says, however, that the trend is increasing shares of non-traditional (non-agricultural) types.

The study distinguishes "new ownership" from traditional ownership by a number of

structural attributes: living in cities or in rural areas ("urban owners"), how far they live from their forests ("absentee" owners), if they manage a farm ("non-farm owners"), and other characteristics regarding their relation to agriculture, including if they grew up on a farm, if they have an agricultural education, and if they work in the field of agriculture and forestry (Hogl et al. 2005). This and the related study by Weiss et al. (2006) says that non-traditional owners do not regularly harvest timber but they often use the forest for their own fire wood. The main difference in their behaviour across all owners is between farm owners and non-farmers: Farmers are more income oriented, non-farmers value more the social values of their forests (Weiss et al. 2006).

3.3. Forest management approaches

Two main approaches are discussed in practice: a joint management of (small) forest properties (forest owner cooperatives or associations) and third party management services such as management planning, harvesting and marketing (Weiss et al., 2006). In fact, these approaches are however rather oriented towards traditional owners and hardly take into account the characteristics of new owner types. According to expert interviews (Weiss et al. 2010), the following measures are most important in practice: 1. Personal, individual high quality on-site assistance and advisory service for fragmented forest owners; 2. Public relations work to emphasize and improve the value and image of forestry in public opinion; 3. Improving and enforcing of GIS-systems for exact quantification of wood potential for Austria; 4. Transparency in timber supply chain; 5. Establishing new communications path to provide specific prepared information for each fragmented forest owner type.

3.4. Policy change / policy instruments

The appearance of the "new ownership" types is explained by social change rather than by policies (Hogl et al. 2005). The main mechanisms are agricultural change and a change in lifestyle.

There are hardly any policy instruments directed at new forest owner types. As said under point 3 on forest management approaches, wood mobilisation measures are mostly directed towards traditional owner types, although other types are also meant to be covered (Weiss et al. 2010). For traditional institutional forestry actors it seems difficult to see the different social characteristics of urban (non-traditional) owners. Therefore, the success/effectiveness is very limited.

The main problem perceived is the good supply of the forest industry with raw material, and the main challenge connected to new or fragmented owner types is "how to reach them" with mobilisation campaigns or forest management services (Weiss et al. 2010). Therefore, these new types are often called UFOs ("Unknown Forest Owners"). In simplified form, the main solution applied or aimed at in policy practice is advisory services. Forest policy representatives believe that they are successful with their advisory services and see limitations in their budgetary and personnel capacities (interviews and workshop result, Weiss et al. 2010). Besides of their limited resources, the main hindering factor is seen in the lack of property and forest site data which hampers management and mobilization activities (Weiss et al. 2010). The activities planned are: Implementing GIS-Systems to realize potential harvestable forest stands (Database); Increase of personal on-site assistance and advisory services (Trust and Information, Realisation); Improvement and intensification of forest cooperation and chamber network; Setting workshops and awareness activities (Trust, Information and Realisation); Public relations work (Weiss et al. 2010). Researchers strongly recommend developing very specific measures when addressing non-traditional owner types because of their distinct values and goals connected with their properties (Hogl et al. 2005; Weiss et al. 2006; Weiss et al. 2010).

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the Austria. The most detailed information at national level is often structured in different ways in different countries. In order to show the most

accurate information, it was decided to use the national data sets in the country reports. To make this information more comparable still, the information is also collected in an international format that is used in the Forest Resources Assessments (FRA) by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses how far the national categories and definitions may be transformed into the international FRA data structure and the extent to which there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Private forest ownership dominates in Austria with around 81% (Table 1).

Table 1: Forest ownership structure in Austria 2010 (source: BMLFUW, 2015)

Ownership	ha	%
Private forests under 200 ha	1.778.024	48.20
Private forests over 200 ha	784.347	21.26
Common rural property	402.746	10.92
Communal property	76.420	2.07
Provincial governments property	69.002	1.87
Austrian Federal Forests SC and other public forests	578.556	15.68
Total	**3.689.095**	**100**

Remark: Private forests include church forest ownership.

The first three categories of the classification are considered to be private forest owner types. Church forests are included in the first two lines. The category of common rural property is a traditional form of joint ownership by local farm stead's. It can be regarded an old common land ownership type although modernised. It is in fact a semi-private category as it is protected by law and administered by a specific authority.

Public forests are traditionally categorized in Austria into the three administrative levels: communal or municipal (local governments), provinces, and national. On national level, almost all forests are managed by the Austrian Federal Forests SC (Österreichische Bundesforste AG) and only smaller shares are under other administrative sectors (e.g., the ministries of defence and of transport).

In the quite simplified overview, it seems that the national data were transferred into the FRA categories in an appropriate way (Table 2), although the classification schemes differ slightly. The here used English term of "Common rural property" is the FRA term of private forests owned by "local communities".

Table 2: Forest ownership structure according to the Forest Resource Assessment (FRA)

FRA 2010 Categories (2005)	Forest area (1000 hectares)	(%)
Public ownership	751	19.45
Private ownership	3111	80.55
...of which owned by individuals	2124	54.99
...of which owned by private business entities and institutions	607	15.72
...of which owned by local communities	380	9.84
...of which owned by indigenous/ tribal communities	0	0
Other types of ownership	0	0
TOTAL	**3862**	**100**

4.2. Unclear or disputed forest ownership

In the province of the Tyrol, it seems that between 1950's and 1970's in many municipalities, forest and agricultural land of municipalities was unlawfully given to agricultural communities. This had been criticised by the highest Austrian court (Verfassungsgerichtshof) in 1982 and 2008 (Rechnungshof 2010). In total it is about an area of some 2000 ha. The case has been

settled by law in 2014 (Amendment of the Tyrolean Agrarian Law – Tiroler Flurverfassungslandesgesetz) which is currently being implemented. In the new regulation, the relation between the agricultural communities (that have use rights in the forests) and the municipalities (who are the property owners) is newly defined: the forest land is transferred to the municipalities but the management is done by the communities.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

In Austria, there are restrictions for buying/selling agricultural and forest land at least in two respects: buyers should be farmers, and farms or forest parcels should not become too fragmented.

1. Buyers must be farmers or must have an adequate education in order to be able to manage the agricultural or forestry land appropriately (landwirtschaftliches Grundverkehrsrecht). Details differ between the federal provinces (Grundverkehrsgesetze). The aim of this regulation is to maintain the agricultural or forestry use of the land. The EU influenced this regulation recently in that way that an acquisition cannot be forbidden if the buyer can prove the management by a tenant. The regulation is not undisputed and there seems to be a trend to a more liberal regulation/interpretation. In practice, each transfer has to be approved by a commission (Grundverkehrskommission). One principle is that a priority is given to neighbouring farmers if they are interested to buy before a buyer without education may buy (Interview Urban). Neighbours may through this hinder the acquisition by a non-farmer; if they want to buy the land they only need to pay what is normally seen as adequate and not more, even if the non-farmer would have paid more (Interview Probst; Erasimus). Furthermore, there are restrictions for foreigners buying agricultural land or forest.

2. Another restriction, in some provinces, is that farms are not allowed to sell off parcels if the remaining farm holding would be too small to be profitable/able to support a family (e.g., Tiroler Höfegesetz, see also next item). Specifically for forest land, the Austrian Forest Act provides that forest parcels may not be divided into parcels too small for a regular management (Forstgesetz, §15 Waldteilung). This minimum area is specified in the provincial laws mostly around 1 ha. (Literature: Lienbacher 2012; Holzer 2012)

4.3.2. Specific inheritance (or marriage) rules applied to forests

In Austria, there are special regulations on inheritance of agricultural land (including forests). In general, Austrian law says that – in those regions where this has been done by tradition – traditional farm holdings (“Erbhöfe”) should not be divided but given as a whole to only one heir (so-called Anerbenrecht in contrast to Realteilung). Specific regulations are given in the laws of the federal provinces. These special regulations on farms differ from general inheritance rules and are therefore called “special inheritance rules” (“Sondererbfolge”). The aim is to maintain farm holdings big enough to support a farm family and to be profitable as a full farm. (Wikipedia: Anerbenrecht, Realteilung)

This regulation implies that the passed on farm is not valued by market prices but less (earning capacity value, Ertragswert) so that the inheritor is able to pay out the other apparent heirs. Forest land, if part of a farm, is included into this regulation (Interviews Urban; Probst). Pure forest holdings, however, are not subject to this regulation at the moment; there are suggestions to include also family forest holdings (Interview Erasimus). It may be possible also that part of the forest land is divided among the heirs if these parcels are not seen as being part of the “core farm” (they are called wandering parcels – „walzende“ Grundstücke; Interview Urban). It is a common practice that if the farm is given to one heir, single forest parcels are given to the other heirs as compensation. The above mentioned principle from §15 FG (Waldteilung) applies as well: the passed on forest parcels should not be smaller than 1 ha. If the estate is given as an entity, they are taxed by a lower value, if cut off parcels are

passed on, their full value (including the stocking timber) is taxed.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

In Austria there is no relevant change between public and private ownership. The Austrian Federal Forests SC (Österreichische Bundesforste AG) buy and sell forests to a small extent (around 1000 ha per year but without much change of their total area). So does also, for instance, the City of Vienna. Smaller changes happened as described under point 2.

4.4.2. Changes within public ownership categories (devolution)

Within public ownership categories (e.g., state, public administration or corporations owned by public administration) the only significant change was the re-organisation of the Austrian Federal Forests into a public company (stock company) in the year 1997, 100% owned by the Republic of Austria (Bundesforstegesetz 1996, BGBl. Nr. 793/1996).

4.4.3. Changes in private ownership categories

Within private forest ownership: There is not a very active forest land market in Austria. The major change is the growing share of “new” or “non-agricultural” forest owners. The agricultural sector has been undergoing structural change in recent decades; many farms have been closed and the share of farms operated on a full-time basis has decreased in favour of part-time farmers. When a family gives up its farm, a ‘new’ type of forest ownership is established, in which the forest is no longer directly connected to agriculture. About 80% of Austrian farms count forests as part of their land. But the number of farm enterprises decreased from about 400,000 in 1960 to about 220,000 in 1999. There is also a clear trend towards part-time farming: in 1960 two-thirds of Austrian farms were operated on a full-time basis and one-third was operated part-time; this ratio is now reversed (Statistics Austria 2001). (Hogl et al. 2005a: 325). A cautious look into the future is discussed in Hogl et al. 2005b: 15% of the surveyed farmers say that they already know that their farm will not be maintained in future.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

The relevance of these drivers in the Austria context is presented in following table.

Trends in forest ownership in the Austria: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	1
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	0
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3
• Other trend, namely:	/

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: PRIVATIZATION OF PUBLIC FOREST MANAGEMENT

Re-organisation of the Austrian Federal Forests into a public company (stock company) in the year 1997: Austrian Federal Forests SC (Österreichische Bundesforste AG).

CASE STUDY 2: CHANGING LIFE STYLE, MOTIVATIONS AND ATTITUDES OF FOREST OWNERS

Based on a representative survey and by means of cluster analysis, seven types of forest owners are identified in the study of Hogl et al (2005a, b). These types form a sequence, ranging from forest owners with a strong agricultural background to forest owners with no agricultural background at all.

Strong agricultural background:

- Farmer forest owners 20%
- Part-time farmers 20%

Intermediary types:

- Small-towners with rural background 12%
- Forest owners previously employed in agriculture 16%
- Farm leavers 10%

No agricultural background:

- Urban forest owners 9%
- Forest owners without connection to agriculture 13%

These types noticeably differ in their behaviour in various respects, e.g. in their use of the forest or in their interest in forest-related information. There is an increasing need for forest policy-makers and extension services to recognize changes in the ownership pattern in the design of programmes and instruments to address effectively their target groups (Hogl et al 2005a, b).

4.5. Gender issues in relation to forest ownership

There is a full sample of Austrian agriculture and forestry businesses from Statistik Austria 2010 (Österreichische Agrarstrukturerhebung 2013 [2]).

The latest survey data is from 2010 and includes the owners of the businesses by gender, age and size of property. The corresponding report was published in 2013, without disaggregated gender data. However, the data can be obtained from Statistik Austria (Direktion Raumwirtschaft, Land-und Forstwirtschaft) as a "separate analysis" (Sonderauswertung).

[2] www.statistik.at/dynamic/wcmsprod/idcplg?IdcService=GET_NATIVE_FILE&dID=142150&dDocName=071011

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organizations such as conservation and heritage NGOs, self-organized community-based institutions and other philanthropic ("characterized or motivated by philanthropy; benevolent; humane" OED) organizations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which

are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

For Austria assessment is as follow:

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives	X		
• Self-organized local community groups		X	
• Co-operatives/forest owner associations	X		
• Social enterprises			X
• Recognized charitable status for land-owners			X
• Other forms of charitable ownerships, namely:		X	

Forests owned by NGO with environmental or social objectives

There are a few cases where nature conservation groups bought forests for managing for conservation goals. WWF in cooperation with the city of Marchegg bought a piece of riparian forest which is a nesting area of storks. In the 1980's, the WWF also campaigned for "freeing" riparian forests at the Danube river as part of their protests against building a hydroelectric power station near the city of Hainburg (campaign "Au freikaufen"). In this case, 400 ha private forest was purchased. Usually, the nature conservation groups do not aim to purchase areas but rather campaign or initiate projects to be financed, owned and run by others. Also in this case, WWF did the campaign and transferred the money to an association founded to manage the forest for nature conservation purposes. (Source: G. Weiss, 2004, Innoforce internal report)

Forest co-operatives / forest owner associations

In Austria, some pioneer forest owner associations were founded in the 1950's and 1960's. A major trend started in the 1980's and 1990's. The original aims were mostly to joint marketing of timber, sometimes the focus was also on the realisation of joint forest roads or the development of management plans for their forests. The associations were often initiated by the forest authorities or chambers of agriculture. The foundation of associations is supported by public subsidies. The organisation differs between the federal provinces of Austria. In Styria, for example, they are organised on three levels: local (municipal level) and regional (district level) communities under the provincial main organisation. In other provinces, local forest owners cooperatives also exist independently from the provincial forest owners associations. In Upper Austria, for example, the local cooperatives are either focused on the joint work in the forests or in the joint purchase of forest machines. The provincial association focuses strongly on the joint marketing of the timber. They roughly market 15% of the harvested timber in Austria. The communities or associations also organise training courses or information events such as excursions or regular evening meetings ("Stammtische"). (Source: G. Weiss, 2004, Innoforce internal report). Furthermore, farmers' cooperatives have also been founded to run rural biomass based district heating plants (Weiss 2004).

The associations are mostly active in the business activities, less in interest representation which is traditionally done by the Chambers of Agriculture. The typical associations (Waldverbände) are in fact service organisations of the Chambers.

4.7. Common pool resource regimes

Commons - forest common pool resource regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organisation (of rules and decisions). Examples of traditional CPR regime are pastures, forestland communities in Sweden, Slovakia, Romania, Italy and other European

countries and irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is a challenge for this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. An example of a new (quasi-) CPR regime is the community woodlands in UK, established in last 20 years mainly in Scotland and Wales. Our interest in "traditional" and "new" common pool resources regimes (CPRs) in European forest is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users may also be CPR regime if they have the rights to determine management rules even though they may not own the land itself. Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are key for sustainable use of CPR regimes.

In Austria, a special form of ownership is the common rural property. Historically, this goes back to the commons before this type of common property was transferred into Roman Law categories. It is a joint ownership of a local community of farms – the property is connected to the farm stead, not the persons. These properties are a kind of semi-public property because they are specially regulated by law and supervised by special authorities (so-called agrarian authority, Agrarbehörde). There are two names used for this: In the mountain areas, they are called "Agrargemeinschaften" and they often include mountain pastures and/or forest. In the Eastern part of Austria, they are called "Urbarialgemeinschaften".

* For further information, the expert in Austria certainly is: D.I. Mag. Peter Herbst, Kärntner Agrarbehörde.

5. Forest management approaches for new forest owner types

5.1. Forest management in Austria

When looking at the main ownership categories in Austria, as presented under section II, the forest management may be described as follows:

Private forests below 200 ha (owning around 50% of Austria's forest area):

- Forest owners of properties below 200 ha own the largest share of Austrian forestry enterprises. They mostly manage their forests as part of an agricultural enterprise where the income from forestry plays either a substantial or negligible role for the income. These forest owners are supported by the Chambers of Agriculture who employ forestry experts who support silvicultural planning with their expertise. In addition the Chambers support the foresters in administrative matters such as access to national or European subsidies. The forest operations, i.e. harvesting and marketing are done either by the forest owners or by contracted local/regional enterprises. Marketing is supported by the Chambers and by consultancy businesses.
- An exception is the small-scale forest owners owning only very small forest properties. They are usually not actively participating in the timber market, mostly because they are engaged in other professions and are only part-time farmers or no farmers at all. The forest products are usually consumed by the owner – mostly fire wood.
- New forest owners are not actively participating in the market. They have interest in forestry for a variety of reasons which not necessarily align with timber production. Due to the insignificance of the economic value and the possible frustration due to technological limitations may lead (and leads) to negligence of the forest property.

Private forests over 200 ha (21%):

- Forest owners of properties larger than 200 ha derive significant income from timber production and associated goods and services. They are organized by private professional associations who exert political influence at a high level (voluntary association of land owners on provincial levels, with an umbrella

organisation on national level, Land- und Forstbetriebe Österreich). The enterprises have a specialized work force for forest management harvesting and their marketing of timber is mostly included in well-established cooperations or networks.

- Forestry is a highly traditional business. A wave of mechanization more than 3 decades ago was a fundamental change. Not only is the harvesting strongly mechanised (e.g. by use of harvesters) but also are the main forest operations such as harvesting in most forest holdings largely outsourced to entrepreneurs. Since then the changes have been rather incremental.

Common rural property (around 10%):

- These forest holdings are jointly owned by local farmer communities. They usually have the size which allows professional management by support of a trained forester. They are supervised and receive support by the agrarian and/or forest authorities. The farmers often do the harvesting work themselves or the work is outsourced.

Communal property (around 2%):

- Municipalities only rarely own forests. One larger forest owner is the city of Vienna who conducts are very specialized forest management with primarily public management goals, including nature conservation and recreation nearby the city itself, and watershed management in the drinking water reserve forests in the nearby mountains.

Provincial governments property (around 1%):

- The only significant provincial forest owner is the province of Styria who own a larger forest holding with commercial as well as nature conservation management goals as they own the core area of the recently established National Park Gesäuse.

Austrian Federal Forests SC (around 16%):

- The Austrian State Forest Enterprise (Österreichische Bundesforste AG) is a joint-stock company with a single shareholder, i.e. the Republic of Austria. The share of marginal-productive forests (protection forests) is rather high as a consequence of the history of the enterprise which means that the majority of the forests are in mountainous areas. Protection forests in the mountains with low economic value but high significance for protection against natural hazards were traditionally owned by the monarchy because of the mineral resources found there (salt and ore mines). A part of the technical forest operations is outsourced to enterprises. This decision is based on a stringent economic evaluation and gives room to highly specialized companies.

Basically, forest management is done by the owners. This applies to practically all categories, including: small and large private ownership and public ownership. Small farm forest owners do the management planning and the operations themselves; larger holdings (if the owner is not a trained forester and does it him- or herself) employ professional foresters to manage their property. They also often have some employed workers although nowadays the forest work is usually outsourced to entrepreneurs. The forest law even requires that forest holdings from a certain size have to be managed by trained and state approved foresters (Förster / Forstwirte mit Staatsprüfung).

Private forest owners receive support through advisory services and subsidies by the forest authorities as well as the chambers of agriculture. All forest owners are obliged to be member of the chambers of agriculture which are active as an obligatory interest group in the policy-making process but also offer advice.

A further special supportive structure is the forest owners' associations (FOA) which exist in all federal provinces of Austria (known under different names such as Waldwirtschaftsgemeinschaft, Waldverband, or similar; see short description under section II). They support private forest owners in the forest management planning, harvesting and particularly in the marketing of wood. Owners need to become member of these associations in order to have access to their services. In the year 2013 (an average year),

some 2.5 mio m^3 timber have been marketed through the FOAs which is around 15% of the total harvested or marketed wood (around 18 mio m^3 per year). FOAs in Austria are quite successful and steadily growing in terms of membership and marketed wood.

The FOAs typically approach and receive members among traditional farm forest owners. New or "urban", "non-traditional" forest owners to a much smaller extent become member as they often think their property is too small, they do not know about the possibility, do not trust them or they are simply not so interested in active forest management.

At the moment, acc. to Weiss et al. (2006) only 16% of the forest owners are members in a forest owner association or cooperative, another 17% might consider joining, but 65% say they have no interest at all (Table 3; Weiss et al., 2006).

Table 3: Membership of private forest owners in an association or cooperation in Austria (Weiss et al, 2006)

Level of Interest	%
Member of a forest owner cooperative (WWG)	16
Becoming a member "could be considered"	17
No interest	65

Despite the idea of FOA is connected with smaller forest properties, the share of membership in FOA grows with the size of the forest holdings (Table 4). This indicates that FOA are an instrument for effective forest management (specifically for timber sales) which is rather used by "active owners". Especially very small owners are often not actively managing their land (Weiss et al., 2006). Even bigger holdings choose to sell their timber together with other forest holdings (Source: G. Weiss, 2004, Innoforce internal report).

Table 4: Membership in forest association and forest owner cooperation differentiated into different ownership sizes (source: Rametsteiner, Kubeczko 2003)

	Less than 10 ha	10-100 ha	100-500 ha	500-1000 ha	Over 1000 ha
Membership	16%	47%	35%	60%	62%

5.2. New or innovative forest management approaches relevant for new forest owner types

In Austria, new forest management approaches – particularly when connected to small or fragmented forest ownership – are dominatingly discussed from the perspective of wood mobilisation. Besides of that, the issue of nature oriented forest management (or close-to-nature forest management) is also always discussed in different ways from different interest groups, however, this is not specifically linked to non-traditional or new forest owner types. We therefore report here in particular to the wood mobilisation issue. The material is largely taken from the Austrian case study report prepared for the EC DG AGRI tender study "Prospects for the market supply of wood and other forest products from areas with fragmented forest-ownership structures" (Schwarzbauer et al. 2010).

Overview on wood mobilization measures in Austria, including the results from interviews and the focus group discussion (Table 5).

Table 5: Measures for wood mobilization in Austria (Schwarzbauer et al. 2010)

Measure	Applied by	Effect / Intention	Success
Personal, individual high quality on-site assistance and advisory service for fragmented forest owners.	Forest owner cooperation and forest advisory institution; other forest owners, private forest personal, timber traders, forest consultants,	Raising trust and awareness of possible potential, reducing prejudices, providing harvest and management services (full service or part services)	Very successful if enough resources are provided and applied by forest owner cooperations and forest advisory institution, less successful if provided by other forest owners or personal because low cost effectiveness.
Public relations work to emphasize and improve the value and image of forestry in public opinion.	forest – timber industry cooperation, forest owner cooperation	Establishing a positive public opinion of forestry and timber harvest,	Trend of last 10 – 15 years shows a positive impact of PR.
Improving and enforcing of GIS-systems for exact quantification of wood potential for Austria.	Forest owner cooperation, forest technical cooperation, forest – timber industry cooperation	Providing data for planning and management.	Successful as support for personal on-site assistance.
Transparency in timber supply chain	Forest owner cooperation, forest advisory institution	Intensifying transparency, securing payment and income, reducing prejudices, uncertainties and mistrust	Successful
Establishing new communications path to provide specific prepared information for each fragmented forest owner type.	Forest owner cooperation, forest advisory institution	Raising awareness of potential and harvest and management possibilities, reducing uncertainties, prejudices and mistrust.	Successful, individual and personal service is most appreciated by small fragmented private forest owners

The study concludes: “The main solution proposed and applied by the institutional actors (mainly the forest owners interest groups – the chambers of agriculture with their forest management associations) is to increase the available information on the forest resources for each owner, and the communication of this information to them. For that, they call for increased personnel resources to reach the owners on the ground. Because this position of the institutional actors is mainly based on their knowledge on traditional owners it may not work for non-traditionals, who may have totally different motivations regarding the resources in their (small) forest lands. In order to increase harvests among non-traditional forest owners, it is necessary to do research on their attitudes and motivations.” (Schwarzbauer et al. 2010; highlighting done for the COST country report).

5.3. Main opportunities for innovative forest management

Opportunities are seen in many ways but specifically in the focused orientation on the aims and needs of the different forest owner types.

Low input forest management: This includes the option to do a forest management which aims to reach forest structures which need as little work input as possible in order to keep stable (reduced input forest management). Such a management would be appropriate for all owners who have not strong interest in a regular forest management, including both traditional (farm) as well as non-traditional (new) forest owners.

New organisational models: A few new organisational models already exist or are discussed. They include the service offers by the FOAs such as: joint timber marketing, organisation of harvester work, forest operations by entrepreneurs, or taking over the whole forest management (from forest management planning until harvesting and marketing of the timber; often called “full services”). Still, these offers are typically addressing traditional forest owners and are not specifically adapted to new owner types.

Special aim forest management: There may be opportunities to develop totally new management approaches for non-timber goals. New forest owners may be more

interested in doing activities oriented at other forest ecosystem services, including recreational, artistic, social, nature conservation, non-timber products, or other goals. This is by now not discussed in Austria.

5.4. Obstacles for innovative forest management approaches

One set of barriers are those seen by the forest practitioners/advisors/policy makers: They refer to the limited profitability of forest management that goes along with the fragmented of forest ownership. These barriers include limited knowledge of the land owners about their property (property borders, harvesting potentials, services offered to support in the management, marketing channels, etc.) but also limited knowledge of the advisory services about the owners, their properties, timber resources and motivations. In the end, this includes also limited personnel and budget capacities of the advisory services in order to be able to approach the forest owners (Schwarzbauer et al. 2010: p. 61).

Another set of barriers can be identified in the limited awareness of the advisory services about the different goals and needs of new or non-traditional forest owner types. This was concluded by the authors of the mentioned study on the basis of their interviews and focus group discussions. In order to increase harvests among non-traditional forest owners, it seems necessary to do research on their attitudes and motivations (Schwarzbauer et al. 2010: p. 65).

CASE STUDY 3: FOREST ASSOCIATION STYRIA – INNOVATIVE APPROACHES TO WOOD MOBILISATION

The Forest Association Styria offers a number of wood mobilization services, including the traditional joint wood marketing (yearly turn-over of about 70 mio €), the organization of joint harvesting operations (e.g. harvester), or forest management planning. Innovative services are, for instance, a “forest management plan – light” or the forest management contracts.

A) Forest management plan “light” (Waldpraxisplan): This forest management plan is a simplified FMP which is specifically oriented at small forest owners and gives only the necessary information required to know about the resources, harvesting potential and tending needs as well as to plan for measures. It includes a map of the forest resources and a management concept including management measures, costs and revenues. It is not too costly and therefore not a big barrier to do the investment into the plan. By showing the harvesting needs and potentials it gives the forest owners a trigger to start active management.

B) Forest management contracts: The association offers to take over the full management of a forest, including management planning, monitoring, and organization of harvesting and tending measures as well as timber sale. This work is done through a company which was founded by the association (with the name Forest Association Styria Ltd.).

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways. Firstly, policies directly or indirectly influence ownership development or even encourage or create new forms of ownership. Secondly, policy instruments are emerging in response to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

In Austria, there any no policy instruments to stimulate privatisation, decentralisation, or nationalisation of forests.

The regulations related to inheritance rights with the aim to hindering fragmentation are described under section II of this report.

The EU policy instruments for afforestation of agricultural land apply. Subsidies are given to afforest lesser productive agricultural land, among others, to reduce overproduction but also to increase cost-effectiveness. There is a

growth of forest land due to afforestation or natural succession of forests on agricultural land of about 4.300 ha per year in average (source: Russ 2011; Austrian Forest Inventory, ÖWI 2007/09).

There are also no policies creating new legal forms of ownership.

6.2. Influences of policies on forest management

According to the Austrian Forest Act, forest management planning in private forests is voluntary. There are subsidies for supporting forest management planning, in particular in smaller forest properties and for forest owners cooperatives. Furthermore, advisory services such as the Chamber of Agriculture do support forest owners through their advisory services. Larger forest holdings do have management plans as a standard planning instrument.

The main policy relevant for forest management in Austria is the national forest act because forestry is under national jurisdiction. Provinces are allowed to issue further additional regulations, a possibility which is, for instance, used in the mountainous provinces of the Tyrol and Vorarlberg. They provide for a stricter supervision of forests and offer specific support (subsidies, advisory services).

Policy instruments to influence the goals of forest management include such with the aim for close-to-nature forest management (advise, subsidies for natural regeneration and natural composition of tree species, etc.), active management of mountain forests (protective forests) as well as wood mobilisation (support of the formation of forest cooperatives).

In case of general restrictions of forest management in protective forests or Natura 2000 areas, there is no compensation. Compensation are given if site- specific restrictions are imposed (e.g., in nature conservation areas) and/or on the basis of voluntary contracts (e.g., increasingly used for the purpose of nature conservation).

6.3. Policy instruments specifically addressing different ownership categories

There have been a few studies that were financed by the ministry (BMLFUW). As described under section III, there are hardly any measures directed towards the needs of new owners. Only in rare examples, such approaches were used, for instance, near Wiener Neustadt, Lower Austria, where all owners of a larger forest complex (Steinfeld) were officially approached in order to motivate them for joint activities in improving the forest condition. Information letters and public gatherings were used.

Only recently, a campaign was launched in national daily newspapers, addressing all types of owners, asking if they want their forest to be “managed by the bark beetle or professional foresters/advisors”. The campaign, however, was not done by the public authorities but by the forest owner association (Waldverband Österreich).

The association of small forest owners has been supported by subsidies that co-financed the forming of the group, forest management planning, purchase of forest machines as well as office equipment (forestry subsidies according to Austrian Forest Act).

6.4. Factors affecting innovation

Barriers in the adaptation of forest policies to different ownership categories may lie in the specific needs of different owner types: while larger forest holdings do primarily timber production (lack of adapting nature conservation goals such as in Natura 2000 areas), farm forest owners have their specific goals such as using the forests as a savings bank. New forest owners, again, have different goals such as fire wood use and are not interested in a very active management of their forests.

Further barriers are the traditional orientation of forest policies and advisory services at timber production. Other policy goals and the needs of non-traditional owner types are hardly realised by forest policy actors.

CASE STUDY 4: JOINT FOREST IMPROVEMENT IN STEINFELD, LOWER AUSTRIA

In the Steinfeld near Wiener Neustadt, Lower Austria, a joint campaign by the forest authority and the chamber of agriculture approached all owners of a larger forest complex (Steinfeld) in order to motivate them for joint activities in order to improve the forest condition. Information letters and public gatherings were used. The campaign particularly addressed also new, urban, small forest owners, for instance, by giving information on the social and cultural values of forests. This meant huge effort but also a considerable response by the owners.

CASE STUDY 5: WHOM DO YOU WANT TO MANAGE YOUR FOREST? THE BARK BEETLE OR A FOREST EXPERT?

The forest owner association Waldverband Österreich launched a campaign in national daily newspapers, addressing all types of owners, asking if they want their forest to be "managed by the bark beetle or professional foresters/advisors". A contact is given for how a forest expert of the Waldverband can be contacted. The same is used on the internet portal of the Waldverband (www.waldverband.at), leading to a few short topical articles on the possible risks (e.g. bark beetle or other damages in forests) and chances of forests (why to manage them) and a contact form in order to arrange a free of cost advisory meeting.

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BELGIUM

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1. Introduction

Important remark

Due to the low relevance of the Action topic in Belgium, which is confirmed by a very low number of research projects undertaken in the field of ownership changes, the authors compiled the report focusing mainly on private forests issues. The authors also decided to describe the situation in Wallonia (nearly 80% of the Belgian forests) trying to be as exhaustive as possible and to insert, when relevant, illustrations and complements from Flanders and if possible from the Brussels Region.

At national level, we consider that the issue of the Cost Action FACESMAP is not one of the main current research topics. Its relevance is mainly linked to the evolution of the society in a post-industrial context and can only be considered as problematic in some specific situations.

1.1. Forests, forest ownership and forest management in Belgium (Wallonia)

Belgium is a federal country where some competences are matter of federated entities. This is the case of the forest policy which is under the responsibility of the regions (Flanders, Brussels and Wallonia) and for which national policy does not exist. As an example, the well-known "Forêt de Soignes", located just beside Brussels city, is in fact at the crossroads of the three Regions and a specific policy coordination scheme between regions is thus required to ensure its coherent management and planning.

As presented in table 1, total forest cover in Belgium is near 700,000 ha or 22% of the country area. Nearly 80% of Belgian forests are located in Wallonia, where forests represent 33% of the area. In Flanders, forests cover represents 10% of the region's area. In the Brussels Region they cover some 1,700 ha.

Table 1: Data on forests and the Belgian context (2010) (Staebel 2015, Belgium.be Portal 2015)

	Brussels	Flanders	Wallonia	BELGIUM
Population (inh)	1,089,538	6,251,983	3,498,384	10,839,905
Population density (inh/km^2)	7,257	462	211	349
Forest area (ha)	1,735	146,381	554,000	692,916
Forest area (%)	10	10	33	22
Part of Belgian forest cover (%)	<1	21	79	100

Wallonia is by far the most wooded region. Only this region will be described in this report, because it is a good example of the forest evolution in the beginning of the century and reflects the relative importance of the roles that are expected of it.

The Walloon region can be broadly defined by the following aspects (SPW 2014) valid for 2008:

- forest land: 554,000 ha (with 479,500 considered as productive);
- forest cover or proportion of the forestland in the whole Walloon territory: 33%;
- private forest: 286,950 ha (52%);
- public forest: 267,050 ha (48%);
- broadleaved forest: 256,250 ha (53%);
- coniferous forest: 223,500 ha (47%).

Some definitions are used to define land classification (Rondeux et Lecomte 2010d, SPW 2014.):

-*Forest land*: includes forest used for purposes of production, protection, conservation and multiple uses. It must have a minimum area of 0.1 ha with tree crown cover of more than 10% comprising trees with the potential to reach a minimum length of 5 m at maturity. Thus forest land or woodlands include both productive and non-productive forest areas.

-*Productive forest land*: all stands, clear cuts and natural reserves.

-*Non-productive forest land*: part of forest area permanently or temporarily unstocked: forest roads, firebreaks, muds, moors, grazing lands, ponds, rivers, clear cuts older than at least 4 years and not reforested.

Since 1984, the total forest area increased slightly (+3% in general and +6.3% for private forest), the share allocated to productive areas decreased. This also means that the areas of "non-productive" forests have grown at about 30,800 ha (+70%) mainly due to no-reforestation after clear cuttings and, to a lesser degree, to an increase of the forest road network (SPW 2014).

The different species or major stand types in the Walloon forest in decreasing order of importance are presented in table 2, which refers to the total area (productive and non-productive forests in ha) (SPW 2014).

Table 2: Distribution of major stand types in private woodlands in Wallonia (areas in ha)

	Total	**Public**	**Private**
Conifers	*223,250 ha* (40.3%)	*100,600*	*122,650*
Spruce	163,450	79,650	92,800
Douglas fir	13,950	6,200	7,750
Larch	7,750	3,500	4,050
Pine	12,600	7,700	4,900
Other conifers	25,700	12,550	13,150
Hardwood high forest	*133,600 ha*(24.1%)	*82,050*	*51,550*
Beech	41,700	32,750	8,950
Oak	34,050	19,650	14,400
Other spp of value(*)	34,800	19,900	14,900
Mixed hardwoods	23,050	13,300	13,300
Coppice with standards	*98,450 ha* (17.8%)	*48,950*	*49,500*
Beech standards	2,000	850	1,150
Oak standards	48,550	28,600	19,950
Other spp of value (*)	25,000	9,950	15,050
Mixed hardwoods	22,900	9,550	13,350
Coppice	*14,400 ha*(2.5%)	*4,350*	*10,050*
Poplars	*9,800 ha*(1.8%)	*1,150*	*8,650*
Productive forest land	*479,500 ha*(86.5%)	*286,950*	*267,050*
Non-productive forest land	*74,500 ha*(13.5%)	*29,950*	*44,450*
Total forest land	***554,000 ha***	***267,050***	***286,950***

(*) Chiefly ash, wild cherry, maple, red oak

The following types of forest owners exist within public forests (267,050 ha):

- Communal (local municipalities) properties: 196,900 ha (35.5%);
- Wallonia: 55,350 ha (10.0%);
- Other (military zones, church administrations, public social aid centres, etc.): 14,800 ha (2.7%)

It is also interesting to note that the forests and natural reserves (included in productive forestland) belonging to the Walloon Region amount to nearly 55,000 ha (10% of the whole forest area).

If we consider the evolution of the total forestland (public + private) during the last 24 years, an increase of 3% (16,300 ha) is observed. It is mainly due to an increase of broadleaved stands (+8,350 ha or 3.4%) and non-productive areas (+30,800 ha or 70.5%) which compensates a decrease of coniferous stands (-22,850 ha or 9.3%) especially affecting the spruce and the pine. However,

conifers continue to dominate in private forests. At the same time, the area of other conifers (douglas fir, larch) has grown to nearly three times, which should be interpreted as a diversification of species and a renewed interest for mixed stands with in certain places the development of natural regeneration.

Concerning private forests, it is noticeable that the total forest area is remaining rather constant. However, a special attention has to be paid to a decrease of coniferous stands (-16,200 ha or 11.7%) and a high increase of non-productive forestland (+18,950 ha or 74%).

Table 3: Evolution of the Walloon forest(1984-2008) estimated areas by the regional forest inventory (RFI) (SPW 2014)

Land classification	1984			2008		
	Public	*Private*	*Total*	*Public*	*Private*	*Total*
Broadleaved stands	136,500	119,750	256,250	128,850	119,050	247,900
Coniferous stands	100,600	122,650	223,250	107,550	138,550	246,100
Productive forest land	237,100	242,400	479,500	236,400	257,600	494,000
Non-productive forest land	29,950	44,500	74,500	18,100	25,600	43,700
Total forest land	**267,050**	**286,950**	**554,000**	**254,500**	**283,200**	**537,700**

Regarding the growing stock, the Walloon forest represents around 113.10^6 m^3, which corresponds to a mean volume/ha of 235 m^3 (productive forest). The volume of spruce stands constitutes 41% of the total volume. Since 1984, a significant increase is observed (+24%) despite a reduction of the total wooded area of 3%.

In Wallonia, the PEFC certification scheme is in use, particularly in public forest (97%) while it only concerns around 11% of the private forests until now (PEFC 2015).

The Natura 2000 network represents 220,883 ha in Wallonia, which means 13% of the Walloon area. The Natura 2000 network in the Walloon forested area represents 150,629 ha (27% of the forest area) (SPW 2013).

1.2. Overview of the country report

The country report is structured as follows:

First of all, we present some references of papers or reports dealing with forest owners, especially private (more change over time compared to what is observed in public) and ownership in Belgium from various points of views: management approaches, influence of forest policy, owner profile, owner assistance systems.

The second step is to describe the forest ownership on the basis of our broad knowledge failing to have relevant data or statistics emphasising all what can concern ownership. The areas addressed are focusing on:

- the types of owners and a comparison of national/regional data collected with the FRA database;
- a summary of the situations where ownership is not always clear;
- the potential restrictions for buying or selling forests;
- the inheritance rules applied to forests;
- trends of changes in ownership structure in the last decades;
- the proportion of female and male owners;
- the presence of NGO or not-for-profit owners and common pool resources regimes.

It has not been possible to answer all the questions because of the absence of data or because some of them do not apply to the country.

The third step concerns the forest management approaches that specifically address new forest owner types. If the emergence of new owners is observed it is too early to highlight corresponding management procedures. The most that can be said is that management due to the size of the properties seems to move in two main directions: either nature-oriented or business-oriented.

The last step deals with policies influencing ownership development and policy

instruments in the following context: types of influence policies on the development of forest and forest management, policy instruments reaching different ownership types and new forest owners.

As it will be seen from this report a recurring lack of data does not allow to answer all the above questions.

2. Methods

2.1. General approach

According to the aims of the country report, which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The country report has been prepared using a mix of various sources given the scarcity of syntheses and statistics dealing with the forest ownership and its evolution in Belgium. The organisation of the country in 3 regions (Brussels, Flanders, Wallonia) does not always help to find useful data and to provide sufficiently reliable results. To respond to these problems it has been decided to use only data concerning Wallonia because it represents the most wooded area of Belgium (80% of the whole forest, forest rate of 33% compared to Flanders with a forest rate of 11%).

Both quantitative and qualitative data have been used. The first ones, mainly statistical data, have been taken largely from information collected by the permanent regional forest inventory ongoing in Wallonia since 1996. The latter were first of all gathered as a result of a series of questions asked to forest managers, owners and forest service or local experts. In the context of the preparation of the new Forest Law (2008) (SPW 2009), which has encouraged the forest multifunctionality, universities and institutions involved in R&D have also conducted several forest-based surveys related to forest owners profiles and ownership strategy.

Interviews of forest service members and experts in private forests management in the Region have been used to identify specific trends in the evolution of the ownership's mentality, the nature of the would be purchasers, what drives people to become forest owners, the type of problems faced by long-time owners or managers.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types),
- private forest owners' motives and behaviour,
- management approaches for new forest owner types,
- and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not

easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). The 8 detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Forest research has a long tradition in Belgium but the interest for private forests and owners is limited. Furthermore, public institutions have not paid significant attention to the state and the evolution of private forests. That is the most important reason why there is a lack of relevant data that should be useful now in the context of the national or regional forest policy. One striking example is what happened to the national ten years census for agriculture and forest (the so-called *"Recensement général de l'Agriculture et des Forêts").* This survey originated in 1846. It concerned public and private forests (surfaces, volumes, financial values) and cadastral data (which unfortunately were not updated) until 1980. At that time, data were only given for public forests ("soumises au régime forestier"). No information, even rough, was available for private forests. Since 1994, the source of information, and especially in Wallonia, is the permanent regional forest inventory based upon a sampling design (Rondeux et al., 2010; 2010b; 2010c). Such inventory is also conducted in the Flemish part. The inventory is based upon a systematic sample (grid of 0.5 x 1 km: each point has a "weight" of 50 hectares) and is carried out repeatedly (10,000 sampling plots revisited, one tenth per year).

Since 1980, all relevant data are gathered in computerised cadastral files and maps but were not available for preserving user privacy.

3.2. New forest ownership types

At first glance there is no data on new forest ownership types available in the literature.

In the view of some actors of the private forest like SRFB ("Société Royale Forestière de Belgique" - *Royal Forest Society of Belgium*) or NTF ("Propriétaires Ruraux de Wallonie" - *Rural Landowners of Wallonia*), complemented by many contacts in the forestry sector (owners, forest service, forest managers), one can consider that in Wallonia the emergence of real "new forest ownership" is not relevant at all or, in other words, impossible to identify because not clearly giving a new face or forest profile.

However, from a more general point of view, different cases can be found, without being able to identify them:

- new forest owners that are people who inherit and intend to change the way to manage the property;
- trading companies interested in acquiring forest holdings for achieving financial goals (for example tourism activities, eco-adventure parks);
- people who buy non-wooded parcels for the practise of sport hunting;
- NGO's and especially nature conservation associations which buy forests to extend nature reserve areas;
- people who buy forest to own and manage "their piece of nature";
- people who buy forest as a saving haven in periods of uncertainty (lack of profitability of money placed in a bank account);
- people who want to diversify their investments (real estate, movables, agriculture, forest, buildings,..);
- persons interested in small woodlands for their firewood potential (not widespread practice).

One can also consider the special case of the new young owners, who are following training sessions organized by forest associations (e.g. *"Société Royale Forestière de Belgique"*).

3.3. Forest management approaches

Since 2012, at a regional level (Wallonia), a quite new structure called *"Cellule d'Appui à la Petite Forêt Privée* (Support unit for small private forests)has been created within the Walloon Economic Office for Wood (OEWB, for "Office Economique Wallon du Bois") in order to help private forest owners (properties less than 5 ha in a contiguous geographic area) in 3 complementary ways (Defays and Colson 2012):

- help and information desk;
- cartographic portal (mapping information system available on a website);
- forest enhancement of scattered holdings.

This experience suggests that the most interested people are not traditional owners but rather those who own small properties for which there is little or no silvicultural monitoring and those who inherited and appreciate to be supported in their management activities.

In relation to the new Forest Law ("Code forestier") (SPW 2009; Gérard 2008; Gérard et al. 2011), the multifunctional role of forests has been put forward and it seems more and more evident that even a lot of traditional owners tend now to see values other than timber production. An example is the opening of rather large private forests to walking or recreational activities.

From a silviculture point of view clear cuttings greater than 5 ha (coniferous) and 3 ha (broadleaves) are strictly prohibited. Nevertheless, such clear cuttings may be authorized if the owner submits a scheme of plantation (the so-called "document simple de gestion") to the Forest Service with a minimum validity of 20 years.

A special attention is also paid to the adequacy species/soil. The outcome of an important research conducted by the universities has been a referential guide or species ecological file ("Fichier écologique des essences") (WEISSEN et al. 1991) for choosing species in relation with geographical zones, types of soils, climatic conditions. This new tool, which also considers biodiversity impacts, is becoming known and mixed plantation or in some cases natural regeneration is progressing. A new version of the tool is in preparation (CLAESSENS et al. 2014).

Due to increased risks of major forest disturbances (climate change, storms and pests) going to more resistant forests and forest structures is a promising or necessary way sometimes enhanced by public subsidies from regional or provincial entities (there are 9 provinces throughout the country).

The forest owner, especially in the case of small properties (comprising some compartment or patch forest), is free from restrictions. Intervention by the state is minimal, so that management is almost entirely a question of personal choice. Sometimes, forest owners are taking part in the management of their woodlands but more generally that is the task of forest experts or cooperatives. Quite often too, for very small properties (compartments generally less than 5 ha), the silvicultural operations are carried out by stakeholders such as people providing advisory oversight or game managers who are occasionally involved in forest works and current silviculture.

Except for large properties, there is not precisely a contract but only a partnership generally with the same persons traditionally involved in wood sale or forest operations.

That situation does not seem to have deeply changed over the past last years.

As concerns the potential new owners, at first sight, the likelihood is that they get in touch with experts belonging to the Federation of Forest Experts ("Fédération des experts forestiers") or sometimes with cooperatives regardless of the area involved.

3.4. Policy change / policy instruments

Due to the persistent low profitability rate of money in the bank, the most recent suppression of inheritance duties on standing trees (ground is not concerned) seems to be attractive to "new forest owners" or people looking for a diversification of their holdings and a more interesting way or opportunity for successful long-term investment.

New approaches or measures, sometimes restrictions, are applied in managing the

forests in a more sustainable way. They are related to the Natura 2000 network and the new Forest Law (SPW 2009, Gérard 2008). To some extent they also concern the private forests.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format, which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

The latest complete official agriculture and forest statistics were updated in 1980 (INS 1986) but only concerning public forests. The 1970s census (INS 1976) shows a forest area of 616,918 ha (poplar stands included), with 323,977 ha or 52.4% in private ownership.

The first census was carried out in 1846. The total forest area increased over time as follows (in brackets and %: private) (Administration des Eaux et Forêts, 1958):

- 1846 : 485,666 ha (65%)
- 1866 : 434,596 ha (not available)
- 1880 : 489,423 ha (64%)
- 1895 : 521,495 ha (63%)
- 1910 : 521,215 ha (58%)
- 1929 : 541,140 ha (52%)
- 1950 : 600,899 ha (53%)

The increase in forest cover from 1866 to 1950 (+ 38%) happened mainly due to conifer plantations.

The 1970s census (INS 1976) shows a forest area of 616,918 ha (poplar stands included), with 323,397 ha or 52.4 % in private ownership. The census of 1950 indicated lower values: 600,899 ha of which 339,028 ha (or 53.4 or ~54%) were private. Concerning the private forest area there is no change observed not only during the period 1950-1970, but also in the last past 60 years (period 1950-2010).

In 2014, forest area is estimated at 692,916 ha, which represents 22.7% of the territory (Belgium.be Portal 2015).

These private forests are small in size and subdivided. Indeed, there are more than 100,000 individual owners, which equate to an average holding of about 3 ha (Rondeux 1991).

Both state and communes have registers of forest property throughout their areas from which data on forest structure can be gathered, but for private forests uniform and reliable information at the individual enterprise level does not exist. Table 4 gives a breakdown of private ownership in terms of the size of holding and number of owners, with corresponding figures for the public sector (state, region or commune).

Table 4: Structure of enterprises by type of ownership and size group (situation in 1970) for Belgium (national level) (Rondeux, 1991)

Area owned(ha)	Private forest		Public forest	
	No. of owners	Area %	No. of owners	Area %
< 0.5	53,950 (51.3 %)	3.7	44 (3.8%)	-
0.5 – 1	18,792 (17.9%)	4.2	55 (4.7%)	-
1 – 5	24,097 (22.9%)	15.9	195 (16.8%)	0.2
5 – 20	5,789 (5.5%)	17.3	177 (15.2 %)	0.7
20 – 50	1,411 (1.3%)	13.9	107 (9.2%)	1.3
50 – 100	599 (0.6%)	13.2	114 (9.8%)	3.2
100 – 500	396 (0.5%)	23.2	339 (29.1%)	30.6
>500	32 (0.0%)	8.6	132 (11.3%)	64.0
Total	**105,066**		**1,163**	

This clearly shows that nearly 100,000 owners (92%) own less than 5 ha and these small holdings comprise 25% of the total private forest area. Half of these own less than 0.5 ha, who do not consider themselves as forest owners. They own a wood or land registered as woodland. It is important to note that these small ownerships comprise a significant number of small compartments, which are usually located within larger blocks rather than being geographically scattered.

At the Walloon regional level, definitions of each forest ownership are the following (Rondeux and Lecomte 2010d; SPW 2014):

(1) Walloon Region: forests owned by the Walloon Region ("forêts domaniales")

(2) Provinces: forests owned by provinces (Brabant wallon, Hainaut, Liège, Luxembourg, Namur)

(3) Communes: forests owned by the communes

(4) Church administration ("Fabrique d'église"): forests owned by the church administration (communal level)

(5) Social administration (Centre Public d'Aide Sociale - "CPAS"): forests owned by the social administration (communal level)

(6) Army: forests owned by the army (federal level)

(7) Private owners: forests owned by private owners (individuals or legal entities of private law).

Categories (1) to (6) are called "public forests". These forests are managed by the Walloon Forest Service, which is an regional public service.

The results of a regional inventory conducted in the Walloon region in southern Belgium (Lecomte et al. 2002) containing 554,000 ha (more than 80% of the national forest area, poplars excluded) showed that 53.2% was in private ownership.

In 2014, the Walloon Forest Administration and the federal Ministry of Finance (which is in charge of cadastral data) found an agreement allowing to get statistics about the ownership of the Walloon forest. All data are anonymous but the area by ownership is available.

The first analyses by the Forest Administration and the Walloon Economic Office for Wood (OEWB) show that the mean area of the private forest ownership in Wallonia is around 2.75 ha (SPW-OEWB 2015). The distribution by class of ownership area confirms that the majority of owners have less than 1 ha of forest (Figure 1). On the other side, ownerships of more than 100 ha represent less than 1% of the number of ownerships but 27% of the private forest area.

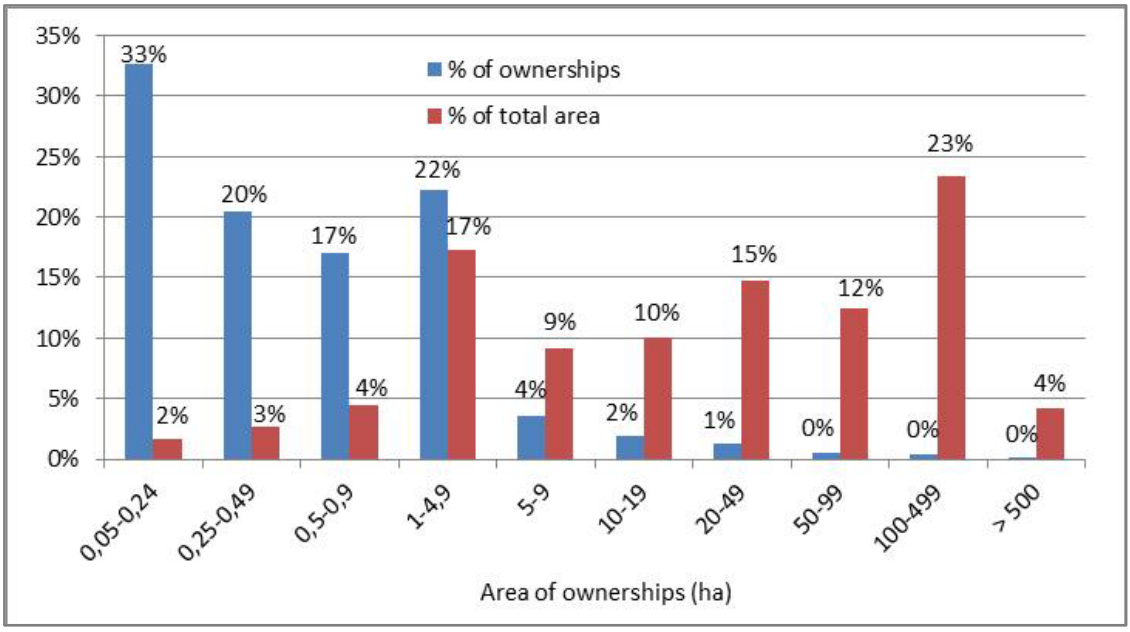

Figure 1: Distribution of the Walloon private forest by class of ownership area (SPW - OEWB 2015)

4.1.2. Critical comparison with national data in FRA reporting

National data collected for FRA are the result of the compilation of data from the three regions (Wallonia, Flanders, Brussels). The following table shows the comparison between the categories from the Walloon Region and those issued from FRA.

Table 5: Comparison with national data in FRA reporting

FRA 2010			Regional (Wallonia) data	
Categories	**Forest area Belgium (1000 hectares) (2005)**	**Wallonia**	**Categories**	**Forest area (1000 hectares) (2010)(*)**
Public ownership	298.7	268.5	Walloon Region	61.7
			Provinces	1.2
			Municipalities	192.5
			Social administration	4.8
			Other public owners	0.3
			Army	2.5
			Nature reserve	5.5
Private ownership	373.9	286.5	Private ownership	286.5
...of which owned by individuals	317.8	243.5		
...of which owned by private business entities and institutions	56.1	43.0		
...of which owned by local communities	0			
...of which owned by indigenous/ tribal communities	0			
Other types of ownership	0			
TOTAL	**672.6**	**555.0**	**TOTAL**	**555.0**

(*) data from the Walloon forest survey 2008-2012 (1 plot per 166.67 ha) (SPW 2014)

The distribution between the categories of private ownership was estimated on the basis of Regional Walloon inventory plots whose owners are known. Percentages obtained from this sample for individuals (85%) and private business entities(15%)were then applied to the total area of private forests. It was assumed that the distribution made in Wallonia was applicable to private forest in Flanders. The same proportions were used in 2010, in the absence of data update.

4.2. Unclear or disputed forest ownership

Property rights have been clear over time, even if in some cases the usufruct represents the right for someone to benefit returns of the forest without being owner. Co-ownership is a legal status, which gives the same rights on the property. The main cause is when there is no division of the property at the death of the owner so that none has integral rights on its part. Such situations may be a problem when conflicts are occurring between the owner himself and the usufruct or between co-owners, more specifically if one of the partners wants to sell the property.

In some cases, the boundaries of forest parcels are very unclear and pieces of forest land seem to be abandoned. Generally due to successive generations of owners (woodland in joint ownership) and for very small properties it is not rare to observe 10 ares belonging to more than 30 owners. Referring to the services of the land register it is very often impossible to know or identify the last owner, as in such cases they are dead and their heirs are not known.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

Regarding the state forest land, parcels with a size greater than 1 ha cannot be sold without

a decree (Forest Law 2008, art 114) (SPW 2009). There is an exception for exchanges, expropriations in order to meet public or general interest and also cessions to get out of joint ownership (possession) with private owners. As concerns other public forest owners (communes, provinces, social public welfare) they cannot be sold without a government's authorization.

There is no legal restriction in private forests regarding the buying/selling forestland. It is not the case in agriculture, for which there is a right of pre-emption to secure farmlands or persons occupying lands.

4.3.2. Specific inheritance (or marriage) rules applied to forests

No origin rules are given for forests transfer from a generation to another. The forest owner may purchase or sell the forest separately or in common.

On ownership/property matters, Belgium is heir to Roman Law and to the Napoleon Code of 1804.

More often, the owner of the land is also owner of standing trees. In case of inheritance, the receiver has to pay succession duties on the value of the land and also on the value of standing trees.

In Wallonia, both provisions have been repealed: on the value of the land and standing trees when forest are located inside Natura 2000 site and on the value of standing trees or growing stock only for all owners according to the new Forest Law (SPW 2009).

4.4. Changes of the forest ownership structure in the last three decades

The following table shows the evolution of forest areas among the various types of owners between 1980 and 2010.

Table 6: Evolution of forest areas from 1980 to 2010 (estimated values)*

Owners	1980		2000		2010	
	Area (ha)	Std Err (%)	Area (ha)	Std Err (%)	Area (ha)	Std Err (%)
Walloon Region	50,287	1.0	55,350	0.9	67,168	1.9
Communes	191,300	0.4	196,900	0.3	192,504	0.9
Other public owners	12,819	2.7	14,800	2.4	8,834	8.9
Total public owners	254,406	0.3	267,050	0.3	268,505	0.7
Private forest owners	285,133	0.3	286,950	0.3	286,506	0.6
Total	**539,539**	**0.2**	**554,000**	**0.2**	**555,011**	**0.4**

**Information provided by the Walloon Forest Service - The values for 2010 are based upon results concerning around 30% of the sampling points. Std Err (=standard error at 95% confidence level).*

According to the results of national surveys and regional forest inventory there is no significant change concerning the relative importance of each forest ownership category. No information is available to follow-up the evolution among owners themselves.

4.4.1. Changes between public and private ownership

The distribution between public and private forests is quite stable. The small increase of the public forests is probably due the acquisition of land set aside to nature reserves or protected areas.

4.4.2. Changes within public ownership categories

Within public ownership categories we observe the quasi-stability of forests belonging to communes and the decrease of other types of public properties.

4.4.3. Changes within private forest ownership

During the last three decades there are no significant signs of change of ownership structure.

Up to now, it is not possible to make use of any credible information as long as the

information of the cadastral database is not available without payment. Furthermore the status of properties is refreshed after 1 year as concerns ownership change. It is quite different for the land status updating.

As presented in the paragraph 4.1.1, new data obtained thanks to the agreement between the Walloon Forest Administration and the federal Ministry of Finance will it make possible in the near future to perform studies about the structure of the Walloon forest ownership.

At the very most one can think that many forest owners have tried to purchase parcels joining their properties in order to expand it. This is also a useful way to look to mechanized forest harvestings and to gain in the sale of wood.

This would contribute to reducing the high degree of fragmentation (small widely dispersed forest patches), which is a real obstacle to improvement of the quality of management and decision-making. It is then also easier to put into practice and less complicated to attempt to optimise a suitable combination of functions for a given area. According to some experts, in practice, this evolution is quite different for big ownerships, in particular already scattered or concerning hundreds of hectares, which are always divided on inheritance.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

In Wallonia, according to surveys carried out by key actors like SRFB and NTF in their own associations (results not published), the following table shows that the main driver of ownership change should be linked to an evolution of lifestyle and attitudes of forest owners.

Due to the increase of the forest land value, forest experts guess one can assume that new forest owners buying forests and afforestation are two trends which could be more important in forest ownership than observed now.

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing lifestyle, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2
• Other trend	-

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

The two case examples presented below are based on contacts with the Walloon Forest Service and experts who know situations more pronounced during the 3 last decades.

CASE STUDY 1: NEW FOREST OWNERS WHO HAVE BOUGHT FOREST
a. People buying forest to contribute personally to sustainable development. They have no specific knowledge in silviculture/forestry but they want to act in harmony with national or international declarations about sustainable development. They are more often interested in keeping forest in its natural condition and sometimes they seem to be sensitive to methods close to the ideas developed by "ProSilva"(*)
b. People who buy forest think it is a safe investment. They calculate (or not) the profitability of such placement and they try to manage their forest as a real financial investment with the help of experts.
(*) ProSilva is a European federation of professional foresters across 24 European countries and in the USA who promote a silviculture close to nature as an alternative to clear felling and short term plantations. It promotes forest management strategies which optimise the maintenance, conservation and utilisation of forest ecosystems in such a way that the ecological and socio-economic functions are sustainable and profitable.

CASE STUDY 2: CHANGING LIFESTYLE, MOTIVATIONS AND ATTITUDES OF FOREST OWNERS
a. Inheritance of forests by people disconnected to the land. This case occurs very often when the presumed new owners are children of former farmers that convert agricultural land to forest when giving up farming. The next generation of heirs left these areas when they were young and lost contacts with the local population. The old generation managed the forest, but the deficiencies of transmission of information/knowledge and the lack of time to spend in forest of the young generation have an influence on their way to become themselves managers of their forests.
b. After cutting, a proportion of private forest owners do not want to plant forest again, and the parcel (compartment) is conducted in a different way than the previous stand. Different cases can be observed:
i. People do not want to invest and spend money on planting;
ii. People are discouraged to plant because of the different risks, in particular deer damages;
iii. People have other objectives than wood production, for example: nature conservation, hunting, leisure.

4.5. Gender issues in relation to forest ownership

Theoretically and practically, gender disaggregated data exist even if it can be quite difficult to consider in the case of a co-ownership. But these data are not available due to privacy protection policies. Cadastral data are held by the Federal Ministry of Finance. All data giving information about the owner are protected and not available. Characterization of owners and especially distinction about gender is thus not possible on the basis of cadastral data. Other types of surveys on owners profiles are old (BARY-LENGER et al. 1993) and the field of gender is not considered as very important until now.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts			X
• NGOs with environmental or social objectives	X		
• Self-organised local community groups			X
• Co-operatives / forest owner associations			X
• Social enterprises			X
• Recognized charitable status for land-owners	X		
• Other forms of charitable ownerships, namely:		X	

Concerning "NGOs with environmental or social objectives", the case is frequently observed in Nature conservation organisations, which buy forests in order to create nature reserves. Concerning "Recognized charitable status for land-owners", Social administration owns about 4800 ha that are, as all forests public properties, managed by the Walloon Forest service. It is the same situation for church administrations which own around 300 ha. Those figures are based upon the 2008-2012 Walloon Forest Survey (1 plot per 166.67 ha).

CASE STUDY 3: NATAGORA AN ASSOCIATION FOR NATURE PROTECTION

In Wallonia, some nature associations aim at developing conservation areas.
Natagora is such an association for nature protection that develops a strategy for the purchase or lease of land with an outstanding biological interest in Wallonia. To date, Natagora natural reserves cover over 4,300 hectares and represent a vast network of protected sites in Wallonia.

These reserves are purchased through donations that the public can perform. Walloon and European funding are also used in programs, such as LIFE.

Initiated in 1992 by the European Commission, the LIFE fund*finances projects intended to improve the environment in the broadest sense. Within this fund, *LIFE Nature* deals more specifically with safeguarding biodiversity through programmes for the protection and restoration of habitats and endangered species at EU level. Through their specific actions, the LIFE Nature programmes contribute to the implementation of the "Birds" and "Habitats" European Directives and the set-up of the Natura 2000 network.

Since the creation of the LIFE Fund, Wallonia has benefitted from around 15 *LIFE Nature* projects, mainly focused on the restoration of natural habitats in decline such as peat bogs, wet meadows, chalk grasslands, or the implementation of measures for the protection of vulnerable species such as otter, pearl mussel, and some butterfly species.

As an illustration, here are some key figures for the *"Croix-Scaille valleys"* project:

- Natura 2000 sites: 4,500 ha
- Project duration: 4 years (2006-2009)
- Budget expenditure: € 2,065,000
- Total area restored: 263 ha
- Area of conifers felled: 174 ha
- Windrowing: 90 ha
- Milling / Stripping-Raking: 90 ha
- Drain plugging: 400 plugs
- Ponds created: 150 ponds
- Miles of rivers cleared: 15 miles
- Surface area dedicated to nature by the end of the project: 250 ha
- New nature reserves: 113 ha

For further information visit www.natagora.be (last accessed 04.09.2014)

** The EU's funding instrument for the environment.*

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

Forest common property regimes (CPR), as type of ownership, do not exist in Belgium.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Wallonia

The forest owner, especially in the case of small properties, is free from restrictions. Intervention by the state is minimal, so that the management is almost entirely a question of personal choice.

Sometimes the forest owners are taking part in the management of their woodlands but more generally that is the task of forest experts or “informal” stakeholders.

Except for large properties, there is not precisely a contract but only a partnership generally with the same persons traditionally involved in wood sale or forest operations.

That situation does not seem to have deeply changed over the past last years.

As concerns the potential new owners, at first sight, the likelihood is that they get in touch with experts belonging to the Forest expert federation (“Fédération des Experts Forestiers”) or sometimes with cooperatives regardless of the area involved.

5.2. New or innovative forest management approaches relevant for new forest owner types

In practice, it is impossible to identify new forest management approaches linked to “new forest owners”. However, for holdings of more than around 20 ha it is likely that in the future simple management plan (“plan simple de gestion”) be encouraged on voluntary basis at first.

Even if it is obvious that such initiatives are very limited, the trend would become increasingly apparent.

In some cases the emergence of Pro Silva has probably created the conditions that should aim to help the development of the concept of “adaptive” management (silviculture adapted to climate change) especially in middle-size properties. This idea has taken roots in the global conscience of a forest policy, which should be to manage forests at a more global level in projects gathering public and private forest owners. But it seems to be difficult to set up among others due to the respect of ownership.

The use of very simple management plans is present but without any obligation to apply them. Up to now, it seems that they are mainly useful for those who intend to join the frame of a certification process (PEFC/FSC).

In some places, in Wallonia and Belgium, private owners are trying to work together. Such cooperative is formed by the owners themselves without any public assistance or subsidies. Their principal aim is to promote management activities in order to reduce harvesting costs and increase the efficiency and effectiveness of operations, and to provide technical service and advice. It became clear that a good knowledge of the wood market can form the basis of strategic planning, particularly regarding the rationalising of product specifications; which eventually led to the creation of a separate society dealing solely with timber sales. The membership system is designated to preserve the freedom of every owner, regardless of the size of his holding. Forest inventories and management advice, for example, are prepared for the individual enterprise at the request of the forest owner himself. The normal forest operations of planting, pruning, thinning, or other activities such as extraction and transport, are carried out by contractors.

The “Groupement de Gestion” and “Socofor-Samkenpen” are the two most significant

forest cooperatives listed in 2014. The first one deals with forest management and wood sales (200 members, 16,000 ha) while the second one is more focused on bundled sales (530 members, 35,000 ha). (*www.groupementdegestion.be; www.socofor-samkempen.be)*

5.3. Main opportunities for innovative forest management

In agreement with international recommendations (*Interministerial conferences on the protection of forests in Europe*) and the attention paid to sustainability and multifunctionality of forests, their management will probably be considered as a part of land use management and at the level of substantial non-broken blocks of forests which could bring together private and public forests. As already mentioned, it is a promising way to avoid or to reduce further fragmentation of ownership and sometimes premature fellings before normal rotation age.

Most of the private forest owners, due to the size of their holdings or lack of knowledge, do not use a management plan. Nevertheless, several attempts have been made to implement simple working plans ("documents simples de gestion") which get more attention in the new generations of young owners. It should be probably the same when considering new owners themselves. What is very important is to propose a simple information system based upon data easy to collect and suitable for a great number of forest properties whatever their sizes. The main objectives of these working plans are thus to propose documents compiling updated descriptive information dealing with administrative data, stand and structure composition, species, age classes, ownership locations, planning and control of main silviculture operations. Information from the forest are collected at the compartment level (planning unit being defined by permanent boundaries) and are registered in a computerized database so that any owner can make continuing use of information such as various repartitions (areas and species by age, by structure) digitized thematic maps (stand, soil, silvicultural operations,…).

It should be noted that a minority of traditional forest owners is interested to go down this path proposed to improve forest management. Although being not formally known as useful, for people becoming new forest owners, it is important to have in mind that these are probably much more open to well-structured and rigorous approaches. This is particularly the case as the ownership size is large. It just happens that potential new forest owners are interested in buying more forest parcels rather than individual parcels. Such owners are also thinking in terms of integrated management combining several objectives.

The most innovative idea is to create positive conditions to associate public and private owners in a same territory in order to stimulate sustainable management taking into account the multifaceted importance of the forest at local levels.

Innovative forest management has to be considered as a way not only to be in agreement with sustainability but also to increase and diversify the forest production under favourable conditions.

The creation of mixed species stands and a better adequacy soil/species should be more often taken into consideration.

The economic valuation of non-marked benefits of forestry is also an important tool for supporting the sustainable use of forest but the outputs forestry produces have no price since being not traded in markets.

Societal demands could be a new market provided public support and market tools are completed. More specifically recreation and outdoor activities are real opportunities and research which has been conducted in Wallonia (Colson, 2009) reveals an average willingness to pay off about € 4.4/activity. The global value of forest recreation in Wallonia has been estimated at around 2 billion Euros.

In the same context the preservation and the enhancement of biodiversity seem to be more and more accepted by the forest owners without any return (except Natura 2000 and Life programs that provide compensations).

In some cases wood energy market has probably influenced silvicultural practices and the way to manage but due to the hard competition between wood purchasers and increasing uncertainty this new opportunity is

down even if such situation benefits to forest owners.

5.4. Obstacles for innovative forest management approaches

The relative lack of organised working plan, as one of the obstacles for innovative forest management, can be attributed to several reasons:

- the size of forest holdings (averaging about 3 hectares);
- the lack of expertise and knowledge among small woodland owners, who are basically part-time operators whose main source of income is from other occupations;
- the scarcity of forest roads in heavily wooded areas;
- the socio-economic conditions influencing the major costs of labour and production;
- the absence of financial support, in contrast to agriculture which receives aid with few strings attached;

  the absence of coordination between the concerned actors: forest owners and other stakeholders;
- the inheritance rules that allow heirs to manage their forest as they want, without any constraint.

It has to be admitted however that many owners are reluctant to change, except for those owning large holdings. Curiously, an element, which can help to take conscience of the importance of a management plan, even superficial, is the increasing use of computers. Children and young people have found that the forest was a very interesting field of applications of new technologies (GIS, GPS). It has been clearly seen on the launching of a survey dealing with forest owner's attitude about the use of simple management plan and particularly its computerized form (Colson *and al.,* 2004a, 2004b). The online consultation of general information concerning ownerships (localisation, cadastral references and additional facilities like stand description, length and area calculation) (SRFB 2013) is now attracting attention.

The only way to change is to go improve and strengthen education, develop and improve tools for training in forestry practices, even if a lot of efforts are already made in this regards. Those who we call "new forest owners" should probably be more open as they should want to acquire knowledge in forest management and silviculture.

Among the attempts to make management more operational 2 cases are presented. They concern an integrated management a large forested area, the implementation of a computer- controlled planning system in a cooperative.

CASE STUDY 4: INTEGRATED MANAGEMENT OF A FOREST COMPRISING PUBLIC AND PRIVATE OWNERSHIPS ("PGISH" - Projet de gestion intégrée du massif forestier de St-Hubert)

In 2000-2004 a forest massif of broadleaved and coniferous trees covering around 18,000 ha has been selected to develop a management model based on participation of stakeholders (forest owner, forest service, hunters, hiking groups, ecologists, research scientists). This massif comprised private ownerships (6,000 ha) and public ownerships (10,000 ha belonging to communes and 2,000 ha to the Walloon region).

The concerted aim was to adapt management rules to a general objective, which was defined for this forest (Rondeux, 2005). The problems to be studied concerned natural regeneration, game pressure and use of hydromorphic soils, so the common question was "which kind of future forest do we want considering the existing potential?". The study piloted by universities has focused on a sector-based approach using a process carrying out the following steps: analysis of the initial forest situation (through interviews and sampling forest inventory - scenarios building - evaluation and comparison of scenarios using indicators - concentration and negotiation - selection of a scenario. This study results in proposing a realistic vision of the future forest ("strategic level"), a global management for both the whole massif and each ownership area ("tactical level") and a priority action program ("operational level").

Multi-criterion analysis has been used as decision support tool, especially to mitigate the effects of very different expectations formulated by stakeholders.

Unfortunately the results of the project have not been implemented in practice, due to the high cost and the low involvement both of forest service and private owners. Nevertheless some forms of concertation (interviews, forums,…) have been used in the frame of the touristic valorisation of large forest areas including public and private ownerships.

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CASE STUDY 5: A COOPERATIVE IMPLEMENTING A COMPUTER-CONTROLLED PLANNING SYSTEM

A cooperative "Le Groupement de Gestion" has been created in 1960 in a region well known for its richness in high quality broadleaves. In 2014 it has more than 200 owners and owning around 16,000 ha of forest, with holdings' sizes varying from 5 to 150 ha. This cooperative was formed by the owners themselves, without any public assistance or subsidies. Its principal aim has been to develop and promote management activities in order to reduce harvesting costs and increase the efficiency and effectiveness of operations, and also to provide technical service and advice.

One of the main goals is to organize all aspects of harvesting and marketing, from volume estimation to selling of wood. That is the reason why this cooperative is linked to a society specialized in timber trade and using a conversion depot (a stacking area where valuable hardwoods are sorted by log quality, species and size). In 1990, more than 10,000 m³ were sold using this way, particularly logs for slicing and peeling. This system of log grading adds significantly the sale value of timber; to some extent it contributes to stabilising prices and increases the owner's chance of obtaining a fair return. It also allows him to negotiate directly with the mills, which provides higher returns compared with the traditional system based on standing trees.

Since 2000, the whole planning strategy has been reviewed because of the importance of new challenges such as international wood trade, exports, market volatility, etc.

In the 1990s, it has set up a first computer-controlled system (Rondeux, 1987) covering the following operations:

- management and control of a the log sorting yard;
- development of a simple plan model based upon a compartment database, which has been used in conjunction with the other operations;
- establishment of a geographic database, mapping species, stands, subcompartments, forest operations, etc.;
- forest survey, involving complete enumerations and sampling.

From a management point of view, special attention was paid to scheduling forest treatments. Reliable information on each wood is collected at the sub-compartment level and entered on a database comprising three interconnected files organised as follows:

- at compartment level (several hectares): administrative identification and site description – ownership, location, aspect, soils;
- at sub-compartment level (from several acres to hectares): qualitative and quantitative description of the species, age, structure of the growing stock, site quality, top height and basal area followed by details of work required – planting, cleaning, pruning, thinning, etc.

Examples of the type of information which this computer-based system is capable of providing at the local level include:

- area distribution of stands by species, age class, growing stock, or cutting classes;
- a calendar of silvicultural operations, showing timing and priorities;
- mapping of various purposes; stand and species maps, cutting areas, etc.;
- outputs in tabular or graphical form;
- reviews of budget decisions.

To summarize the main services of the cooperative are: all silvicultural operations comprising plantings, cleanings, thinnings and since 2010 a new computerized management plan ("Document simple de gestion") which is proposed to all members of the cooperative. It gives an updated calendar of all activities to be implemented over space and time for each holding.

For further information: *www.groupementdegestion.be*

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

In Wallonia, there is no specific **instrument stimulating the privatisation, decentralisation or nationalisation of forests.**

Concerning **regulations related to inheritance rights, with an effect on creating smaller parcels or hindering such a development**, Belgium is heir to Roman Law and to the Napoleon Code of 1804. More often, the owner of the ground is also owner of standing trees (considered as realty). In case of inheritance, there is a need to pay

succession duties on the value of the ground and also on the value of standing trees. In Wallonia, both provisions (on the value of the ground and standing trees) have been repealed when forests are located inside Natura 2000 sites and only the provision on the value of standing trees for all other owners in accordance with the new Walloon Forest Law (2008) (SPW 2009).

It is also worth noting that the official reason behind the recent suppression of inheritance rights in 2008 was above all to reduce the fragmentation of forest holdings. Official data dealing with property sizes, number of owners and ownerships are only available since 2014. They however need to be processed. In the given context it is difficult today to assess the impact of this measure.

Afforestation of agricultural land was induced with the EC Regulation 2080/92 and follow-up measures of the EU rural development policy. In Belgium this is regulated through regional land-use planning code. It must result from a specific application or permit. Afforestation of agricultural land does not constitute a significant trend in Belgium.

In Belgium, in 1999, thanks to **a law, a new legal form of ownership** ("groupement forestier familial"/ "family forest association") has been created allowing better fiscal conditions for avoiding land fragmentation (Moniteur belge 1999, FRNB MRW-DGRNE 2001). There are in 2014 around 30 types of such ownership, which are registered for a total area covering 7,800 ha.

6.2. Influences of policies in forest management

Among the main policies influencing forest management, there is a lot of rules linked to Natura 2000 sites which have to be respected. According to the nature of the management units the restriction can be more or less important.

According to the Forest Law (SPW 2009), from 2008, even for a private owner, it is forbidden to cut more than 5 hectares (forming a block) in coniferous stands and 3 hectares (forming a block) in broadleaved stands. However, some derogations from the rules are possible but in such cases the owner must prepare a management plan - covering a 20-year period - for approval by the government (regional forest service).

In the frame of Natura 2000 involving possible silvicutural restrictions in certain areas the regional government has decided to compensate all the concerned owners by suppressing property taxes and helping them in preserving the forest site in accordance with Natura 2000 prescriptions (Naturawal 2015). Furthermore, compensations for forest measures are fixed at a level of €40/ha and €100/ha for voluntary forest measures. They are defined in the Walloon Order of 24 November 2012 and awarded on an annual basis.

To be eligible for compensations the following requirements are necessary (Naturawal 2015):

- to be owner of a total area so that an indemnity of € 100 can be allowed;
- to identify on maps small-sized conservation areas called "conservation islands", at least 2 dead trees and 1 tree/2 ha with high biological value out of the aforesaid conservation areas;
- to produce photo plans of parcels (compartments) concerned by Natura 2000 measures.

6.3. Policy instruments specifically addressing different ownership categories

In Wallonia, the government supports various initiatives undertaken by forest owner associations or organisms (several non-profit associations under Belgian law) dedicated among others to advise private owners.

A specific initiative ("Cellule d'appui à la petite forêt privée - CAPFP"- "support unit for small private forests") integrated into the Walloon Economic Office for Wood has been created in 2012 to support most specifically small-scale private forest owners (Defays and Colson 2012) (See Case study 6).

Non-profit organizations, as the "Société Royale Forestière de Belgique" through field trips, its bimonthly magazine "Silva Belgica" and trainings (silviculture, electronic data processing), contributes to improving knowledge in various fields relating to

silviculture and management. A few forest centers working in nature education with the financial support of the region are also active in providing advices on how to approach forest management. Another non-profit organization (Forêt Wallonne) more involved in public forests works in close cooperation with universities inside an annual research program. The main results achieved are disseminated in both public and private settings using technical reports and training sessions on new tools in forest management.

In some places, mainly at communal level, the CAPFP tries to drive owners into bundled timber sales concerning several tracts of forest of a few hundred hectares. The same approach is also tested for a lot of works dealing with grouped silvicultural operations (planting, cleaning, thinning, road network maintenance, etc.).

There is essentially no very active political lobby in place except an association grouping land and forest owners (NTF) that provides to their members legal information and assistance. The main objectives are to defend owners' rights and influence the claims and proposals submitted to regional levels of policy and administration. Recent and significant examples are: Natura 2000: simplification of procedures concerning conditions of obtaining financial and fiscal compensations; and Forest Law (NTF 2014, SPW 2009, SRFB 2014): negotiation to obtain abolition of gift and succession duty.

CASE STUDY 6: A PUBLIC ORGANISATION DEDICATED TO SMALL FOREST OWNERSHIP

In 2008, the Walloon Government edicted a new Forest Law ("Code forestier") which includes, among others, new rules for the private forest ownership (size of clear-cuttings, adequacy between species and soils, etc.). These new rules made it necessary to set up an information desk for private owners.

In 2012, the Walloon Government decided to create a public organisation specifically dedicated to stimulate the wood industry: the Walloon Economic Office for Wood (OEWB, "Office économique wallon du Bois"). One of the missions of this organisation is to encourage a sustainable management of forest resources, with a special target on the small forest ownership.

These two political decisions resulted in the creation of a specific service of the OEWB called "Support unit for small private forests" ("Cellule d'Appui à la Petite Forêt Privée", CAPFP).

The three main missions of this service are:

- The information desk to give the forest owners all information they need to manage their forest or to contact professionals;
- The development of projects of "forest management group" in scattered woodlands in order to encourage and to optimize forest management in wooded parcels smaller than 5 hectares;
- The monitoring of the small forest ownership (owners profiles, structure of the ownership, evolution of forest resources, etc.).

All these missions that have been clearly defined are supervised by a committee bringing together delegates from the forest administration, associations of owners, entrepreneurs and academics.

Commercial acts are not allowed for the CAPFP and redirection to professionals (private sector) has to be done. The information desk is free for the private owners except for the visits on site (a small financial contribution is asked to the owner).

One of the missions entrusted to the CAPFP specifically consists in developing forest "collective management" (which means in this context that each owner, keeping all this property rights, accepts to participate in silvicultural or management actions covering a territory including its own properties or parcels). Such activities only concern for the moment woodlands or parts of territories which are very scattered and owned by a lot of small forest ownerships.

The work plan of the CAPFP for each project can be summarized as follows:

- identification of target woodlands or parts of the territory particularly scattered and thus potentially dedicated to "collective management";
- contacts with local communes (partner of each project) and organisation of personal contacts with owners (mail, conferences,…);
- offer of personalized advice to owners (entirely free of charge and of any subsequent commitment): this visit should make the owner aware of good forest practices;
- incentive to attending grouped operations relating to logging, pruning, thinning or planting;
- choice of professional operators (enterprises and independents) to carry out these forest works which are supervised by the CAPFP;
- project monitoring by giving updated information to owners.

As a public and thus neutral organisation, the main CAPFP objective is to encourage owners, especially the smallest ones, to put some focus on forest management, to benefit from advantages provided by the collective management (better prices wood sales and silvicultural works, roads building opportunities, much more possible influence on forest policy decisions,…). Another objective is to stimulate over time the economic activity in forests and the sustainability of the Walloon forest resources.

Profiles of owners who agree to join these projects (generally less than 10% of the global number of forest owners concerned) are essentially:

- owners not directly connected to the land (living far from their forest);
- new forest owners assimilated to those who have inherited their forest but lack knowledge about forest management;
- owners getting old who can't manage their forest themselves or are no longer interested because of their age.

Nevertheless such actions also contribute to forest management in a larger part of the woodland, by other owners who work themselves in their parcels.

Benefits of each project are thus more important than the direct results of grouped operations.

The network built among owners in each woodland and maintained by regular newsletters also gives the satisfaction to the owners that they are part of a group and have a partner to help them in the management of their forest.

The first two years of activity of the CAPFP showed that the need of a such organisation is real, in particular for new forest owners and other owners disconnected from the land.

This initiative is the first one conducted by a public organisation to the benefit of private forests. Even if results are at a local level for now, this forest policy measure is a big change in terms of involvement of the Walloon Region for the small forest ownership.

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CASE STUDY 7: THE "BOSGROEPEN", AN EFFICIENT TOOL FOR THE SMALL FOREST OWNERSHIP IN FLANDERS

The Flemish region counts 19 "bosgroepen", which are a particular type of forest owners association. The Flemish forest administration has developed this structure to find a solution to the high partition of the private forest area. Created in 1994 by the Nature and Forest Agency("Agentschap voor Natuur en Bos") the "bosgroepen" are based on partnerships between private and public forest owners. In 2007 around 19 groups were attended by more than 5,000 owners.

The solution concerns not only forest management but also nature conservation.
Keys of the success of this policy instrument are:

- Autonomy and responsibility of each structure;
- Independence and neutrality;
- Possibility for every forest owners to reach the association independently of the ownership area.

The mean area of forest ownership member of the "bosgroepen" is around 2.9 ha. The members represent globally 10% of the total number of ownerships in Flanders and 33% of the wooded parcels. 53% of the forest area member of the "bosgroepen" are concerned by a management plan.

The 19 "bosgroepen" count globally 177 volunteers.

Since January 2014, the "Bosgroepen" depend on the "Provinces" for labels, subsidies and monitoring of their activities.

For further information: *Administratief Medewerkster Koepel van Vlaamse Bosgroepen vzw en Oost-Vlaamse Bosgroepen p/a Provincie Oost-Vlaanderen*
Dienst Milieubeleidsplanning, -ondersteuning & Natuurontwikkeling
sylvie.focke@oost-vlaanderen.be, *www.bosgroepen.be*

6.4. Factors affecting innovation in policies

In Wallonia, there is no national or regional forest programme and there is a lack of strategic development. Forest planning is also still conceived at ownership level without enough integration to/with other sectors and land-use.

We are of the opinion that it is probably due to several reasons:

- the lack of appropriate representation of the private forest in all its aspects. It is not easy for the government and the regional forest service in charge of forest policy to find someone recognized as being the official and entitled representative;
- the tendency of forest owners (public as well as private) and industries not to work together;
- the lack of places of exchange and concertation (sector professionals and forest users);
- forest is still often neglected by policymakers even if it is seen as a renewable resource which is very important in the socio-economical development.

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BOSNIA AND HERZEGOVINA

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1. Introduction

1.1. Forests, forest ownership and forest management in Bosnia and Herzegovina

Forests in Bosnia and Herzegovina (hereinafter B-H) comprise a diversity of forest types from coastal Mediterranean forest to mountain forests in central B-H. Covering more than half of the country, forest resources have great importance for both national economy and local livelihood. Together with wood-processing industry and agriculture, forestry plays a key role in development and well-being of most rural areas. Total number of people employed in forestry sector in B-H is around 10.000.

According to the official data (First National Forest Inventory 1964-1968), forests and forest lands in B-H cover 2.709.769 ha (52% of the total area). The state owns 2.186.332 ha (80.68%) while private forest owners hold 523.437 ha (19.32%). Official results of the Second National Forest Inventory (2006-2009) are not available yet. Still, some of the available results revealed that forest cover in B-H has been increased up to 63% of the total area of the country (USAID – FIRMA, 2012).

Forest resources in B-H show typical structures for countries in South-East Europe, for which a huge amount of coppice forests are typical. Ratios of high forests and coppice forests are diametrically opposed when comparing state and private owned forests – most of the high forests are state-owned while most of the coppice forests in B-H are privately owned.

Term “state owned forest” is widely used to refer to the public forests and it can be recognized in both official documents and day-to-day life. According to the constitutional set up of the country, the ownership of public forests rests with the two Entities (the Federation of Bosnia and Herzegovina and Republic of Srpska), while the Cantons (in the Federation of Bosnia and Herzegovina) and municipalities (in both entities) have no ownership rights over the public forests.

The percentage of privately owned forests is higher in the lowland area of B-H where the forest coverage is the smallest, while public forests are located in areas with high forest cover. Private forests are mainly owned by individuals. During the socialism, private forest ownership was marginalized by national forest policy. Comparing to relatively intensive management of public forests, private forests have been quite neglected by both, forest policy decision makers and private forest owners.

The organisation of forestry sector in B-H is complex and divided between two entities: the Federation of Bosnia and Herzegovina (hereinafter FB-H), Republic of Srpska (hereinafter RS) and Brčko district. In the FB-H, the ownership of the public forest resources rests with entity level while management rights are transferred to 10 Cantons. Cantons transfer these rights to Cantonal Forest Management Enterprises (one in each canton). Forestry Department within the Ministry of Agriculture, Forestry and Water Management, is responsible for forests and forestry in RS. Public forest enterprise “Šume Republike Srpske” is responsible for management of public forests. It has a hierarchical organization with headquarter and 25 Forest Management Units. In Brčko district, where forestry plays a subordinated role, there is the Department for Agriculture, Forestry and Water management.

Beside the above mentioned public forest enterprises, some public forests within protected areas are managed by public institutions responsible for management of protected areas (e.g. National parks, protected landscapes etc.).

1.2. Overview of the country report

According to the official data from the First National Forest Inventory, current forest ownership structure in B-H (80% of public and 20% of private owned forests) is similar to the ownership structure during the Austro-Hungarian annexation of B-H. In many aspects, public and private forests in B-H significantly differ. While high forests are mainly owned by the state, private forest owners own most of the coppice forests.

When it comes to the definitions of the property types, there is no ambiguity between national definitions and those provided by FRA. Difference lies in the lack of various categories of private ownership in national Laws on Forests due to underdeveloped private ownership in B-H (no strict rules for selling private owned forests, traditional customary rights are not accepted by current legal framework, private forest ownership category is overregulated etc.). Still, forest-related legislation frameworks in B-H are passing through rather turbulent processes, which will result with many changes. Some of these changes will probably refer to improvement of the status of private forest ownership category, which is pretty neglected in current legislative and policy solutions in the country. For this to happen, it is not possible to indicate neither concrete examples of new forest ownership types in the country nor examples of policy instruments directed toward them. Therefore, one of the main opportunities of forest management practice in B-H is to introduce innovative forest management approaches in both legislative and policy framework of the forest sector and day-to-day management practice.

Private forests in B-H are valuable source of various goods and services that could be effectively managed by their owners with help of state forest administration. One of the main problems related to private forest owners is their under-representativeness in policy planning and implementation of executive plans. Private forest owners in B-H have no potential to adopt innovative management approaches due to the fact that laws at all administrative levels and institutional arrangements do not recognise this category of forest ownership equally important as public forests. In order to increase their role in implementation of forest management plans, private forest owners should be organised in private forest owners associations (hereinafter PFOAs).

Despite of the fact that private forest owners in B-H are characterized as inert and unorganized, there are some of the bright examples of PFOAs in the country (PFOAs “Naša šuma” and “Šume Krajine”). Recently adopted Laws on renewable energy sources and efficient cogeneration in both entities prescribe subsidies, as economic instrument of forest policy, both for production and consumption of woody biomass for energy. This regulation represent good example for improvement of legal framework toward supporting the establishment of interest-based associations of private forest owners in the Country.

Scientific focus of conducted research on private forest ownership in the country were mainly related to the motives and behaviour of private forest owners, analysis of policy and legislative solutions related to private forest ownership and recommendations for creation of specific policy instruments in order to improve situation in this ownership category. Lack of analytical capacities and abilities to publish the results internationally is seen as the weakest point of conducted research. Focus of future research efforts should be on developing and testing appropriate mix of forest policy instruments to promote better cooperation of private forest owners and sustainable management of privately owned forests.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge,

expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

Since comprehensive analysis of forest ownership represents main goal of this Country report, its preparation demanded application of mix of various research methods as follows: literature reviews of secondary data (mostly the results of national and regional studies on private forest ownership), analysis of statistical data from national forest inventories and other relevant forest-related sources of information (such as Global Forest Resources Assessment, official statistical reports of the country etc.), own expert knowledge (mainly for estimations of future trends related to forest ownership in the country) and provision of appropriate case examples.

The data collection was obtained in the period February-March 2014. Collection of secondary data sources entailed collection of various scientific papers and studies that have been dealing with forest ownership issues on both national (B-H) and regional scale (Western Balkan region), collection of relevant statistical sources (annual bulletins of forest sector, statistical yearbooks etc.) and analysis of forest-related laws and strategic documents that regulate framework for forest management activities in B-H. Illustrative case examples were obtained in order to describe certain specificities related to forest ownership issues in B-H (examples from regulatory frameworks, specific innovative solutions, socio-cultural contexts etc.).

Finally, expert knowledge was mainly used to backup certain statements, predictions of future trends and overall estimations of the situation.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These references are listed at the end of the report. The 7 detailed descriptions of publications can be found in the full single country report (http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).

The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

The project "Research into the Organization of Private Forest Owners' Interest Associations in the Western Balkan Region

(PRIFORT) (started on May 2007, finished on April 2009) conducted as part of the project "Forest Policy and Economics Education, Training and Research in the Western Balkan Region (FOPER)", financed by Finnish Ministry of Foreign Affairs, represents a starting point in research of private forest ownership in B-H and entire Western Balkan Region. Thus, results of the PRIFORT project represent cornerstone of all recently conducted research on private forests in B-H that are presented in this report.

Main research questions of this project are as follows (Glück et al, 2011: 12):

- Why are private forest owners' interest associations (PFOAs) in the four countries almost not existent?
- What is the procedure of forming PFOAs?
- What kinds of services and lobbying are expected by potential members of PFOAs?
- What are the possible choices, constraints and possibilities to form PFOAs in the Western Balkan region?

All papers that were published based on results of PRIFORT project were trying, each in specific perspective, to answer on some of these questions. Scientific focus was mainly related to the motives and behaviour of private forest owners, analysis of policy and legislative solutions related to private forest ownership and recommendations for creation of specific policy instruments in order to improve situation in this ownership category. Due to the fact that countries involved in PRIFORT project were once joined in one State (Yugoslavia), specific focus of most of the research papers were on cross-country comparisons.

Coming back to the overall goal of FOPER project which was to build regional capacities in fields of forest economics, policy and governance, the research presented in these scientific publications are from the fields of sociology and political science. Quantitative door-to-door surveys and qualitative in-depth interviews were main research methods applied. Specific focus of analysed research papers/projects were on formation of interest associations that implies probing of following theories: Pluralism; Theory of collective action; Exchange theory; Voice, exit and loyalty and Theory of critical mass.

Furthermore, PRIFORT bring together experts in field of forest policy and economics from universities and public forest-related research institutes from Western Balkan region. Working together on realisation of PRIFORT and FOPER project, regional researchers got opportunity to work together on various scientific publications. This means that research presented in these papers were funded mainly as part of FOPER project that was financed by Finnish Ministry of Foreign Affairs.

3.1.1. Major results and insights

As it was previously emphasised, historical background of the countries involved in the implementation of PRIFORT project had imposed cross-country comparisons related to private forest ownership category. Therefore, major results and insights of conducted research are divided on those which are refereeing to cross-country comparisons and those for B-H.

Privately owned forest parcels are small (most of them are smaller than 1 ha) and fragmented into several parcels (2 to 7 parcels on average, most often in Serbia and B-H). Most of the respondents suffer from restrictive legal regulations concerning private forest owners (Glück et al., 2011). Yet, analysis showed that new Laws on Forests in Serbia, B-H and Macedonia prescribe some stimulating regulations for private forest owners such as support for creation of private forest owners associations, incentives and subsidies, participation in decision making process etc. (Nikolić et al, 2011). Furthermore, results showed that private forest owners are underrepresented in current organisation of forest sector and they perceive formation of interest association as way to achieve common goals. First and foremost goal is road construction and maintenance (Glück et al., 2011; Avdibegović et al., 2010). Beside forest road construction and maintenance, in case of private forest owners from Slovenia and B-H, results revealed that silvicultural advice and strengthening of entrepreneurship represent other two expectations from interest associations (Pezdevšek-Malovrh et al.,

2011). The results show significant homogeneity across the region towards creation of independent interest forest owners associations based on financial support (Glück et al., 2011). In spite of the large number of private forest owners, there are good chances for the formation of private forest owners' interest associations in all four countries (Croatia, B-H, Serbia and Macedonia), mainly because of the high critical mass of engaged private forest owners and the support of the majority of forest policy decision makers (Glück et al., 2010).

As concerns private forest owners in B-H, results showed that they can be grouped in three clusters based on differences in willingness of private forest owners to join in interest associations (Čabaravdić et al., 2011). Different clustering methods applied (post-stratification, two-step, k-means and hierarchical clustering) resulted in different cluster sizes of private forest owners and their characteristics (Čabaravdić et al., 2011). Property size based stratification resulted with three groups identifying boundaries of property sizes (< 0,70 ha, 0,71-3,0 ha, >3,1 ha) pointed out majority of very small size forest properties (Čabaravdić et al., 2011). On the other hand, post-stratification and two-step clustering resulted in three clusters with different forest property features but without differences in interest for PFO association (Čabaravdić et al., 2011). The k-means clustering based on willingness for cooperation generated three clusters with different attitude towards PFOAs (Čabaravdić et al., 2011). The first cluster expressed support for all common activities, the second cluster expressed interest for cooperation in forest road construction and maintenance while third cluster did not support common activities at all (Čabaravdić et al., 2011).

Lack of analytical capacities and abilities to publish the results internationally is seen as the weakest point of conducted research. Focus of future research efforts should be on developing and testing appropriate mix of forest policy instruments to promote better cooperation of private forest owners and sustainable management of private forests.

3.2. New forest ownership types

Currently, B-H has no changing forest ownership trends. Results of the PRIFORT project (Glück et al., 2011) revealed following: only 3% of private forest owners live in settlements with more than 5.000 inhabitants. This clearly refers that most of the private forest owners are living in rural areas of B-H. Furthermore, majority of the respondents belong to low income population. Either half of them are retired or unemployed, while more than one third are lower-level employees, manual workers and farmers. Only 3% of private forest owners have college or university education - the majority have either vocational or high school qualifications while one third has only elementary school qualifications or even no formal education at all. Having in mind such characteristics of private forest owners, it is difficult to expect significant appearance of new forest ownership types in B-H. By that, it is impossible to expect any changes in forest management approaches as well.

Still, some of the political processes could result with their formation in future. Processes of denationalisation and restitution may lead to the increase number of “new private forest owners”. Yet, absence of legislative framework has slowed down these processes. However, the comparison of forest inventory results conducted by Austro-Hungarian monarchy (1880-1885) with the area of private forests in B-H indicates that the share of private forests will not significantly increase as a results of denationalisation and restitution processes (Glück et al., 2011). Official data on current forest ownership structure in B-H (80% of public and 20% of private owned forests) is similar to the ownership structure during the Austro-Hungarian annexation of B-H.

3.3. Policy change / policy instruments

When it comes to the Law on Forests in the FB-H, by the request of the non-profit and non-governmental organisation “Association of Municipalities and Cities of the Federation of Bosnia and Herzegovina” in 2009, the Constitutional Court of B-H had proclaimed the Law on Forests of the FB-H (Official Gazette of the FB-H, No. 23/02) as invalid. The reason for such verdict was due to the fact that the Law was not in compliance with

the European Charter of Local Self-Governments that was signed by the officials as well as the Law on Local Self-Governments of the FB-H. According to the justification of such verdict, implementation of the Law on Forests from 2002 could directly affect the several issues of concern of local self-governments in the FB-H especially in the regulation and management of public affairs under the responsibility of local self-governments. By the verdict, this is especially manifested in relation to the development plans of local self-governments, economic growth and achievement of higher employment rate, creation and implementation of spatial planning documents, environmental protection and management of natural resources. Even though the verdict prescribed that Parliament of the FB-H, in consolidation with the Association of municipalities and cities, has opportunity to harmonize the Law on Forests from 2002 with European Charter on Local Self-Governments within six months after the publication of the verdict in the Official Gazette of the FB-H, until now (six years later), new Law on Forests in the FB-H has not been adopted. Therefore, it is not possible to indicate neither concrete examples of policy instruments which are directed at new forest owner types nor challenges of different stakeholders which are connected to new ownership forms.

Having in mind significant political power that stakeholders gathered around Association of Municipalities and Cities currently have on (forest) policy arena in the FB-H, it is speculated that such political process could resulted with appearance of local communities (cities and towns) as “new forest ownership” or at least “new forest management” type in the FB-H (own expert knowledge).

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

B-H consists of two Entities (the FB-H and RS). There is neither common forest policy nor national forest legislation at the state administrative level of B-H. Thus, governing and management of forests resources are under the jurisdiction of the Entities. Therefore, national data set on ownership structure will be presented separately for two Entities. Furthermore, official results of the Second National Forest Inventory (2006-2009) have not been published yet. Available results of the Second National Forest Inventory (USAID – FIRMA, 2012) do not contain information on forest ownership structure. Therefore, following official data on forest ownership structure in B-H represent the results of the First National Forest Inventory.

Table 1: Forest ownership structure in B-H

	RS		The FB-H		B-H	
	ha	%	ha	%	ha	%
Public forests	979.716	81.00	1.206.616	80.43	2.186.332	80.68
Private forests	229.874	19.00	293.563	19.57	523.437	19.32
Total forests and forest lands	1.209.590		1.500.179		2.709.769	

Total area covered by forests and forest lands in Bosnia and Herzegovina amounts to 2.709.769 hectares or 53.4% of the state’s territory (Glück et al., 2011: 31). Data about forest ownership structure in B-H is presented in Table 1 and Figure 1. For both Entities,

ownership structure is quite similar (in case of RS 81% of the forests are owned by the state and 19% by private forest owners while in the FB-H 80.4% of forests are owned by the state and 19.6% by private forest owners). In total, ownership structure for entire country is as follows: 80.7% of the forests are owned by the state and 19.32% are owned by private forest owners. In many aspects there is a significant difference between state and private forests in B-H. While high forests are mainly owned by the state, private forest owners own most of the coppice forests. Compared to state forests, wood volume and growing stock in private forests are significantly lower (Table 2).

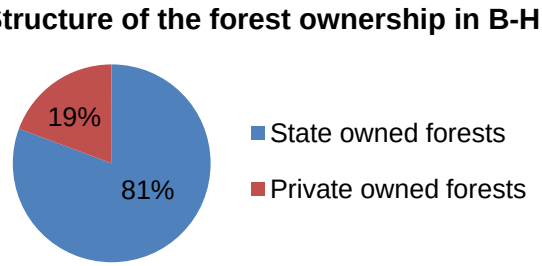

Figure 1: Forest ownership structure in B-H
(Sources: Glück, et al. (2011); Federal Ministry of Physical Planning and Environment, Ministry of Planning and Ecology of RS and World Bank (2003))

Table 2: Growing stock of accessible high and coppice economic forests per ownership in B-H

Economic forests	Growing stock - wood volume				
	Public owned		Private owned		Total in B-H
	1,000 m^3	m^3/ha	1,000 m^3	m^3/ha	m^3/ha
High forest	299,630	282	53,968	202	266
Coppice forest	35,710	87	46,412	107	97
All forests	335,340	228	100,380	143	201

Source: USAID - FIRMA (2012)

4.1.2. Critical comparison with national data in FRA reporting

Table 3: FRA and national data on forest area in B-H

FRA 2010 Forest Ownership Categories	Forest area - FRA	Forest area - national data	Forest area - national data
	Year 2005	Data from the first forest inventory (1964-1968)	Data from the second forest inventory (2006-2009)
Public ownership	1.718.000	2.186.332	*Official results are not published yet*
Private ownership	467.000	523.437	*Official results are not published yet*
...of which owned by individuals	n.a.	n.a.	-
...of which owned by private business entities and institutions	n.a.	n.a.	-
...of which owned by local communities	n.a.	n.a.	-
...of which owned by indigenous / tribal communities	n.a.	n.a.	-
Other types of ownership	0	0	-
TOTAL	**2.185.000**	**2.709.769**	**3.231.500**

Sources: FRA (2010); Glück et al. (2011: 31); USAID – FIRMA (2012: 33)

When it comes to the definitions of the property types, there is no ambiguity between national definitions and those provided by FRA. Difference lies in the lack of various private ownership categories in national Laws on Forests due to underdeveloped private

ownership in B-H. Still, it is important to notice that data on distribution of forests and forest lands per ownership categories differ between those given by FRA and national data (from First National Forest Inventory). Reason for the difference lies in the fact that data from National FRA report (Table 3) did not include category of „other wooded land". Data on other wooden land category are given in Table 4 (FRA, 2010). This leads to the conclusion on absence of significant difference between FRA and national data (from First National Forest Inventory) when it comes to the total forest cover in B-H.

Table 4: Distribution of other wooded land category per ownership types in B-H

	Area in 1000 ha for B-H		
	State	**Private**	**Total**
Other wooded land	461	88	**549**

Source: FRA (2010)

According to the Article 3, paragraph 1 of the Law on Forests of RS (Official Gazette of RS No. 75/08), forests and forest lands in RS can be owned by RS or other legal and natural persons. By Article 39 of this Law, private-owned forests and forest lands are both managed and governed by their owners with professional and technical expertise of public forest enterprise responsible for forest management at the territory of RS. The Law prescribes forest management plans for all private forests within one municipality (Article 18). Unlike the situation in the FB-H, forest management plans must be adopted by the Municipality Assembly before its implementation (Article 22). Law on Forests of RS prescribes a number of legal regulations to private forest owners in RS. Many of them include elements of very strict regulations. For example, felling of trees in private forests is carried out by the owner in accordance with the provisions of the forest management plan (Article 69). Labelling of trees in private forests and issuing of a waybill is done by the enterprise and in the presence of the private forest owner or authorised person (Articles 39 and 70, paragraph 2). Furthermore, prior to labelling of trees in privately owned forests, private forest owner is obliged to show valid approval of ownership (Article 70, paragraph 3). What is more, by the Article 55, paragraph 1, private forest owners as well as public enterprise responsible for management of public forests have obligation to adopt Plans for protection against forest fires. Generally, private forest owners are responsible for integral forest protection as well as forest utilization (Article 39).

When it comes to the Law on Forests in the FB-H law-abolition in 2009 caused severe difficulties in organising of both managing and governing in forest sector[3]. Therefore, legal aspect of private forest ownership category will be analysed from perspective of former Law on Forests of the FB-H (Official Gazette of the FB-H No. 23/02). According to the Article 3, paragraph 17 of this Law, forest owners are legal or natural persons who have a legally registered right of ownership to a forest or forest land. The Law prescribes two main types of ownership: forest and forest land in State property (public forests) and private forests (Glück et al, 2011: 35). The ownership right for private forests must be proved by valid documents from the land registry and the cadastre of real estate (Glück et al, 2011: 35). Private forests are managed by their owners in accordance with the legal regulations and provisions laid down in mandatory forest management plans. The Cantonal forest offices are obliged to prepare forest management plans for private forests. The common forest management plan is prepared for all private forests within a municipality. Private forest owners are obliged to carry out afforestation, forest protection and other silvicultural activities specified in the forest management plans (Glück et al, 2011: 35).

As mentioned above, national forest legislation prescribes a number of legal regulations to private forest owners in B-H. Considering legally based dominance of public forest administration and state forest enterprises one can understand that the private forest sector in Bosnia and

[3] Under the term 'forest sector', we consider only forestry and not wood-processing industry - these two branches of the national economy are under the responsibility of different ministries.

Herzegovina is discriminated by forest legislation (Glück et al, 2011: 36-37). This is not a case in the new European forest legislation which is moving towards reduced regulation of many aspects of private forest management by public forest administration (Glück et al, 2011:36). It focuses on setting frame conditions by defining minimum requirements and performance standards while guidelines for best management practices are increasingly used (Cirelli and Schmithüsen, 2000: 20). Another interesting result of PRIFORT project refers to the level of awareness of forest regulations on private forests. Results revealed that level of awareness is very low with 9% of private forest owners included in this survey were familiar with forest legislation (Glück et al, 2011:42).

4.2. Unclear or disputed forest ownership

Both public forest management enterprises (in the FB-H as well as in RS) and official statistics do not publish data on unclear or disputed ownership in their annual reports. Therefore, it is hard to estimate exact size of areas with unclear or disputed ownership. Nevertheless, according to our expert knowledge, land disputes in case of both private and public forests are common problem in B-H. Yet, it is not possible to give their exact size due to the unstructured and unified data on land disputes.

Despite of the characteristics of private forest ownership in B-H (small-sized, fragmented in 2-4 parcels, mainly smaller than 1 hectare and mainly collectively owned within one family), complicated situation with land register, as well as the socio-economic circumstances of the Country, one can be surprised by the fact that 97% of the respondents know the size (acreage) of their forest estates (Glück et al, 2011:39).

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

According to the Articles 3 and 32 of the Law on Forests of RS (Official Gazette of RS, No. 75/08), forests owned by RS cannot be subject of privatisation except in the case of consolidation of owned parcels. Same also holds for the Law on Forests of the FB-H (Official Gazette, No. 23/02). According to the Article 45, trade of the public (state-owned) forests and forest land is strictly forbidden except in the case of consolidation of owned parcels or its exchange. These activities require a permission of the Ministry for Agriculture, Water Management and Forestry which is based upon opinion of cantonal and federal offices for forestry.

Public forests and forest land can be sold to another legal or natural person when it is in accordance with spatial planning adopted by Parliament of the FB-H. The FB-H has priority in buying forests and forest lands from private forest owners that owned forests proclaimed as protected or protective forests by Government of the FB-H.

When it comes to the legal restrictions for buying or selling private owned forests in B-H, it is not forbidden in both entities. Still the amount of these transactions is quite modest. According to the results of PRIFORT project, only 5% of private forest owners had purchased or sold their forests during the last decade (Glück et al, 2011:40).

4.3.2. Specific inheritance (or marriage) rules applied to forests

Formal inheritance process of privately owned forests is in accordance with Law on Inheritance of RS (Official Gazette of RS No. 1/09) and Law on Inheritance of B-H (Official Gazette of SR BH, No. 15/80). Forest land is mainly a subject of family heritage but in many cases the process of formal ownership transfer is not officially completed. As the procedure of land partition among successors is relatively expensive and time-consuming, in many cases the land is not designated to single person. According to the legislation, all children, regardless their gender, have equal right to inherit the land. Still, customary rights in B-H imply that mainly sons inherit the land while daughters are giving up their inheritance rights. Furthermore, patriarchal society of B-H is not that supportive toward formal share of ownership rights between husbands and wives. This means that in most

of the cases male members of families own the land.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

There are some indications that share of private owned forests have been increased within last 20 years. This will be revealed by results of the Second National forest inventory. These results will reveal exact changes in ownership structure. Available results of the Second National Forest Inventory (USAID – FIRMA, 2012) do not contain this type of information. Without official data on change of ownership structure it is not possible to assess it.

4.4.2. Changes within public ownership categories

As a result of Dayton Peace Agreement, former Socialist Republic of Bosnia and Herzegovina had been comprised on two entities. Such decision had influenced inner organization of forest sector as well. Before war, forests and forest lands at the territory of B-H were managed by one State forest enterprise. After Dayton Peace Agreement, public forest enterprises were established on following way: one public forest enterprise at the level of Entity (in case of RS) established by Government of RS and ten cantonal public forest enterprises (in case of the FB-H) established by Governments of each canton. This organisation is not fully implemented in two cantons - in Canton 2 (*Posavina Canton*) with lowland area where forests play minor role and Canton 7 (*Herzegovina-Neretva Canton*) where a number of municipality-based enterprises are not integrated in existing Cantonal Forest Management Enterprise. By that, currently there are eight cantonal public forest enterprises in the FB-H.

4.4.3. Changes within private forest ownership

There is no data on exact change of ownership structure within private forest ownership. Reason for such situation is mainly due to the continuous inheritance process and further fragmentation of parcels. Still, it is important to mention that results of PRIFORT project revealed that only 5% of private forest owners had purchased or sold their forests during the last decade (Glück et al, 2011:40).

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

Significance of these trends in B-H is assessed in the table below, with the case example describing the rather important trend - new forest ownership through afforestation of formerly agricultural or waste lands.

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	1
• New private forest owners who have bought forests	0
• New forest ownership through afforestation of formerly agricultural or waste lands	2
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	1
• Other trend	-

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: EXPANSION OF FORESTS ON FORMER AGRICULTURAL LANDS IN RURAL AREAS OFB-H

Results of the Second National Forest Inventory will reveal significant increase of forests and forest lands (for around 500.000 ha). What is particularly interesting is the fact that these changes are the most prominent in the rural remote and mountainous areas of B-H with numerous abandoned villages. Such trend is direct output of war between 1992 and 1995 when over half of the pre-war population of the country has been displaced from their homes (Toal and O'Loughlin, 2009: 7). In many cases, rural population that has been displaced during the war did not return to pre-war settlements and many villages are still abandoned. Therefore, agriculture land in rural areas has been continuously diminished as result of forest expansion and natural afforestation.

4.5. Gender issues in relation to forest ownership

Private forests owners in B-H are mainly owned by males (97%), a result of the socio-cultural characteristics of B-H society where women rarely share formal ownership rights (particularly land) with their husbands (Glück et al, 2011: 39).

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

For B-H situation in this regards is as follows:

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives		X	
• Self-organised local community groups		X	
• Co-operatives / forest owner associations	X		
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

According the Article 40 of the Law on Forests of RS (Official Gazette of RS, No. 75/08), private forest owners have right to associate in private forest owners associations in order to improve overall conditions of private owned forests and to apply forest management measures. According to this article, PFOAs are responsible for information sharing about programs, procedures and possibilities for

supporting private sector and rural development, advisory activities, representation of various interests of PFOAs members and other duties which are not opposite to this Law and other regulations.

In RS, two Private Forest Owners Associations were established. In terms of the number of members and engagement in project activities, main association is PFOA „Naša šuma“, and second (smaller) association is PFOA "Šume Krajine". There are no data on activities of PFOA „Šume Krajine“ while PFOA „Naša šuma“ has active web site with updated information on its activities. What follows is information about this association according to the data available on their official web site (www.nasasuma.com).

CASE STUDY 2: FOREST OWNER ASSOCIATION IN B-H - „Naša šuma“

Association of private forest owners „Naša šuma“ was established on 30 July 2006 in Municipality of Čelinac, RS. Mission of this association is to become common voice of all private forest owners in B-H for fulfilment of their rights and implementation of legislative obligations related to forest management and to improve provision of professional assistance in forest management activities in privately owned forests.

Vision of the association of private forest owners “Naša šuma” is to assure equal status of private forest with public forests and to become a leader in organising private forest owners in RS and the FB-H, to participate in adoption of legislative framework and to become member of CEPF. Besides, vision of this association is to become recognized by private forest owners in B-H as an institution which represents their interests. Any natural or legal persons in B-H that have forests or forest land can be a member of this association. Enrolment in this organisation is enabled through its regional branches. Currently, this association has regional branches across entire RS as well as in Canton 10 of the FB-H. Association has its expert bodies, different commissions and council for forest management. In 2010, this Association published the *Guide for private forest owners* in RS that is consisting out of most important economic, social, ecological and legislative information about organisation of forest management practice in RS.

4.7. Common pool resources regimes

Commons - forest common property regimes (CPRs) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in” traditional” and “new” common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

CASE STUDY 3: HISTORICAL DEVELOPMENT OF FOREST OWNERSHIP PATTERNS IN B-H AND ITS IMPLICATIONS ON TRADITIONAL USAGE RIGHTS

Currently, there is no example of existing CPR regimes in B-H. Yet, historical development of forest ownership regimes has significant influence on traditional usage rights of local population in B-H. Period of the Ottoman Empire brought completely new forest ownership pattern in B-H. The legal base for forest land tenure was the Islamic canonical law (the Shariat). Forests were considered as public good that could not become subject of private ownership (Begović, 1960). Some forests, called "baltalici", were designated for the satisfaction of the local population's needs. It is the complex type of using rights which evolved in other European countries into community forests. In addition, some remote forests, called "džiboli-mubah", were allowed to use by local population as "free forests" without any charge, either for their own needs or for commercial purposes (Čomić, 1999). Immediately after the annexation of B-H by the Austro-Hungarian monarchy (1878), the first cadastre was conducted (1880-1885) and forest ownership issues were regulated in accordance with "Ševal's Law on Forests" from 1869. "Baltalici" remained property of the state although some restricted users' rights of the local population were recognised (so-called "meremat" right of local rural population). In this context, community forests, as a special type of forest ownership, were abolished. For achieving Austro-Hungarian political aims, some forest areas were given to private owners, mainly to powerful local feudalists. Consequently, at the end of the XIX century, privately owned forests in B-H amounted to about 550.000 ha (Forestry encyclopaedia, 1980). Following regimes in B-H (Yugoslavian monarchy and Socialistic Federal Republic of Yugoslavia) had completely marginalised private ownership category. Still, traditional usage rights of forests stayed as heritage right of local populations in B-H. Very often, these traditional rights are not recognized as legitimate ones. For example, in the Laws on Forests of both Entities of B-H, grazing is strictly forbidden and treated as illegal activity. Furthermore, traditional usage rights are perceived as main cause of small-scale illegal activities in forestry.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in B-H

5.1.1. Organisation of forest management practice in B-H

Forestry Department within the Ministry of Agriculture, Forestry and Water Management of RS is responsible for governing of forest sector. Public forest company "Šume Republike Srpske" is responsible for management of the state-owned forests in RS. It has a hierarchical organization with headquarter, 25 Forest Management Units (FMUs), a Research Development and Design Centre which undertakes forest management planning, a Centre for Seedling Production and a Karst Management Centre. By Article 39 of the Law on Forests of RS (Official Gazette of RS No.75/08), private owned forests and forest lands are managed by their owners with professional and technical expertise of public forest enterprise responsible for forest management at the territory of RS. Furthermore, Article 40 of this Law prescribes formation of associations of private forest owners in order to improve overall conditions of private owned forests and to assure full implementation of forest management instruments. Forest management of the private forests is based on adoption of forest management plans for all private owned forests within one municipality (Article 18) and executive plans for silviculture activities (Article 25). Unlike situation in the FB-H, forest management plans must be adopted by the Municipality Assembly before its implementation (Article 22).

In case of the FB-H, public forests are owned by the FB-H, which transfers management rights to 10 Cantons. The Cantons transfer these rights to Cantonal Forest Management Enterprises (one in each canton). This organisation is not fully implemented in two cantons: in Canton 2 (Posavina Canton) and Canton 7 (Herzegovina-Neretva Canton). Department for Forestry within the Ministry of

Agriculture, Water Management and Forestry and a Federal Forest Office are responsible for forest governing at the level of the FB-H. At the Cantonal level, responsibility for forestry rests with the responsible Ministry (Cantonal Forest Office) whose main function is to control activities of the cantonal forest management enterprise and provide advice and support to private forest owners. According to the Law on Forests of the FB-H (Official Gazette, No. 23/02), private forests are managed by their owners in accordance with the regulations and provisions laid down in mandatory forest management plans. The Cantonal forest offices are obliged to prepare forest management plans for private owned forests. The common forest management plan is prepared for all private forests within a municipality. Private forest owners are obliged to carry out afforestation, forest protection and other silvicultural activities specified in the forest management plans (Glück et al, 2011: 35).

5.2. Main opportunities for innovative forest management

So far, there are no any forms of new forest ownership types in B-H. Therefore, one of the main opportunities of forest management practice in B-H is to introduce innovative forest management approaches in both legislative and policy framework of the forest sector and day-to-day management practice.

Main opportunities for innovative forest management in B-H are related to the improvement of traditional way of forest management which is based on technical expertise that do not include participation of other relevant stakeholders (representatives of other sectors, forest owners etc.). Based on that fact, the need for improvement of traditional way of planning and implementation of management plans is recognised. This is mainly related to necessity to improve effectiveness of forest utilisation and to make significant change from “timber production” orientation toward “maintaining forest service” orientation. The second is connected to potentials of forest resources in B-H to provide various goods and services beside just timber. To fulfil these intentions, new forest management approaches have to be applied in order to get more benefits (social, ecological and economical) from utilisation of timber and other forest products and services as one of the main resources for economic development of B-H.

Private forests in B-H are valuable source of various goods and services that could be effectively managed by their owners with help of state forest administration. One of the main problems related to private forest owners is their under-representativeness in policy planning and implementation of executive plans. In order to increase their role in implementation of forest management plans, private forest owners should be organised in interest associations. Together, they could establish joint forest management system and communicate with state forest administration on various fields of forest management.

5.3. Obstacles for innovative forest management approaches

Private forest owners in B-H have neither potential nor opportunity to adopt innovative management approaches. Reasons for such situation stem from the laws at all administrative levels and institutional arrangements that do not recognise this category of forest ownership equally important as public forests. This is mainly related to economic benefits provided by state forests and their contribution to national economy. As it was already mentioned, forest owners are poorly organised in interests association and do not have access to information related to new management approaches as well as information related to potential sources of funds to implement silvicultural and other activities in their property.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence

ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

Period of socialism had completely abolished private forest ownership category. The agrarian reform in former Yugoslavia (1945) limited the ownership of private forests to 8-30 ha, depending on terrain. After dissolution of Yugoslavia, all ex-Yugoslavian countries had raised question of restitution and de-nationalisation of once deprived property.

According to the result of the in-depth interview conducted with president of Commission for Restitution of B-H, 763.582,8 ha of forests and forest lands were deprived during former Yugoslavia (Delić et al, 2013: 103). Still, applicable legislative framework for restitution and denationalisation has not been adopted yet. Therefore, it is hard to estimate future perspective for resolving this problem in B-H as well as its effects on forest ownership structure.

Furthermore, constant fragmentation of private forest represents a serious issue related to private forest ownership category in B-H. What is more, none of the forest-related legislation or legislation that is dealing with inheritance process did prescribe any limits of the size of private owned forest parcels that lead to their continuous fragmentation .

6.2. Influences of policies in forest management

Based on a contract between the Municipality Assemblies and responsible forest districts, the Public Forestry Enterprise "Šume Republike Srpske" carries out all forestry activities in private forests. Felling of trees in private forests is carried out by the owner in accordance with the provisions of the forest management plan and a decision appointed by the public forest enterprise. Labelling of felled trees in private forests and issuing of a waybill is also done by the enterprise. According to the Amendment to the Law on Forests of the RS (Official Gazette of RS, 60/13), private forest owners are obliged to allot funds for biological reproduction of forests. Private forest owners shall be obliged to pay 10% of the net income from the approved quantity of wood to two separate accounts in the following ratio: 80% to the Forest Management Enterprise account (to perform forest management activities in private forests), and 20% to a separate account for forest biological reproduction of the Municipality (funds has to be used for making forest management plans, establishment of new forests, forest care and protection of forests in private ownership). This amount is calculated on the basis of market prices.

According to the Law on Forests of the FB-H (Official Gazette, No. 23/02), the Cantonal forest offices carry out following tasks in private forests for ensuring sustainable forest management: marking of trees before felling, measuring and labelling of timber, issuing of a waybill, planning of silvicultural activities etc. They can also transfer certain tasks to the Cantonal Forest Management Companies. The Law prescribes that Cantonal forest offices provide financial and professional support for the establishment and functioning of forest owners' associations, where the reduced size of forest parcels, fragmentation or dispersal of parcels are detrimental to sustainable forest management. However, none of the Cantons is implementing this provision. Private forest owners in the FB-H are obliged to allot funds for biological reproduction of forests. Prior to selling wood, private forest owners must pay 15% of the gross income from the approved quantity of wood, as calculated on the basis of market prices. This money is paid to the Cantonal funds for the enhancement of forest cover. Private forest owners are obliged to carry out afforestation, forest tending and other silvicultural activities specified in the forest management plans. The Law prescribes that silvicultural measures in private forests can be co-financed by the Federation and Cantonal funds for enhancement of forest cover, if income from timber is not sufficient to carry out the necessary silvicultural activities' (Glück et al, 2011: 35).

6.3. Policy instruments specifically addressing different ownership categories

Even though fund for subsidies is prescribed by Laws on Forests of both Entities, results of PRIFORT project showed that none of the interviewees received any subsidies from public forest administration (Glück et al, 2011:42). Furthermore, recently adopted Law on Renewable Energy Sources and Efficient Cogeneration (Official Gazette of RS, No. 39/13) and Law on utilization of renewable energy sources and efficient cogeneration (Official Gazette of the FB-H, No. 70/13) prescribe that Federal Ministry of Industry, Energetics and Mining/Ministry of Industry, Energetics and Mining of RS are obliged to inform public on various sources of subsidies for both production and consumption of renewable energy sources and cogeneration, which includes woody biomass. Both laws were adopted just recently and it is early to assess enforcement of their regulations. This example was described just to point out on certain improvements of legal framework that is referring to private forest owners in B-H. Subsidies as motive for joint production of woody biomass can be perceived as good driving force for establishment of interest-based associations.

6.4. Factors affecting innovation in policies

One of the result of PRIFORT project showed very low awareness on forest regulations by private forest owners - 9% of private forest owners included in this survey were familiar with forest legislation (Glück et al, 2011:42). On the other hand, analysis showed that private forest ownership is overregulated in FB-H.

Furthermore, results of the PRIFORT project revealed that more than 80% of private forest owners believe that their interests are not appropriately represented (Glück et al, 2011:44). The majority of private forest owners included in this survey need an interest association to support them in managing their forests (e.g. silviculture, harvesting operations, timber market access etc.) and to represent their interests by lobbying political parties, civil servants in ministries/governments in order to improve the social and economic situation of private forest owners (Glück et al, 2011:44). The most desired services from private forest owners' associations regarding interest representation are subsidies, opening of new markets, cadastral issues or tax reduction (Glück et al, 2011:46).

As previously mentioned, examples on establishing PFOAs ("Naša šuma" and "Šume Krajine") implies certain positive changes and "awakening" of private forest owners in B-H toward improving their position on (forest) policy agenda in country. These trends can be explained by political commitment of B-H to become member of the European Union and demanding changes with whom forestry sector are becoming to facing with. One of these changes is definitely referring to strengthening of the private forest ownership category in B-H. Since reforms in forest sector as well as in entire B-H society are rather slow and unstructured, private forest owners in B-H are still rather inert in lobbying for improvement of their position in forest policy agenda of the country. Concrete improvements and their engagement in improving the status of private forest ownership category in B-H are yet to come.

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BULGARIA

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1. Introduction

1.1. Forests, forest ownership and forest management in Bulgaria

Bulgaria's forest land occupy 4,148,114 ha and covers 37,4% of the total territory of the country, where forested area is 3,774,778 hectares or 91% (2011). They are an important national resource with economic benefits for the country and people, biodiversity conservation and the environment.

Bulgaria's forests maintain the quantity and quality of 85% of the water flow of the country, or around 3,6 billion m^3 of clear drinking water. State of the Bulgarian forests directly affects climate and water resources of the neighboring Balkan countries and determines the quality of life of seven million Bulgarians and over fifteen million people in the Balkans.

Bulgarian forests have great conservation value due to their biodiversity, topography and distribution. They contain more than 80% of the protected plant species in the country, over 60% of endangered animals, eight of the twelve landscape complexes defined by the National Strategy for the Conservation of Biodiversity. They provide removal of greenhouse gases between 10,7% and 18,9% of total greenhouse gas emissions in the country.

No less important are their economic, environmental and social functions for the sustainable development of the country.

The main indicators that characterize Bulgarian forests are showed in the table 1.

Table 1: Indicators that characterized forests in Bulgaria in the period 2000 -2010

Indexes	2000	2005	2010
1. Total forest area, ha	3 914 355	4 076 464	4 138 147
Increase in %	100	104,1	105,7
2. Afforested area, ha	3 375 117	3 651 243	3 737 542
Increase in %	100	108,2	110,7
3. Percent of forests with special purposes	34,2	31,9	38,3
4. Distribution of forest area, according to the type of ownership:			
- State	3 324 130	3 131 825	3 066 771
- Municipality	234 773	464 929	503 694
- Private natural persons	290 008	393 680	421 885
- Private juridical persons	3 547	9 508	29 945
- Religious communities	21 027	22 666	23 243
- Forests on agricultural territories	1 935	53 856	92 609
5. Total growing wood stock, 1,000 m^3	526 063	590 781	644 840
6. Mean wood stock per ha, m^3	156	162	172
7. Mean annual increment, 1,000 m^3	11 101	14 120	14 400
8. Mean increment per ha, m^3	3,3	3,9	3,9
9. Average tree age, years	44	51	53
10. Percent of coniferous	33	29,5	30,5
11. Mean stand density	0,73	0,72	0,73
12. Wood available for harvest according FMP, 1,000 m^3	5 416	5 298	4 892
13. Total felling, 1,000 m^3	3 739	4 165	4 333
14. % FMP planned harvest utilized	69,2	85	89
15. % of harvested wood according to the current increment	33,7	29,5	30,1
16. % of growing stock harvested	0,71	0,70	0,67
17. Felling per ha of forested area, m^3	1,12	1,14	1,16

Data from the table showed that in the period 2000 – 2010 all forest indicators had an increase trend.

Only 4% of forest areas are non-productive (figure 1).

Coniferous, Coppice for transformation and Broad-leaved high stem type of forests occupy 81% of all forests in Bulgaria (figure 2) and are a good base for developing productive and sustainable forestry.

The main tree species in Bulgarian forests are Oaks, Beech, Scotch pine, Turkey Oak etc. (figure 3).

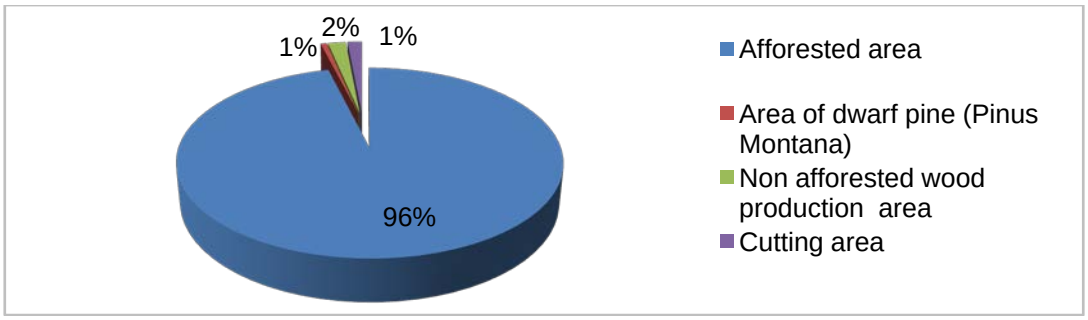

Figure 1: Distribution of forest area in ha

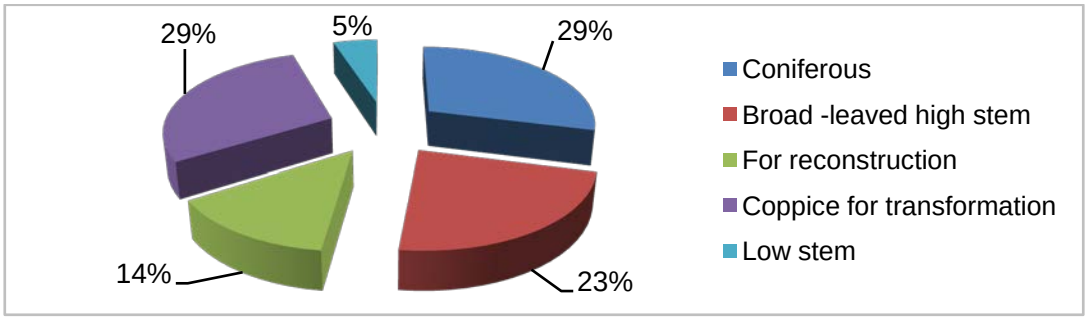

Figure 2: Distribution of main forest types in Bulgaria

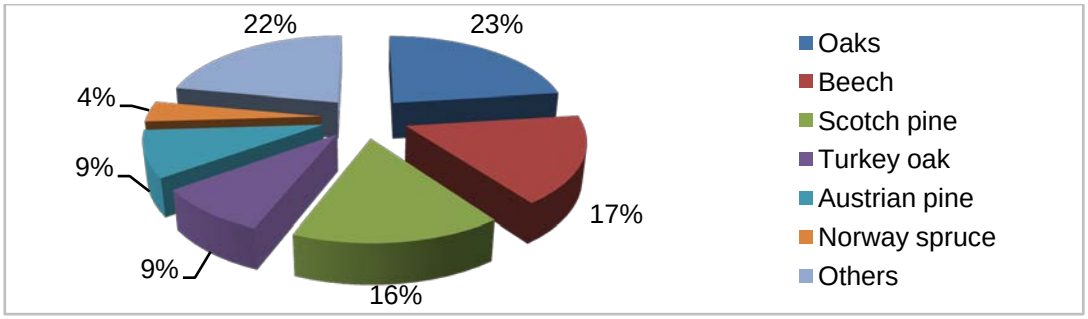

Figure 3: Distribution of main forest tree species

Distribution of forest lands according to the ownership is showed on figure 4.

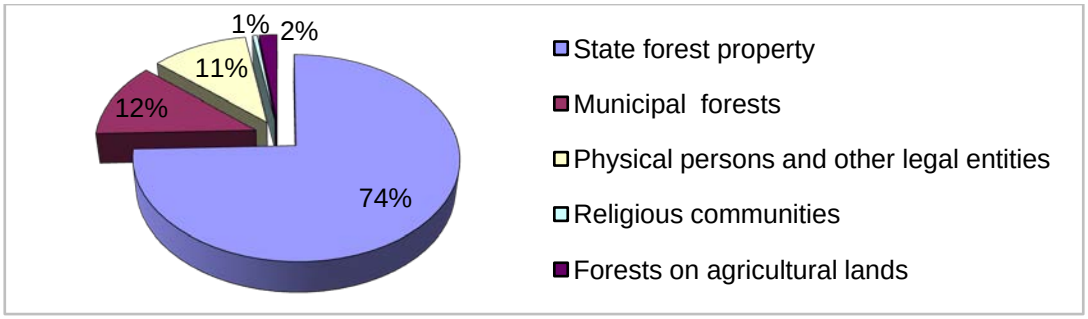

Figure 4: Distribution of forest lands according to ownership

The data for distribution of forest lands according to ownership indicate that state property predominate (74%) and municipal and private forests are approximately equal (12 and 11%).

1.2. Overview of the country report

Forests in the Republic of Bulgaria are state, municipal, or private property. The ownership is regulated by the Constitution and Legislation of the Republic of Bulgaria, which guarantees equal rights to each owner and provides equal responsibilities, immunity of the rights of ownership and independence of the economic activity.

The process of restitution of forest property begun from acception of Forest Law and Law for the restoration of forest and forest land in the end of 1997 and the end of time for claims was in the end of 1999.

Now the process of restoration of property of forest property is finished and the distribution of forests according to requirements of Law for the restoration of property of forests and forest lands is follow (in %):

- State –74,1
- Educational and Experimental Forest Enterprises – 0,3
- Private physical persons – 10,2
- Private juridical persons – 0,7
- Municipal – 12,2
- Religious – 0,6
- Other – 2.2.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

During the development of country report there are used different methods.

They include a literature reviews, statistical data, secondary data and expert interviews as well as the expert knowledge of the authors.

Data include quantitative data from official national statistic (National Statistic Institute), from national and regional forest statistic (Annual Forest Reports from Executive Forest Agency and Ministry of Agriculture and Foods) and from scientific studies as well as qualitative data (expert knowledge of authors of the country report and specialists from Executive Forest Agency, Ministry of Agriculture and Foods, State Forest Enterprises, State Hunting Enterprises and different types of Forest Owners). There are provided many meetings and consultations with representatives of different property in the country to answering of different question, to give overview assessments and to provide case examples.

The authors of country report participated in different national and international projects, connected with the restoration of forest property, development of laws and other documents, structural reforms in forest sector and policy documents.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These references are listed at the end of the report. The 13 detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

The restoration of forest property in Bulgaria begun to discuss in the beginning of 90^{ties} and different articles and paper on the restoration of forest property and developing new forest low we find out from this time. More of publications was published in specialized magazines and proceeding, as well as in the reports from scientific and research projects on this theme.

The restoration of property and new forest ownership types is interesting theme and we were found many publications in the period from 1990 till now.

3.2. New forest ownership types

According to the Constitution of the Republic of Bulgaria all forms of ownership are equivalent, from which follows that in the forestry too, are presented all established forms of ownership.

The restoration of property on the forests and forestlands in Bulgaria is an inevitable fact. The rights of owners, which possessed forest lands and forests before the nationalization was restored.

In order to restore all forms of ownership in Bulgaria restitution was carried out, i.e. returning of the forests and the forestlands to their former proprietors. These were physical persons, churches, monasteries, mosques, schools, co-operatives, local authorities and other juridical persons.

The restoration of the property of forests in Bulgaria begun in 1997 – eight years after the beginning of political and economic changes where the Bulgarian Parliament accepted the Law for the Restoration of the Property of the Forests and Forestlands of the Forest Fund (LRPFFLFF).

Besides private forest owners, State and Municipalities also are the forest owners – their property is public and private.

The State forests are managed by the different structures under the management of Ministry of Agriculture (which name was changed several times during the period from 1990 till now) (Regional Forestry Directorates. State Enterprises, State Forest Enterprises and State Hunting Enterprises), by the Ministry of Environment and Waters (Reserves and 3 National Parks) and by University of Forestry (two Educational and Experimental Forest Enterprises).

According to the Law for State property state property (as well as forest property) is divided on state public and state private property.

For implementing different forestry activity according to the Commercial Law was created many different, mostly private companies – for harvesting, for forestry activities, for forest inventory, for collecting herbs, mushrooms e.t.c.

Most part of publication from the period from 1990 till now expressed and discussed how to provide process of restoration of forests and forest lands to the former owners or to their

inheritors and the rights and obligations of private owners.

3.3. Forest management approaches

We may to mark three main periods in the development of structural reform in the field of forestry in Bulgaria – from 1990 to 1997 and from 1998 till 2011 and from 2011 till now.

During the first period there were created trade companies on the territory of each Regional Directorate of Forests owned by the state. The capital of these companies was created trough free share payments from the State Forestry Enterprises, situated on the territory of the respective Regional Directorate of Forests.

The advantages of this business structure were the following:

- The trade companies acted as mediator between producers of wood (State Forestry Enterprises) and consumers of removed round wood;
- Part of qualified personal, working at the harvesting, logging and trade of wood and their possibilities and contacts with consumers of wood was preserved;
- The process of creating of regional markets of round wood and the possibility for satisfying the needs of big consumers was helped.

The disadvantages was:

- The trade companies was transformed to commissioners, which increased artificially the prices of wood with it's own commission;
- The trade companies didn't assure the sale of removed middle-sized and small-sized wood, but they sell mostly big-sized industrial wood;
- The trade companies was transformed into undesired and incorrect trade commissioners, because they didn't pay regularly to the State Forestry Enterprises for the wood.

From the beginning of 1998 after the accepting of new legislative documents (Law for the Forests and the sub law normative documents) started the process of structural transformation in the forestry. The business activity was separated from the activity of the State Forestry into new created Joint stock companies. The new forest organization has aim to satisfy several groups of interests:

- of society – to use forests according the requirement of forest science, to protect and regenerate forests for the needs of present and future generations;
- of forest owners – to use the forests according the requirements of the science and to assure enough income from this property;
- of consumers – to satisfy their today's needs from wood at price, which may assure the sale of processed wood and the final wood products;
- of contractors – to receive satisfying rate of profitability from the capital invested into the harvesting and processing of wood;
- of workers at the harvesting, logging and processing of wood – to protect their worker places and to increase the price of their labour.

Some of these interests are contradictive. The creating of new business structure could try to solve these contradictions. This was the cause that was created new business units (Joint stock companies with state property) which was suitable for market conditions.

The main advantages of this new business structure are:

- Restriction of monopoly and creation of competitive environment in the harvesting, logging and selling the timber, elaborating of rules for selling the timber, competition between customers;
- A possibility for all participants in the process of buying of timber to receive information about the conditions of selling timber;
- Application of requirements for accomplishing more precise measuring of wood, receiving more complete and detail information and a possibility for control of measurement of wood and conditions of forest stands;
- Availabilities of possibilities for satisfying the needs of big consumers in the terms of calendar year.

The main disadvantages are:

- Frequent changes in the normative documents (mainly Instruction 33) without wide discussions. In result of this the forest sector worked under the unknown and continuously changing conditions without enough experience.
- A possibilities for enter into the harvesting and logging of timber of non qualified persons;
- The application of new business structure and new conditions for selling the timber required considerable quantity of free money and specialized techniques from the contractors; In the conditions of prevailing state property of the forests there weren't created specialized business units for accomplishing the activities for development of sustainable forestry and protection of interests of state property;
- Availabilities of difficulties on the control, preservation and protection of forests.

The third period begun with the acceptance of new Forest Act in 2011.

The main characteristics of this period are:

- creating of 6 State Enterprises in field of forestry;
- creating the possibility for State Enterprises and their units (SFE and SHE) to implement management activities (harvesting and forestry works);
- dividing control functions and management functions between Executive Forestry Agency and State Enterprises;
- improvement of management of all property type of forests;
- introduction of special requirements regarding certification of forests, elaboration of forest management plans, national forest inventory e.t.c.

To manage Municipal forests there was created municipal forest bodies.

In 2008 the Association "Municipal forests" was established, which three years later had 97 members of communities, with the holding of 290 000 hectares of forests. Association actively interact with MAF and the EFA and is particularly active in assisting municipalities to create structures for management of municipal forests, increasing the capacity of workers in the municipal forest structures in forest management and in preparation for projects under the RDP and other EU programs.

Forest owned by private individuals and companies covers 10% of the forest area in Bulgaria, mainly in the districts of Smolyan, Lovech, Veliko Tarnovo and Montana. Properties are highly fragmented, 94% of the forest properties has an area up to 2.0 ha. The average area of individual forest property is below 1.0 ha. A significant number of the private forest owners often do not have the specific knowledge and experience in forest management. Their interest is limited to a single use of wood resources for personal purposes - construction, heating or income generation.

The basis of the lack of sustainable economic interest, fragmented and small private forests are: low income and low profitability of this type of forest property, increasing demands for sustainable forest management, poor road infrastructure, lack of support from state institutions incl. resources to encourage the formation of associations of owners of private forests for their sustainable management. At the national level, policy on private forest owners is often weak and insufficient effective. At this stage, the functions and support measures are limited.

There are alternatives for the development of management of private forests: establishing an office to advise the owners of private forests (the example of many countries of the EU support); consolidation of private forest estate; association and contract management; cooperation during the implementation in forest areas of specific activities of common interest; providing low-interest and interest-free loans for activities related to the management of private forest estates - marking assortment, sales of wood; protection and conservation; tax incentives for forest management; lower capital gains tax or tax on rent. Opportunities for more effective support from the state for the development of non-state forest, including technical and financial help may be the subject of a realistic analysis and recommendations to form the basis of preparation of the National Development Plan of non-state forestry.

3.4. Policy change / policy instruments

In the beginning of period of transition from centrally planning to market economy the main policy changes was connected with elimination of planning from activities of the forest enterprises and given freedom to the management for making a decisions.

After 1997 when the new Laws for forests were accepted begun a long process for structural reforms and new policy implementation.

In the period after 1997 there were elaborated several international projects about restoration of forests, consultation of new private owners, helping state administration in structure reforms e.t.c.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format, which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Towards 31.12.2011 allocation of the total area of forest areas by type of property is as follows:

- public - 3,088,464 ha (74.5%), of which 2,907,273 ha (70.1%) were managed by State Enterprises (State Forestry Enterprises and State Hunting Enterprises), 169 931 ha (4.1%) - forest areas managed by the Ministry of Environmental and Water, 11 260 ha (0.3%) - forest areas managed by Educational and Experimental Forestry Enterprises "Yundola" and "Barzia";
- non-state - 974 599 ha (23.5%), including Municipal - 495 734 ha (12.0%), private individuals and legal entities - 456 092 ha (11.0%), religious organizations - 22 773 ha (0.5%) and 85,051 ha (2.0%) - forests established on former agricultural land.

The distribution of the forest statistics as of 31.12.2005 is as follows:

- public - 3,131,825 ha (76.8%), of which 2,961,072 ha (72.6%) are managed by the state forest enterprises of art. 163 Forest Act (State Forestry Enterprises and State Hunting Enterprises), 159 435 ha (3.9%) - forests managed by the Ministry of Environmental and Water, 11 318 ha (0.3%) - forest areas managed by Educational and Experimental Forestry Enterprises "Yundola " and " Barzia";
- non-state - 890 783 ha (21.9%), including Municipal - 464 929 ha (11.4%), private individuals and legal entities - 403 188 ha (9.9%), religious organizations - 22 666 ha (0.6%) and 53,856 ha (1.3%) are forests established on former agricultural land.

For the past six years observed a noticeable increase in the area of private forests, mainly due to self-afforested and inventoried abandoned lands outside forest areas. The process of fragmentation of private forests continues to be a challenge for Bulgarian forestry.

After analyzing the data Bulgaria is characterized as a country with prevailing a state property on the forest territories.

4.1.2. Critical comparison with national data in FRA reporting

In the following tables 2 and 3 are given the data for owners during period 2000 – 2010 from the national forest statistic and data from FRA.

Table 2: Changes in forest property in Bulgaria in the period 2000 – 2010, according to the National statistic

Type of property	2000		2005		2010	
	ha	%	ha	%	ha	%
-State	3 324 130	84,9	3 131 825	76,8	3 066 771	74,1
-Municipality	234 773	6,0	464 929	11,4	503 694	12,2
-Private natural persons	290 008	7,4	393 680	9,7	421 885	10,2
-Private juridical persons	3 547	0,1	9 508	0,2	29 945	0,7
-Religious communities	21 027	0,5	22 666	0,6	23 243	0,6
-Forests on agricultural territories	41970	1,1	53 856	1,3	92 609	2,2
Total forest area	**3 914 355**	**100**	**4 076 464**	**100**	**4 138 147**	**100**

Table 3: Changes in the forest property in the period 1990 – 2005, according to FRA

Original data	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	3327.027	2763.847	2651.5
Community/municipality/ownership	0	205.843	427.750
Forests belonging to Ministry of Environment and Water "Agricultural" forest fund	0 0	93.447 14.556	108.206 52.302
Educational and experimental forests	0	14.148	10.602
Private individuals	0	264.272	374.441
Private legal entities	0	3.168	8.865
Religious institutions	0	15.836	17.511
TOTAL	**3327**	**3375.117**	**3651.24**

Compare two tables we establish differences, which are due to the fact that at the FRA the data for total area include only afforested area and at the data from national statistic are included total forest areas.

4.2. Unclear or disputed forest ownership

Although officially brought to an end, the process for restoration of ownership on forests and forest lands continues – claims for recognition of the right of ownership are conducted by municipalities and religious communities as well as by other owners, who have missed to declare their own or inherited forests in the term allowed by the law. The areas with unclear or disputed forest ownership are mainly in the regions Lovech, Veliko Tarnovo, Berkovica and Sofia. They are mostly related to actions taken by the court of municipalities and religious communities to restore their ownership of forests that have been allocated by the state for use before nationalization in 1947 and partly by such acts of private forest owners who missed laws deadlines for submitting applications for reimbursement of the ownership of forests and forest lands.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

The property rights of private forest owners are limited due to great public interest in it. According to the Forest Act "privately owned are forest areas, the ownership of which is Restored to legal and/or natural persons as well as those acquired through a legal transaction, prescription or other agreements to acquire and are not state or municipal property". According to Kostov, D. (in Rafailov et al., 2001) than the legal definition of common definitions of the law, we can draw three main points concerning private forest owners:

1. There cannot exist more than one form of ownership over a particular separate forest.
2. Owners of forests may only Bulgarian natural and legal persons and their successors and assigns.
3. Private forest ownership can be acquired in two ways: through the restoration of property (restitution) or by legal transaction or other acceptable

methods of acquisition (prescription, inheritance, etc.).

According to the last changes in Forest Act (art. 22 and 23) the ownership of forest areas belongs to natural and legal persons, State and municipalities. Political parties, organizations, movements and coalitions with political objectives can not have ownership of forest areas. Foreign countries cannot have ownership rights over forest areas. Nationals of Member - States of the European Union and the states - parties to the European Economic Area may acquire ownership of forest areas under this Act after the expiration of the period specified in the Accession Treaty the Republic of Bulgaria to the European Union. Legal entities from Member - States of the European Union or Member – countries Agreement on the European Economic Area may acquire ownership on forest areas under par. 3. Aliens - third-country nationals as well as foreign legal entities established in accordance with the laws of a third country can acquire ownership of forest areas under international treaties ratified in accordance with Art. 22, par. 2 of the Bulgarian Constitution, promulgated and entered into force, and through legal succession. Forest Act also states that can not be acquired by prescription forest areas - state or municipal property.

4.3.2. Specific inheritance (or marriage) rules applied to forests

The Law for Inheritance hasn't any exception applied to forests.

Aliens - third-country nationals as well as foreign legal entities established in accordance with the laws of a third country who acquire ownership of forest areas through Inheritance by law and not otherwise provided in an international treaty, ratified in accordance with Art. 22, par. 2 of the Constitution of the Republic of Bulgaria are shall, within three years of opening of succession to transfer ownership persons who are entitled to acquire such properties. For those who have restored ownership of forest areas thus, three-year deadline for the transfer of ownership from the moment of his recovery. Failure to comply with this deadline state buys forest areas at prices set by ordinance.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

According official statistical data from 1947, before nationalisation - table 4, the share of forest property has been as follows:

- 26.6% - state-owned;
- 54.7% - municipal forests and forests given by the state to municipalities' disposal;
- 0.7% - property of educational institutions;
- 1.0% - property of monasteries and churches;
- 17.0% - private forests, 0.7% of them united in 71 co-operatives and guilds.

After nationalisation, in the period 1950 – 1997, forests in Bulgaria were 100% state-owned.

Table 4: Distribution of the forests by property in Bulgaria before nationalisation

Type of property	Number of owners	Afforested area in thousand ha					Total thousand ha	%	Average area of one owner or holding ha
		Coni-ferous	Deciduous		Total	Un-forested area			
			High-stem	Low-stem					
State	1	166.5	267.3	329.9	763.7	197.0	961.7	26.6	-
State, given to the communities to manage it	6059	112.6	368.4	1178.0	1659.2	327.0	1978.2	54.7	328
Schools	563	1.0	2.0	12.2	15.2	10.0	28.2	0.7	45
Monasteries and churches	500	3.8	9.7	10.3	23.8	12.5	36.3	1.0	73
Cooperatives	71	16.4	2.1	0.7	19.2	7.5	26.7	0.7	376
Private, over 50 ha	153	12.6	8.5	30.3	51.4	12.0	63.4	1.7	415
Private, under 50 ha	472500	42.2	53.7	406.4	502.3	25.2	527.5	14.6	1.12
Total	-	355.3	711.7	1967.8	3054.8	592.2	3627.0	100	-

Source: Statistical data from 1947.

Until 1998, forest property in Bulgaria was fully state owned. After the adoption of the Law on Restitution of Forests and Lands of Forest Fund in 1997, a long process of restoration of forest properties to its former owners before the nationalization began. Besides the state-owned, big and small private property was established and the share of municipal forests became considerable.

Restoration of ownership in forest fund is already finished. Although officially brought to an end, the process for restoration of ownership on forests and lands in forest fund continues. Claims for recognition of the right of ownership are still conducted by municipalities, as well as by other private owners, e.g. who have missed to declare their own or inherited forests in the term allowed by the law.

The first real changes in forest ownership were in 2000. Besides the state-owned, big and small area of private forest ownership was established and the share of municipal forests became considerable.

Changes in the areas and the number of non-state forest property during the period 2000-2010 are presented in Table 5.

Table 5: Dynamics of the area and the number of non-state forest estate over the period 2000-2010

Type of property	Year	Area in ha	%	Number of estates	Change % by 2000 base
Municipal forests	2000	229880	100	11426	100
	2005	459484	199,88	25048	219,22
	2010	493479	214,67	42959	375,98
Forests owned by physical persons	2000	274896	100	360568	100
	2005	392763	142,88	504550	139.93
	2010	407157	148.11	552653	153.27
Other non-state forests	2000	62903	100	3725	100
	2005	54181	86.13	5601	150.36
	2010	91995	146.25	26946	723.38

Source: Statistical data of Executive Forest Agency (EFA)

The data from table 5 clearly show that the area and number of estates of non-state forests are growing up in the period 2000-2010 due to the long term of the process of restoration of forest property and same trading cases for forest land. For municipal forests the growing up of areas is about two times, and the growing up of the number of estates is above three times for this period. The growing up of forest area and number of estates owned by physical persons is about 1.5 times and the same is for areas owned by other non-state forest owners, but the number of estates for them growing up significantly up to 7 times. The reason for this significant grow of the number of this estates, mainly

owned by juridical persons is the process of buying forest land, closed to buildings, owned by them, according to the requirements of paragraph 123 of the Forest Act acting for this period.

Distribution of private forest owned by individuals in Bulgaria, according to the size of the forest estate over the period 2000-2010 is presented in Table 6.

Data presented in the table 6 clearly show that the number of properties to private individuals as well as their size increased in the last decade. This is due to the lengthy process of restitution of forests in Bulgaria. It is noteworthy that the predominant parts of the properties are small in size and in 2010 the percentage of private forest land with an area less than 10 ha is 99% (Bogdanov, P. (2012)).

Table 6: Number of forest property privately owned by individuals over the period 2000-2010

Year	Under 10 ha	11-100 ha	101-500 ha	501-10000 ha	Above 10000 ha	Total	Change % by 2000 base
2000	359469	1016	67	4	0	360556	100
2005	503334	1443	111	6	0	504894	140
2010	545692	2979	75	10	0	548756	152

Source: Statistical data of Executive Forest Agency (EFA)

In the following table is showed the share of different property in regional forestry boards towards 31.12.2005.

Table 7: Share of the total forest area according to type of property in regional forestry boards and total for the country towards 31.12.2005

Regional forestry board	Total forest fund - ha	According to type of property - ha			
		State forest fund	Municipal	Private	Religious
Berkovitsa	235050	142216	15349	75753	1732
Blagoevgrad	397350	434797	436	8281	3
Burgas	331665	211358	97933	11950	424
Varna	184462	172908	6667	4870	17
V. Tarnovo	207346	138273	17332	53547	865
Kardzhali	357065	290702	58711	7243	409
Kyustendil	240217	198288	4698	28373	13168
Lovech	221207	146176	29329	63685	1671
Pazardzhik	261186	224225	33728	5575	903
Plovdiv	210683	186952	19823	16965	901
Ruse	174051	126443	41569	5805	234
Sliven	235433	187199	33990	13188	1056
Smolyan	242124	189987	7019	44478	640
Sofia	421033	331455	78699	41383	555
St. Zagora	175548	163384	5274	13147	3
Shumen	182044	158642	14372	8945	85
Total for BG	**4076464**	**3313005**	**464929**	**403188**	**22666**

Source: Statistic of National Forest Board (NFB), now Executive Forest Agency (EFA,2006)

As It is seen from table 7 the biggest part of municipal forests are mainly in the regions Burgas, Sofia, Kardzhali, Ruse, Sliven and Pazardzhik, the private forests prevail in the regions Berkovitsa, V. Tarnovo, Lovech, Smolyan and Sofia, and the religious forests are with biggest area in the regions Kyustendil and Berkovitsa.

Non-state forests are very unevenly spread in 28 administrative districts of Bulgaria. They are unevenly spread also according to the type of forests. The distribution of total forest area according to the type of property and by the type of forests in Bulgaria at the end of 2005 is presented in table 8.

Table 8: Share of the area of forests according to type of property and forests in ha towards 31.12.2005

Type of property	Coniferous	Deciduous High-stem	For reconstruction	Coppice for transformation	Low-stem	Total
Agricultural fund	26024	6130	5525	7386	8791	53856
Structure %	48,32	11,38	10,26	13,71	16,32	100
Municipal forest fund	93566	105007	61748	175949	28659	464929
Structure %	20,12	22,59	13,28	37,84	6,16	100
Physical persons	110032	54135	39262	156695	33556	393680
Structure %	27,95	13,75	9,97	39,80	8,52	100
Juridical persons	1895	1750	1086	3876	901	9508
Structure %	19,93	18,41	11,42	40,77	9,48	100
Religious	11535	4804	2185	3742	400	22666
Structure %	50,89	21,19	9,64	16,51	1,76	100
Total non-state forests	**248864**	**176679**	**110122**	**347981**	**72311**	**955957**
Structure %	**26,03**	**18,48**	**11,52**	**36,40**	**7,56**	**100**
Share%	**19,47**	**21,16**	**17,61**	**30,24**	**38,70**	**23,45**
State forests	932047	613770	502393	798696	114166	2961072
Structure %	31,48	20,73	16,97	26,97	3,86	100
Forests MOEW	97603	44451	12956	4030	395	159435
Structure %	61,22	27,88	8,13	2,53	0,25	100
Educational and training forest enterprises, schools, cultural centres	5812	4853	316	333	4	11318
Structure %	51,35	42,88	2,79	2,94	0,04	100
Total state forests	**1029650**	**658221**	**515349**	**802726**	**114561**	**3120507**
Structure %	**33,00**	**21,09**	**16,51**	**25,72**	**3,67**	**100**
Share%	**80,53**	**78,84**	**82,39**	**69,76**	**61,3**	**76,55**
Total	**1278514**	**834900**	**625471**	**1150707**	**186872**	**4076464**
Structure %	**31,36**	**20,48**	**15,34**	**28,23**	**4,58**	**100**

Source: Statistic of National Forest Board (NFB), now Executive Forest Agency (EFA)

The data in table 8 show that 19,47% from the coniferous forests, 21,16% from deciduous high-stem, 36.40% from coppice for transformation and 19.08% from low-stem and for reconstruction forests are non-state ones.

Although small and fragmented, private forest property has more and more importance for owners as source of additional income and timber. In 2005, about 1.6 million m^3 have been produced from non-state forests, which is 28% of the total quantity of produced timber.

4.4.2. Changes within public ownership categories

According to Art. 27 of the Forest Act (2011), States are forest areas that do not belong to individuals and legal entities and municipalities. Forest areas are state property, when identified as such by another law.

Public state property are:

1. forest areas - public property granted to management agencies for the implementation of their duties or in connection with national security and defense, or for health, educational and humanitarian activities;
2. forest areas - state property within the innermost belt of the sanitary areas of water sources and facilities for drinking water supply and sources of mineral water under the Water Act;
3. forest areas - state property in protected areas within the meaning of Art. 5 of the Protected Areas Act;
4. forest areas - state property included in the territories for the conservation of immovable cultural Heritage in the Cultural Heritage Act;
5. protected forest belts;
6. seed orchards, clonal, cultures and geographical dendrariums and forest

nurseries of national importance;

7. forestland in the 200-meter strip along the borders of the Republic of Bulgaria with countries that are not States of the European Union, as well as forest areas included within the systems and equipment for protection from the harmful effects of water.

Forest areas - state property, other than those listed above are private state property.

Municipal property (Art. 28 of the Forest Act) are forest areas, the ownership of which has been restored to the municipalities, as well as those acquired by them through a legal transactions or other methods of acquisition and are not publicly or privately owned. Public municipal property are forest areas - municipal property:

1. provide management departments to fulfill their duties or in connection with the national security and defense, or for health, educational and humanitarian activities;
2. within the innermost belt of the sanitary protection zones of sources and facilities drinking water and mineral water sources under the Water Act;
3. within the protected areas within the meaning of Art. 5 pt. 3, 5 and 6 of the Law on Protected Areas;
4. included in the territories for the conservation of immovable cultural heritage in the Law on Cultural heritage.

4.4.3. Changes within private forest ownership

According to Art. 25 of Forest Act (2011), privately owned are forest areas, the ownership of which is reinstated to physical and/or legal entities, as well as those acquired through a legal transaction or other acquisition ways and are not state or municipal property.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

Table 9: Main trends of forest ownership change

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	3
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	3
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2
• Other trend, namely:	0

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

4.5. Gender issues in relation to forest ownership

About this item in Bulgaria hasn't any data.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-

based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Bulgarian Biodiversity Foundation

BBF brings together people with different perceptions for the preservation of Bulgarian nature. Underlying everything we do is a belief that natural resources preservation is only possible through public awareness. We strive to increase recognition of the opportunities and benefits of protected areas and work for their long-term protection.

BBF

- strive for enhancement of the protected areas network in Bulgaria
- support wider involvement for management of the protected areas
- promote integration of biodiversity concerns into economic sectors
- involve local people in practical activities for nature conservation
- support pro-biodiversity businesses work for the enhancement of the environmental legislation
- create models for education in conservation biology
- foster national campaigns for an appreciation of Bulgarian nature
- promote biodiversity in its social, ethical, cultural and economic dimensions
- maintain the Bulgarian Biodiversity Clearing House Mechanism in partnership with the Ministry of Environment and Water
- develop management plans for protected areas, action plans for priority species, regional and municipal plans for development

BBF will continue to:

- integrate biodiversity considerations into economic sectors by applying the best practices
- support the establishment of the Bulgarian Natura 2000 network and encourage public participation
- revive the operation of the biosphere reserves of the UNESCO Man and Biosphere Programme in Bulgaria
- encourage the establishment and the management of protected areas across native borders.

Source: http://bbf.biodiversity.bg/en

BBF emerged from an intergovernmental Bulgarian-Swiss Biodiversity Conservation Programme in 1997. Since its creation BBF has supported efforts of the Bulgarian Government and the Swiss Agency for Development and Cooperation in implementing sustainable management practices in 7 key regions of Bulgaria – Central Balkan, Dobrudja, Bourgas Wetlands, Strandja, Eastern Rhodopes and Pirin - www.bsbcp.biodiversity.bg.

The BBF team has carried out numerous direct nature conservation activities; developed 11 Action Plans for endangered species and 12 Management Plans for protected areas; submitted documentation for declaring 11 new protected areas including 3 new nature parks, and 3 new Ramsar Sites. The "Small Grants Fund" of BBF supported the activities of more than 60 nature conservation organisations all over the country. The evolving and continuing commitment of BBF is developing towards and integration of biodiversity into all human activities rather than its initial role of strict protection.

BBF is the initiator and organizer of the fund-raising campaign "Send 1 SMS - save 1 m^2 nature!". The purpose of this campaign is to buy up valuable natural areas (meadows,

pastures, woods, swamps) that are private property in order to guarantee a long-term preservation of the biodiversity in them. It's our chance to keep a little wild land in order that the Bulgarian nature remains!

Table 10: Charitable, NGO or not-for-profit ownership of the forests

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		x	
• NGO with environmental or social objectives		x	
• Self-organised local community groups	x		
• Co-operatives / forest owner associations	x		
• Social enterprises			x
• Recognized charitable status for land-owners		x	
• Other forms of charitable ownerships, namely:			x

Green Balkans – Federation of nature-conservation NGOs

Green Balkans is a leading organization in the field of conservation of rare species and habitats in Bulgaria. The Organization was established in 1988 being Bulgaria's oldest nature conservation NGO. For its almost 20 years' existence, Green Balkans has won recognition from international and national institutions, authorities, and donors as a welcome partner and a highly reputable and competent organization. This is proven by the public confidence in the Organization and its almost 4,500 Bulgarian and foreign members. Thanks to Green Balkans' hundreds of volunteers and experts, as well as the international and national support, the Society achieved significant results in the preservation of Bulgaria's unique natural heritage. More than 110 projects have been implemented, as their investment in nature conservation exceeds $ 3,5 million.

Green Balkans operates in accordance with the Non-Profit Legal Entities Act (OJ, issue 81 of 6.10.2000). The Society has been registered with the Central Register of Non-Profit Legal Entities at the Ministry of Justice as an organization of "public benefit".

Green Balkans is a NON-profit, NON-governmental, and NON-political organization.

For that reason, and based on the principles set out in the Organization's Statutes, Green Balkans does not deal with political issues, neither does it participate in the political forces' campaigns.

For its almost 20 years' history, Green Balkans has proven to be a genuine and impartial defender of Bulgaria's nature, regardless of the political parties in power and the policy they proclaim, and despite the risks of collisions with the political forces or the managing institutions.

Green Balkans is an active member of a number of prestigious and competent international networks and organizations, among which:

- Conservation Volunteers Alliance (CVA) www.conservationvolunteers.org
- International Wildlife Rehabilitation Council (IWRC) www.iwrs-online.org
- Society for Conservation Biology (SCB) www.conbio.net
- Central and East European Working Group for the Enhancement of Biodiversity (CEEweb for biodiversity) www.ceeweb.org
- East-European Griffon Vulture Working Group and the Pygmy Cormorant Working Group
- Danube Environmental Forum (DEF) www.defyu.org.yu
- Bulgarian Business Leaders Forum (BBLF) www.bblf.bg

Source: www.greenbalkans.org/index.php

Environmental Organization Rhodope

Aims:

- To protect and conserve the unique biodiversity of the Rhodope Mountains.
- To support sustainable development in the region.
- To preserve nature, culture and traditions of the Rhodope Mountains through education and by raising public awareness.

In 1992 a group of students from Sofia

University “Sent Kliment Ohridsky”, subject of Biology, created the Youth section of Bulgarian Union for protection of Rhodope mountain /BUPR/. In order to implement effectively all the goals, the Youth section of BUPR has separated in 1997 as an individual organization and has registered as foundation “Youth Ecological Organization – Rhodope”. /YEO – Rhodope/.In 2002 YEO – Rhodope has pre-registered as a union “Ecological organization – Rhodope”, with socially useful goal, where the change, in fact, has affected the name and the address of registration which gives a better ability for local activity.

Since 1995 Environmental Organization Rhodope (EO-Rhodope) has been working for the protection and conservation of the unique natural diversity and cultural heritage of the Rhodopes, organizing biodiversity research, seminars, and youth camps, as well as green schools for children from orphanages. Since 1997 the organization has been implementing a program of sustainable tourism in the region.

Source:www.rhodopeflowersfestival.org/en/environmental-organization-rhodope

CASE STUDY 1: UNCOOPERATIVE PRIVATE FOREST MANAGEMENT IN THE REGION OF BERKOVICA]

Private forests occupy a significant share - 45.39% of the total forest area in the region. Forests of private individuals are managed solely by their owners without associations in any form, and the extraction of timber was done on contractual basis with private logging companies. During the period 2000-2010 the number of properties owned by natural persons increased by 51.7%, with a predominance of small-area properties. Around 96% of private forests in the region have an area less than 10 ha and properties with an area of over 500 hectares missing, which is evident from the follow Table.

Space and number of forest property privately owned by individuals in the region of Berkovica over the period 2000-2010

Year	Under 10 ha	11-100 ha	101-500 ha	501-10000 ha	Above 10000 ha	Total	Change %
2000	72869	40	1	0	0	72910	100
2005	105512	50	1	0	0	105503	144.7
2010	106352	951	0	0	0	107303	147.2

Source: Statistical data of Executive Forest Agency (EFA)

CASE STUDY 2: COOPERATIVE MANAGEMENT OF PRIVATE FORESTS IN THE REGION SMOLYAN]

Cooperative ownership and management of private forests in Bulgaria is typical for the region of Smolyan. It stems from the mid 30s of last century, and after 50 years break, due to the nationalization of forests, it is restored again after the restoration of property to former owners. A specific feature of the established forest cooperatives is that the ownership of the individual members of the cooperative is in common parts. In the end of each business year they receive dividend depending on the size of such shares of the total forest area, restored as property of the cooperative. In this region the private forest ownership is about 20% of the total forest area, which is 244 614 ha and is mostly (over 80%) of coniferous forests.

According to the EFA report (2010) there have been 49 associations of private forest owners in Bulgaria by 2010. These are mainly (90%) forestry cooperatives in the region of Smolyan.

Forests owned by self-organised local community groups?

Currently, only a very small proportion of private forests in Bulgaria can be assigned to forests owned by self-organised local community groups. This is mainly due to the recent recovery of ownership of these forests, many owners of individual properties, their diverse interests and lack of motivation for the creation of such associations. In recent years in Bulgaria several forest owners cooperatives are created in the region of Pleven and Teteven, and they can serve as a positive examples of such self-organised associations. Creation of future similar associations is expected mainly in central northern Bulgaria, where private ownership of forests accounts for a substantial share of the total forest area, but it is too fragmented to multiple properties with a large number of owners.

Forest co-operatives / forest owner associations?

Forestry cooperatives in the country are developed in a few regions, where increasing return on investment are expected, and where the forest raw material is of high quality and is close to the market, so that the transport is not much expensive. As

mentioned above such cooperatives are typical for the region of Smolyan, where they existed also prior to the nationalization of forests in 1948. Since 1997, when the private ownership of forests is recovered, cooperative-owned forests was returned to common parts, as was until 1948, which means it was not restored to the owners and their heirs, but to the cooperatives and their successors. By 2002, most cooperatives were recovered and continued their activities in the context of the new economic conditions. On this basis, currently in the region of Smolyan there are over 40 forestry cooperatives and other associations of private forest owners.

The main forest owner associations in Bulgaria are:

- BULGARIAN CHAMBER OF FORESTRY

BULGARIAN CHAMBER OF FORESTRY (BGSK), established on November 12, 1998, is a model of an association that represents the interests of forest owners and land managers and entrepreneurs in rural areas of national and European political level. It is independent and non-profit organization that is able to protect the interests of all rural entrepreneurs in Bulgaria by promoting the values of private property. BGSK mission is to support and enhance the economic viability, social utility and environmentally responsible sustainable management of private forests. BGSK serve the interests of one million forest owners.

During the last period BGSK focused its efforts to operate and develop as a competitive organization corresponding to European models and practices in order to represent the interests of forest owners. Following the event, many years of work achieved membership in international organizations, support, cooperation and partnership with other state and non-state institutions. Under development is a demand and the determination of appropriate forms of organization and management of retail and Large-scale private forest ownership. The efforts of the Bulgarian Chamber of forestry are aimed at promoting sound policy framework and strengthening of forest owners and organizations with the capacity to preserve and strengthen economically viable, socially beneficial, culturally and environmentally responsible sustainable forest management.

Source: www.bcfbg.org/01about_us.html

- ASSOCIATION OF THE FOREST OWNERS AND PEOPLE WORKING IN THE FOREST SECTOR

The association is Public benefit registered in the Central Registry, with address: s. Treklyano, obl. Kyustendil, obsht. Kyustendil, Bulgaria.

The objectives of the organization are to combine and coordinate the activities of forest owners and workers in the forestry sector in Kyustendil region, raising the qualification and status of public forest owners and workers in the forestry sector; support forest owners and workers in the forestry sector to the proper performance of their tasks on the management, conservation, improvement of forest functions and environmental protection, protection of the interests of forest owners and workers in the forestry sector to the public institutions; supporting local and regional authorities in development of legal regulations and legislation and support the public sector in the management of forest resources and environmental protection.

- BULPROFOR

BULPROFOR is a professional industry association of foresters and other specialists natural and legal persons who practice forestry activities (under Article 39, paragraph 1 of the FA). Founded on 28.01.2000 in Sofia. The association is one of the few non-governmental organizations in Bulgaria and only branch structure in the forestry sector , which is certified for quality management standard based on ISO 9001:2000, issued by MOODY INTERNACIONALISO 9001:2000 Certified QM System, Moody International Q070203.

Main objectives of BULPROFOR are:

- To coordinate efforts and to assist its members for their full realization as practitioners and entrepreneurs in the forestry sector .
- In the context of the European Development of Bulgaria , to protect and promote their professional, ethical and material interests at home and abroad.

The main activities are as follows:

- Maintain and develop a national network of consulting Forest Information Centers "advice and services to owners of forests" - organization of internal structure of forest entrepreneurs – individuals and companies with diversified activities in the forests.
- Conduct training through training courses, exchange of experience at home and abroad forest contractors for contemporary models and practices for sustainable forest management and use of forest resources.
- Participate in projects, programs and other activities of European Commission, FAO, UNDP - Rhodope Project, GTZ - "Project to support Agro and forest structure in the Rhodopes" BSHPG - Foundation "Sylvica" and others donor organizations that support and enhance the capacity for effective management of the organization and its members - entrepreneurs in the forestry sector.
- Publishes reference and information and literature practical for a wide range of specialists foresters and contractors in the forestry sector.
- Maintain an information portal www.bulfor.net/index.php forest with comprehensive professional and market information for the forestry sector in Bulgaria and forest contractors.
- Participate in forums and correspondence in support and protection of professional rights and interests of its members. In this activity BULPROFOR partnering with other industry organizations in the forestry sector, incl. forest owners, as well as with other institutions and agencies.
- Actively cooperate with government and non-governmental organizations, incl. with international ones, for production and application of:
  - regulations and decisions governing forest management in Bulgaria, including National Forest Strategy;
  - the introduction of European criteria for sustainable forest development, incl. IV-th Ministerial Conference in Vienna, 2003, forest certification, multifunctional forestry, biodiversity conservation , etc.
  - introducing ISO 9001-2002 standards, 14000-2000, 18000-1999/2002 - Policy and Planning, Audits, Procedures and Development, Monitoring, Training.
- introduction of European standards for the classification of untreated and treated wood;
- Development of the forestry component of the National Plan for Rural Development (by Axis - 1: Improving the competitiveness of forest contractors in GA-2: land management / environment and the countryside / and Axis-3 Improving quality of life and promote diversity, incl. most heavily on component qualification and training of forest owners and forest contractors themselves).

National Network Forest Information Centers "Consulting and Services for forest owners"

With the adoption in 2001 of the document "Concept - Model for consulting and working private foresters in forest owners" BULPROFOR actually has a structured organizational form of a coherent advice network (according to the accepted organization chart).

Network of forest consultants, developed mainly in 2004-2005 with the participation and support of other organizations more entrepreneurs and forest owners. In early 2006 the network included 11 offices in areas with a large focus of non-state -owned forests (in the registration process are still 3 available).

Source: www.bulprofor.org

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years

mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

In Bulgaria has not registrated such organizations.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Bulgaria

5.1.1. Historical overview

Till 1997 forest branch was organized and functioned according to the requirements of Law for Forests, 1958. The state was sole owner of forests and the structure of management was organized on three levels:

- Committee of Forests at the Council of Ministers - central management structure;
- Regional Directorates of Forests – regional forest managements (17);
- State Forest Enterprises (Local Forestry Services) (about 176).

Besides these bodies in the structure of the Committee of Forests exist two Forest Seeds Stations, two Forest Protective Stations, two Experimental Stations and one Poplar Breeding Station.

Actually, the first step of the reorganization in forestry sector started in 1991 with the establishment of the Forest Committee at the Council of Ministers, as an authority financed by the budget for conducting of the state policy for development of forestry, hunting husbandry and state control on forest management and protection of forests, game and fish richness. With its establishment, the management of the forestry was separated from the management of wood-processing, furniture and cellulose-paper industry. The multifunctional forest management approach was adopted. As regional and local bodies of the Forest Committee, Regional Forest Directorates were organized and respectively the State Forestry Enterprises, later renamed as forestry units. In fact, they appear to be successors to the existing structures, by preserving the complex character of the forest units, but two new directions separated - protection and reproduction of the forest resources, on the one hand, and ecologically complying forest utilization and by-work, on the other hand. The supporting of the first direction of the forestry enterprises and of the Regional Directorates on the forests was realised until 1997 by the created specialised fund "Forestry Measures and Construction of Forest Roads". The second direction, realising the activity for utilization in the forests operated on the principle of the self-support and internal economic account. This partition of the activities created possibilities for their future separation in independent production and administrative units. Since 1995 there was organized Directions of Nature Parks as different administrations responsible for protected territories within of Committee of Forests.

The forest branch had absolute independence and all forestry and logging activities were accomplished by complex forest enterprises. The structure reform in forestry in Bulgaria started after accepting the Forest Laws (end of 1997). The main aim of this reform was dividing the functions of complex forest enterprise.

The state functions of control are the task of bodies and administrative structures of National Forestry Board (NFB) at the Ministry of Agriculture and Forests, which was created according the requirement of Law for the Forests. For fulfilment business activities in the forestry sector there were created State Limited Joint-stock Companies by dividing former complex State forest Enterprises.

The new functions and tasks of three level structure of management of forests are the following:

NFB manage and controls: Organization of forest fund; Regeneration of forest in the forest fund; Utilization of forest and forestlands in the forest fund; Protection of forests and forestlands in the forest fund; Building on the forestlands; Financing of activities in the state forest fund.

NFB develop and suggest proposals for acceptance of new laws and for improving laws trough the Minister of Ministry of Agriculture and Forests to the Council of Ministers; NFB suggest to the Minister of Ministry of Agriculture and Forests for accepting from the Collegiums normative documents concerning implementation of the Law for the Forests (instructions, methodics, regulations etc.).

Regional Management of Forests (16) (second level) accomplish management of state forest fund and control of the following activities: organization of forest fund; regeneration of forest in the forest fund; utilization of forest and forest lands in the forest fund; protection of forests and forest lands in the forest fund; building on the forest lands.

State Forestry (176) (third level) with area from 8 to 42 thousand ha) accomplish the same functions as Regional Management of Forests at the local level. Besides these basic bodies in the structure of the NFB functioned several other administrations:

- Forest Seed Stations – 2;
- Forest Protection Stations – 3;
- Experimental Stations – 2;
- Directions of Nature Parks – 9;
- Game Breeding Stations – 24;
- Poplar Breeding Station – 1;
- Information System for Forests – 1;
- Editorial office of magazine “Gora”.

63 new created State Limited Joint-stock Companies with 100% state share capital accomplished business activity in the beginning of reform. The number of State Limited Joint-stock Companies was increased up to 82. The State Limited Joint-stock Companies are transitory structures, which were necessary in the transition period from old to New Forest legislation.

After the re-structuring of the former forestry units during the years 1998 and 1999 in the sphere of the forest economy of Bulgaria 63 trade companies with state property have been established for the realization of the economic activity in the woods and the lands of the forest fund. In parallel with this process also began the process of privatization of the existing before trade companies in the same field. These were mainly forest tractor stations, repair shops, units of “Gorstroy” Ltd. and other enterprises, executing mainly service in the sphere of the forestry and registered as trade companies before the process of structural reform in the forestry. Thus, in Bulgaria in the beginning of 1999 were formed the first joint-stock companies with state and private participation in the forestry sphere. Since the middle of the same year, by order of the Minister of Agriculture and Forests procedures have been open for privatization of large number of the newly-created forest-economic trade companies with fully state owned property (EAD.

Since the beginning of 1999 in Bulgaria the economic activity in the forests is realized by 61 trade companies, registered as Sole Joint-Stock Companies (EAD) with state owned property, 14 Limited Liability Companies with fully state property (EOOD) and 6 Limited Liability Companies (Ltd.) with mixed form of property, state and private participation. These are totally 81 companies, mainly state companies, realizing various economic

activities in the forests. All they are branch subordinated to the Ministry of Agriculture and Forests and are in the structure of the Ministry of the operating at that time Department "State Property", and later at the established Directorate "Privatization, Re-structuring and State Participation".

Until February 2002 out of the existing and established in the period of the structural reform 86 trade companies at the Ministry of Agriculture and Forests, working in the sub-branch "Forestry", 55 companies were privatized, 7 companies were in liquidation (for two of them the liquidation is over) and 24 companies were still with 100% state participation.

The greater part of the privatized companies is bought by the created by themselves for this purpose worker-manager's companies (WMC). At that time they are mainly joint-stock companies with mixed property, where in most of them prevails the private property and the state participation is small. Only in one of the privatized companies the state blocking quote is preserved (33% state participation), and in all the rest the relative part of the state participation is under 30%, the allotment is as follows:

- 24 companies with state participation from 20% to 30%;
- 7 companies with state participation up to 20%;
- and 23 companies, in which the state part is bought entirely, that is at the moment they are fully with private property.

Management of state forests and the control of all forests were, till July 2007, the responsibility of the National Forestry Board (NFB) under the jurisdiction of the Ministry of Agriculture and Forests. The NFB is a state budget administration with three level structures. The regional and local structures of NFB are the 16 Regional Forestry Boards, 141 State Forestries, 10 Nature park directorates, 37 Game Breeding Stations and 19 research, seed control, and other stations and sections. Revenues from sales of forest products are transferred to the state treasury and cannot be directly used as working capital for forest operations. At the same time, annual allocation of state budget funds do not recognize the seasonal nature of forest activities and are not sufficient to carry out management functions adequately. Due to these circumstances the forest sector was in a crisis over the last years. A decree of the Council of Ministers from July 2007 has restructured the National Forestry Board into a State Agency for Forestry with its own budget and resources under the direct jurisdiction of the Council of Ministers. The structure of the newly established SFA is not clear yet. Building on European good practice examples, the basic approach foresees the separation of management and supervisory functions to improve efficiency, transparency and accountability of all institutions involved. It is supposed that the SFA becomes totally independent at the beginning of 2008.

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. Management of state forest

Operative institutional frame in the forest sector after 2011 is based on the new Forest Law that has not an analogy in over 130 years forest history of Bulgaria. As the main owner of forest territories in Bulgaria – the state (71%, without national parks) has apparently created two functional branches with common principal –Ministry of Agriculture and Foods, respectively with splitting of control and administrative functions from business functions, connected with direct management of forest territories. Implementing the control and administrative functions is committed to the EFA, financed by state budget, and the business functions in the forests state property – to the state forest enterprises, financed by incomes from business activity. In addition to this, it is regulated equity of all type of property on the forest territories and it is given relevant rights and obligations to the non state owners of forests.

The main goal of this institutional frame is the financial and management independence of both functional branches to reach better results – from one point at the protection of forests, and from another - to reach better financing results, which would lead to the fulfilment of projected activities in the forests

and in general to the reinvestments in the forest sector.

As a result of last structure reform in the state forest sector related to EFA is separated state forest administration with control and public functions with their structures – regional forest directorates (RFD) and specialized territorial sections (STS), and in relation to state forest enterprises (SFE) – business units, which implement the functions on management of state forest territories. In this way EFA and their structures don't participate directly or indirectly in the management of state forest enterprises, thus functions, they implement on all owners of forest territories, are mainly control (fig. 5 and 6).

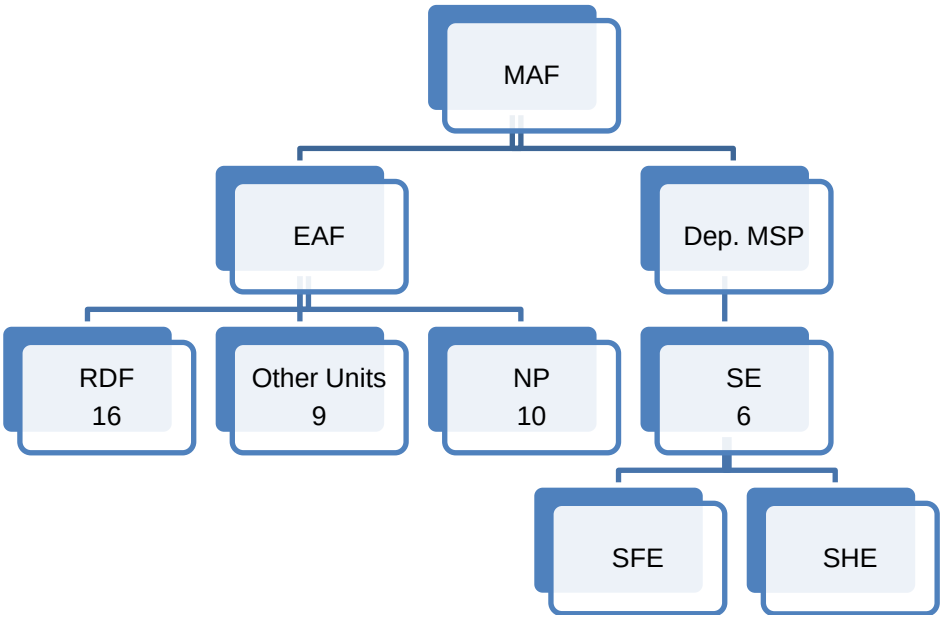

Figure 5: Organization of management of forests in Bulgaria

MAF – Ministry of Agriculture and Food; EAF – Executive Agency of Forests; RDF – Regional Directorate of Forests; NP – Natural Parks; Dep. MSP – Department of Management of State Property; SE – State Enterprises; SFE - State Forestry Enterprise; SHE – State Hunting Enterprise

Now EFA is organized on two levels – central management, 16 RFD and relevant STS, including directorates of natural parks.

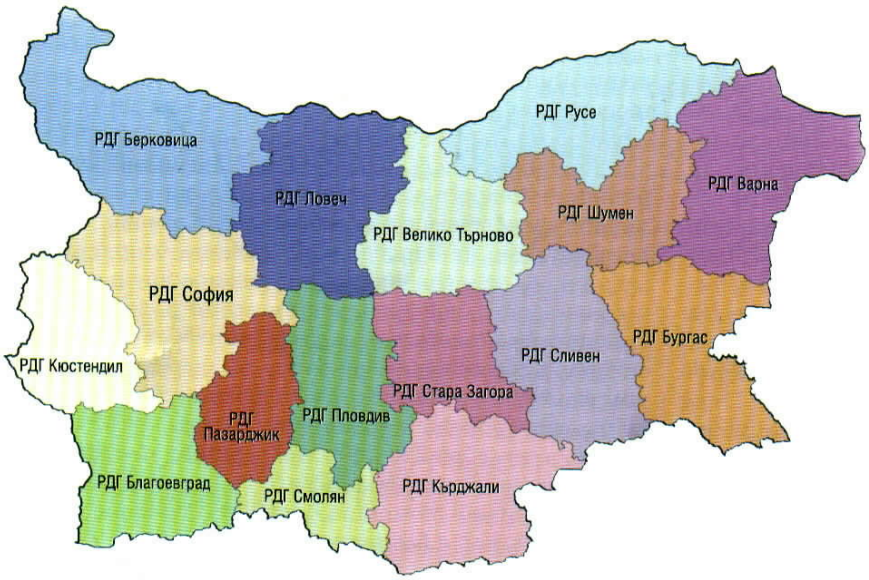

Figure 6: Territorial distribution of Regional Forests Directorates in Bulgaria

Forest territories – state property are managed by six forest enterprises in the structure of which as territorial units are included 164 State Forest Enterprises and State Hunting Enterprises. In their activity they are helped by department “Management of state property” and section “State Forest Enterprises” at the MAF (fig. 5 and 7).

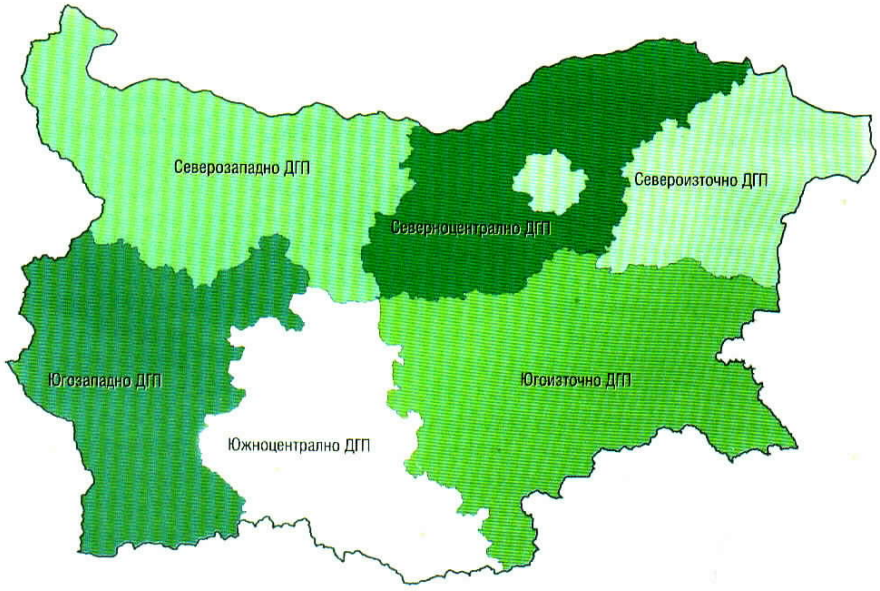

Figure 7: Territorial distribution of State Enterprises in forestry of Bulgaria

According to the requirements of the new Forest Act (2011) in Bulgaria these six State enterprises for management of state forests are based on the six economic regions in the country. These are as follows:

1. **Northwestern State Enterprise (SZDP)**

According to the administrative division of the Republic of Bulgaria SZDP covering all the districts of Vidin, Montana, Vratsa and Pleven and parts of Lovech and Sofia.

In the forestry division SZDP includes the territorial scope of activity of the Regional Forest Directorate (RFD) Berkovitza, part of Lovech RFD small part of RFD Sofia. Territorial scope of the Northwest state enterprise includes areas of activity of these state forestry units (DGS) and state hunting units (DLS): Berkovica DGS, DGS beef DGS Montana, Lom DGS, DGS Chiprovtzi, Belogradchik DGS, DGS Vidin, Vratsa DGS, DGS Mezdra Oriahovo DGS, DGS Midzor, Borima DGS, DGS Lesidren, Lovech DGS , DGS Nikopol, Pleven DGS, DGS Trojan, DGS Cherni Osam, Mermaid DLS, DGS Godech Svogbe DGS, DGS Botevgrad DLS Vitinya. The total area of SZDP is 1961 426 ha, of which 512 022 ha are forest areas and from them 289 732 ha are state property. The majority of the forests of the premises are deciduous. The highest participation are oak and beech forests. North now bordered by the Danube River, along which there are five state forestry units - territorial divisions of SZDP, the task of which is to create a poplar plantations of timber and protection of the coasts and islands of the River Danube. Annual estimate of logging on in 2013 is 429 thousand cubic meters.

By the end of 2012 have been planted and created new forests on an area of 2246 dca of which 1986 dca poplar. Raised are 13 399 dca of young trees. Hunting and fishery measures:

Developed and maintained 240 dca of game lands and 130 dca of meadows and clearings game. There are good opportunities for hunting of deer, fallow deer, wild boar etc. The company has 786 employees.

Source: www.szdp.bg

2. **North - Central State Enterprise (SCDP)**

Now manages the state forest areas in five districts - Gabrovo, Veliko Tarnovo, Ruse, Silistra and Razgrad. It is composed of 17 regional offices, including 13 state forestry

units and four state hunting units. The total area of forests is 379 023 ha, of which 246 175 ha are state forest areas (65%). The company has 992 employees. The main activity is related to forest management and forest owned. The main income comes from the sale of timber and organized hunting tourism. For maintenance of Ecoravnovesie and the biodiversity annually perform various activities related to reforestation of forest areas and displacement of game. Given the large territorial scope and number of staff, SCDP plays an important economic and social role in the region.

Source: www.scdp.bg

3. Northeast State Enterprise (SIDP)

Now manages the state forest areas in four districts - Shumen, Varna, Dobrich, Targovishte. It is composed of 18 regional offices, including 13 state forest units and 5 - state hunting units. The total area of the state forest areas included in the area of activity of the SIDP - Shumen is 287 892 ha forested areas from which 271 222 ha - 94% are afforested lands. The total standing timber is estimated at 36 million cubic meters, and the average use of timber from state forest areas is 520 thousand cubic meters. Now it has a nine forest nursery, 2 of which are of national importance. The number of seedlings produced amounted to 2.5 million.

The varied natural conditions favour the development and spread of many tree and shrub species that form the diverse composition, age, construction and condition of plants. The highest participation in the forested area are forests of oak, hornbeam, oriental beech, linden, acacia, black pine and ash. Artificially introduced through planting white and black pine, occupying 9.6% of the area locust - 10% and red oak - 2.5%. Important place and protective forest belts, located in Dobrich and Shumen. The scope of the SIDP DP - Shumen has a wide variety of protected territories and objects, including two natural parks - Nature Park "Golden Sands" Nature Park "Shumen Plateau" three reserves - "Kamchiya", "Kaliakra" and "Bukaka" eight managed reserves, and many protected areas, landmarks and objects. The territory of SIDP goes way seasonal migration of birds VIA PONTICA that is national, European and global importance and is the subject of increased scientific interest and international legal protection.

The varied natural conditions SIDP - Shumen and rich vegetation, a natural basis for the distribution of many species of birds and mammals, some of which are hunted.

The most common game species subject for hunting are red deer, roe deer and wild boar, hare, partridge and pheasant. Also of interest are mouflon, fallow deer, quail and waterfowl. To preserve and enrich the diversity of the game, its reproduction and dispersal and improving the trophy qualities has five state hunting - territorial divisions of SIDP - Shumen, namely: DLS "Cherni Lom" – Popovo, DLS "Palamara", DLS "Balchik", DLS "Sherba" and DLS "Tervel". Leaders in the state hunting are DLS "Cherni Lom" – Popovo, DLS "Balchik" and DLS "Sherba". Game in these three state hunting units has excellent trophy quality as much of the trophies received gold medals CIC.

Source: www.dpshumen.bg/zanas.html

4. Southeast State Enterprise (UIDP)

Headquartered in Sliven the company manages the state forest areas in five districts - Burgas, Sliven, Stara Zagora, Haskovo and Yambol. Members of the enterprise include 31 regional offices, including 26 State forestry units and 5 State hunting units. The total area of forests falling within the territorial scope of the state enterprise is 913 822 ha, including state forest areas 644 102 ha (70%). The altitude in UIDP is between 0 m altitude, century - sea level and 1536 m altitude, century - Chumerna. There is a variety of different types of habitats suitable for the existence of many plant and animal species. The main tree species on the premises are beech and oak from deciduous tree species, as well as pine, white pine and spruce from coniferous. The average annual wood use in state forests provided by the forest management plans of territorial divisions amounted to 894 354 cubic meters. Planned average annual planting an area of 1800 hectares and for the production of planting material required now it has 39 forest nursery, including four nursery with national importance.

Source: www.uidp-sliven.com

5. **South-Central State Enterprise (UCDP)**

Based in the town of Smolyan, the company manages the state forest areas in four districts - Kardjali, Pazardjik, Plovdiv and Smolyan. Members of the enterprise include 43 regional offices, including 36 State forestry units and 7 state hunting units. The total area of forests falling within the territorial scope of state enterprise is 853 705 ha, including state forest areas 721 846 ha (85%). The altitude in UCDP is between 100 m altitude - along the river Maritsa and 2198 m altitude - Grand Perelik. There is a variety of different types of habitats suitable for the existence of many plant and animal species. The main tree species on the premises are white pine, spruce, pine from coniferous and also beech and oak from deciduous tree species. The average annual use of wood provided by forestry projects of territorial divisions amounted to 1.318 million cubic meters. Planned average annual planting an area of 690 hectares and for the production of planting material it has 35 forest nursery, including six nursery with national importance.

Source: http://www.ucdp-smolian.com/about.php

6. **Southwestern State Enterprise (UZDP)**

Based in the town of Blagoevgrad, the company manages the state forest areas in seven districts - Blagoevgrad, Kyustendil, Sofia city, Sofia region, Pazardzhik, Pernik and Lovech. It is composed of 37 regional offices, including 32 state forest units and 5 - state hunting units.

The total area of woodlands covered the southwest state enterprise is 934 968 ha, of which 686,310 ha are state forest areas (73.4%). This is an extremely valuable natural resource that determines the large volume of activities in the forests. The main coniferous tree species are: white and black pine, spruce, and fir. Deciduous forests are represented mostly by beech and oak. Geographical location, topography, climate soil fertility, water resources and other unique natural features for extremely diverse fauna, game and fish wealth. South-western state enterprise inhabit red deer, fallow deer, wild boar, deer, wild goats, grouse, as well as bears, wolves, jackals, foxes. Colourful picture of wildlife is complemented by numerous rabbits, partridges, pheasants, mountain rock partridge and migratory species. The territory of UZDP passes second largest air corridor for migrating birds from Europe to Africa - Via Aristotelis. The presence of rare and endangered species of great interest to ornithologists, nature-lovers, for photographers. Three major rivers - the Iskar, Struma and Mesta, crossing South-western state enterprise, along with their tributaries are prerequisite for a varied and rich fish fauna and represent year-round interest for lovers of sport fishing. The average annual use of wood provided by forestry projects of territorial divisions in the composition of UZDP so far is about 1 million cubic meters. To produce the required seedlings for afforestation now it has 67 forest nursery, 4 of which are of national importance. Hunting business is concentrated in the five state hunting units - "Iskar", "Vitoshko Cold", "Aramliets", "Dikchan" and "Osogovo". The efforts of hunting specialists are focused on improving the gene pool and health of game populations in order to achieve better exterior and trophy quality.

Source: www.uzdp.bg/bg/

Management of state forest areas is carried out by these six state forest enterprises with a two-tier structure, headquarters, regional offices - state forest enterprises and state hunting enterprises.

5.2.2. Management of non-state forests

The support for non-state forest in Bulgaria is very limited. In the Law for the Forests and Regulations for Implementation the Law for the Forests are provided the following free services for private owners: protection of forests, providing the protected activities, developing of plans for anti-fire activities, making of inventory of forests, developing of forest management plans for private owners, which are combine for joint planning, placement the seedling for afforestation on agriculture lands, for experimental and science purpose etc.

The management of non-state forests in Bulgaria is carried out in different ways:

- A big part of forests and forestlands of physical persons is managed by their owners. Mainly the private owners with

forests bigger than 10 ha manage their property alone, according to the requirements of the existing and new forest management plans.

- Forest owners, possessing small pieces of forests, have difficulties to manage them. The biggest part of them possesses very small parcels (mainly less than 1 ha) and this is the cause for difficulties.

Religious communities also manage their forests alone. There are several monasteries in Bulgaria, which have big own forest area. They use forest specialists as consultants or as managers for the management of forests.

- In the region of Smolyan (the Rhodopes), we had traditions in the past in management of private forests by co-operatives. More than 40 co-operatives for management of private forests were established again in this region. The co-operatives implement harvesting, wood processing, selling of timber, wood and non-wood products, forestry operations, etc.

Natural and legal persons who are the owners of forest land can operate in their own territory when they are registered in the publicly Register of EFA or by assigning the state forestry and state hunting enterprises, municipal forest structures, and individuals or traders entered in the registers of EFA.

Forest owned by private individuals and companies covers 10% of the forest area in Bulgaria, mainly in the districts of Smolyan, Lovech, Veliko Tarnovo and Montana. Properties are highly fragmented, 94% of the forest properties has an area up to 2.0 ha. The average area of individual forest property is below 1.0 ha. A significant number of the private forest owners often do not have the specific knowledge and experience in forest management. Their interest is limited to a single use of wood resources for personal purposes - construction, heating or income generation. During the analyzed period, the annual use of wood in the forests - owned by private individuals and legal persons to the amount of harvested timber in the all forest areas is as follows: 2006 - 19.0%, 2007 - 20.2%, 2008 - 18.2%, 2009 - 15.7%, 2010 to 13.4%, 2011 - 13.5%. In absolute terms, the amount of use of wood from private forests decreased from 1,384,990 m^3 in 2006 to 859 630 m^3 in 2009, then rose to 999 240 m^3 in 2011. The trend towards a reduction of the use of wood from private forests is mainly due to the reduction in the total area of plantations reached the age of maturity.

One part of forest owners has begun to establish their organisations and guilds for mutual forest management. About 49 private forest co-operatives have already been established in the country, most of them being in Smolyan district, where this kind of management has been widely popular before forests nationalisation.

5.2.3. Management of municipality forests

The communities in Bulgaria are the biggest non-state forest owners.

In 2008 the Association "Municipal forests" was established, which three years later have 97 members of municipalities from different Bulgarian regions, with the holding of 290 000 hectares of forest. Association actively interact with MAF and the EFA and is particularly active in assisting municipalities to create structures for management of municipal forests, increasing the capacity of workers in the municipal forest structures in forest management and in preparation for projects under the RDP and other EU programs. According to the Association "Municipal forests" by the end of 2011 in the country were built 15 municipal forest bodies.

Municipalities, which are forest owners, are in the beginning of a process to establish special structures for forests management. This process should be encouraged. Although the presence of forest co-operatives and some guilds of private forest owners, the level of association of non-state forest owners is still low. The role and responsibility in forest management on the side of non-state forest owners grows more and more.

5.3. Main opportunities for innovative forest management

There are alternatives for the development of the management of private forests: establishing an office to advise the owners of private forests - the example of many countries of the EU support, including and

resources, consolidation of private forest estate, association and contract management; cooperation during the implementation in forest areas of specific activities of common interest, providing low-interest and interest-free loans for activities related to the management of private forest estates - marking, assortment, sales of wood protection and conservation, tax incentives for forest management, lower capital gains tax or tax on rent. Opportunities for more effective support from the state for the development of non-state forest, including technical and financial help may be the subject of a realistic analysis and recommendations to form the basis of preparation of the National Development Plan of non-state forestry.

A good example of this is the work of the existing National Association of owners "Gorovladelets", that unites currently 25 cooperatives across the country, four private family revirs, 1 monastery, 2 municipalities and eight individuals - owners over 500 ha forests. This association manages forest area of 38 000 ha. The association represents the interests of 82,000 members, cooperate with local authorities and organizations and participates in national and international programs and initiatives in the area of private forests for their sustainable development and the formation of ecological culture among the owners. Active partner of the state forest administration in the development and implementation of regulations and decisions related to the management of private forests.

The management by cooperatives is popular mainly in the region of Smolyan. We need to exchange experience between successful cooperatives and forest owners in other regions of Bulgaria.

In Bulgaria as new or innovative forest management approaches may be consider cooperative management and management of forests by communities. Especially creating of association of private forest owners and association of municipality forests are new management approaches in Bulgaria.

In order to begin to manage properly their forests, new forest owners can receive help from the state and from trained foresters. The National Forestry Board and now the Executive Forest Agency, in collaboration with NGOs, works together for improving the knowledge and training of private forest owners.

5.4. Obstacles for innovative forest management approaches

The basic obstacles for implementation of innovative management approaches in private forests and the lack of sustainable economic interest are: fragmented and small private forests; low income and low profitability of this type of forest property, increasing demands for sustainable forest management, poor road infrastructure, lack of support from state institutions incl. resources to encourage the formation of associations of owners of private forests for their sustainable management. At the national level, policy on private forest owners is often weak and insufficient effective. At this stage the functions and support measures are limited.

New private forest owners have insufficient experience, as well as no necessary specific knowledge and skills for in management of forests. They also have insufficient knowledge about their rights and duties. For the moment, the bigger part of forest owners prefer to manage their property by themselves. Taking into consideration the small area of single ownerships, this type of management is ineffective.

Lake of experience and lake of knowledge for creating and working in cooperatives in forestry are between the main factors that stopped forest owners in other regions to create forest cooperatives.

In spite of the measures undertaken by the state forest administration, considerable problems appeared in the management of private forests, i.e.:

- absence of interest and experience by owners for management of private forests;
- considerable scale of utilisation of private forests;
- insufficient normative regulations;
- constantly changing normative regulations;
- increasing requirements of the society to the owners for maintenance of ecological balance in forests and their sustainable management;

- poor infrastructure for normal carrying out of necessary activities;
- insufficient resource support of small owners for establishing of guilds.

The problems mentioned above have significant influence on small private forestry. In this case there is no interest to forestry activities because they require big investments and the fragmentary character of this forestry makes it unprofitable. There is absence of experience in Bulgarian forest management in conditions of various types of property. That's why encouraging the management of private forests is especially important with view of sustainable forest management.

Main ways to overcome the weak points in management of fragmented small private forest estates are:

- consolidation of small private forest property;
- uniting of private forest owners for mutual management of forests;
- commitment of private forests management to state forestry structures.

CASE STUDY 3: NATIONAL ASSOCIATION OF PRIVATE FOREST OWNERS OF BULGARIA (NAPFOB) "GOROVLADELETZ"]

Bulgaria is a rich country in forest resources, with about 4.15 million hectares forests, where 74.5% are state forests, 12% are communal forests, 11% are private forests, 0.5% religious forests and 2% former agricultural lands. It's worth to be mentioned the very good state of the forests, mainly of the conifer species such as Picea abies and Pinus silvestris. Mrs. Anelia Dimitrova Pochekanska, President of the National Association of Private Forest Owners of Bulgaria, as well as owner of 600 hectares of forests presenting the association, the history of establishment of this association, the purpose, organization, functioning, achievements, tasks and responsibilities.

Brief history of establishment of the National Association of Private Forest Owners

The genesis of National Association of Private Forest Owners of Bulgaria begins since 2002, but the history of forest cooperatives begins earlier than that, where the first cooperative "Pamporovo" was established in 1905, whereas the other cooperatives were established somehow later during 1912 to 1915. After 1915 each cooperative was obliged by the law to be registered at the respective institutions. The particularity of these cooperatives was that in the kingdom time, the forest area of each cooperative, is bought as a single unit by collecting the money of all inhabitants of the village and based on the amount paid by each one, the total forest are is partitioned. Thus, nowadays each owner doesn't have an exact map of the location of his forest area. But this does not impede them to cooperate or to have conflicts amongst them, it fosters furthermore the cooperation. Functioning of cooperatives has continued till 1947, the time where all forests were nationalized in the time of communism system. After the system broke down, by initiative of private forest owners started gathering of all forest ownership documentation they had. Re-establishment was done after 1990 and cooperative "Gora" was re-established in 1992 and in 1996 it has requested abrogation of the law of 1947, which is achieved in 2000. All forest cooperatives were functioning as independent till at 2002, the time where was established the National Association of Private Forest Owners, which has as its aim the sustainable management of forests, lobbying and protection of private forest owners interests and supporting to establishment of economically viable and effective business units.

Organization and Functioning of the National Association and of Forest Cooperatives

The NAPFOB is composed by 22 forest cooperatives, 1 commune, 2 forest companies, 2 joint-stock companies and 15 physical entities. All in all, the association represents interests of about 85 thousand forest owners. The structure of forest cooperatives is composed by: General Assembly, which is the highest governing body and is composed by all private forest owners, Control Council, Management Board, Chairman, and Operative Units. For election of Governing Bodies of Cooperatives, is convened the respective assembly of each cooperative, each year at the end of April, whereas for election of Governing Council of the National Association and its leaders is convened each year at the end of June. Each cooperative has its own staff composed by administration, operative units, as well as by a forest technician and a forest engineer that in total varies 2 to 5 people. The Forest Cooperative "Gora" par example, possesses 1652 hectares of forests, mainly with Picea abies but even Pinus halepensis and it's comprised by 3128 forest owners, with various area size and amongst them. From it, 1216 owners were active members of the association, paying the annual quota and who were influencing in the forest management and have the right to benefit from economic activities carried out in forests, whereas the other part, who are not members were benefiting only from the rent of forest use.

Achievements of the National Association of Private Forest Owners of Bulgaria

Among achievements of the National Association, is that the forest owners are responsible and organize their forest management and guarding. The forest cooperatives organize and are allowed to issue all the respective documentation regarding to harvesting and transportation of the wood material. Those have the rights and responsibilities equal as the state forest bodies and communal forest owners and there is a single supreme authority that controls them all. As well, in 2010, as it is said "union makes power" the National Association has lobbied and has reached to become part of drafting of the new forest law, where for the private forest there is a particular chapter, prepared by the association itself.

Tasks and responsibilities of the Forest Cooperatives

Forest Cooperatives have tasks and responsibilities clearly defined by law. They are responsible for managing and guarding of the forest area they possess, whereas the control is conducted by a supreme state body, which controls the state, communal and private forests. Forest governance is carried out based on the management plans, which are drafted by state companies and after their approval these plans are submitted to forest cooperatives. After submission of the management plan to cooperatives, then they are responsible for its implementation. For conduction of exploitation operations foreseen in the management plan, the cooperatives contract companies of forest exploitation. Marking of trees which are going to be harvested, is done by the forest technician and it's controlled by the responsible forest engineer. To start with exploitation, responsible forest engineer is informing by email authorities for timber marking done and receive permission answer in a period of three days to start with harvesting operations. For each quantity of harvested wood material, monthly and annual reports are prepared and are submitted to the state forest bodies electronically by the chairperson of the cooperative.

The annual exploited quantity was 8 thousand cubic meters. The exploitation costs of wood brought to forest road were 14 euro/m^3, but this cost went lower by selling the residues remained from exploitation to the exploitation company with a price of 5 euro/m3. The task of the exploitation company was till to extraction of the wood material to roadside, then afterward another company was buying the wood material. The price of round wood of Picea abies varied according to the seasons but it reached up to 60 euro/m^3. As well, in this forest area could be noticed the presence of several ski tracks, what evidences that this cooperative, except numerous forest resources was utilizing even the winter tourism potential of skiing, of which could provide considerable incomes from the rents of using the forest areas by the skiing companies, where for an hectare was paid 400 euro a year.

For two years in a row, in this area was developed the fair for promoting the technology in exploitation and processing of wood, supported even by the government of Bulgaria. A fair which aimed to encourage all forest cooperatives for improving and increasing the scale of mechanization in forest exploitation, as well as increase of the processing scale of the wood material, as it is known, by increasing the processing scale, the margin of incomes increases too. Near the place where the fair was held, easily could be noticed a metal tower about 20 meters high, which made curious the participants. It was a tower for fire monitoring, on the top equipped with a digital camera with a rotation angle of 360 degrees and with long distance observation capacity, and even more special it was that the energy used for supplying the camera was solar. This tower and many other similar are placed throughout the whole country and are connected in a network with a central monitoring system. In case of noticing smoke, they signalized the location, thus it was easier for the respective structures of fire extinguishing to put the fire under control.

Another forest cooperative named "Chil Tepe" in the commune named Laki, which is also member of the National Association of Private Forest Owners possess 2500 hectares of forests and was composed by 855 owners and the cooperative's staff was composed by 48 people, including working staff in wood processing mill. The chairman of this cooperative expressed that the EU in the framework of the Rural Development program had financed this cooperative for buying of equipments and building of a sawmill. A sawmill is with a processing capacity up to 60m^3/day. The process of processing is fully automatic. The mill has two drying chambers with retentive capacity of 40m^3. The fuel used for putting the furnaces to work was chips and sawdust, what enabled the maximal use of residues from processing of wood material and reduction of the cost at minimum. The reason for having these two furnaces was trading of the sawn wood according to customer demands, something that is an added value in the market. Incomes of this cooperative were considerable. This is a good indicator of the advantage of organization in cooperatives.

CASE STUDY 4: CHAPTER TWELVE - MANAGEMENT OF FOREST AREAS - OWNED BY INDIVIDUALS AND LEGAL ENTITIES AND THEIR ASSOCIATIONS OF FOREST ACT (2011) DEVELOPED BY ASSOCIATION "GOROVLADELETS" AND INCLUDED IN THE FOREST ACT]

Chapter Twelve - MANAGEMENT OF FOREST AREAS - owned by individuals and legal entities and their associations

Art. 183. (1) Forest associations are associations of natural or legal persons - owners of land in forest areas established under existing legislation with a view to jointly and management of their properties.

(2) The Forestry Agency assists in the formation and operation of forestry associations which meet the following requirements:

1. carry out any of the following activities:
   a) implementation of forestry plans;
   b) implementation of forestry activities;
   c) purchase and sale and processing of timber and non-timber forest products;
   d) the conservation and protection of forest areas;
   e) construction and maintenance of forest roads and accompanying infrastructure forest operations;
   f) purchase of machinery and equipment for the implementation of forest management and processing of wood and non-wood forest products;
2. unite neighbouring estate owners with a total area of their property after reunification not less than 100 hectares;
3. (Effective 01/01/2016) The forests they are certified.

(3) Forestry Association, which imposed a sanction for violation of this Act or the regulations for its implementation may not be supported for a period of one year from the entry into force of the penal provision.

Art. 184. Support under Art. 183 can be accomplished by:

1. provide information for the development of forest plans and programs;
2. support for the consolidation of individual properties in common forest, including grant making assessments of the property - subject to exchange and consolidation;
3. consulting and training for the association for the implementation of good forestry practices;
4. consultations on the construction of forest roads;
5. advice in organizing and conducting activities to protect forests.

Art. 185. (1) The representation of members of forestry associations are owned by the individual owners in common borders, is carried out by Presidents respectively of their managers, by a decision of the governing body of the association.

(2) Under paragraph. 1 is carried out and the representation of members of forest associations in connection with their participation in national and international projects and programs.

Art. 186. (1) Natural and legal persons - owners of land in forest areas, operating in their territory:

1. alone when registered in the public register of art. 235 or 241;
2. by delegation to:
   a) state forestry enterprises and state hunting;
   b) municipal forest structures of art. 181, par. 1, p. 1;
   c) individuals or traders entered in the registers of art. 235 and 241.

(2) The owners of land in forest areas, which commissioned the implementation of activities under par. 1 pt. 2, are required within 14 days of signing the contract award to notify the relevant Regional Forest Directorate of the date of conclusion, and in the cases under par. 1 pt. 2, letter "c" - and the number of the certificate of registration of the person contracted.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

One of new policy instruments in Bulgaria is the National Strategy for Development of the Forestry Sector in Bulgaria 2013 - 2020, November, 2013 with the measures concerned new private forest owners: Measure 3.3 Promoting the association of forest owners and optimization of public-private partnerships in the forestry sector.

The measure is aimed at creating the right conditions for sustainable development of forestry in non-state forest areas by: 1) promoting the association of forest owners to effectively carry out forestry activities of mutual interest; 2) Evaluation and

optimization of public-private partnership in forestry sector. Implementation of this measure is related to:

- Preparation of a National Plan for the development of non-state forestry;
- Evaluation and optimization of the scope and possibilities for public-private partnership to conduct independent or joint forestry and hunting activities at different sites in the forest areas.

The expected results of the measure are:

- Developed and adopted a national plan for the development of non-state forestry;
- Attracted investments by providing opportunities for negotiation of long-term right to conduct independent or joint forestry and hunting activities at different sites;
- Conducted successfully completed procedures provided for under the Public-Private Partnership and the Forestry Act opportunities for public-private partnership in forest areas.

Source: Republic of Bulgaria, Ministry of Agriculture and Foods, 2013, National Strategy for Development of the Forestry Sector in Bulgaria 2013 - 2020, November, 2013

6.1. Influences of policies on the development of forest ownership

6.1.1. Targets and strategies concerning privatization

Transformation of economic system toward market oriented economy gives prerequisites of some parts of state forests (i.e. land and stands).

The possibility of partial privatization of forests in Bulgaria corresponds to the international level. Maintaining a significant share of forest area in the state ownership can be compared with European standards as well.

The fact, that society considers forests as national heritage, should be taken into consideration.

Experience from the period before 1944 shows that management in woodlands owned by the state was better than that in private forests (results of inventory can prove it.). In the last fifty years (when the state own forests) the development of forestry in Bulgaria was characterized as positive. The elementary reason for unsatisfactory forest management in this period (over harvesting, afforestation mostly with coniferous, creating monocultures etc.) followed from deformation of political and economic systems, not from the fact that forests were in the state ownership. Therefore, privatization of forests, implemented merely as a change of ownership, is of no value in Bulgaria.

On the basis of experience during the process of restitution of forests and on the experience of management of non-state forests, Bulgarian government can consider the possibility of further privatization of forests. Such privatization, which would lead to further fragmentation of woodlands, seems to be inappropriate and could result on increasing financial demands from state budget in the future. In the initial phase of privatization, naturally segmented forests should be exclusively chosen (localities with scattered tenure, woodlots situated between non-forest land and forests separated from complex units which are intended to remain in the state ownership perspectively). The government should decide upon privatization of forests, its extension and the way of implementation after taking decision which areas of forests are suitable to be left in possession of the state for the reason of satisfying the public demands. With respect to the facts that Bulgarian forestry legislation didn't allow the sale of state forests to the private or juridical persons and experience in the past with the concessions in the Bulgarian forests it seem that the privatization of forests in our country is inadmissible.

6.2. Influences of policies in forest management

A quarter of Bulgaria's forests are owned privately: by individuals (10%), municipalities (12%), and institutions (2%). Although the municipal forests can be in fairly large blocks, individual ownership is fragmented and typically blocks are less than one hectare in size. The private sector has four primary concerns about the current state of the forest

sector, and the impact of the reform process.

First, policy toward private forest owners is weak, or is entirely absent. There is virtually no policy framework in place, which recognizes the importance or viability of private forest owners. The same, more or less, applies to the forest industry. The focus on state forest ownership, and the reform process which has supported the emergence of SFEs as commercial entities, has greatly marginalized the role of private forest owners.

Second, there are concerns that the current institutional structure fails to separate control from management functions clearly enough, and that management institutions (SFEs) are exerting control functions over private forest owners. Indeed, SFEs/SHAs are controlling the activities of private owners, and in some cases are providing guards and assuming the role of approving and checking management plans, felling permissions and transport of timber. In some areas where the SFE/SHA is competing in the same markets, the control function is clearly unfair, and represents a significant conflict of interest. There have already been a number of cases alleged where felling permissions, issued by SFEs, have been delayed in a manner lacking in transparency.

Third, the industry has major concerns about how timber is marketed and priced. Much of the market appears to be geared to small, local timber consumers. But at the national level, the forest industry is dominated by only a few large players. Fewer than 10 large buyers purchase around 35 percent of the timber offered for sale by the SFEs/SHAs. These buyers need to have an assured supply of large volumes, usually of smaller pulpwood sized logs. Some of these large buyers need around a million cubic meters per year. Access to assured supplies of timber is hampered because of:

- frequent auctions, where small quantities of wood are offered for sale at sites scattered throughout the country (e.g. there 180 SFEs/SHAs, and many will hold up to 20 auctions per year often with less than 1000 m³ offered for sale at a time). While this is great for small, local timber industries, it greatly increases the costs to larger industries.
- the lack of alternative competitive timber sales methods. Because of the SFA‟s taxation system, preference is given to auctions of felled timber in a yard or at roadside; standing sales or long term contracts are not favoured; storage depots can seldom hold sufficient quantities to meet large scale demands, and the use of storage depots increases the factory gate price because of dual handling costs (removal from the forest to the depot, and then removal from the depot to the factory);
- although auctions are covered by the public procurement legislation, these are not effectively being regulated. There is inconsistency as to how auctions are being advertised; reserve prices do not serve the purpose of stabilizing prices; there is a reported lack of transparency and collusion in the market both between buyers and between buyers and sellers.

Due to these factors some large scale buyers are:

- entering into negotiated purchase agreements with SFEs, which are neither transparent nor competitive, limiting the revenue potential for SFEs and increasing the perception that the sector is deeply corrupt;
- increasing their own stocks of forests, by purchasing forests from municipalities and private owners to guarantee a steady supply from their own forests throughout the year;
- importing timber supplies from Romania, Ukraine and Russia (even though there is surplus harvestable timber in Bulgaria).

Clearly newly independent forest enterprises need to develop their markets to maximize their returns, improve their efficiency and stabilize their cash-flow. This means that they need to cultivate bulk markets as well as the smaller scale buyers. To do this, a pragmatic and organized approach needs to be developed to timber marketing that is fair to both seller and buyer, is transparent, competitive and yet flexible enough to adjust to climatic factors and other supply chain constraints.

Fourth, the way the market is organized, timber harvesting practices tend to be inefficient and, ultimately, increase the cost to the industry. Timber harvesting, is mainly undertaken by private sector contractors contracted by SFEs and SHAs through competitive procedures in accordance with procurement legislation. The common practice is to tender specific lots prior to auction, and the contractor fells, trims, cross-cuts, extracts and hauls the timber to the Enterprise's log yard. Most contractors do not have modern harvesting equipment and rely on chainsaws, horses, agricultural tractors and second hand trucks. It is likely that most of the workers have received no formal training. Efficiency (and cost savings) should be greatly enhanced through investment in appropriate technology and training. The lack of continuity of contracts is perhaps the main reason preventing investment in this sector, and preventing efficiency gains

6.3. Policy instruments specifically addressing different ownership categories

Policy instrument affected the status of private forest owners and their activity and forests is **the Rural Development program (RDP) and the National Strategy Plan for Rural Development.**

In the following Table are given information on the types of activities that the RDP's forest-related measures are supporting in Bulgaria and have an impact on the management and conservation of private forests.

Table 11: Classification of RDP forest-related activities

Category	Code	Measures
Commercial forestry	122	Improving the economic value of the forests
	123	Adding value to agricultural and forestry products
	125	Improving and developing infrastructure related to the development and adaptation of agriculture and forestry
	223	First afforestation of non-agricultural land
	226	Restoring forestry potential and introducing prevention actions
	312	Support for the creation and development of micro-enterprises
Environmental practices	224	Natura 2000 payments for forests
Training and information	111	Training, information and diffusion of knowledge
	114	Use by farmers and forestry holders of advisory services (2010–2013)
Others	41	Implementation of the local development strategies
	421	Inter-territorial and transnational cooperation

Allocation of RDP funds for forest-related activities

Money from the European Agricultural Fund for Rural Development (EAFRD) is going to certain forest-related activities in Bulgaria. However, the actual amount cannot be estimated accurately, because forest-related activities are included in joint measures with agricultural and other activities, and no demarcation of funds between the activities has been made. Table 12 provides information about the amount of funds allocated to the forest-related measures.

In the RDP, on the percentage of these amounts from the total budget of the RDP and what this money may be used for generally. The BG grand total budget of the RDP for the period 2007–2013 is approximately €4.278 billion. The amount of public expenditure is around €3.242 billion. 80 per cent of the public expenditure will be secured through the EAFRD. The indicative size of the funds by the EAFRD for the 2007–2013 period amounts to €2.6 billion. The total sum related to forestry, and forest/agriculture, from the BG grand total budget is around €1.127 billion. The total public expenditure for these measures consists of approximately €730 million, 80 percent of which (around €584 million) will come through the EAFRD. The subsidies going explicitly to forests from the BG grand total budget amount to €133 million, of which only the Natura 2000 payments for forest can be described as being purely for forest protection. The latter consists of €15.5 million indicative public expenditure. The amount whose allocation between forest and agriculture cannot be

distinguished is €994 million. The measure 'Adding value to agricultural and forestry products' receives the highest sum, almost €535 million. Regarding forestry, this sum will support investments relating to the use of wood as a raw material, and is limited to all working operations prior to industrial processing. A significant amount will go towards infrastructure and the development of micro-enterprises. The latter measures cover predominantly commercial forestry-related actions, and could improve the economic benefit from the forests; but they have no direct relation to forest conservation, and if not correctly planned might even lead to forest destruction (e.g. the building of forest roads could make the access to biologically valuable and old-growth forests easier, and lead to the destruction of important habitats). Those measures that could have a negative impact on nature should require an obligatory Environmental impact assessment (EIA).

As described above, three of the forest and forest-related measures had to start their implementation after 2009. In the meantime, their budget was allocated to other measures. Till its implementation in 2010, the indicative financial allocation of the measure 'Use by farmers and forestry holders of advisory services' is provisionally transferred to the measure on 'Training, information and diffusion of knowledge', which also concerns forest-related issues and will enable the introduction of (for instance) forest-related training.

The indicative budget for the measure for 'Improving and developing infrastructure related to the development and adaptation of agriculture and forestry' is transferred to the budget of the measure.

Modernisation of agricultural holdings', and forests will not benefit from its budget till 2010. The budget for the measure 'Natura 2000 payments for forests' has provisionally been allocated to the measure 'Agro-environmental payments', and farmers in the potential Natura sites can apply for support under this measure. Private forest owners will not benefit from the 'Natura 2000 payments for forests' measure until it comes into force in 2009, and this is likely to have a negative impact on forest protection.

Table 12: Funding for forest-related activities in the Bulgarian RDP

Code	Measure	Funds allocated (€)	What the measure could be useful for
111	Training, information and diffusion of knowledge	102,413,694* public expenditure (ca 3.15 per cent of the BG grand total public expenditure)	Training courses Information actions Working meetings
114	Use by farmers and forestry holders of advisory services (years 2010–2013)	36,146,000 indicative public expenditure (ca 1.1 per cent of the BG grand total public expenditure)	No description in the RDP available
122	Improving the economic value of the forests	24,097,340 public expenditure (ca 0.74 per cent of the BG grand total public expenditure)	Creation of sustainable forest management plans and programmes for non-state owned forests Management activities aiming at increasing the economic value of the forest (e.g. pruning of coniferous plantations, lightening and tending in coppice stands, etc.) Purchase of suitable harvest equipment
123	Adding value to agricultural and forestry products	240,973,396 public expenditure (ca 7.4 per cent of the BG grand total public expenditure)	Introduction of new and/or modernisation of the existing facilities and improvement in their use Introduction of new products, processes and technologies Reaching compliance with EU standards Environmental protection (including decreasing pollutant emissions and waste) Reduction of production costs
125	Improving and developing infrastructure related to the development and adaptation of agriculture and forestry	90,365,000 indicative public expenditure (ca 2.8 per cent of the BG grand total public expenditure)	No description in the RDP available

Code	Measure	Funds allocated (€)	What the measure could be useful for
223	First afforestation of non-agricultural land	40,424,494 public expenditure (ca 1.25 per cent of the BG grand total public expenditure)	Afforestation of abandoned agricultural land and not afforested forest fund lands Development of technological plans for afforestation Site preparation for afforestation Seeding and planting Actions for guided natural succession Fencing
226	Restoring forestry potential and introducing prevention actions	29,540,976 public expenditure (ca 0.91 per cent of the BG grand total public expenditure)	Clearing of forests damaged by fire, windstorms and other natural disasters Establishment and improvement of timber depots in case of disasters Reforestation of damaged forests using indigenous tree species Establishing and improving fire protection facilities Diversification of vegetation structure by transforming coniferous plantations into broadleaved or mixed stands
224	Natura 2000 payments for forests	15,548,000 indicative public expenditure (ca 0.48 per cent of the BG grand total public expenditure)	No description available in the RDP
312	Support for the creation and development of microenterprises	127,261,669 public expenditure (ca 4 per cent of the BG grand total public expenditure)	Investments and marketing and management advice for new and existing micro-enterprises in non-agricultural sectors such as: • Processing industry – furniture production, light engineering, etc. • Renewable energy production: • Services – rural tourism initiatives by private enterprises, recreation and sports, setting up or development of consultancy and business services, social and health care, transport services, etc.
41	Implementation of the local development strategies	53,891,814 public expenditure (ca 1.67 per cent of the BG grand total public expenditure)	Any activities within measures under Council Regulation 1698/2005 selected in the RDP under Axis 1, Axis 2 and Axis 3 Other actions outside the scope of the measures specified in Council Regulation 1698/2005 if they contribute to the objectives of the RDP and the local development strategies and aim at protection of the environment, rural landscape and local identity
421	Interterritorial and transnational cooperation	5,132,554 public expenditure (ca 0.16 per cent of the BG grand total public expenditure)	Preparatory technical support including feasibility studies, market research, surveys, etc.; and/or technical planning; and/or partnership meetings Implementation of joint actions (e.g. establishment of facilities for joint production of goods or services, joint marketing of local products, preservation of shared natural or cultural heritage

6.4. Factors affecting innovation in policies

In spite of the efforts made by state forest administration and the presence of private forester's practice, owners still face difficulties in the access to investments and advice, which shows that the assistance in this direction remains insufficient.

The measures undertaken by the National Forest Board (until 2007), State Forest Agency (2007-2008) and Executive Forest Agency (state forest administration) to assist the economic activities in private forests are as follows:

- normative regulation was accepted for management and maintenance of private forests;
- there are specialists in the state forest administration and its structures, who assist and consult forest owners;
- private forest owners can obtain financial support from the state for gratuitous inventory of forest resources, consulting, carrying out of forest protection activities, etc.;

- the state forest administration carries out conservation, protection and control of private forests, as well as sanction of infringers according to the Law of Forests;
- rules have been introduced and updated for maintenance and management of forests, which don't limit the owners rights and protect utilities from forests of general use;

  legislative guarantees have been established for sustainable development of private forests through regulation of private foresters practice;
- upright relations were established between the state forest administration and private practicing foresters for information exchange, carrying out of seminars, participation in mutual commissions, suggestions for improvement of normative regulations, etc.

Arising of different forms of property in Bulgaria require to solve many questions, concerning management and utilisation of non-state forests, namely:

- To develop mechanisms for protection of interests of forest owners, including creation of legislative and normative guarantees for implementing balanced and accepted by the whole society strategy for development of forestry.
- To improve management of the small-sized forest possessions. In this direction there is a need for hard effort for finding suitable form and stimulus for co-operation of owners for jointly management and planning of their forests.
- To motivate forest owners for protection and sustainable management of their forests. It is necessary to popularise modern multifunctional forms of utilisation of resources, with aim their sustainable and close-to-nature management for the interest of different owners and for the whole society.

  To provide support to the owners for activities concerning the afforestation, regeneration and tending of the forests, their management planning and certification, as well as establishment of a system for administrative servicing and a network of centres for education and consulting of private forest owners.
- To establish a mechanism for compensation of lost benefits from limited economic activity in forests and commercialisation of their environmental functions.
- To support the establishment of a market for forest holdings, products and services related to the forests.

The establishment of new property relationship in the forestry in Bulgaria hasn't finished with the restoration of forests and forestland to former owners and their inheritors. In order to begin work properly, new forest owners can receive help in the form of free consultations, education, compensations and financing help from the state. This can be the way that will give the possibility to preserve private forests as national wealth and to help private forest owners to receive additional returns.

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CROATIA

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1. Introduction

1.1. Forests, forest ownership and forest management in Croatia

Total land area of the Republic of Croatia amounts to 56 594 km^2 out of which forests and forest land area account for 46%, thus making Croatia one of the countries with highest forest cover in Europe, while the share of forestry sector in GDP is 1.5% (UNFAO, 2014). According to the National Forest Inventory (2010), total size of forests and forest land area in Croatia is 2 580 826 ha, of which 1 987 799 ha (78 %) is state owned and the rest of 593 027 ha (22%) is privately owned. Majority of state owned forests are managed by Croatian Forests Ltd. company. Forests in Croatia are sustainably managed according to 10-year management plans. All state forests are FSC certified from 2002.

1.2. Overview of the country report

Report is based on several methods applied - literature review, expert knowledge and case studies, while quantitative information on forest cover and forest ownership was collected from available forest inventory data.

In Croatia there is a modest knowledge base on private forests and private forest owners based on scientific literature, but lately the situation is improving mainly as a result of several international projects. Main themes based on literature review are policies and policy changes related to private forestry, while the most common method was quantitative survey questionnaire. Theoretical frameworks applied in analysed literature is based mainly on rational choice economic theories, hence deeper understanding of motivation and behaviour of private forest owners is still missing. Future research needs include effect of existing policies on private forest ownership and new types of private forest owners; studies on effectiveness of new management business models and their impact on sustainable forest management of private forests; and qualitative studies on motives and behaviour of private forest owners.

In Croatia there are two types of forest ownership - public and private. The exact amount of public and private forests varies according to the methodology, but generally 22% of total forest and forest land area is privately owned. There is also a small amount of communal forests that are not legally recognized. Recently a new trend is emergence of new big private forest owners, mainly due to the restitution process, where bigger properties taken during communist regime are returned to previous owners or their successors (mainly Church and nobility). Other outcome of transition from a centrally planned to market economy is a privatization of public forest management that resulted in 392 licensed companies providing forestry services (mainly wood extraction), in the register of the Croatian Chamber of Forestry and Wood Technology Engineers (status on 16 April 2015).

Sustainable forest management in Croatia has tradition longer than 250 years and is regulated by several laws and other legal acts. Publicly owned forests are managed by Croatian forests Ltd. company (98%) or other public institutions (2%), while private forest owners are responsible for managing their own forests. Forests should be managed according to 10-year forest management plans, which do not exist for about one third of private forests. Establishment of private forest owner associations is considered as innovative approach to management of private forests since it provides opportunity for private forest owners to manage their forests in collaboration with other private

forest owners. Two new business models with regard to forest management are identified at the moment. According to one business model company pays rent to the owner for forest management and in the other model private forest is managed by forestry contractor paid by the owner. Main opportunities for innovative private forest management are also recent democratisation of private forest owners' rights according to which private forest owners have possibility to choose forestry contractor and positive attitude of part of private forest owners towards engaging themselves in energy wood production and cooperation on forest road construction according to literature review. However, obstacles for innovative approach to forest management are small-scale forestry, poor cadastre and land registry, unsolved property rights in some cases. Additionally, private forestry development is slow due to insufficient road infrastructure, absence of open market, and missing management plans for about half of private forests.

Forest policy certainly made an impact on establishment of new private forest owner types and private forest property in general. Restitution process started in 1996 and is still ongoing even though it is slow. National Forest Policy and Strategy in 2003 made a foundation for many other policy changes affecting private forests and private forest owners, such as Law on Forests in 2005, establishment of Forestry Extension Service for private forest owners and Croatian Chamber of Forestry and Wood Technology Engineers in 2006, and the most recently re-establishment of the forestry extension service within the Advisory Service in 2014 after several years operating within Croatian Forests Ltd. with a limited power. Establishment of the Forestry Extension Service in 2006 positively affected establishment of private forest owner interest associations over time. However, there are some obstacles for innovation in policies, such as lack of accurate ownership register and cadastre, missing forest management plans for some private forest and certain amount of private forests that still need to be given back to previous owner. Furthermore, existing National Forest Policy and Strategy is redundant, and new is still missing. Private forest management plans sometimes cannot be implemented due to unclear ownership and property fragmentation. However, legal regulations threat all private forest owners equally regardless of the size of their property, even though owners may not be interested in forest management or do not have capacity and knowledge to implement forest management plans.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

For the purpose of writing this report a mix of appropriate methods was applied. The starting point was literature review of all relevant publications related to private forests and private forest owners in Croatia, including both scientific and professional publications, as well as review of relevant laws and regulations in the last 20 years (1994-2014). Quantitative information related to forests was found in the General Forest Management Plan (2006-2015) (Croatian Forests Ltd., 2006), the National Forest Inventory (Čavlović, 2010), and the FAO Forest Resource Assessment (UNFAO, 2010). Data on status of private forest ownership and behaviour of private forest owners is based on two regional research studies conducted within the timeframe of the PRIFORT (Glück

et al., 2010) and WESSPROFOR project. Expert knowledge was used for description of case studies, information about ongoing initiatives of associations of private forest owners and identification of issues and obstacles for private forest owners.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). The 7 detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

The most important literature related to private forest owners and private forestry in Croatia includes only seven publications as a result of the weak coverage of this topic by the Croatian scientific community.

3.1.1. Main themes covered by the selected studies

Main themes of selected studies are policies and policy changes related to private forestry (Carvalho Mendes et al., 2011; Avdibegović et al., 2010a; Lovrić et al., 2009; Paladinić et al., 2008), motivation and behaviour of private forest owners (Halder et al., 2014; Glück et al., 2010; Avdibegović et al., 2010b) and current status of private forest ownership (Lovrić et al., 2009; Paladinić et al., 2008).

3.1.2. Types of organizations conducting the researches and funding types

Majority of studies are results of collaboration between researchers from universities and public research institutes (Halder et al., 2014; Glück et al., 2010; Avdibegović et al., 2010a; Avdibegović et al., 2010b; Paladinić et al., 2008) who were prevailingly interested in motives and behaviour or private forest owners. Two publications are written by university researchers exclusively (Lovrić et al., 2009) on the topic of forest management; and one book chapter (Carvalho Mendes et al., 2011) is a result of the pan-European collaboration between participants of the COST action E51 "Integrating innovation and development policies for the forest sector" on the topic of ownership and policy changes. Analysed studies were mostly conducted on European/cross-national level and were funded by European public funds. Only three studies were nationally funded (Lovrić et al., 2009; Paladinić et al., 2008). Six out of seven studies are cross-national in scope with only two being national (Paladinić et al., 2008).

3.1.3. Theoretical and methodical approaches

In majority of studies theoretical framework

resting upon several theories were employed. The most common were Olson's theory of collective action (in Carvalho Mendes et al., 2011; Glück et al., 2010; Avdibegović et al., 2010a; Avdibegović et al., 2010b) and critical mass theory (Marwell and Oliver, 1993) (in Carvalho Mendes et al., 2011, Glück et al., 2010 and Avdibegović et al., 2010b), followed by the theory of pluralism (Truman, 1951) and exchange theory (Salisbury, 1969) (in Glück et al., 2010 and Avdibegović et al., 2010b). The theory of planned behaviour (Ajzen, 1991) was used in one study (Halder et al., 2014). The selection of theories in analysed studies corresponds with the prevailing topic of motivation and behaviour of private forest owners.

Quantitative survey questionnaire was used in three studies (Halder et al., 2014; Glück et al., 2010 and Avdibegović et al., 2010b), while only two studies applied qualitative methods and approaches (Carvalho Mendes et al., 2011 and Avdibegović et al., 2010a), namely case studies and qualitative in-depth interviews with key stakeholders respectively. Two papers are review studies and applied method of literature review (Lovrić et al., 2009; Paladinić et al., 2008).

3.1.4. Major results and insights

Results of the analysed literature showed that private forests owners in Croatia deal with numerous problems as a result of political neglect of private forest ownership over long period of time: small and scattered ownership, usually owned by several owners, which make difficulties in managing forests in an economically sustainable manner (e.g. Halder et al., 2014, Glück et al., 2010; Lovrić et al., 2009). Policy changes are considered as major driver of change in the last 20 years which enabled establishment of associations of private forest owners and hence new approach to private forest management and occurrence of new types of private forest owners (e.g. Carvalho Mendes et al., 2011). These policy changes include process of restitution (Paladinić et al., 2008), new forest legislation in 2005 that provided bases for establishment of the Forestry Extension Service in 2006 who would work on providing advisory services and incentives for certain activities in private forests (Carvalho Mendes et al., 2011; Lovrić et al., 2009; Paladinić et al., 2008) and which gave an impetus to establishment of increasing number of associations of private forest owners and increased percentage of private forests covered by forest management plans (Lovrić et al., 2009; Paladinić et al., 2008). Additionally, importance of critical mass of engaged and entrepreneurial private forest owners is acknowledged (Glück et al., 2010). Results of quantitative studies showed that majority of them are willing: to join PFOAs (Glück et al., 2010), to cooperate with other PFOs (Glück et al., 2010; Avdibegović et al., 2010b) and to produce energy wood (Halder et al., 2014), but often under certain circumstances, like provision of financial support or existence of stable energy wood market.

3.1.5. Critical assessment, gaps and future research needs

Several papers address PFOs and relevant policy changes in Croatia (Halder et al., 2014; Glück et al., 2010; Avdibegović et al., 2010a; Avdibegović et al., 2010b). These papers are based on studies conducted within the timeframe of the PRIFORT project (2008-2009) (Glück et al., 2010; Avdibegović et al., 2010a; Avdibegović et al., 2010b) aiming at the investigation of readiness of private forest owners to join interest associations in SEE countries (Bosnia and Herzegovina, Croatia, Macedonia, Serbia) and RoK-FOR project (2011-2013) (Halder et al., 2014) which partly addressed the topic of sustainable forest management for the purpose of forest biomass production, including analysis of policy environment for mobilisation of forest biomass from public and private forests in Croatia and Serbia. Another recent scientific project was WESSPROFOR (2011-2013) that addressed attitudes of private forest owners to engage themselves in forest biomass production. However, the manuscript preparation for publishing in international peer-review journals as a result of this project is still ongoing.

Theoretical frameworks applied in analysed literature is based mainly on rational choice economic theories, where main goal is maximisation of profit, hence deeper understanding of motivation and behaviour of private forest owners that might be beyond

economic benefits (e.g. nature conservation goals) is still missing.

The representativeness of the survey results on the national level is hard to achieve since there is no accurate list of private forest owners in Croatia and there are also regional differences in the share of private forests. For instance, PRIFORT project put focus only on regions with the significant share of private forests. Two review papers give a good overview of the status of private forest ownership and related policy changes in Croatia at the time they were published (Lovrić et al., 2009; Paladinić et al., 2008). More recent information is missing.

There is lack of information related to private forests and private forest owners such as register of private forest owners where all owners are listed up; up-to-date cadastral information related to private forests; forest management plans, including forest inventory data, are still missing for some private forests (not all are covered by forest management plans).

Future research needs: studies on effect of existing policies on private forest ownership and new types of private forest owners; studies on effectiveness of new management business models and their impact on sustainable forest management of private forests; and qualitative studies on motives and behaviour of private forest owners.

3.2. New forest ownership types

In cited literature there is no available data on forms of new or non-traditional forest ownership. However, several studies made attempt to provide typology of private forest owners in Croatia with regard to readiness to join associations of private forest owners (Glück et al., 2010, attitudes towards energy wood production (Halder et al., 2014) or readiness to cooperate in forest road construction and maintenance (Avdibegović et al., 2010b). In the study made by Glück and others (2010) three groups of private forest owners in Croatia were identified- 'drivers' (20%), 'supporters' (48%) and free riders' (32%). Drivers could be considered as new type of private forest owners, those who are willing to engage themselves more in forest management and are ready to cooperate with other private forest owners in all kinds of forest management activities, especially when having in mind that the majority of private forest owners in Croatia are being passive with regard to their ownership. Study by Avdibegović and others (2010b) shows that private forest owners are mostly willing to cooperate in forest road construction and maintenance (45% of respondents). Halder and others (2014) differentiate between two groups of private forest owners- 'institutionalists' and 'enthusiasts'. The former are of positive about higher role of public and private forestry institutions in provision of the positive environment for energy wood production, while the latter are those inclined to planting short rotation and exotic trees, as well as cooperating with other private forest owners. Furthermore, the restitution process could lead to higher share of private forest owners with larger private forest properties (Avdibegović et al., 2010; Paladinić et al., 2008) and this potentially leads to occurrence of new types of private forest owners. Paladinić and others (2008) mentioned that 2-3% of total area of private forests were returned to previous owners by process of restitution and that there is still ongoing restitution process for 300 000 ha of forest, of which there are individual requirements for even more than 100 ha.

3.2.1. Urban, absentee and non-traditional or non-farm owners

In cited literature there is no information related to share of urban, absentee, and non-traditional or non-farm owners.

3.2.2. Difference between "new ownership" from traditional ownership

There is no information in selected papers about what distinguishes "new ownership" from traditional ownership, in terms of structural attributes, outputs, goals and management or what distinguishes these "new ownership forms" from traditional ownership with respect to motives for ownership and management practices.

3.3. Forest management approaches

The study by Glück and others (2010) showed that vast majority of private forest owners (90%) in Croatia use their forest for energy wood production for domestic use, much less number of private forest owners use forest for saw logs production again for domestic use (27%), industrial wood for sale (16%), energy wood (including charcoal) for sale (14%), hunting (6%), nature conservation (6%), non-wood forest products (5%) and tourism (1%).

3.4. Policy change / policy instruments

Policy changes are considered as major driver of change in the last 20 years which enabled establishment of associations of private forest owners and hence new approach to private forest management and occurrence of new types of private forest owners (e.g. Carvalho Mendes et al., 2011).

3.4.1. Specific policy instruments and their effect on new ownership types

Policy changes include process of restitution (Paladinić et al., 2008), as a result of Law on compensation for the property expropriated during Yugoslav communist rule (1996), new forest legislation in 2005 that provided bases for establishment of the Forestry Extension Service in 2006 who would work on providing advisory services and incentives for certain activities in private forests (Carvalho Mendes et al., 2011; Lovrić et al., 2009; Paladinić et al., 2008) and which gave an impetus to establishment of increasing number of associations of private forest owners and increased percentage of private forests covered by forest management plans (Lovrić et al., 2009; Paladinić et al., 2008). Additionally, importance of critical mass of engaged and entrepreneurial private forest owners is acknowledged (Glück et al., 2010).

According to Paladinić and others (2008) about 20% of the Green Tax in Croatia is used annually for supporting private forest owners in forest management activities. The Green Tax as an economic instrument was established already in 1980s to support management of forests on karst (high value in ecosystem services, but the low value of wood) in the Croatian Mediterranean area, but the actual implementation started in the early 1990s when it became obligatory to economic subjects to pay certain amount for forest ecosystem services (0.07% of their annual turnover) (Vuletić et al., 2010). Today, according to Law on Forests (amended in OG 25/2012) and Rulebook on Method of Calculation, Forms and Deadlines for Green Taxes Payments (OG 84/2010 and 39/2012) the amount for forest ecosystem services decreased to 0,0265% of annual turnover. It is purposefully spent and one of the purposes is providing funding for elaboration of forest management plans for private forests. Forestry Extension Service provides funding for private forest management plans, does the allocation of wood for cutting, supports establishment of private forest owner associations and private forest property consolidation (Paladinić et al., 2008). Another policy changes include Rulebook on the register of private forest owners in 2006 by the relevant ministry, establishment of Croatian Chamber of Forestry and Wood Processing Engineers in 2007 (Paladinić et al., 2008).

The presence of the Forestry Extension Service caused the increase in number of private forest owner associations from only six in 2006 to 18 in 2008 (Paladinić et al., 2008) and 36 by the end of 2009, including two umbrella associations on the county level and establishment of umbrella organisation on the national level in 2008 (Lovrić et al., 2009).

3.4.2. Challenges derived from policy changes and instruments

According to Lovrić and others (2009), the precondition for getting a financial support for implementation of forest management activities, is that PFO is in the Register of private forest owners. Due to unclear ownership in some cases and inability of some owners to prove their ownership, not all owners fulfil legal requirements to be registered which prevent them from getting incentives. The main issue for some private forest owners is still unfinished process of

restitution (Paladinić et al., 2008). However, there is no study so far that addresses effect of policy changes on private forest owners and management of private forests in Croatia.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Majority of forest areas in Croatia are publicly owned (Croatian Forests, 2006). Croatian Forests Ltd. company manages state owned forests. In the Republic of Croatia almost one quarter of all forests and forest lands belong to private forest owners (Table 1A in Annex).

According to the results from the first National Forest Inventory in Croatia measured in 2010 (Čavlović, 2010), forest and forest land in Croatia cover 2 580 826 ha or 46% of total inland area. Forest area in state property is 1 987 799 ha, private forests cover 593 027 ha, or 22% of total forest land in Croatia. Total growing stock is 552 146 000 m^3, from that growing stock in private forests is 85 143 000 m^3.

4.1.2. Critical comparison with national data in FRA reporting

The public forest ownership data are changing due to the restitution process. After the year 2005 some forest areas were returned to the Church. A rise in proportion of private forests could be explained with a new valid Forest Management Plan in 2006 and returning of nationalised forest areas to the previous owners. The result between information provided by National Forest Inventory (2010) and information provided in FRA (UNFAO, 2010) (Table 2A.) may be also due to different methodologies. Information for FRA 2010 is provided from the General Forest Management Plan (2006-2015) based on information collected by Croatian Forests Ltd. company by using different methodology.

4.2. Unclear or disputed forest ownership

Situation between state and private owned forests is clear, but there are some problems with missing updates in land ownership register and cadastre. There is only one small area where forest ownership is disputed (ownership type called *komunele*). This is due to the fact that in Yugoslavia until 1990 there was a status of community forest ownership, and national forest legislation of the Republic of Croatia does not recognise this ownership category. Also there is a problem of proving the ownership over this area since ownership documents in many cases are missing. There is ongoing legal process over the forest and pasture areas on the mountain Ćićarija in Istria between the state and several villages (Čalić Šverko, 2008 & 2013).

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

The legal restrictions are only for publicly owned forests and they cannot be sold (according to the Constitution and Forest Act) but they can be given in long – term leases for the purpose of establishment of golf courses or tourist camps. Private forest can be bought or sold without any restrictions. Pre-emption right exists in case of selling forests within national parks according to the Law on Nature Protection (OG 80/2013). In that case private forest owner must offer the property first to the state (Articles 165-166).

4.3.2. Specific inheritance (or marriage) rules applied to forests

According to the Inheritance Law (OG 48/2003, 163/2003, 127/2013) there is no restriction imposed on inheriting forest land in terms of the minimum size of forest property that cannot be further divided. This means that all children of the PFO can inherit the forest property.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

Ownership structure between public and private ownership has changed on behalf of private owners because of the restitution process that is still ongoing. Until 2014 approximately 30 000 ha was returned to private owners based on expert information.

4.4.2. Changes within public ownership categories

Ownership structure within public ownership categories has not changed. All public forests are still owned by the State. State owned company Croatian Forests Ltd. manages 98 % of these and other 2 % is divided among several public institutions (mostly nature protection areas, Croatian Waters Company, Croatian Electricity Company).

4.4.3. Changes within private forest ownership

Ownership structure within private forest ownership has changed in the way that new big owners are appearing due to process of restitution and in some cases they sell their forests to other private owners or business entities according to expert information. However, there is no information on the size of the area bought or sold.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

The most significant trends in forest ownership are restitution of the forest land, privatization of public forest management, while less important trends are new forest owners who have bought forests and changing lifestyles, motivation and attitudes of forest owners (Table 1.).

Table 1: Trends in forest ownership in Croatia

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	3
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	2
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	0
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	1
• Other trend, namely:	

**0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: RESTITUTION PROCESS

Restitution process in Croatia is still ongoing and is regulated by the Law on compensation for the property expropriated during Yugoslav communist rule (OG 92/1996, 39/1999, 42/1999, 92/1999, 43/2000, 131/2000, 27/2001, 34/2001, 65/2001, 118/2001, 80/2002, 81/2002). The regulation is explained more in detail in the Chapter 4. Restitution of these forests is significant because it opens possibilities for sustainable management and entrepreneurship in private forests. In 2008 Paladinić and others wrote that only 2-3% of private forests are returned to previous owners due to restitution and that some estimates showed that another 300.000 ha will be subject to restitution. So far there is no publicly available information on how much forest area still needs to be returned to previous owners. According to experts opinion so far about 30 000 ha of forest is returned to previous owners.

CASE STUDY 2: PRIVATIZATION OF PUBLIC FOREST MANAGEMENT

The Law on Forests (2005) prescribes that private forest owner can perform manual labour related to habitat preparation, reforestation, thinning, logging and other types of labour for which he/she is qualified. The types of activities for which private is not qualified must be performed by a licensed forestry contractor. The process of licensing is prescribed by the Ordinance on issuing, renewal and revoking of licenses for operations in forestry, hunting and wood processing technology.

The process of licensing of private contractors in forestry of Croatia began by 1 October 2007. According to Landekić and others (2011) 356 companies of different kinds have been licensed, out of which 80.34% are active and 19.66% had their license revoked due to their non-compliance to the conditions of the license conditions. From the 286 active companies that have complete or partial license for at least one of the nine types of forestry operations, 229 of them (80.07% of all active companies) have license for harvesting and 135 licenses (47.20% of active companies) have been issued for performing of silvicultural operations. Companies registered as sole proprietorship mostly are holders of licenses for operations of direct forestry production (harvesting and silviculture), and the companies registered as a limited liability(Ltd.) have triple number of licenses related to tree marking, urban forestry, management of private forest estates and for making forest and hunting management plans.

In the period 2000-2010 there is an increase in the share of private contractors in the fields of felling, hauling, skidding and transport of lumber. The activity of private contractors n felling within the same period has doubled from 10.81% to 23.77%. Their share in hauling and skidding is held at a constant rate (41.83%), which means that Croatian Forests Ltd. have performed 58.17% of the respective activities. The share of private contractors in the transport of logs in 2010 was 83.53%, which represents an increase of 15.34% with respect to year 2000. The activity of private contractors in private forests is not documented, so there is no concrete data on the timber volume which is felled, hauled and transported from the private forests (Landekić et al., 2011).

CASE STUDY 3: NEW PRIVATE FOREST OWNERS WHO HAVE BOUGHT FORESTS

In some cases, but not very often, new private forest owners buy additional forest area from other owners to expand and consolidate their property.

CASE STUDY 4: CHANGING LIFE STYLE, MOTIVATIONS AND ATTITUDES OF FOREST OWNERS

Some rural areas in Croatia are depopulated and especially young people are leaving to pursue education and jobs in cities. They usually stay there and do jobs that are not related to agriculture or forestry. At the same time population in rural areas is getting older. The result is that forests and agricultural lands in these areas are abandoned.

4.5. Gender issues in relation to forest ownership

There is no information on national level about the number of forest owners according to gender. However, according to the results of the most recent project related to PFOs in Croatia, vast majority of private forest owners are males (93.1% of interviewees based on the sample size of 350) (Source: WESSPROFOR project, unpublished data).

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic (“Characterized or motivated by philanthropy; benevolent; humane” OED) organisations.

The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

In Croatia only two types of ownership exist-public or private. There is no charitable, NGO or not-for-profit forest ownership (Table 2).

Table 2: Forest ownership in Croatia

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		x	
• NGO with environmental or social objectives		x	
• Self-organised local community groups		x	
• Co-operatives / forest owner associations		x	
• Social enterprises		x	
• Recognized charitable status for land-owners		x	
• Other forms of charitable ownerships, namely:		x	

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in ”traditional” and “new” common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning, etc.) are the key for sustainable use of CPR regimes.

However, there are no CPR regimes in Croatia.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Croatia

5.1.1. Who is who in forest management in Croatia?

There is more than 250-year long forestry tradition and organised sustainable forest management in Croatia. At the present, forest management and other forestry activities are regulated by several laws and legal acts, such as Law on Forests (OG 140/2005a), Forest Management Rulebook (OG 111/2006), Law on Physical Planning and Building (OG 76/2007), Law on Nature Protection (OG 110/2007), Law on Forest Planting Material (OG 75/2009), Law on Fire Protection (OG 92/2010). In the actual management of state forests, a state owned company Croatian Forest Ltd. (in Croatian, *Hrvatske šume d.o.o.*), has a key role. The company is obligated by the Law to make detailed Forest Management Plans (FMP) and to keep a precise book keeping of growing stock for every Forest Management Unit (FMU)(OG 140/2005a, 111/2006). The average size of FMU is around 3000 ha (Croatian Forest, 2006). FMP for each FMU has to be renewed every 10 years on the basis of data from the previous FMP and forest measurements with the intensity of up to 10% of the area. FMP contains data (area, forest and soil type, site index, DBH, growing stock and increment for main tree species, etc.) for every forest compartment along with the plan of activities. Results of activities and volume of extracted wood are regularly noted in the FMP and updated to the company's central database.

All State owned forests which are managed by the Croatian Forests Ltd are certified according to FSC certification standard. The company Croatian Forests Ltd has been actively involved in the process of certification since 2000. At the beginning, only respective Forest Administrations had been certificate holders (since 2002), and later the whole area managed by Croatian Forests was subjected to the certification monitoring, on which basis a mutual certificate for the whole group consisting of 15 members (Forest Administrations) was issued. The unique COC number is SA-fm/coc-1212 and it is valid for all forest administrations. It can be also referenced by all wood processors down the chain of custody who obtained the raw material from Croatian Forests Ltd. The use of FSC certificate, FSC logo and COC number is subject to strictly regulated FSC rules and its abuse is forbidden (Croatian Forests, 2008).

Croatian Forests Ltd. is also in charge of developing a General Forest Management Plan (FMAP) on the national level every 10 years. The FMAP is made by compiling and summarizing data from existing FMPs for the state owned forests and data available for private forests. The FMAP for the Period 2006-2015 is a comprehensive document containing past and present status of forests in Croatia with a plan of activities for the period of 10 years (Croatian Forests Ltd., 2006). The Ministry of Agriculture gives approval for the FMP as well as forest management plans of private forests.

Forestry Extension Service as an independent agency existed from 2006 until 2010 when it became a unit within the Croatian Forests Ltd. company. From 2014 the extension services are moved again from the Croatian Forests Ltd. company to independent agency that was established as are sult of merging forestry and agricultural

advisory services in one agency.

According to the statute of the established Advisory Service at the Ministry of Agriculture the role regarding forest management of private forests is: participation in forest fire protection in private forests, collecting the data about the forest fires, recommendations for new seedlings purchase and reforestations, preparation of documents for forest roads and forest fire brakes infrastructure building, organise and prepare public procurement for biological reproduction work according to the law regulation (Statute of Advisory Service, Ministry of Agriculture, 2014).

The fragmentation of forest ownership is the main reason that bigger forest area is not elaborated and approved by the Ministry resulting only in small area of private forests covered by forest management plans while the rest remains unmanaged (Posavec et al., 2011). In recent years about 70% of private forests area has approved forest management programmes according to expert opinion. The goal is to have all private forests covered by 2018.

Main national bodies involved in forest planning and management are Ministry of Agriculture, State Institute for Nature Protection, and the Ministry of Environmental and Nature Protection. The Ministry of Agriculture with its forestry department is monitoring body and forest company Croatian Forests Ltd. is accountable to this Ministry. The role of the Ministry is quality assurance in terms of assessment and giving approval to forest management plans developed by Croatian Forests Ltd. Company.

State Institute for Nature Protection is a state body who issues approvals for forest management activities in protected areas based on request by the Ministry of Environmental and Nature Protection. The State Institute for Nature Protection developed proposal for NATURA 2000 sites in a consultation process and carried out tendering activities related to NATURA 2000 project in Croatia. Percentage of forests and forest land covered by NATURA 2000 is 36.22% (broadleaves 25.58%, coniferous 2,57% and mixed 7.65%), and 29.38% of total surface in Croatia (25.959,6 square km) (Martinić and Kerovec, 2013). There is still no official data about the size of forest area covered by NATURA 2000 network.

Beside Croatian Forests Ltd. and its daughter company the Forest Biomass Ltd., there is also the Faculty of Forestry, University of Zagreb who is involved in forest management activities, but only of special purpose forests used for education and training of students. The Forest Biomass Ltd. is a sister company of Croatian Forests ltd. which produces and sells forest biomass (wood chips) from wood bought usually from Croatian Forests Ltd. and puts it on the market.

5.1.2. Private forest owner associations (PFOAs) and their role in private forest management

The associations of private forest owners are non-governmental organisations (NGO). The first meeting of forest owners was held 2005 in Delnice (Posavec et al., 2011) which was the basis for setting up the private forest sector reform, and where key problems were highlighted.

The Croatian Union of Private Forest Owners Associations (CUPFOA) was established in 2008 whose role is representation of private forest owners associations (PFOA) on the national level and lobbying for private forest owners interests. Their main objective is to represent forest owners' interests on national level trough collaboration with public institutions and participation in several professional committees which deal with forestry issues. The funding of the CUPFOA is based on membership fee, donations and project acquisition. CUPFOA cooperates with the PFOAs from the Western Balkan region and is a member of the Confederation of European Forest Owners (CEPF). Not all associations of private forest owners are members of umbrella association.

Basic PFOAs are small NGOs with up to 100 members and usually cover an area of one municipality. PFOAs are weak because private forest owners do not play an important role in the wood supply chain and for now they use their forests mostly for firewood, the reason why most forest owners are not more members of these associations according to expert opinion.

The role of PFOA’s is to educate the members about sustainable forest management, to participate in the elaboration of forest management plans and to cooperate with local and national government. The main goals of PFOA’s is the improvement in forest management, collaboration and exchange of knowledge and experiences; access to information; expert education; cooperation with public institutions; to enhance financial possibilities and the utilisation of incentives and other funds. PFOAs are usually working on the municipality basis and implement different projects (education, information, management plans, forest roads...).

5.1.3. Obligations of private forest owners regarding forest management

According to the Law on Forests (OG 140/05, Article 8), private forest owners should manage their forests with taking into account biodiversity and landscape diversity of their forests:

- maintain the natural composition of the forest and support autochthonous species
- strive to extend the rotation of economically important species where possible
- the location and structure of artificially established stands should encourage the protection and restoration of natural forests, and not increase the pressure on them,
- use autochthonous species for afforestation
- avoid cutting protected, rare and endangered species
- during harvest leave the required number of old and rotten trees
- cleaning and deforestation carried out in a manner that does not cause permanent damage
- establish a comprehensive monitoring in order to review trends of negative processes in forests that are threatened by drying and natural disasters
- support the traditional forest management system on appropriate habitats that forms a valuable ecosystem, when economically feasible
- during the forest roads construction minimize the damage to the habitat, taking care of special geological and vegetation values.

According to the Ordinance of Habitat Types, Habitat Maps, Endangered and Rare Habitat Types and on measures for Conservation of Habitat Types (OG 7/06) forest owner should:

- conduct forest management in accordance with the certification procedure
- during the final felling leave small areas uncleared
- preserve open sites and forest edges
- ensure the extension of the cutting age of autochthonous species
- avoid use of chemical pesticides
- not afforested with alien species
- during harvest leave the required number of old and rotten trees
- make afforestation with autochthonous species

According to the Law on Nature Protection (NN 80/13), in protected areas it is forbidden to pick, collect, destroy, cut or uproot wild growing strictly protected plants and fungi.

5.1.4. State and private forest management

Most of the wood (logs) from the State forests is sold to the domestic wood processing industry through the (annual and) perennial agreements based on fixed prices from the Croatian Forest Ltd. price list for wood products (Croatian Forests 2012, 2013, 2014). Those prices had not been significantly changed for 10 years, and since 2012 the prices of all assortments have been corrected according to current market situation and new business policy of the company. Those market conditions lead to the fact that most of the industry is based on semi-processed wood for export instead on production of products with higher added value. Lately valuable wood assortments originated from state forests are advertised and sold on the international auctions (6.0 %, 3.6 % and 2.0 % of total amount of sold logs in 2011, 2012 and 2013 respectively) and are achieving better prices (Croatian Forest, 2012, 2013, 2014). There are no officially published data on wood assortments sold from private forests. Croatian Forests Ltd. sells more than 1 million m^3 of energy wood annually to the local population for heating purposes, and up to 100000 m^3 to the Forest Biomass Ltd. for wood-chips production (Croatian Forest, 2012, 2013, 2014).

Decreasing trend of the number of employees in companies operating in wood-processing sector, furniture production and forestry sector has started in Croatia even before beginning of last global economic crisis. In order to increase employment in these sectors and to balance and regulate mutual relationship, Wood Processing Industry Association of the Chamber of Commerce and Croatian Forests Ltd. made an agreement in 2012. Based on this agreement Croatian Forests Ltd. developed the new business model allowing annual and several year contracts (up to 10 years) with domestic wood-processing companies and Croatian forests Ltd. for the purchase of raw wood material, based on defined terms, criteria and

the rebate calculation system According to the proposed model all the companies of wood-processing sector in Croatia have got ability and the right to access, under equal conditions, the signing and implementation of several year contract (Majnarić, 2013).

According to comprehensive analysis of forestry contractors and services provided to the company Croatian Forests Ltd. in the period 1998 to 2002 by Šporčić and Martinić (2004), forestry contractors have carried out around 14% of all tree-felling activities and around 44% of all wood skidding (calculation based on extracted wood volume). Also they have carried out some 10% of reforestation and afforestation activities and around 70% of all wood transportation for the company Croatian forests Ltd. The vast majority of forestry contractors' services were carried out in state forests. Service contracts have been contracted with forestry contractors each year for different implementation periods, from single day to annual contracts. The most common were short-term contracts with deadline for carrying out the services since 30 to 50 days. According the three Annual reports of Croatian Forests Ltd. (2011, 2012, 2013), the share of services provided by forestry contractors to the company has significantly increased, compared to results from Šporčić and Martinić (2004).

After the establishment of Forestry Extension Service in 2006, provision of forest management services by forestry contractors increased based on experts opinion.

In Croatia, typical forest owners harvest their forest by themselves and then sell the round wood to contractors who resell it to sawmills, and forest owners and entrepreneurs are connected mainly through informal information channels (RoK-FOR report, 2012). It is possible also for forest owners to sell wood from their forest as standing trees. Then the contractors harvest and sell wood products.

Classification of wood assortments is done according to the national standards for wood products (HRN). The complete process is based on the price list for wood products.

According to Halder et al. (2014a, 2014b), the majority of the non-industrial private forest owners (NIPF) in Croatia use wood from their forests for household heating, and the average yearly consumption of wood for such purpose is 12 m^3. Similarly, the majority of the NIPFs also reported that they purchased energy wood from market and around 7% of them sold energy wood from their forests, while the study by Glück and others (2010) showed that the share of those who sell energy wood is 14%.

Usually private forest owners are not aware enough on wood products standards (HRN) and then they accept some average assortment prices. The problem is that forest owners get lower prices for the wood, benefiting sawmills and dealers with extra profits. This is a result of the lack of wood market, making quite difficult to define market prices for different type of wood.

The buyers are wood processing companies, and there is unknown number of intermediaries involved in the processes. The PFOAs are not involved in the selling process.

5.1.5. Funding of forest management in Croatia including private forests

Payment for ecosystem services in Croatia has been present for 20 years through the Green Tax", an obligatory payment for all economic subjects registered in Croatia, in amount of 0.02625% of annual turnover (0.07% until 1st July 2010) (Law on Forests, OG 140/05; 80/2010).

This fund issued for improving forest management, especially for the ecological and social forest functions (and also for financing Forestry Extension Service work). It was also used for financing forest fires protection (building fire protection roads) and other non-profitable works in forest (first thinning, afforestation, forest protection, forest management plans, etc.). Advisory Service administers funds allocated for management of private forests (e.g. forest management plans) according to latest amendments to Law on Forests (OG 94/2014).

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. Emergence of new forest management approaches

Establishment of PFOAs is considered as a new cooperative approach to management of private forests since the role of PFOAs is to educate the members about sustainable forest management, to participate in making of forest management plans and to cooperate with local and national government. The number of PFOAs increased from only six in 2006 (Paladinić et al., 2008) to 48 today (status on 16 April 2015) (Ministry of Administration: Register of Association in the Republic of Croatia, 2005).

From the beginning of the restitution process in 1990's, a certain number of private forest owners have reclaimed large forest areas, e.g. members of nobility (Drašković family) and Catholic Church among others.

Two innovative business models appeared in the last 3-5 years for management of these large private forest areas. According to the first business model, private forest is managed by companies who pay rent to the owner and according to the second model, licensed forestry contractors are paid by the owner for management of private forests. These business models will be explained more in detail as case examples in the end of the chapter.

Regarding silvicultural or technical approaches in forest management, there are no significant differences between those applied in state owned forests and those applied in privately owned forests for now according to expert knowledge.

5.3. Main opportunities for innovative forest management

5.3.1. Collaboration of private forest owners

The main opportunity for new and improved forest management in Croatia is possibility of small-scale forest management in collaboration with other private forest owners. According to expert estimates, private forest owner needs to have at least 300-400 ha of mixed forests as a consolidated property to be able to manage forest in sustainable and economically profitable way. Due to small size of the private forest property in Croatia, consolidation of ownership in cooperation with other PFOs will be necessary to establish conditions for sustainable and profitable forest management.

The new opportunity for new and improved forest management in private forests is given by the last amendments of Law on Forests (OG 94/2014). According to those amendments, the Advisory Service as a public agency is established for carrying out advisory services, related to improvement of forest management in private forests among other. The establishment of the Advisory Service is regulated by the changes and amendments of the Law on Agricultural Advisory Service (OG 14/2013).

The one of the opportunities for PFOs is that they will have possibility to choose which forestry contractor to hire for management of their forests, according to latest amendments to the Law on Forests (OG 94/2014).

Also the newly established Advisory Service will financially support and carry out activities on making new or revising existing forest management plans for private forests the same way as the Forestry Extension Service did before.

Another supporting factor for implementing innovative forest management approaches is positive attitude of part of private forest owners towards engaging themselves in energy wood production (Halder et al., 2014a) and positive attitude towards cooperation on forest road construction (Avdibegović et al., 2010b).

5.4. Obstacles for innovative forest management approaches

5.4.1. Forest legislation as main obstacle for innovative forest management approaches

Management approaches are regulated by Law on Forests (OG 140/2005, 94/2014). The Law on Forests (OG 140/2005) takes into consideration all forest properties regardless

of ownership. Innovative or new forest management practices imply changes in management, but the Law on Forests and other relevant regulations prevent those in larger extent. Management changes are possible only to a small extent.

5.4.2. Other challenges for innovative forest management approaches

Main challenges in private forests are small scale forestry, heterogeneity of silvicultural forms, poor cadastre and land-registry, non-marked parcel border and degradation of forests (Čavlović, 2004). However, the most important challenge is **unsolved property-rights** because this is obstacle for consolidation of smaller properties, and prevents joining private forest owners into PFOAs.

Main challenges regarding the roundwood production in private forests are **insufficient road infrastructure** and **absence of open market** (Županić, 2011).

The necessary precondition for any forest management approach in private forests is to have approved forest management plan by the relevant Ministry. Hence, the Ministry of Agriculture and Forestry in 2008 initiated the process of making those plans coordinated by the Forestry Extension Service that was established in 2006. It was planned to have forest management plans for all private forests by the end of 2018, but due to policy changes the Forestry Extension Service ceased to exist as an independent agency leading to slowing up of planned activities so up to date **only about 70% of private forests are covered by forest management plans** according to expert opinion.

CASE STUDY 5: PRIVATE FOREST MANAGED BY CONCESSIONER WHO PAYS RENT TO THE OWNER

The restitution process in Croatia effectively started in 1996, when Croatian parliament passed "Law on Restitution/Compensation of Property Appropriated During Yugoslav Communist Rule". According to the law, Archdiocese Đakovo-Osijek became the owner of couple thousands of hectares of forests and forest land. Consequently, Archdioceses announced invitation to a tender, on which "Sunčane šume" Ltd. won 20-year-long, management concession rights. Together with the forests and the forest land owned by Archdiocese, "Sunčane šume" Ltd. manage couple hundred hectares of forests owned by the company itself, resulting in total of 8 900 ha of managed land (Sunčane šume, 2014).

Current business approach of "Sunčane šume" Ltd. is based on typical contract agreement model. Hence, the owner (in this case Archdiocese Đakovo-Osijek) grants land management rights to the contractor (in this case "Sunčane šume" Ltd.) in return for a fee.

"Sunčane šume" Ltd. is a private forestry company founded in 2010, based in Đakovo and employing 14 employees (Sunčane šume, 2014). At the moment, the company is mostly focused on traditional forestry. Therefore, company is performing tasks prescribed by management plan: stand tending, stand regeneration, harvesting, while gaining most of the revenue from wood assortments marketing.

However, apart from being licensed for forest management, company is licensed for numerous related activities, such as: game management and hunting, tourism services, catering and other (Sunčane šume, 2014.) This, together with the construction of biomass power plant in vicinity of Đakovo (Lešić Omerović, 2013) implies probable expansion of current business model and diversification of products and services portfolio.

CASE STUDY 6: PRIVATE FOREST MANAGED BY FORESTRY CONTRACTOR PAID BY THE OWNER

According to the Law on Forests (OG 140/2005) private forests are managed by forest management plan. However, a lot of small scale owners do not have required knowledge or technical abilities to perform these activities themselves. Therefore, there is a growing need for private contractors who provide this type of service.

As an example of this type of business approach serves "Faunus selva" LP (limited partnership), a small privately owned company (10-15 employees) based in Zagreb. "Faunus selva" LP offers services on implementing activities prescribed by management plan. However, the company does not conduct practical, field activities, since the company does not possess its own mechanization. Therefore they usually hire other licensed private contractors for performing the tasks in the field (e.g. harvesting and silviculture operations), while the company itself is supervising and dealing with legal, administrative and logistical aspects of the tasks. Moreover, apart from implementing forest management plan, the company is usually hired to market the wood assortments produced in these activities. Therefore, the company is also providing marketing services (e.g. finding the buyers, negotiating the price, arranging the contract, etc.). Lastly, it is important to note that the company is being paid only for the marketing service and not gaining revenue from the sales of wood assortments.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

6.1.1. Specific policy instruments that stimulate privatisation, decentralisation or nationalisation of forests

The process of restitution in Croatia started with the introduction of the **Law on compensation for the property expropriated during Yugoslav communist rule** (OG 92/1996, 39/1999, 42/1999, 92/1999, 43/2000, 131/2000, 27/2001, 34/2001, 65/2001, 118/2001, 80/2002, 81/2002) and made a huge influence on the privatisation of forest area. According to this law private forest owner is entitled for compensation for the expropriated forest land (Article 15). Private forest land is returned to PFO as a rule (Article 20), and only in case of exemption to the rule private forest owner is entitled for compensation in money, stocks or shares (Articles 52-55).Private forest owners have right to submit their request for returning forest land to the State Attorney's Office with supporting documents (Articles 64-67). The problem with reclaiming forest land to previous owner(s) may occur in case when private forest owners do not have documents that support that they are owners or heirs of the forest property in question or if they received even insignificant compensation for their property in Yugoslavia. In 2008 Paladinić and others wrote that only 2-3% of private forests are returned to previous owners due to restitution and that some estimates showed that another 300.000 ha will be subject to restitution. So far there is no publicly available information on how much forest area still needs to be returned to previous owners. However, the process of restitution enabled emergence of the new type of PFOs, some of which own large forest areas (e.g. Count Drašković, Catholic Church), taking into consideration the prevalence of small forest ownership in Croatia. In some cases new private forest owners emerge by buying private forests from several owners who reclaimed their property though the restitution process.

Another policy that affected development of forest ownership in a way of creating impetus for making better environment for private forests and private forestry is **National Forestry Policy and Strategy** (OG 120/2003). The goals marked in this Strategy enabled later policy changes reflected in the establishment of the specialised department for private forests at the Ministry of Agriculture, Forestry and Water Management in 2004, new Law on Forests (OG 140/2005) that prescribed establishment of the Forestry Extension Service (OG 64/2006) and Croatian Chamber of Forestry and Wood Technology Engineers (OG 22/2006). The National Forestry Policy and Strategy supports consolidation of private forest area and establishment of associations of private forest owners. First step towards that goal was made in 2004 with the establishment of the Department of Private Forests at the Ministry of Agriculture, Forestry and Water Management at that time. The basic aim of the Department was to offer professional and financial support to private forest owners for the purpose of managing private forest areas according to sustainability principles. Additional tasks of the Department included the monitoring of the state of private forests, suggesting measures for its improvement, supporting private owners associations, and collaboration with the bodies of the regional and local self-government units.

New **Law on Forests** was issued in 2005 (OG 140/2005) and for the first time defined obligations of private forest owners related to forest management (Articles 8-12). According to this law private forests are managed based on forest management plans (Article 9) and

private forest owners are allowed to perform less dangerous activities in their forests (Article 50). However, they are not allowed to cut trees that are not marked for cutting by authorised person (forestry professionals from the Forestry Extension Service at that time or later by forestry professional from the Croatian Forests Ltd. company) (Article 30) or to transport wood from the forest for personal consumption or market without issued permission (in Croatian *popratnica*) (Article 31). Furthermore, role of the Forestry Extension Service was defined (Article 68). Subsidies for improvement of the state of private forests, supporting establishment of associations of private forest owners and consolidation of private forest property are funded from the state budget and other available sources (Article 69). However, to get support and subsidies private forest owners must be registered in the Registry of Private Forest Owners at the Ministry.

However, the newest amendment to the Law on Forests (OG 94/2014) brought some significant changes related to private forests and PFOs in terms of higher rights of PFOs to make decision about their forests. Now PFOs can choose any legal person employing licensed forestry engineer to do the tree allocation for cutting, and previously it was done either by employees of Croatian Forests Ltd. company (before the establishment and after the closing of Forestry Extension Service) or employees of Forestry Extension Service in the period when it was active. The same is valid for issuing the permits for transport of trees.

Establishment of the Forestry Extension Service in 2006 certainly affected the increase in number of associations of private forest owners in Croatia and umbrella association in 2009 (namely Croatian Union of Forest Owners' Associations). However, Forestry Extension Services, as agency directly linked with the Ministry of Forestry, ceased to exist by the amendment to the Law on Forests (OG 124/2010), but majority of staff ended up as a special unit at the Croatian Forests Ltd. Company, now with limited budget and autonomy to continue with their advisory service for private forest owners. This was not taken well by some actors and was considered as indicator of regression of private forestry. Recently the government made a decision to put Agricultural Advisory Service and provision of forestry extension services under the same umbrella and the agency is now called Advisory Service. The scope of the agency and services provided to private forest owners are described in the amendment to the Law on agricultural advisory service (OG 148/2013) and the latest amendment to the Law on Forests (OG 94/2014).

Establishment of the Croatian Chamber of Forestry and Wood Technology Engineers in 2006 affected forest management of private forests due to obligatory licensing of contractors who are providing services in forestry (usually wood extraction) and voluntary licensing of forestry and wood processing engineers (Law on Croatian Chamber of Forestry and Wood Technology Engineers, OG 22/2006).

6.1.2. Privatisation of state forests and the other way around

According to the Law on Forests (OG 140/2005) state forests may be excluded from the forest management only if it is in the interest of the state, e.g. for the purpose of building of public infrastructure (roads, energy plants, water provision facilities) (Article 51). Easement over the forest land (in Croatian *pravo služnosti*) may be granted for the purpose of establishment of golf courses or tourist camps according to the newest amendment to the Law on Forests (OG 94/2014). However, privatisation of state forests is not possible.

There is no legal restriction for private forest owners to sell their forests to the state. Croatian Forests Ltd. company sometimes buys off private forest land if it is located within the large forest area for the purpose of consolidation of forest area, usually in case when the private forest area is reclaimed by the process of restitution. However, there is no information on the private forest area bought off in this way so far.

Pre-emption right is applied on private forest property that is part of national park according to the Law on Nature Protection (OG 80/2013). In that case private forest owner must offer the property first to the state (Articles 165-166). Property rights may be limited or forest land may be a subject of

expropriation if there is special interest of the state for the purpose of nature protection (Law on nature protection, Articles 167-168).

Private forest owners are also entitled to sell their forests to other private forest owners or other parties. This certainly affected the establishment of new forest owner categories.

Private forests only under specific conditions can be changed into other land use according to Law on Forests (140/2005).

In the Inheritance Law (OG 48/2003, 163/2003, 127/2013) there is no restriction imposed on inheriting forest land in terms of the minimum size of forest property that cannot be further divided, which means it is not possible, at least for now, to stop private forest property fragmentation. Also there is no restriction on inheritance based on gender.

6.2. Influences of policies in forest management

6.2.1. Forest management planning and applying instruments

Private forests are managed according to forest management plans in a sustainable way according to the Law on Forests. The Law prescribes what is considered as forest management activities in both public and private forests. Elaboration, renewal and revision of forest management plans for PFOs are funded from the payment for forest ecosystem services (Law on Forests; Vuletić et al., 2010). It was done in the past by Croatian Forests Ltd. company, than during the period 2006-2010 Forestry Extension Service was issuing calls for contractors for provision of these services for PFOs, and with new amendment to the Law on Forests (OG 94/2014, article 8) Advisory Service is covering costs of elaboration, renewal and revision of forest management plans. Private forest owners are entitled for subsidies only if they are registered in the Register of the private forest owners at the Ministry of Agriculture (Article 69 of the Law on Forests). These subsidies include provision of regeneration material – tree saplings for forest renovation, support for tree roads building and establishment, public procurement for licensed contractors who would perform silvicultural activities in private forests, providing support and subsidies for capital investments of private forest owners. One sort of subsidy is available also for those who are not registered. In this case private forest owner can receive service of tree allocation and those who provide service are paid from the payment for forest ecosystem services. However, according to the value of extracted wood, private forest owner must pay forest tax (in Croatian *šumski doprinos*).

Private forest owners have rights only to cut trees in their forests that are allocated by authorised person (licensed forestry engineer) and in order to transport cut wood from their forests either for personal consumption or for market, they need to issue a permit (in Croatian *popratnica*) according to Law on Forests. So far do not have to pay for the permit, but there is indication that the payment will start in 2015.

6.2.2. Compensation for restrictions in harvesting imposed by the state

According to the newest amendment to Law on Forests (OG 94/2014), if state wants to change category of private forest from regularly managed to protective or special purpose forest it can be done only upon the agreement with private forest owners. They are entitled to compensation for restriction imposed on forest management in their forests. Before the latest amendment to Law on Forests this sort of compensation for had not been foreseen.

6.3. Policy instruments specifically addressing different ownership categories

6.3.1. Establishment and the role of Forest Extension Service

Establishment of special department for private forests at the Ministry of Forestry in 2004, Forestry Extension Service in 2006 and new Advisory service in 2014 all served the purpose of providing advisory services and help to private forest owners in order to be able to properly manage their forests. These developments certainly got interested many owners who started to think about how to better use their property. Forestry Extension

Service organised many courses and trainings for private forest owners to inform them about their rights and obligations, to provide them with basic skills needed to perform simple activities in the forest in a safe way, promoted self-organisation of private forest owners in interest associations, etc. Now these activities are under the scope of the Advisory Service. Establishment of associations of PFOs also helped since PFOs got better access to information on their rights and obligations. At the moment 48 associations of PFOs are registered according to the Register of associations in the Republic of Croatia (16 April 2015). Also there are two umbrella associations, one at the national and one at the regional level. According to the Law on Forests improvement of the state of private forests and improvement of private forest management, encouragement to private forest owners to form interest associations especially for the purpose of land consolidation will be subsidised and supports for capital investments will be provided from the state budget and other sources, but only to registered private forest owners.

6.4. Factors affecting innovation in policies

6.4.1. Information needs

Information needs affecting innovation in policies are need for accurate land ownership and cadastre, forest management plans for about 30% of private forest area that are still missing and information on the amount of private forests that still need to be returned to original owners in the process of restitution.

6.4.2. Barriers in adaptation of forest policies to different ownership categories

Existing National Forest Policy and Strategy is redundant and new is missing. At the moment there is no strategic plan about the future direction for forests and forestry sector in Croatia regardless of ownership. This could be due to lack of political will to tackle these issues.

Due to shared and sometimes unclear ownership, forest property fragmentation and size of parcels, some private forest owners cannot implement forest management plans.

One of the barriers is also restrictive legal regulation – Law on Forests threats all PFOs equally regardless of the size of their property.

Forest management plans are still missing for about 30% of private forest area and in this case private forest owners are limited in the activities they are allowed to perform (only sanitary cutting is allowed). However, having forest management plan still does not mean that private forest owners are actually interested in management of their forests.

Private forest owners sometimes do not feel obliged to ask for permission for cutting trees and transportation of wood from the forest if this is only wood fuel for personal consumption. This is considered illegal logging even though private forest owners are cutting trees in their own forests for personal consumption and regardless of the amount of wood extracted in this way. However, it is not possible to say the amount of wood extracted or how many private forest owners are performing such activities.

Process of restitution is still not finished and it is not possible to foresee its timeframe.

Stakeholder changes (jurisdiction over private forests in terms of advisory services and forest management switched several times in the last 10 years, from Croatian Forest Ltd. to Forestry Extension Service than back to Croatian Forests Ltd. and then back to Advisory service which slowed the process of improving the status and forest management in private forests.

Even though there is 48 owners' association of at the moment and two umbrella association (16 April 2014), it is hard to tell how many of these are really active in promoting their interests.

6.4.3. Positive factors affecting innovation in policies

Continuation of provision of advisory services and state support (including financial support) for private forest management is considered as important to help private forest owners to manage their forests in line with sustainable forest management.

State support for elaboration of private forest management plans is important since this is a starting point for any forest management activities in private forests according to current regulations.

Private forest owners are invited to participate in public discussion on the content of the forest management plans which gives them a right to have their say. However, according to expert opinion, private forest owners are insufficiently using this opportunity. Recently private forest owners were represented in the processes of drafting of forestry measures of the Operational Programme for rural development on the national level and in the process of the drafting of amendments to the Law on Forests which is considered as a positive step forward.

CASE STUDY 7: HISTORICAL DEVELOPMENT OF PRIVATE FOREST OWNERSHIP IN CROATIA BEFORE 1990s

One of the main characteristics of the territory of the present Republic of Croatia is that it was divided between different states and empires throughout the history. Accordingly, there were significant regional differences regarding legal regulations, which, together with the environmental differences, shaped different management practices, ownership pattern and overall status of forests. This fact has to be noted since it enables easier understanding of some of the facts described here, although it is less significant for the historical period considered in this chapter. Development of forest private ownership in modern sense can be discussed from middle of the 19th century onwards, when new types of ownership are emerging due to official abolishing of serfdom in 1848.

The "Royal Patent", issued in Croatia on 17th of May 1857, regulated that a squire or a landowner should hand over a part of the forests in his estate to the peasants, his former serfs. This marks the beginning of the present private forest ownership. In every village, forests obtained by the peasants through segregation were managed by the Land Community, (in Croatian: *zemljišna zajednica*) which had its own forest ranger, while surveillance was carried out by the municipal and regional forester (Glück et al, 2011).

However, this type of communal ownership was relevant only for the part of Croatia under the rule of civil government. At the time, parts of Croatia bordering with Ottoman Empire were under special military rule and were called Military Frontier (in Croatian: *Vojna krajina*). In Military Frontier all forests were state owned, population had rights on fixed amounts of fire wood and construction wood. After demilitarization of Military Frontier half of the forests remained state owned and other half was given to the population. These forests were governed by Estate Communities (in Croatian: *imovna općina*) which were formed according to the law from 1873. (Potočić, 1976). Estate Communities present type of communal ownership similar to the Land Communities. Members of Estate Communities were previous members of Military Frontier cooperatives[4], local administration, church and school communities. Main objective of Estate Communities was to meet the needs of its members for fire wood, construction lumber and pasture. Excess profit was used for support of local cultural and economic development (Hrvatska enciklopedija, 2014). Both Land Communities and Estate communities existed until the end of the Second World War when they were nationalised by the communist government of SFR Yugoslavia and only public and small scale private forest estates remained. In 1946 communist authorities nationalized most of the privately owned forests and all of the communal owned forests according to the Law on confiscation of property and implementation of confiscation (OG of the former SFR Yugoslavia, 61/1946).

Private forest ownership, before Second World War, existed only in parts of Croatia who were under the rule of civil government. Private forests were owned by small scale owners (peasants), large scale owners (mostly nobility) and Church. Private forests cowered 425 000 ha or 27.7% of total forest and forest land area. Interestingly, in next 40 years area of private owned forests decreased for approximately 25% and amounted 327 000 ha, due to expropriation of the land under the Agrarian reform after the First World War (55 000 ha), selling of private forests to Land Communities and Estate Communities and transformation of forests to agricultural land (Potočić, 1976.).

[4]Military Frontier cooperatives were rural, single-house family communities or holdings with speical legal status, characheristic for Military Frontier (Marković, 2009.)

CASE STUDY 8: FORMATION OF PRIVATE FOREST OWNER ASSOCIATIONS AS A RESULT OF POLICY CHANGES

Croatian National Forest Policy and Strategy (OG 120/2003) has recognized private forestry as having a good potential for wood production and for other services. As main obstacles are mentioned high fragmentation and small property size, while joining of private forest owners in associations is recommended as one of the solutions. One of the goals was to encourage consolidation of private forest holdings and the establishment of associations of private forest owners. One of the activities, within this goal, was the establishment of Forest Extension Service (FES). Main responsible institution for this activity was the Ministry of Agriculture and Forestry together with its partners: Ministry of Finance, existing forest associations and organizations and Croatian forests Ltd. As a result of new Law on forests (OG 140/2005) FES was established in 2006 by the Regulation on establishment of the Forestry Extension Service (OG 64/2006, 19/2010).

Before 2005 in Croatia existed only a few private forest owners associations, founded in north-western and western part of the country (Posavec et al., 2011). But legislative reforms and the activity of FES have brought considerable changes and a rising number of forest associations, so the number of associations in period of 10 years, from 2004 to 2014, increased from just a few to 48 according to the Register of associations in the Republic of Croatia (16 April 2015). FES played important role in communication between forest owners and forestry professionals which was considered as important turning point for private forests (Posavec et al., 2011). FES encouraged private forest owners to actively participate in the management of their property. However, it was abolished by the decision of the Croatian Government in 2010 (Amendment to the Law on Forests, OG 124/2010). It was re-established (Amendment to the Law on Forests, OG 94/2014) and it works now within the Advisory Service. According to The Law on Forests one of their duties is expert assistance and encouraging of private forest owners on the active involvement and establishment of private forest owners associations. In accordance with the Law on Associations (OG 74/2014) the association is defined as any form of a free and voluntary union of a number of natural or legal persons, for the purpose of protection of their interests and benefits which are in accordance with Constitution of the Republic of Croatia and laws, without the intention of generating profit.

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Ordinance on Habitat Types, Habitat Maps, Endangered and Rare Habitat Types and on Measures for Conservation of Habitat Types (Pravilnik o vrstama stanišnih tipova, karti staništa, ugroženim I rijetkim stanišnim tipovima te o mjerama za očuvanje stanišnih tipova), OG 7/2006 (amended in 119/2009)

Ordinance on Issuing, Renewal and Revoking of Licenses for Operations in Forestry, Hunting and Wood Processing Technology (Pravilnik o izdavanju, obnavljanju i oduzimanju licencije (odobrenja) za radove u šumarstvu, lovstvu i drvnoj industriji) (2007, amended in 2013) Komora inženjera šumarstva i drvne tehonologije [Online] Available from: http://forum.hrsume.hr/komora/Pravilnik%20o%20licenciranju.pdf[Accessed: 14 Nov 2014]

Rulebook on Method of Calculation, Forms and Deadlines for Green Taxes Payments (Pravilnikom o načinu obračuna, obrascima i rokovima uplate naknade za općekorisne funkcije šuma), OG 84/2010 (amended in 39/2012)

Statute of Advisory Service (Statut Savjetodavne službe) (2014) Ministry of Agriculture. [Online] Available from: www.savjetodavna.hr/adminmax/File/stranice/stranice_2014/Statut_Savjetodavne_sluzbe.pdf [Accessed: 14 Nov 2014]

8. Annexes

8.1. Forest ownership structure – detailed tables

8.1.1. National data set

Table 1A: Forest area according to ownership (Source: National Forest Inventory, 2010)

Category	Definition	Area (ha); share in total area (%)
Public ownership	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.	1 987 799 ha; 77.02%
Private ownership	Forest owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.	593 027 ha; 22.98%

8.1.2. National data in FRA reporting

Table 2A: Forest ownership according to FRA criterions (Source: UNFAO 2010 – FRA Country report, Croatia, p. 14)

National classes (forest according to FRA criterions)	Area (ha)		
	1986	1996	2006
State ownership	1420280	1359176	1416135
Private ownership	454030	434470	528699
TOTAL	1874310	1793646	1944834

CZECH REPUBLIC

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1. Introduction

1.1. Forests, forest ownership and forest management in the Czech Republic

In the Czech Republic (CZ) forests cover approximately 34% of country territory and its area slightly grows each year. Under the Act on Forests (1995) forest is regarded as national wealth, creating an indisputable component of the environment. Conceptually "forest" means forest stands with their environment and estates designated to perform forest functions. The forest functions are benefits conditioned by forest existence, which the law divides as production and non-production functions. Based on the prevailing functions, the forests in the CZ are classified into three categories: protection forests (2.5%), special purpose forests (22.9%) and production forests (74.6%). In a longer-term framework, there is a slight increase in the category of special purpose forests at the expense of production forests.

Gradual reduction of pollution load in the last decades has had a positive impact on the health conditions of forest stands where positive environmental changes are manifested with a certain time lag. However, forest stands still show a high level of defoliation which is amongst the highest in comparison with other European countries and, despite certain deflections, it shows a slightly rising trend in a long-term observation.

In terms of the tree species representation, coniferous trees (74%) significantly exceed deciduous trees (26%). The most frequently represented tree is the Norway spruce (51%), pine (17%), beech (8%), and oak (7%), larch (4%), birch (3%) and fir (1%). The area of the coniferous trees continues to decline, e.g. the area of spruce declined about 62,000 ha as opposed to the year 2000. The age structure of our forests is uneven. In the last years there has been a significant increase of superannuated stand areas (over 120 years), which might result in an economic loss in the future. It may be caused by the regime of forest management especially in protected landscapes and protection forests and by postponing the renewal of economically unattractive, less accessible or less quality forests. The area of forests below 60 years of age continues to be below standard. Approaching the standard continues in a very slow pace. The average rotation period is 115 years.

The ownership structure of forests underwent many changes in the 20th century caused by several revolutionary social-political episodes (the formation of Czechoslovakia, the 2nd World War, the government of the Communist Party and the return to democratic principles). The last substantial change occurred in relation to the process of returning property to former owners, restitution process, which was in progress in the 90s of the 20th century. On its basis an ownership structure was established which has not altered much since 2000. There has only been a slight fall in the area of state-owned forests. In 2012, the ownership structure was as follows: state forests 59.8%, forests owned by individuals 19.3%, communal and municipal forests 16.8%, legal persons 2.9%, forests cooperatives 1.2%. Probably, by 2016, the share of state-owned forests will drop about 6-7% as a result of the last round of the restitution process, the return of the properties to church (at present registered as an individual category).

Despite great social significance of the forests, the importance of the forest management for the national economy is small. The share of forestry in GDP in basic prices is less than 1%, in 2012 the share was 0.73% (0.59% in constant prices of 2005). In the last 10 years the amount of felling has ranged from 15 to 17 m^3, which presents approximately 6 m^3/ha of forest. Of the total amount of felling coniferous trees represent

85-90%. Growing stock volume continues to grow; in 2012 it amounted to 686 mil.m^3.

An important milestone for forestry is also the membership of the CZ in the EU and the related possibility of obtaining European financial aid, especially in the context of rural development support.

1.2. Overview of the country report

The Czech national report consists of four parts: literature review, the description of forest ownership and its changes during last 25 years, the characterisation of forest management approaches utilised for new forest owners and the analysis of policy instruments for such owners.

From the presented literature overview can be learned that the issue of the forest ownership and its changes was discussed mainly in the professional literature and web sites while scientific approaches and analyses are scarce; comprehensive research on different groups of forest owners has not yet been conducted. In the Czech Republic a wide range of areas has been studied so far, although not addressing ownership categories explicitly, but approaching the issue of ownership from different points of view.

Concerning the ownership structure, the current one formed in the 20th century as a result of many socio-political changes. The return to democracy re-established private and municipal forest ownership; the process of restitution lasted about 20 years and is completed with the return of forest property to churches. However, the state still owns more than one-half of all Czech forests.

The main trends in the forest ownership change were as follows: a restitution process, the establishment of the Forest of the Czech Republic, state enterprise, and the restructuring of Czech forestry and significant changes in lifestyle.

From a size structure point of view, the Czech situation is not sufficient. There are more than 100 thousand private small-scale forest owners, with the average size 3 ha but the medium size smaller than 0.5 ha. In such small forest assets it is difficult to secure a sustainable forest management. For those owners there is a support available for association establishment (provided by the state administration) as well as other financial incentives for sustainable forest management.

Besides financial support, there are other different policy instruments. The most important are legislation measures. They differ according to the structure of ownership and, in particular, the size of assets.

The improvement of forest owners' situation should be assured by a functional sectoral innovation system (SIS) although the essential functions of such system are in the Czech Republic fulfilled only partially. Based on the analysis by Jarský (2014) it can be stated that out of the three essential functions of the innovation system it is the function of support granting that is fulfilled the most followed by an information function and the function of conflict restriction management is fulfilled the least (which is reflected in the relation between forest management and landscape protection where different tools that should eliminate potential conflicts are in reality often their sources).

2. Methods

2.1. General approach

According to the aims of the country report, which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

A qualitative data collection relied on a literature review from scientific papers and reports and professional journals on a restitution and transformation process in the Czech Republic, forest ownership structure changes, forest management approaches and policy instruments related to forest ownership.

Quantitative data were collected as well. Statistical data were gathered from the statistical database and Yearbooks of the Czech Statistical Office (CSU) and from the Reports on the Status of Forestry in the Czech Republic (Green reports), as well as from different international and national scientific studies on forest ownership.

For illustration and better understanding of the issues of new forest owners types, case examples as well as own expert knowledge was used and the specialists from the Czech University of Life Sciences Prague, Mendel University of Agriculture and Forestry in Brno and Forestry Research Institute were questioned.

The research period lasted from November 2013 till September 2014.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature defined as relevant, detailed description of 7 most relevant publications, and a 1-3 page summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). The 7 detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

In the Czech Republic, comprehensive research on different groups of forest owners has not yet been conducted. Large number of literary sources in the Czech Republic cover wide range of forestry issues and address ownership implicitly, but still they are taken as relevant (and presented in Literature section) since they approach the issue of ownership from different points of view.

Most comprehensive overview so far has been done in the national report of an international project Innovation and sustainability of forestry in Central-Eastern Europe: challenges and perspectives (SUSI-CEE) focused on various changes in the forestry sector after the political changes in Central and Eastern Europe (Pudivítrová et al. 2010).

Forest ownership issue was very lively debated in the past 20 years and more, especially in professional networks (including professional journals, such as "Lesnická práce" – "Forestry Work"), but has not been evaluated by scientific methods, which is the basis for publishing in scientific journals. In the journal Lesnická práce and professional web site www.silvarium.cz there were hundreds of different opinion published (among others Jiráček 2011, Lasák 2012,

Oliva 2004, Řezáč 1999, Slavinger 2013, Šímová 2006, Zahradník 2000). However, these opinions are individual and very often contradictory, from which as sole sources it is almost impossible possible to deduce any conclusions.

Moreover it can be mentioned that several studies were commissioned in relation to the process of re-privatization, these were made available to contracting authorities only (state enterprise Forests of the Czech Republic, Ministry of Agriculture, etc.) and could not be further published (based on the contract).

One fundamental area that is related to the topic of FACEMAP Cost Action is the issue of restructuring of forest sector, which occurred after social transitions in the Czech Republic in 1990s. This core area can also be diversified into three groups:

1) restitution (return of nationalized property, see Bartůšková and Homola 2009, Bičík and Jančák 2003),
2) privatization of forestry technologies, including some forestry operations (creation of business entities in forestry, see Kupčák 1998, 2003, 2007),
3) the creation of state enterprises managing state-owned forests (see Kupčák 2005).

Organizations that deal with such problems (all three categories) are on one hand state organisations, e.g. - especially the Ministry of Agriculture of the Czech Republic (MA) and organisations under the Ministry of Agriculture competency (Forestry and Game Management Research Institute, Forest Management Institute), and also Forests of the Czech Republic, state enterprise (LČR, s.p.) and on the other hand research institutions, e.g. universities, which include the Forestry Faculty (CULS and Mendel University in Brno). Topics that are marginally related to all three areas have been financed from the state budget (Grant Agency of the Czech Republic, Ministry of Agriculture, Ministry of Education) or private grant agency of the LČR, which funds projects for their own needs (financial analysis related to the area 2 and 3).

So far research was focused on national or regional level; a comparison among other European states was made only rarely. The most commonly used methods are: economic (i.e. financial) analysis, comparative analysis, sociological research, analysis of policy documents (e.g. Jarský, 2014; Šišák 2006, 2011).

It is very difficult to characterize the main results of existing research, because results are highly fragmented, and refer to separate areas, where different groups of forest owners are assessed just as one of the analysed features. A clear result can be determined only in relation to the analysis of legal documents and policy instruments, where it can be stated that the general rules for different forms of ownership are the same. There are cases where public ownership of forests is limited by some additional responsibilities (compared to private owners), and within the possibilities of obtaining financial support private owners are favoured (Flora 1997).

Currently, the last phase of the restitution process is running dealing with the return of properties to church. Throughout the process of restitution not any major problems occurred (Bičík and Jančák 2003). A more detailed analysis related to each category of property and possible implications for the management of restituted forests is missing. A major deficiency is the lack of public forest owners' databases, which could serve as a basis for more detailed analysis (Oliva 2005). All research activities (particularly related to the analysis of motives and motivation of forest owners) within FACESMAP are suitable for the Czech Republic to perform as they could significantly extend knowledge and be a base for further research.

3.2. New forest ownership types

In the Czech Republic all forest owners who received their forests in restitution (the property was released after at least 40 years) can be considered as new forest owners (i.e. in the period of restitution they were the new forest owners). There are around 150,000 private forest owners and 4,700 municipal forest owners after the restitution (MA 1999). From 2013 until now 17 churches requested the return of 150,000 real estates (of which 95% are Roman Catholic Church).

The available national literature does not deal with detailed breakdown of new forest owners (Kubačák and Jacko 2012), but it is possible

to assume that among so many restituents urban owners are going to be counted, absentee owners and very often non-farm owners. Therefore, it is understandable that no analyses on the motives of forest owners groups were performed. An attempt was made only in the evaluation of the implementation of innovations in forestry, where goals and personal views of selected groups of owners were evaluated (Jarský 2002, Jarský et al. 2007, Pudivítrová and Jarský 2011).

3.3. Forest management approaches

In the current scientific literature there are no direct recommendations for specific types of new forest owners regarding the forest management. There are, however, articles and recommendations concerning the income diversification (Kupčák 2010, 2011, Pulkrab 2006, Pulkrab et al. 2006, Šišák et al. 2012, Vlkanova 2011), forest visitors, their opinions and importance of non-wood forest products (Pejcha and Šišák 2010, Riedl 2010, Riedl and Šišák 2012, Riedl and Šišák 2013, Šišák 2006, 2011), which are applicable for new owners also.

Within the support of the management of small forest owners there is relatively much attention paid to the association of forest owners (Flora 2003, Flora et al 2003, Matějíček and Lišková 2010, 2011, Matějíček and Skoblík 1997, Pacovský 2006, UHUL 2007, Weiss et al 2012), to the reimbursement of cost due to restrictions in forest management (Kocourek 2012) or to promoting afforestation (Jarský and Pulkrab 2013).

3.4. Policy change / policy instruments

All existing forest owners (except state) lost their property after 1949 and 40 year later after social and political changes in 1989 they got it back. The entire socio-legal system has been changed and has been transformed in terms of the equality of all forms of ownership. The same applies for legal changes in forestry, which arose on the basis of political change (Flora 1997). The specific relationship of state-forest owners is characterized by Oliva (2006a, 2006b) where especially the question whether public (state) forests should fulfil the same functions as the forests owned by private owners is evaluated.

If we evaluate the **policy instruments** related to forest management used in the last 20 years then we could say that this area is in literature analysed most often. These include the assessment of funding (financial aid) of forest management from different perspectives and different forms of support (Jarský 2004, 2005, 2007, Kupčák and Šmída 2012, Šišák 2013, Šišák and Chytrý 2004, Špičková and Jarský 2013), evaluation of illegal logging (Ventrubová and Jarský 2010), and evaluation of policy documents related to innovation (Jarský et al 2010).

The basis for most of the current mentioned analysis is the National Forest Program (NFP), effective since 2008 (MA 2008). The NFP II (the first was valid until 2008) is the only official document that deals with various categories of forest properties, specifically focuses on small owners, their associations and the role of state forests.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on a national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information still comparable, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses how far the national categories and definitions may be transformed into the international FRA data structure or how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Who owns the forest?

The main source of the data for forest

ownership structure is the Annual Report on the State of Forests and Forestry published by the Ministry of Agriculture of the Czech Republic. The principal share of forests in the Czech Republic is owned by the state (59.8 %). Municipalities, their forestry commissions and communities (registered within one category) have a 16.79 % share in woodland ownership and private owners a 19.31 % share. Of the total area of woodland owned by the Czech Republic (1,553 thousand hectares) 1,306 thousand hectares is administered by "Lesy České republiky s.p." (Forests of the Czech Republic, state enterprise), 124 thousand hectares by "Vojenské lesy a statky ČR s.p." (Army Forests and Estates of the Czech Republic), 6 thousand by the Office of the President of the Republic (in the Table 1 within State forests – other) and 94.9 thousand hectares are administered by Správy národních parků (National Parks Administrations).

Table 1: Ownership structure in the Czech Republic in 2012 (MA 2013)

Ownership		**Area of forest stands**	
		ha	**%**
State forests		1,553,086	59.80
of which	Forests of the Czech Republic, State Enterprise	1,305,591	50.27
	Military Forests and Farms, State Enterprise	124,164	4.78
	Ministry of the Environment (National Parks)	94,893	3.65
	Regional forests (secondary schools and other)	2,823	0.11
	Other	22,311	0.86
	Ministry of the Environment (National Conservation Agency)	1,195	0.05
	Originally state forests*	2,110	0.08
Legal persons		74,654	2.87
Communal and municipal forests		435,951	16.79
Forests owned by church and other religious entities		1,476	0.06
Forest cooperatives		30,502	1.17
Forests owned by individuals		501,514	19.31
Other forests(not listed elsewhere)		4	0.00
Total		**2,597,186**	**100.00**

** Original large FMPs owned by state – validity from 1981–1996, partly from 1997; private owners and municipalities manage their forests under an abstract from FMP and will have new FMPs upon their renewal.*

In Table 1 national classification is applied that is used in all national official reports. The definition is as follows:

National class + definition

State Forest

= owned by the State (national, state or government-owned institutions or corporations)

Municipalities

= forest owned by cities, towns, municipalities, communities and villages.

Regions

= forest owned by regional government

Church

= forest owned by churches

Forest cooperatives

= forest owned by forest cooperatives, which consist of individuals that joined co-operatives or similar organisations

Individual Private

= forest owned by individuals

Corporate bodies

= forest owned by corporations, legal persons

For the international comparison the forest owned by state, municipalities and regions is considered public ownership, while forests owned by individual owners, legal persons, church and forest cooperatives are regarded as private.

4.1.2. Critical comparison with national data in FRA reporting

There is no specific approach or methodology for FRA reporting used in the Czech Republic. Data for FRA report are resulting from general monitoring of forests at the national level based on a legal definition of forest. It would be extremely difficult to have two different approaches in spite of different purposes for using the data; therefore the national data for FRA are based on the definition of forest in the Forest Act.

The definition of forest according the Forest

Act is as follows: Land registered in cadastre as forest = that land must be in accordance with forest act reforested in 2 years after deforestation, tree density must be higher than 70 % (if less, it is obligatory to cut it down and reforest it). Size in area is not limited. Incl. roads, cleared tracks etc.

Another reason for such reporting is inexistence of continual monitoring and updating data according to FRA methodology. The Czech Republic (resp. Forest Management Institute) uses the data from forest management plans that are updated on a regular basis. However the Czech and the FRA definitions of the forest (lesni puda, PUPFL) are very similar.

Differences:

- FRA size limits (0.5 ha), in the CZ, a "forest" could be smaller depending on how the individual land plot is registered in the cadastre; no information on this is available. The main reason for unavailability of the data is a co-ownership of smaller forest owners; total area of such isolated plots smaller than 0.5 ha could be approx. from hundreds to 2 thousand (max.) hectares. It is obligatory to reforest any forest stand in 2 years after felling; it is also obligatory to maintain a density of a forest stand higher than 70 %. In some cases the regeneration time could be prolonged by state forest authority.
- An unknown part of the approx. 6,000 ha of dwarf pine is not a regular forest according to the FRA definition (it mostly does not reach a height of 5 m in situ): these dwarf pine groups ("spots"), mostly mixed with spruce, form parts – larger or smaller than 0.5 ha - of regular forest stands mainly in high mountains. Here, these (roughly 0.2 % of total forest area) are included into "forest" because they are used and protected like regular forest stands having more non-wood producing functions than a regular forest has. It is also better to keep them within "forest" than to introduce absolutely groundless subjective assessments into reporting tables. The height and area size limits are not fully useful for a forest definition in Central Europe.

Table 2: Comparison of national data (MA 2011) and data in FRA reporting relating to 2010

FRA reporting					
Forest		**Other wooded land**		**Other land in 1 000 ha**	
1,000 ha	%	1,000 ha	%	Total	of which with tree cover
2,657	34	0	0	5,069	92
Annual report on the state of forests and forestry					
2,657	34	0	0	5,069	92

Essential differences between official statistics and FRA report are that FRA displays forest estate areas whereas official statistics of the Ministry of Agriculture are presented as the area of wooded land (i.e. estates really covered by woods), see the above mentioned differences. From this point of view the two statistics are not entirely comparable. FRA data show higher values than MA (2014) for individual categories. Table 3 compares the FRA data with the data of the Czech Statistical Office (CSU 2013) which present areas of forest estates. However, the data are observed in 4 categories only: state (1,591,000 ha), municipalities and communities (418,000 ha), private (557,000 ha), other types of ownership (97,000 ha).

Table 3: Comparison FRA 2005 and CSU 2013

FRA 2010 Categories	Forest area (1000 hectares)	
	(FRA) 2005	(CSU) 2013
Public ownership	1,999	2,015
Private ownership	648	654
...of which owned by individuals	555	557
...of which owned by private business entities and institutions	93	97
...of which owned by local communities	0	0
...of which owned by indigenous/tribal communities	0	0
Other types of ownership	0	0
TOTAL	**2,647**	**2,664**

Source: CSU 2014

4.2. Unclear or disputed forest ownership

In the CZ the owners of property are registered in the so-called Cadastre of Real Estate, which is a database (register) open to public and substituting former real estate cadastres comprising data on ownership, rights and duties (servitudes or easements) related to the property in question. After 1989, a period of significant social changes characterized by restitution processes and state estates privatization, forest ownership relations existing before the 25th February 1948 were renewed. This date presents a day on which the communist upheaval occurred in 1948 followed by a gradual takeover of forests in the CZ and their inclusion among the property of the state. The so-called "unknown owner" is a great obstacle not only for handling the property but also for administrative procedures concerning for instance neighbouring estates. Property in the Cadastre of Real Estate is often registered as an unknown owner, i.e. as title No. 11000, or it concerns an owner registered in the cadastre without a proper identifier (e.g. surname and former domicile only), or property not registered as any title. In the CZ a total amount of such cases (all types of land) reaches to several hundred thousand. However, it is difficult to quantify a share or amount of the property that is in the regime of forest estates (estimated on several ten thousand). The causes of the most current ambiguities in the issue of ownership fall back to 1948 – 1989, when the duty to register property ownership in the public cadastre was totally cancelled for a certain time period and later partially substituted by records that were insufficient for present needs (the so-called simplified records). This was acceded by administrative mess in which a number of legal tasks of the previous state administration was not duly supported by titles, or was not both legally and formally accomplished.

Frequent formal mistakes could be found also in property changes among the property administrators (e.g. national enterprises).

A part of properties with an unknown owner accounts for unsettled inheritance from persons that emigrated.

Record deficiencies concern the whole area of the CZ. However, they are especially frequent in borderline areas uprooted by former German inhabitants. An unsatisfactory state of archives is often an obstacle for tracing back the development of legal relations. Situation varies from one place to another. Moreover, today's cadastres register the so-called "unknown owners" even in such cases where they have not sufficient and plausible background data. However, the New Civil Code (NCC) (new Act from 2013) introduces a change determining that an estate can be regarded as abandoned for ten-years, after which the estate is transferred to the ownership of the state. With respect to the NCC and its force from the 1st January 2014 it can be assumed that from the 1st January 2014 some property belonging to "unknown owners" could be registered as state ownership.

During the 1st half of 2012, the staff of the ÚZSVM (Institute for Representing the State in Property Issues) newly looked up 1,564 estates of unknown owners and found the owners of 1,525 estates out of which 711 registered during the 1st half of 2012 under the state. Since 2006, the ÚZSVM has altogether found as many as 30,711 estates of unknown owners. They managed to find concrete owners in 16,383 cases while 7,903 estates belong to the state, i.e. 48% of the

elicited.

The Cadastre of Real Estate must be informed about the transfer of the title by entities in due course, or by court (submitting the proposal for title must be supported by legal record). It is necessary to emphasise that Real Estate Cadastres are recording offices only. They are not entitled to decide who the owner is or who is legitimate in terms of legal relation in the real estate cadastre, nor are they endowed with legal measures to solve situations where legal relation in the real estate cadastre is not filed in agreement with true legal relation.

The main problematic issues in relation to Real Estate Cadastre can be divided into three basic categories:

I. Property registered in the Cadastre of Real Estate with its unknown owner;

II. Property whose owners are registered in the Cadastre of Real Estate albeit they are probably deceased;

III. Property with the owner, registered as an entity that cannot be identified.

I. THE OWNER IS UNKNOWN

There are about 24,000 plots with the total area of 10,000 ha whose owner is unknown. However, a large share of these plots amounts to farmland. In such cases the issue of the unknown owner is amended by § 15 of Act No. 95/1999 Coll., on Transfer Conditions of Agricultural and Forest Property from State Ownership to other Entities.

The Institute for Representing the State in Property Issues records a large number of applications for solving legal relations of these estates. Territorial branches are then solving the above mentioned applications by assigning screening the set of descriptive and geodetic information at a particular real estate cadastre. Based on the experience of the Czech Office for Land Surveying, Mapping and Cadastre, the probability of finding the owner or title of most properties, which would enable the estate to be registered, is negligible.

II. THE OWNER IS PROBABLY DECEASED

Based on the investigation performed by the Czech Office for Land Surveying, Mapping and Cadastre, the 2nd category incorporates about 10 thousand plots (how many of these are forests is not specified), 444 buildings and 95 flats. The office has also included in the list properties where the owner registered in the real estate cadastre was born in the 19th century. With regard to the mentioned facts it is probable that this category of property will be even more extended. If it is possible to look up the date of death and, if during the inheritance proceedings the property in question was not dealt with, it is necessary for the inheritance to be resolved additionally. However, if it is impossible to determine the date of death, in line with valid legal adjustment it is possible to propose the initiation of procedure to declare the owner dead. In this case, though, inheritance procedure must follow. The Institute for Representing the State in Property Issues does not accept such proposals due to the length of such process and the fact that not always in a follow-up inheritance process is the property accrued to the ownership of the state.

III. THE OWNER CANNOT BE IDENTIFIED

The third category comprises 3% of properties registered in the real estate cadastre. It includes approximately 640 plots, 13,000 buildings and more than 100 flats. The owners of these estates are registered in the real estate cadastre by their names and surnames only. They cannot be properly identified. Therefore they cannot be found in the population register or declared dead.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

After accessing the European Union (as of 1st May 2004), the Czech Republic, according to the EU Law, had to accept the fact that even other countries nationals can acquire country's property. In the CZ this law had been suppressed by the Foreign Exchange Act § 17 and since it was an interest of the CZ to maintain such arrangements even upon the accession to the EU, a transient period was negotiated during which the Czech Republic maintained the restriction in the area of acquiring property by foreign nationals.

For objects intended for housing a five-year transient period was negotiated which ended on the 1st May 2009. For other estates (farm and forest estates) a seven-year transient period was negotiated ending in April 2011. The expiry of the transient period has also transmitted into the foreign exchange law by adopting an amendment to the act which with effect as of the 18th July 2011 completely abolished § 17.

At present (as of 1st May 2011), restrictions for foreign entities acquiring property in the CZ do not exist. This will inter alia lead to the abolishment of setting up CZ trading companies by foreign nationals for the purpose of the companies purchasing property with foreign nationals being its owners.

There are no restrictions when buying or selling forest estates for CZ citizens. In conditions of sale or purchase there is no difference between state or private forests. The sale of forests owned by state entities, e.g. Forests of the Czech Republic, state enterprise, is conditioned by the approval of the founder of the company, in case of the Forests of the Czech Republic, the Ministry of Agriculture of the Czech Republic.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no special measures or restrictions for inheritance (regarding both the size and number of ownership shares). For instance, fideicommissum and allodial* titles were abolished in our countries as soon as in 1924.

**Both refer to historical forms of ownership, which developed from mediaeval feudal law. Allodium was a form of real estate ownership, which the owner could independently dispose of, while fideicommissum is form of real estate ownership, which the owner cannot freely dispose of, as it is a successive right to the property.*

4.4. Changes of the forest ownership structure in last three decades

Table 4: Changes in ownership of forest property 1850 – 2012

Ownership (%)	1880	1910	1920	1930	1945	1947	1950	1960	1970	1980	1990	2000	2012
state forests	0.3	0.2	3.6	12.4	18.3	60.1	70.1	74.2	91.6	94.4	95.8	63.1	59.80
communal and municipal forests	10.2	9.4	10	11.3	14.9	17.4	16.6	14.2	0	0	0	13.9	16.79
church and other religious entities	7.2	6.6	7.9	7.1	6.1	7.1	0	0	0	0	0	0	0.06
forest cooperatives and associations	0	1.2	1.9	1.8	1.7	3.2	3.2	0	0	0	0	0.9	1.17
foundation forests	1.3	1.3	0.8	1.2	0.9	0	0	0	0	0	0	0	0
nobility forests	25.7	29.5	0	0	0	0	0	0	0	0	0	0	0
other private forests	55.3	51.8	75.8	66.2	58.1	12.2	10.1	3	1.2	0.4	0.1	22.1	22.18
farm cooperatives	0	0	0	0	0	0	0	8.6	7.2	5.2	4.1	0	0.00

Source: MA 1999, MA 2001, MA 2013

From the data in the table follows:

- In the beginning of the 20th century the state did not own almost any forests (0.3% of forest area in 1900)
- State ownership was increased after 1945 by confiscating properties belonging to Germans, collaborators and traitors, the so-called Benes decrees
- Before 1989 state ownership extended to 95.8% of total forest area in the CZ
- Currently (data from 2012), the largest share, 59.8%, belongs to the state (The Forests of the Czech Republic, state enterprise, Military Forests and Estates, national parks, regional forests and others)
- At present there are 23.4 % privately owned forests (Forests owned by individuals + Legal persons + Forest cooperatives and associations) and 16.8% municipally owned forests

- After 1989, ownership structure from the 25th February 1948 has been renewed
- Restitution was initiated by the Act on Ownership Relations to Land and other Farm Property (No. 229/1991 Coll.) - forest estates were returned to private owners
- Following the same Law, state forests were returned to municipalities and
- The issue of church restitutions had remained unsolved for a long time (till 2012), and only after the adoption of Act No. 228/2012 Coll. the churches are to be returned approximately 175,000 ha forest estates (approximately 6% total forest area in the CZ)
- Regarding church ownership, after 1989 in 1990 Act No. 298/1990 Coll., on property relations amendments of monastic orders, congregations and Olomouc archbishopric, in amendments of Act No. 338/1991 Coll. was adopted returning almost 200 buildings, mainly cloisters, monastic houses and several other estates to the churches

Restitution process – returning property to its former owners after 1989

The renewal of proprietary rights to forest property was carried out in accordance with the Act No. 229/1991 Coll., on the adjustment of proprietary relations to land and other farm property, as amended. The purpose of the restitution process was to return to the ownership structure existing prior to February 1948 (see Table 1.) Since the law came into effect in 1991, there have been received more than 50,000 applications for 359,000 ha of forest property. Following legally effective decisions of land offices or courts, almost 49,000 cases were completed and 350,000 ha of forest property was issued.

Challenging legal disputes are still expected to be heard.

A part of property disputes is between the state and potential forest restitutions dealing with the issue of ownership and legal state dating back to the 25 February 1948. The most problematic is proving the ownership which was many times influenced by the regime of Nazi occupation (1939 – 1945), aryanisation of Jewish property and, consequently, confiscations after 1945 (the so-called Benes' decrees).

At present the restitution process is to a great extent accomplished. According to the Annual Report for 2012 (LCR, 2013) of the state-owned company Forest of the Czech Republic, State Enterprise, a legal entity required to issue forest property following restitution claims, from 1993 till the end of 2012 altogether 550,000 ha forests were claimed and 484,000 ha forests so far were issued to private and legal entities under the Act No. 229/1991 Coll. 66,000 ha forests which have been claimed for and are pending (2.5% total forest area) have not been returned yet (except for church forests). Since 2012 altogether 415,121 ha forests have been returned to municipalities (in total 7,108 cases solved). However, as long as 2012 no general legal measures were taken regarding the restitution of church property.

Restitution of forest property of towns and municipalities were in progress from 1991 under the Act No. 172/1991 Coll., on the transfer of some assets from the property of the Czech Republic to municipalities, and forests formerly owned by forest cooperatives were returned to these entities under the Act No. 229/1991 Coll., on transfer of some assets of the Czech Republic to the ownership of municipalities, carried out following the Government Resolution No. 169/1995 Coll.

The church restitution is an allocation of property which had been confiscated by the state, i.e. nationalised, to churches or religious institutions either back to the ownership of those entities from which it was confiscated or in line with a political agreement to another legal entity of the same church or other churches or religious institutions. In Czechoslovakia the church property had been confiscated in several waves; first by Joseph's decrees, then by the land reform in the period of the first Czechoslovak Republic and finally after the Second World War, especially after February 1948. Churches, to the greatest extent the Roman Catholic Church, supposedly lost 2,500 buildings, 175,000 ha forests and 25,000 ha arable land. As substitution for yields from these estates the state had committed itself by law to paying salaries, social insurance and pensions to the clerics

and priests of several churches, running costs and maintenance of confiscated church property from the sources of the state budget (based on Act No. 218/1949 Coll., on economic security of churches and religious institutions). Despite reversible talks going on since the Velvet revolution in 1989, a legal separation of the state from the church in the CZ (which is, based on polls, desired by the majority of Czech Republic inhabitants, regions, municipalities and even 17 listed churches applying for their property restitution) has not yet taken place, while in other European countries the separation of the church from the state is in progress, if not already accomplished. The church in the CZ is not state-owned. However, registered churches have so far been financed by a significant share from the state budget of the CZ (there is no special church tax, for instance clergymen salaries are paid by the state etc.). It is therefore a complete separation of the church from the state. Churches will thus become private legal entities.

After several problems in the Parliament and the Senate and after the return of the act by the president, the church restitutions were finally accepted by the Parliament on the 8th November 2012. On the 22nd November 2012 president Vaclav Klaus neither signed nor vetoed the act No. 228/2012 Coll., which came into effect in 2013. To the churches are to be returned the property in the value of approximately 75 billion Czech Crowns (3 billion EUR) and in another 30 years they are to be gradually paid approximately 59 billion Czech Crowns (2.3 billion EUR) as compensation for the property that cannot be or will not be returned due to various reasons. Approximately 175,000 ha forest estates are concerned (approximately 6% total forest area in the CZ). Within the restitution process churches receive both property and compensation. They will most likely not receive all 175,000 ha forests as about one third of claims is disputable, which will be decided in court. A 2.3 bill EUR compensation within 30 years is compensation legally determined following expert opinions which will probably decrease within those 30 years. Only after the 30 years have passed, church financing will be finally completely disengaged from the state.

4.4.1. Changes between public and private ownership

In 1990 (immediately after the political changes in 1989, following the fall of the communist regime) the state owned 95.8% of all forests in the Czech Republic. 4.1% accounted for farm cooperatives. The disposal of these forests was however limited and due to the deformation of the right of ownership during the communist era it de facto meant the same as state ownership. Only 0.1% remained in the ownership of private physical entities and other subjects. The adoption of restitution laws at the beginning of the 90s resulted in the restoration of the ownership to the state in 1948 (before the communist coup). Approximately 90% of required forests were returned already in the 90s of the 20th century. The issue of the adopted legislation for the restitution of church forests remained opened till 2012.

4.4.2. Changes within public ownership categories

Public forests include: forests owned by the state and forests owned by municipalities and communities and forests of public corporations (e.g. universities) and vocational school forests. The state-owned forests are managed by the Forest of the Czech Republic, state enterprise, a company established in 1992 after the transformation of state forests. Military forest estates are managed by state-owned company Military State Forests and Estates. After 1990, 3 national parks were declared (Šumava, Podyjí, Bohemian Switzerland) whose forests together with the forests of Krkonoše National Park are under a direct administration of the Ministry of the Environment performed by National Parks Administrations. After 1998, the forests of schools for forests and farms were transferred to the ownership of Universities (Act No 111/1998 Coll.).The forests of vocational schools forest districts are owned by the state; however these organisations are established by regions (autonomous administrative units). At present the abolishment of one military estate (in Brdy) is discussed, however, with respect to specific ways of management (military exercise area)

these forests will remain in the property of the state even with the right of the Military Forests and Estates to manage them. Public forests are also managed by the Presidential Office - Lány Forest Administration.

In the beginning of 1991, communal and municipal forests were returned from the state ownership to respective subjects. Most of the forests were returned in the 1990s. In the Czech Republic there are now 6,521 municipalities and townships (CSU 2014). Information on communal and municipal forests is provided by The Association of Municipal and Private Forest Owners in the Czech Republic (SVOL 2014).

4.4.3. Changes within private forest ownership

From 1990 until the end of 2012 the share of private forests increased from 2.1% to approximately 23.35% (1/4 of total forest area in the CZ). Forests were returned to both private physical (19.3%) and legal entities (2.9 legal persons + 1.2% forest cooperatives and associations). These entities perform the enforcement of property rights in different forms of trade companies (companies with limited liability, cooperatives, join-stock companies etc.) One of the largest private forest owners is Holzindustrie Schweighofer, Ltd, with approximately 20,000 ha (Schweighofer 2014), followed by Colloredo-Mansfeld, Ltd. with approximately 12,500 ha (Colloredo-Mansfeld 2014) and Orlík nad Vltavou Forests, Ltd. with approximately 10,500 ha (Schwarzenberg 2014).

As regards the efficiency of forest management, a problem seems to be in restitutions to small-scale owners (in the 1990s there were approximately 236,000 owners whose forests estates were smaller than 1 ha, in 2012 there were about 198,000 such estates (interview with representatives of the Ministry of Agriculture of the Czech Republic, 2014). Changes are definitely occurring in private ownership; however, statistical surveys are still not available for the public.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

Restitution process

From the legislative perspective new forest owners, as specific category, were not recognized in restitution process. Members of those families who use to own the forest before socialist time moved into different business when their land was taken. Now, it is possible to characterize the majority of so called “restituents” of forest property as persons who do not have or have lost a relationship towards their forest property, they do not have any or just very little knowledge in forestry and forest management. From this point of view such owners are considered as “new”. The structure of the individual forest owners is unfavourable, more than ¾ of all owners manage the property smaller than 1 ha. The average area of the forest property is about 3 ha. Until now only one monograph have been published that deals with the complex restitution process in agriculture and forestry (Kubačák and Jacko 2012). However, deeper analysis is needed regarding this issue.

Forest state enterprise

The issue of the status, organizational structure, and way of fulfilling economic activities and at the same time social/public requirements in the properties owned by the state is currently an important issue to tackle. In the CZ during the beginning of the 1990s an entity of the Forests of the Czech Republic emerged by transformation of socialist state

forest enterprises. It has the form of a state enterprise, while the principle of its functioning is the property administration by means of professional forest personnel who is outsourced to private subjects to provide forest activities (afforestation, educative measures and harvesting). The concept and settings reflected the situation of the first half of the 1990s and in course of time had to adapt to several modifying external factors: e.g. a new model of state administration, the establishment of higher territorial aggregates (regions), accession of the CZ to the EU. The effectiveness of this new model of enterprise functioning was not assessed with respect to the situation on the timber market and impacts of the state-established entity to a processing sector.

However, analytical or comparative studies on these issues largely do not exist. There are available studies comparing the manner of timber trade at the roadside and standing sale only, and the proposal of new organizational structure of the Forest of the Czech Republic, state enterprise (Kupčák 1998, 2003).

Buying forests

Total liberalization of the property trade (including forests) since 2011 in the CZ and related consequences in the change of ownership structure have not yet been analysed. In the CZ, there exist price maps of realties, legal regulations for property valuation (including forests and forest property). Changes in the property market regarding forests and forest property are best seen based on the data from public register (Real Estate Cadastre). For detail scientific research and assessment the problem is in the Law on Personal Data Protection with many data unable for publishing due to monitoring and or scientific research.

Afforestation

Afforestation of agricultural land is one of a few opportunities how to expand forest area in the CZ. This issue is tackled in forest-policy documents, in which support for afforestation is listed as one of the major goals. In practice this support has a historical tradition. Until 2003 there was support for afforestation only from national sources. Since 2004 there exists co-financing with EU funds. However, as the available analysis shows (Špičková and Jarský, 2013, Jarský and Pulkrab, 2013) political ambitions are not fulfilled and afforested area of agricultural land is still relatively small. What leads to this situation deserve a deeper analysis.

Changing lifestyles

From a sociological point of view, it would be very beneficial to make a study on forest owners who no longer live in the country and are not even active in managing their forest property. Such a study is still non-existent in the CZ. From the perspective of the CZ, the institute of a “Forest Manager” guarantees the care of the forest.

According to Forest Act (1995) each forest owner (regardless of its size) shall be obliged to carry out forestry activities in co-operation with a forest manager. The forest manager shall offer special skills required in forestry activities. The forest manager may be an individual or a legal person holding a licence for such activities issued by a relevant state forest administration body.

Each forest owner can choose a forest manager and he/she should notify a relevant state forest administration body of the name of the selected forest manager.

A forest owner who carries out forestry activities according to a plan is obliged to conclude an agreement on the provision of services with the forest manager. If the forest owner meets the requirements for special forestry education and experience in forestry work, the forest owner may himself carry out the specialised activities of a forest manager in forests without a licence.

If the forest owner does not choose a forest manager himself, this is done by a legal entity which executes the forestry right in state-owned forests in the given area, unless the relevant state forest administration body decides to appoint another legal entity or individual.

Staff members of a relevant state forest administration body in the area of competence may carry out the activities of the forest manager. This shall not apply to forestry activities on their personal property. The costs of the activities of the forest manager shall be borne by the forest owner; the costs of the activities of the forest

manager carried out by a legal person or individual shall be borne by the state.

The assessment of the change in the lifestyle and related needs for maintenance and gradual liberalization in the issue of "forest manager" or possible impacts on other areas of forest-related policy (e.g. support of owners' associations) have never been carried out.

Compensations for property right restriction due to public interest

The Charter of the CZ Constitution on the Rights and Freedom guarantees property right protection. To restrict the property right it is necessary to meet two conditions: law assigns the restriction and the owner is eligible for compensation. When declaring protected regimes of species or territorial protection in the CZ, forest owners are restricted in terms of management (as far as management exclusion) by the Law on Nature and Landscape Protection (Act No. 11/1992 Coll.) Interesting results could be obtained by a cross-country study or by an analysis of the judicature of the European Court for human rights in Strasbourg. A short analysis on this was performed by Kocourek (2012).

Table 5: Trends in forest ownership

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	3
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	3
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2
• Other trends, namely: Compensations for property right restriction due to public interest	2

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

4.5. Gender issues in relation to forest ownership

The official statistical data do not deal with the gender issues in connection with forest ownership. Probably it is possible to obtain (based on contract, charged) some data from cadastres.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic (characterized or motivated by philanthropy; benevolent) organisations. The management objective for these forests is usually to deliver social or environmental services with maximisation of financial or timber returns as a secondary concern. Most owners corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

There are several types of NGOs, the most important are cooperatives/association and environmental NGOs.

Table 6: Forests owned by different NGOs

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts	X		
• NGO with environmental or social objectives	X		
• Self-organised local community groups	X		
• Co-operatives/forest owner associations	X		
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

4.6.1. Foundations or trusts

In 1918 – 1938, after the birth of independent Czechoslovakia, foundation forests were usually administered by two institutions (a state and self-governing or church institution). This form of forest ownership was abolished before 1947, prior to the communist coup, by the Act No. 142/1947 Coll., on the Inspection of the First Land Reform. Current legislature does not tackle the problem of the restitution of such property and, de facto, due to its legal non-existence before the 25th February 1948 it cannot even be a subject of restitution. A foundation fund first "appeared" in CZ legislature at the beginning of 1998 when the Act No. 227/1997 Coll., on Foundations and Foundation Funds came into effect. Current legislature of the CZ allows foundations as one form of ownership; however, up to now in CZ this form of ownership has been non-existent.

Statistical surveys of the CZ do not mention any data on forest estates that would be part of foundations.

4.6.2. NGO with environmental or social objectives

One of the examples of forest owned by NGO's is called land trust[5]. Land trust is not a form of a legal entity; it is a function or "title" of a non-profitable organization only. In essence, setting up and forming such an entity is feasible in two ways: as an association (within the meaning of the Civil Code – 89/2012 Coll., § 214 and further), or as a trust (in accordance with the same law, § 402 and further). The movement of land trusts in the CZ follows the tradition of pre-war beautification trusts and experience of many similar organisations abroad. NGO "Czech Union for Nature Conservation" stood at the birth of the movement of land trusts in the CZ and is a coordinator of land trusts activities in CZ and a long-term financial as well as methodical supporter. Land trust care about valuable plots or buildings in a long-term commitment with ecologically valuable areas being already protected and proclaimed in the regime of Nature and Landscape Protection Law (114/1992 Coll.). Sometimes the land trust is a direct owner of property, or it has various leasehold agreements signed with the owners, following certain duties arising from the leaseholds. At present, in the CZ there are approximately 60 such entities within the NGO "Czech Union for Nature Conservation". However, not all of them are the owners of forest property and the total forest area owned by the trusts has never been exempted to an inventory. The area is estimated to approximately several hundred ha at most. These land trusts are spread quite evenly in all regions of the CZ.

[5]For illustration and directory go to www.csop.cz/psfront/.

4.6.3. Self-organised local community groups

This issue is described in chapter 4.7.- Common pool resources regimes (CPRs).

4.6.4. Co-operatives / forest owner associations

Co-operative form of ownership is a traditional and common form of the forest ownership in the CZ. The area of co-operative forests started to expand after 1900. During the period of independent Czechoslovakia (1918 – 1938) forest co-operatives were formed by forest allocation from the land reform. After 1945 they were formed either by the allocation from land reforms or to a greater extent by a voluntary association of communal forest property as the so-called communal forest co-operatives. Legally, the co-operative forests used to belong to private

forests. They were nationalised by a Government Regulation No. 81/1958 Coll., by the administration of national property. After 1989 the former co-operative property was returned to its former owners and its legal form – a co-operative – was renewed. In 2012 there were 48 forest co-operatives in the CZ administering the total area of 30,502 ha (i.e. 1.2% total forest area in the CZ). Even though the issue of associating small-scale forest property is mentioned in strategic and concept materials (e.g. National Forest Programme 2007 – 2013) of forest-related policy, the number let alone the area of forest co-operatives is not growing and the support is rather at a declarative than factual level.

CASE STUDY 1: COOPERATIVE - LDO Přibyslav

For case examples an analysis of the establishment of forest owners co-operatives in the region of the Czech and Moravian Highlands (e.g. LDO Přibyslav) in the 30s of the 20th century can be used. The description analyses prerequisites of its establishment and gives a socio-historical and legal study of the renewal process during restitutions in the 90s of the last century. This case can be compared with the course of restitutions of other property in the form of co-operatives due to the analysis of the relation renewed to administer the estate, although members of the forest cooperatives were in this case members of the municipal forest cooperative estates. The approach of municipalities to the forest property can also be analysed with municipal construction as a basic unit of civil society, which can again develop after democratic changes after 1989.

The forest Cooperative of Municipalities in Přibyslav was established in 1930 and subsequently abolished by the communist regime in 1959. In 1995, it was restored after 36 years, and currently it administers 5,700 ha forest land. The administered estates are owned by 44 municipalities in Žďársko and Přibyslavsko regions in central part of the Czech-Moravian highlands. The estates are administered through three forest administrations: Ransko, Račín and Nové Veselí. The forest Cooperative of Municipalities in Přibyslav also incorporates the department of forestry services based in Sklené. In 2013 the cooperative had 36 employees – 19 in the forest administrations, 7 in the headquarters and 10 in the department of forestry services. The basic activity of the Forest cooperative of Municipalities consists in work connected with managing entrusted forest estates, acting as forest manager of private estates, purchasing and transporting timber and providing complex services for small-scale forest owners in the regions. Additional activities consist in providing fee hunting in their own hunting grounds, (in total 4,300 ha), sale of timber and sheet material, book keeping, lease of a recreational building near Pond Řeka, fish breeding etc.

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of a traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, and Romania, Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is a challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. An example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are a key for sustainable use of CPR regimes.

In the Czech part of Czechoslovakia common pool resources[6] forests were always administered jointly. Common pool property is a residue and historical product of a former family (hereditary) ownership organisation of farm land, in particular forests, pastures and exceptionally other land. The transfer of

[6]For illustration see for instance:
Singular forests in Jemnice: www.lesycr.cz/o-nas/casopis-lesu-zdar/Stranky/singularni-lesy-v-jemnici.aspx?retUrl=%2Fo-nas%2Fcasopis-lesu-zdar%2FStranky%2Farticlelist.aspx%3Frubric%3DZpr%25C3%25A1vy%26Page%3D6, The property has a legal form of a co-operative.
Singular co-operative Seninka: http://beskydyvalassko.cz/encyklopedie/objekty1.phtml?id=100905 These forests have a legal form of a company with a limited liability.
Trust of singular co-owners Komňa: www.singular-komna.cz, this entity has a legal form of a trust.

former family ownership, which had been done for centuries, did not affect all land, and particularly forests and pastures remained in further common use by farm owners in certain communities of the so-called ruralists. This common property pool has been transferred to the present in various forms of existence:

- As a general farm – this form was abolished by Act No. 421/1919
- As a singular property (urbarian property in Slovakia)
- As a komposesorat property (similar to singular property, however, based on Hungarian Law – exist also in Slovakia and to a small extent in Southeast Moravia).

Besides this property that emerged following the Customary Law, other singular forest properties emerged in accordance with the Act No. 130/1883 Austrian Collection of Law, on binding and purchase of easements. Based on this law, forests were given as acompensation for previous abolished servitudes either to the ownership of the municipality or to the common ownership of “all eligible”, however, never to individual ownership of persons up to that time entitled to use the servitudes. At the end of the 19th century in Moravia (eastern part of the CZ) emerged 188 singular estates with the total areal of 16,336 ha. The singular forests were abolished after 1948 and the property was then returned to eligible entities after 1989.

Today these formerly singular estates bear various legal forms – legal entities, e.g. private companies with limited liability (Ltd. – in Czech legislation "s.r.o."), co-operatives, trusts and others.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in the Czech Republic

5.1.1. Who typically manages forests in your country?

The institutional framework of ownership of forest land is created by the state forest administration, private forest owners, communal forest owners, state forestland managers, private forest companies, and by their associations. State Forest administration consists of two levels. The Forestry Division of the Ministry of Agriculture supervises regional authorities and authorities of responsible municipalities. These authorities exercise the state administration duties imposed by the state forest administration, prescribed in the Forest Act, on the property they are managing. Regional offices are especially responsible for implementation of financial support programmes by the Ministry of Agriculture into practice.

In general, forest ownership structure has been substantially diversified mainly by the process of restitution. A great change occurred in area and number of private forest owners (about 145,000 new private forest owners). Small owners reassumed their property rights to about 750,000 ha of forests, but nearly 90% of these owners own on average less than 2 ha of forest land, which is not favourable for forest management.

Practical activities in the state forests have been carried out by private forest joint-stock companies (FJSC) and other entrepreneurial entities registered at the market. The relationship between FJSC and Forests of the Czech Republic, state enterprise, is established by a contract based on procedures developed and approved for each particular territorial unit (type).

The important non-state forest owners have established a voluntary professional

organisation - the Association of Municipal and Private Forest Owners in the Czech Republic (SVOL) just after restitution law approval. This is a very important partner of the Ministry of Agriculture, Ministry of Environment and other partners in the development of forestry policy documents in the CZ. SVOL organises expert seminars for its members and excursion, disseminates regularly expert forest information and organizes common wood-sale.

The Forest Management Institute (FMI) is a government organization established by the Ministry of Agriculture of the Czech Republic. FMI is responsible for executing forest inventory in the Czech Republic and elaborating and administration of regional plans of forest development based on the principles of sustainable forest management. Those plans serve as information resources for executing forest management plans, forest management guidelines, as well as the support for government administration decision making.

To have the Forest Management plan (FMP) is an obligation for all forest owners with forest property over 50 ha. FMP contains instructions of what it is necessary to carry out in which stand (afforestation, tending, felling) and it is elaborated for a 10-year period.

Small forest owners are obliged to manage forest in accordance with the Forest Act. They may receive forest management schemes (guidelines) free of charge.

5.2. New or innovative forest management approaches relevant for new forest owner types

New approaches in forest management are mentioned in the National Forest Programme (NFP) which is part of the national forest policy and is viewed as concept designed for the implementation of sustainable forest management and long-term enhancement of forestry competitiveness. There are particularly highlighted:

- On the basis of the principle of precaution, to enhance the species and spatial composition of the forest. (MA 2008)
- In suitable localities, to utilize the timber potential (forest biomass) for energy purposes (solution of population's energetic needs, substitution of fossil fuels). (MA 2008)
- Strengthening the multifunctional role of forests, particularly of state forests. (MA 2008)
- Increased use of timber and wood-based products, and their recycling as renewable ecological raw material with a view to contribute to the mitigation of climate change. (MA 2008)

5.2.1. Increase natural regeneration

One of the long-term objectives of the state forest policy is to increase natural regeneration.

Table 7: Increase in natural regeneration

Way of forest regeneration	1990	2000	2010
Artificial regeneration (ha)	33,615	21,867	21,859
Of which replanting	9,635	4,371	3,087
Natural regeneration (ha)	908	3,422	5,127

Unsuitable silviculture and neglecting thinning operations by small forest owners are quite ordinary, partly because of high costs of these operations and small yields from them. These operations cannot be mechanized as easily as harvest cutting. Their costs could be decreased, for example by using the natural regeneration of forests (Skoupý et al. 2004). The target is to make natural regeneration contribute to the overall regeneration by 1/3.

5.2.2. Change of tree species composition

One of the goals of forest management supported by the state forest policy is to increase diversity of forest tree species and to approximate it to natural composition of forests with adequate use of tree species suitable for production. The recommended tree species composition is an optimized

compromise between natural composition and composition reflecting contemporary economic terms. Even the approximation to the recommended tree species composition is a long-term process because the average rotation period in Czech Republic is about 115 years. It means that every year new species composition can influence on average about 0.87% of the total forest area (1/115).Deciduous species (especially oak, beech) and fir are supported.

Table 8: Current, recommended and natural tree species composition in %

	Natural	Current			Recommended
		1990	2000	2010	
Conifers	34.7	77.6	76.5	73.9	64.4
Broadleaves	65.3	20.8	22.3	25.1	35.6
Total without unstocked areas	100	98.4	98.8	98.9	100

5.2.3. New technologies

New owners are usually not adequately equipped with technical machines, knowledge on the use of these machines, new technologies, or working procedures. Modern and more efficient equipment and technologies in forestry, e.g. mini forwarders, help to cheapen the work in the forest, allow convenient operation of machines. For forest owners it is necessary to establish machine co-operatives or other forms of co-operation which make it possible to reduce costs of logging operations.

5.3. Main opportunities for innovative forest management

5.3.1. Marketing potential of non-wood forest products

Non-productive functions of forest in the CZ are systematically monitored, e.g. the annual research of forest visits frequency and forest fruit collection performed since 1994 by the Czech University of Life Sciences Prague (Šišák 2006). The results of this research confirm the long-term trends of population behaviour towards the visits to the forests and the volume of collected forest fruits.

Collecting mushroom and forest fruits is a very popular activity in the CZ. Almost 70% of households of the whole Czech Republic state they collect mushrooms. But depending on the region of household residence the percentage of households collecting mushrooms can vary from 50% to 80% (see Tab. 9).

The value of forest fruits and mushrooms collected in the CZ in 2012 is estimated on 4.6 billion CZK, i.e. 184 million Euro.

Table 9: Total volumes of forest fruits and mushrooms picked by visitors in 2012 (1 000 t)

Year	Mushrooms	Blueberries	Raspberries	Blackberries	Cranberries	Elderberries	Total
2012	32.8	6.8	3.4	3.2	0.3	2.2	48.8
Average1 994-2012	21.91	9.3	3.1	2.0	0.8	2.0	38.9

Source: Czech University of Life Sciences Prague, 2012

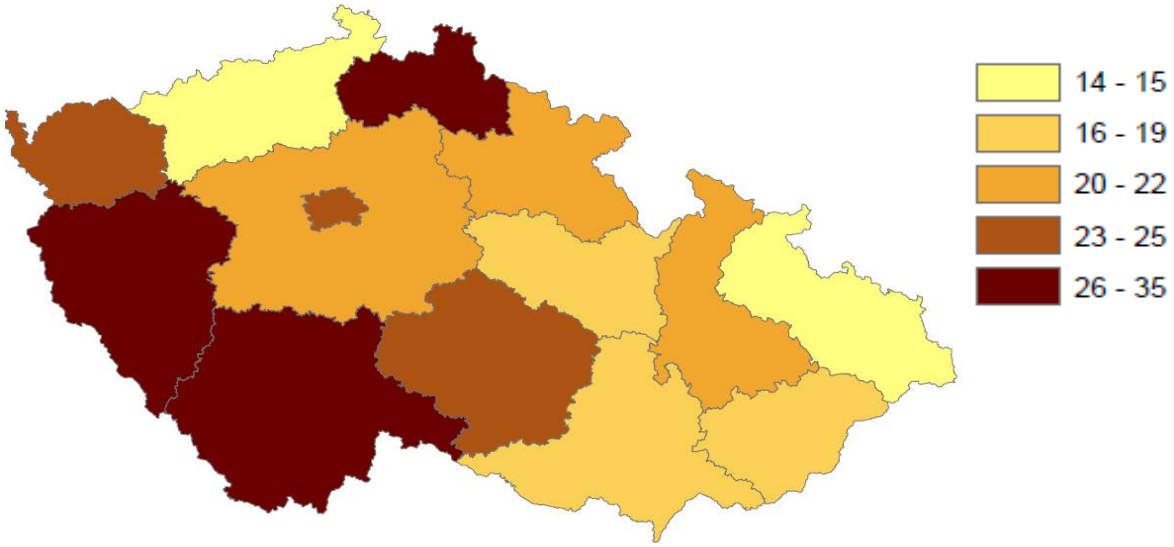

Figure 1: Average annual forest visits of inhabitants of different regions of the Czech Republic
(Riedl and Šišák 2012)

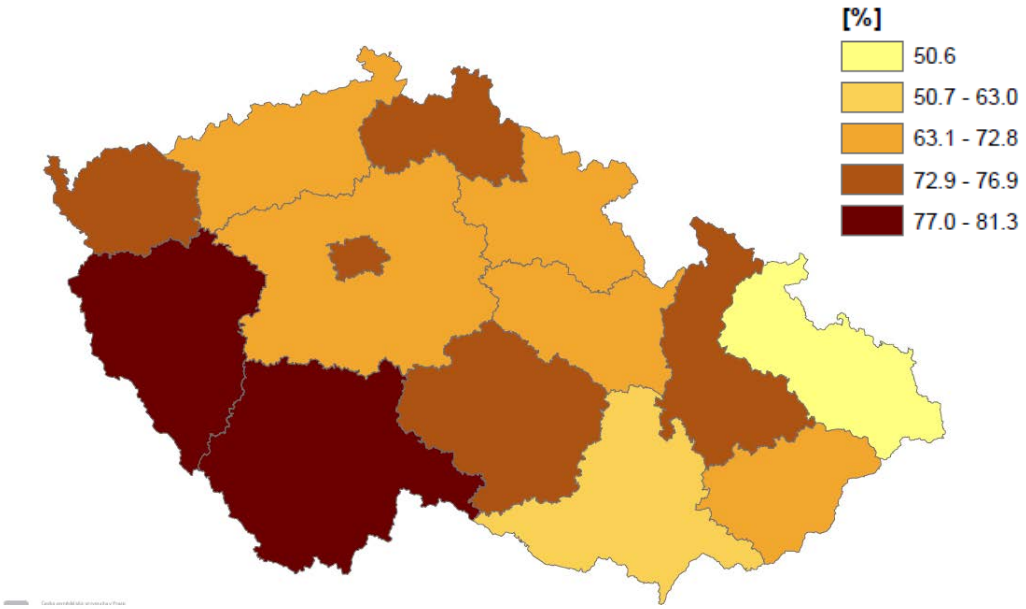

Figure 2: Percentage of households picking mushrooms in different regions of the Czech Republic
(Riedl and Šišák 2012)

5.3.2. Marketing potential of forest certification

The chain of custody certification allows the use of other marketing methods and techniques, such as a differentiation strategy using Porter's value chain. Although Czech customers are not expected or willing to pay more for certified products, (Aguilar and Vlosky 2007) labelling products from certified wood and paper opens up new possibilities for differentiation at point of sale and allows to increase the perceived psychological value of certified products and increase their competitiveness in comparable prices with uncertified products (Riedl 2010).

5.3.3. The promotion of the use of energy from biomass

In 2010 the Czech Republic was one of the states of the European Union, which met the indicative target for the share of renewable

energy sources in gross electricity consumption. The share of renewable sources in gross electricity consumption reached 8.24% in 2010. An increase to 13% in 2020 will require a great effort.

CZ Biom is a non-governmental non-profit organization and professional association supporting the development of phytoenergy in the CZ.

The Czech Biomass Association (CZ Biom) is the CZ's biggest professional organisation engaged in the issue of using biomass in all its forms as an energy source. Established in 1994, CZ Biom employs ten experts and currently represents roughly 160 firms and members.

The support scheme for electricity and heat production from biomass is done by following governmental acts and by decisions of the Energy Regulatory Office:

- Act No. 180/2005 Coll., on the promotion of electricity from renewable energy sources with amendments to other laws,
- 5/2007 Coll., Ordinance, which changes the ordinance 482/2005 on setting kinds and arts of their utilization and parameters of biomass by the support of the electricity production from biomass,
- 502/2005 Coll., Decree to establish the way of reporting the amount of electricity in the joint combustion of biomass and non-renewable resources.
- Price Decision No. 10 / 2008 - fixing the support for the production of electricity from renewable energy sources, combined electricity and heat and secondary energy sources.

Table 10: Potential of wood biomass in the CZ

Estimation of wood biomass potential	Coefficient	Total (thousand m^3/year)
Timber lodging		17,678
Residues from timber logging	0.1	1,768
Wood residues from wood processing	0.25	4,420
Thinning	0.25	4,420
Cleaning	0.005	88
Sum Potential		**10,695**

Source: Sivek et al. (2012)

5.4. Obstacles in innovative forest management approaches

Main obstacles in innovative forest management approaches in the CZ are:

- Professional knowledge of small forest owners **-**private owners who own small properties generally have little professional knowledge in forestry. They also generally have a weak claim to the ownership of the land, a lack of financial means, and often live very far from their forestland and work in other sectors of industry (Šišák 2011). Forestry stakeholders need to be educated in forms of subsidies and relevant taxation. The state provides services free of charge to help forest owners improve the standards of forest management and ensure forest protection against damaging agents. Within its consulting services the state provides up-to-date information concerning preventing protection and protective measures
- Public understanding of multifunctional and sustainable forest management - public understanding of multifunctional and sustainable forest management is at a very low level in the CZ (Vančura et al. 2004, Riedl and Šišák 2013).
- Conservative thinking of forest owners in terms of traditions and traditional business approaches

  Distrust of small forest owners to the association and the cooperative form of ownershipresultingfrom forced collectivization during the communist era
- Unstable legislative and business environment - laws and taxes have been changed many times in recent years.
- The ongoing process of restitution of

church lands and forests hampered some business activities while creating new opportunities for new owners.

- Rising tensions between conservationists promoting the expansion of protected areas, including restrictions limiting traditional farming and tourism and forest owners.

5.4.1. Challenges

The forest policy, and the state administration and authorities try to support small forest owners by the enhancement of their knowledge, elaboration and use of forest management guidelines, consultancy and advising by professional licensed foresters (free of charge), and creation of forest owners co-operatives (Šišák 2006).

Czech forestry communication efforts with the general public have apparently not managed to explain effectively the real processes taking place in forests and forestry, the positive shift of Czech forestry towards multifunctional forestry and the improving condition of forests (Riedl and Šišák 2013) as well as the enhancement of the society's awareness and regard of forests and forestry (MA 2008).

CASE STUDY 2: FORESTRY AS A PASTIME

Mr. Kraus represents new well-off owners who have forestry as their hobby. The business model covering their activities contains items as amusing and meaningful work in the open air, movement in nature, saving assets for future generations etc. Mr. Kraus, a successful manager in a construction company, has always liked to work with hands. Now he is 55 years old and lives with his wife in a gas-heated family house in South Bohemia. In 2011 he bought 2 ha of forest with a predominance of spruce and pine trees: one third about 80 years old, one third around 50 years old and the rest is younger growth. On weekends Mr. Kraus regularly works in his forest. He studies professional literature and his work is supervised by a forest manager. Having bought a new fireplace with a blower setup that would move the hot air in his house, Mr. Kraus began to enjoy preparation of firewood and work in forest. Apart from the saw and other tools he invested in an off-road with a trailer for better transport to the forest. Mr. Kraus is very proud of his forest. The rest of the family (wife, daughter and son) do not share his enthusiasm but he is looking forward to building a fence and establishing a new forest next year. He feels that he is doing the right thing. On the top, the work in the woods is now his hobby and he bought another 3 ha of forest in 2014.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners, e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

The main policy instrument (the Prohibition of Lease and Sublease of state forest), which is based on the Forest Act (1995), states that it is not possible to privatize state-owned forestland (According Art. 5 Forest Act "Prohibition of Lease and Sub-Lease": It is prohibited to let or sublet a state forest for the purposes of forest management). Change in ownership is only allowed for those categories that were created on the basis of the restitution process.

The reverse process exists, that is the purchase of forest from non-state forest owners by state, mostly in the cases related to the nature and landscape protection. The state has a pre-emption right in the event that the owner's land is in a specially protected natural area (and the owner wants to sell its forestland).

Establishing forests through afforestation of agricultural land is a common practice in the CZ. Non-state owners of such agricultural land can apply for support for afforestation from national or EU funds (in fact, this is the support for owners of agricultural land – not forest owners, because the concurrent ownership of forests and agricultural land is not a frequent phenomenon in the CZ).

In terms of support for creation of new legal

forms (and concurrent support for forest management) there exists financial support for small forest owners associations (support for management of the associated forests). There was the theoretical possibility for such support from national and EU funds in last two decades. In reality such support does not produce new forms of ownership, because most of the created new associations in the CZ were associations without legal entity.

6.2. Influences of policies in forest management

In CZ the basic forest policy instrument is the Forest Act (1995). It prescribes, among other things, that the state forest policy is implemented by elaboration of Regional Plans for Forest Development (OPRL), and any other planning activities as Forest Management Plans (FMP) and Forest Management Schemes (FMS) should be elaborated based on OPRL. In the CZ planning is differentiated by the size of assets, not by type of ownership. FMP are mandatory for all forests with an area of more than 50 ha. For smaller estates (if they do not have FMP) FMS are elaborated, and it depends on the forest owner, if he decides to "take over" (accept) this FMS (which then have the same value as FMP) or not (then forest management is solved by individual permits). The forest management plan includes binding provisions and provisions of recommendation. For estates smaller than 3 ha (which do not have FMP or FMS) a maximum aggregate volume of felled timber is a binding indication. For others, additional binding provisions are the minimum share of soil-improving and reinforcing species for stand regeneration, and for state and municipal forest owners the minimum area of tending activities in stands under 40 years of age shall also be a binding provision.

The elaboration of the FMP shall be financed by the forest owner, while elaboration of the FMS is covered by the state. For non-state owners, however, there is a possibility to ask for the financial support for the development of the FMP in a digital form - from the budget of the Ministry of Agriculture.

Because the forest management is regulated by the Forest Act and other related acts rather strictly (e.g. with a maximum size of clearings, the set of rotation period, use of regional seedlings), there is quite a large variety of financial incentives for forest management (from the regional budget or from the Ministry of Agriculture). The support (in the form of subsidy) is dedicated mainly at: (i) regeneration of forests affected by air pollution, (ii) reforestation, establishment of stands and their tending, (iii) grouping of owners of small-size forests, (iv) green and environmentally friendly technologies, (v) support of endangered wildlife species and (vi) breeding and training of national hunting dog breeds and hunting birds of prey. After the CZ access to the EU, forest owners are also able to apply for financial support from European rural and regional development funds. European funds have become the most important source of finance for the acquisition of investments (machinery, construction and reconstruction of forest roads, etc.) in forestry nowadays.

The Forest Act and the Act on the Nature Protection may restrict forest management through its provisions (e.g. by extension of the rotation period, limiting the method of logging, selection of technology, species diversity, etc.). In such cases, however, the forest owner has the legal right for compensation or for covering increased costs. Details for the calculation of such compensation are prescribed in the relevant regulations.

6.3. Policy instruments specifically addressing different ownership categories

There are activities in forestry which are, by their scope, beyond the capabilities of individual forest owners. Such activities are provided for forest owners by the state in the form of services. These include the aerial liming and fertilisation, aerial fire control services, large-scale measures in forests (protection), consultancy and other free services. State (from the budget of the Ministry of Agriculture) provides such services in order to help forest owners to improve the management in forests and ensure protection of forests against harmful factors. Information for forest owners on current preventive and defensive measures against harmful

influences are provided with in the consultancy (using the website eagri.cz and by financing of the Forest research institute, which provides consultancy through website, newspapers, workshops and conferences, or directly by answering phone or mail questions). The amount of money dedicated for such services is presented in Table 11.

Table 11: Supported services in the Czech Republic

Type of service [mil CZK]	2009	2010	2011	2012
Aerial liming and fertilisation	19	17	2	0
Aerial fire control services	1	28	28	28
Large-scale measures in forest	2	1	1	1
Consultancy	35	35	36	21
Other services	6	7	8	0
Total	**61**	**88**	**75**	**50**

Source: MA 2013

Forestry and Game Management Research Institute (VÚLHM) provide (on request and free of charge) the expert and advisory services for forest owners in the area of forest protection (against biotic and abiotic influences, against game damages), forest and game management. Within consulting and educational activities they organise professional workshops designed especially for forest owners and their professional forest managers also helping them to improve the forest management These seminars were mainly organized by professional forestry organizations and associations (Association of Municipal and Private forests of the Czech Republic, Czech Forestry Society, and many others) and were supported by the Ministry of Agriculture.

Another important institution, which provides consultancy for forest owners, is the Forest Management Institute (FMI). The obligation to establish a single agricultural advisory system was established in the Czech Republic with the entry into the EU on the basis of Council Regulation No. 1782/2003. This system ensures state-guarantee advice for management of farmland and forests.

Its primary aim is to ensure implementation of EU legislation and transfer plans and goals under the EU Common Agricultural Policy into practice. FMI provides consulting and educational activities on the basis of its Foundation deed and in accordance with the fulfilment of Advisory System Concept of the Ministry of Agriculture for 2009-2013. FMI consultancy services focus on financial support for forestry and legal requirements for forest management.

From the perspectives of a different approaches to forest management it is very important that in the last 10 years 4 information brochures were published (each about 30 pages) with the title *Rádce vlastníka lesa do výměry50 ha* [Mentor for forest owner with less than 50 hectares] which were designed for small forest owners who do not have developed FMP and for owners of agricultural land who are contemplating afforestation.

As a fundamental tool (which started in 1996 according the Forest Act from 1995) for the association of forest owners financial support (subsidies) was implemented - aid for management of common property (the amount of aid was dependent on the size of the associated property and size of the share). Competence to provide such contributions was until 2005 at the Ministry of Agriculture, the amount of the contribution is shown in the table below. In 2005, the competence for the provision of aids for forest management (including support of association) moved to a regional level. Nowadays each region can decide whether it will provide support or not in the given year.

Table 12: Support for association of forest owners

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Million CZK*	**1.1**	**1.2**	**2.2**	**3.1**	**3.4**	**3.7**	**3.8**	**3.8**	**4**	**2.7**	**3**	**1.3**	**1,3**	**1.4**	**1.4**	**0**	**0**

Source: MA 1999, 2005, 2010, 2013

** Because in analysed period the share CZK/Euro varied substantially (between 37 and 23 CZK/EUR), the amount is given in national currency*

Table 12 presents the data beginning in 1996, because since this year the new Forest Act has been valid (establishing the financial support for FOA). Before 1996 there were special support measures for forest management in forests <250 hectares.

With the accession into the EU in 2004, a new possibility emerged to support the creation of new associations also from the European Agricultural Guidance and Guarantee Fund (EAGGF). In practice, the possibility remained completely unfulfilled, because for the related sub-measure during 2004-2006 not a single application was submitted. The problem was with the legal formulation of associations, the absolute majority of Czech FOA did not suit the prescribed characteristics.

6.4. Factors affecting innovation in policies

The fundamental problem in this context is that the issue of different forest management by owner's category did not become a focus of political or scientific attention. Scientific research/analyses on this topic have not been carried out so far. The main policy documents (although this need is mentioned) are primarily concerned with the possible differences (only) in the management of state forests and other ownership categories. The issue of small and new forest owners has not been considered as crucial, and there was not enough information on this issue to become a major political point.

The functions of the institutions in the innovation process could be divided into three categories: **reducing uncertainty by providing information, conflict management and cooperation, granting financial and non-financial support** (Edquist and Johnson 1997). The evaluation of the three functions in Czech forestry is as follows:

Support granting: this function of the system **is fulfilled rather significantly in the CZ, but not exhaustively**. Actually, the support of innovation implementation is not declared explicitly, but is only understood as the support of innovations. Its fundamental shortcoming consists in the fact that no criteria exist for evaluation of the importance of innovations implementation support.

If we are to efficiently accomplish this function of the innovation system, we would need to explicitly declare the implementation support in future program periods, and set the indicators used for the evaluation of the support. The analysis of innovations implementations by forest owners in the CZ shows that the support from public expense program was an essential and fundamental factor for the innovators, and influenced the implementation. Therefore, the function of providing the support might be declared definitely important.

The functions of **providing information, and management and support for collaboration** are rather tightly interconnected, therefore difficult to evaluate individually. Seen from this point, the above-mentioned function of implementation support is also significantly related to the other two, as the support is inadequate without sufficient information. Respondents expressed both views related to sufficient information on new innovation processes (Pudivítrová and Jarský 2011). Some respondents admit they felt encouraged to implement innovations thanks to sufficient information, while the non-innovative respondents claim lack of information on new possibilities. Therefore, we evaluate the **information function** of the innovation system similarly to the support function – the information function of the IS **is only partially fulfilled**.

Cooperation is generally considered as the most important instrument of the third function of the innovations system realisation – conflict management, i.e. management of the existing conflicts and preventing the imminent ones. Apart from various associations, this function should be performed by other institutional-innovation system items, especially state (public) organisations and institutes. Administration-law instruments should play its fundamental role in this issue, together with forest-political documents. Nevertheless, they do not pursue the issue of practical conflict management – they deal with some situations only indirectly and ex-post. Respondents often mention a negative factor for implementation of innovations – legal acts are generally denounced as too strict and unsupportive. A strict diversification of competences might be one of the reasons of this inadequacy. Multi-functionality of forestry

(i.e. variety of forest functions) is a widely acknowledged fact, but actually it provokes rather strict diversification by setting significance of the individual function (e.g. categorisation of forests in the CZ together with the competence splitting). Such a traditional view should be refused as all forests are multifunctional. Innovations implementation in protection forests and special forests are more complicated nowadays than in commercial forests, no matter whether the innovation concerns other than timber production function. In view of innovations system functions we might say that competence splitting is a potential source of conflict rather than its prevention. One of scarce examples of prevention of conflicts arising from the forests multi-functionality is the utilisation of financial support aimed at nature and landscape protection in forest support (e.g. payments in the framework of NATURA 2000 in forests). The question at issue is whether these activities should be carried out as subsidies (not legally enforceable; the forest owner is the applicant). More innovative (fair) could be to carry out these activities as services purchased by the public sector (state) from the forest owners. At present the forest owners are reimbursed for detriment (ex-post conflict management) but, as the analysis showed, the related regulations are not optimal (both factually as formally – too complicated).There is not enough political will to make changes in this point. Therefore we can say that the **conflict management function is insufficiently fulfilled** (Jarský 2014).

CASE STUDY 3: IMPORTANCE OF ASSOCIATIONS - ASSOCIATION OF MUNICIPAL AND PRIVATE FOREST OWNERS

In the CZ the most important forest owners association is Association of Municipal and Private Forest Owners (SVOL), which became a very important partner in creation of the Czech national forest policy during the last 20 years. In the period 1991-1992 most of the municipalities got their property back. In April 1992, about 60 municipalities decided to establish an association with the main idea to provide assistance, information and experience exchange. The founder members were 93 owners of 990 ha of municipal forests. Since 1996, SVOL is a voluntary organization that associates owners and managers of all kind of non-state forest property. Municipalities, forest municipal and church communities (since 2008) are organized in SVOL directly, through the chamber of municipal forests. Private owners may participate through chamber of private owners, the single legal entity, which is a collective member of SVOL. Nowadays there are 530 members with 356 thousand ha of forests. The main objective is to advocate the ownership rights in the legislation processes regarding forestry and to highlight the importance of forest management in terms of stability and rural development. The basic organizational unit consists of regional organizations without legal status. The members' meeting, as a body, elects delegates to the conference, which is the highest body of SVOL and decides on the major issues concerning the association. The initial activity of the association is managed by the presidency of a representative of each region. SVOL manages the income from its own activities, membership contributions, donations from third parties, with the benefits of sponsorship and advertising activities. SVOL management is governed by a budget is proposed by the National Committee and approved by the SVOL conference. SVOL is a member of the following international organizations: European Federation of Municipal Forest Owners (FECOF), CEPF, PEFC and ELO (source: www.svol.cz).

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ESTONIA

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1. Introduction

Estonia has quite long forestry traditions. Due to the moderate maritime climate the conditions for forest growth are very suitable. Of all the woodland 51% of the stands are dominated by deciduous species and 49% by coniferous species. Forests cover nearly half of the Estonian mainland territory. The general characteristics of forests have remained stable throughout the last decade. In 2012 the total forest area was 2.2 million hectares and total growing stock was 470 million cubic metres of solid volume. The most common stands (according to the dominant tree species) are Scots pine (*Pinus sylvestris*, 32.9% of the total area of stands), birch (*Betula ssp*., 31.6%), Norway spruce (*Picea abies*, 16.2%) and grey alder stands (*Alnus incana*, 8.8%). By growing stock pine dominated stands prevail (37.2%) (Yearbook Forest 2013, 2014).

For the first time the possibility of buying out farms including forest land was introduced in the second half of the 19th century. As a result, private forest ownership was re-established. When the Soviet Union occupied Estonia in 1940 land was nationalized and once again all land including forests became the property of the state. Following the regaining of independence in 1991 re-introducing private property was one of the main objectives. Regarding forests and land in general this happened with the Land Reform Act. With the land reform former private forests were returned to their rightful owners or their heirs (Meikar and Etverk, 2000). In addition to restitution, privatization also took place and to some extent it is still ongoing[7]. The land subject for privatization has been former private land where no claims were submitted.

Twenty years after regaining independence forests cover 2.2 million ha (50.6% of the total land area) in Estonia from which private ownership accounts for 47% and 41% to the State Forest Management Centre and other state forests (Yearbook forest 2013, 2014). In 2011 there were 97,272 forest owners in Estonia i.e. 4,001 legal owners (legal persons) and 93,271 private individuals (Forinfo, 2011). The estates of these private individuals covered 72% of private forests (~750,000 ha) while legal forest owners (companies, NGOs, etc.) covered 28% (~300,000 ha) (Yearbook Forest 2013, 2014).

Forestry in Estonia is the responsibility of the Ministry of Environment so the legal framework is developed within the government. The fundamental policy document is the Approval of the National Forest Policy (1997) which initiated further development of the National Forest Program. Forestry is directly regulated by the Forest Act (2006) and its supplementary acts. However other legislative documents also influence the development of forestry including private forestry. Such documents or regulations include for example the Environmental Act (2004).

In forest management modernization has taken part in recent decades. During the Soviet period the main way to harvest was the whole-stem method. The cut-to-length method was largely introduced in the end of the 1980s when the first machines were imported (Muiste et al., 2006). Nowadays cut-to-length is the prevailing method for logging. Between 2012 and 2013 the total forest harvesting including all types of cuttings covered an area of ~140, 000 ha according to the harvesting documentation. The estimated total volume was approximately 11,000,000 m^3 out of which 35% came from state forest (Yearbook Forest 2013, 2014). It has also been identified that forest companies (legal owners) are twice as active in forest management compared to private individuals (Forinfo, 2011).

[7]According to the Yearbook Forest 2013 (2014) the forest land subject to privatization accounts for 12% of the total forest area.

2. Methods

2.1. General approach

According to the aim of the country report which is to give a comprehensive overview of forest ownership issues in a specific country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as expert knowledge of the authors. Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results of studies). The literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-the-art report. Case examples are used for illustration and for gaining a better understanding of the mechanisms of change and of new forest owner types. Detailed analyses of collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

This report is primarily based on the literature review and expert knowledge of the authors. While research on this topic is quite new in Estonia not much relevant literature is available. However in recent years the situation has started to change. There are some research papers from the first half of the 2000s (e.g. Meikar and Etverk, 2000; Muiste et al., 2006), yet most of the relevant research for this report has been done in the second half of the 2000s and 2010s. Many of the early studies have mostly focused on the processes of ownership development. In recent periods however the focus has shifted more on the forest owners themselves. This has included also some empirical forest owners surveys (e.g. Toivonen et al., 2005). Also a number of statistical sources are used. For example the Yearbook Forest which is published by the Environmental Agency. Most of the data is based on the National Forest Inventory (NFI), but also harvesting documentation information is used. The first chapters are mainly based on available literature and existing statistical evidence. However chapters 5 and 6 are mainly based on literature and expert knowledge of the authors.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches to new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, a detailed description of 10 most relevant publications, and a 1–3 page summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These references are listed at the end of the report. The 10 detailed descriptions of publications can be found in the full single country report (website:http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions:

- Which research frameworks and research approaches are used in the research?
- What forms of new forest ownership types are identified?
- Which specific forest management approaches exist or are discussed?
- Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

The observed studies are dealing mostly with forest ownership, its changes and forest owners' motivations or needs. Private forest ownership is relatively new in Estonia, as private forestry has existed here for only ~25 years. The majority of private persons became forest owners as a result of the land reform, via restitution or privatization. The processes of restitution and privatization have not finished, so the detailed ownership structure is changing all the time. Therefore research has been often quite descriptive (e.g. Meikar and Etverk, 2000) and statistical (Forinfo, 2011). Yet there is a number of survey-based studies available as well (Põllumäe et al., 2014a; Põllumäe et al., 2014b; Toivonon et al., 2005). Teder (2014) and Urbel-Piirsalu and Bäcklund (2009) look at private forestry from a policy perspective. While the first one concentrates on FOA wood sales, the second one analyses the situation of private forestry from a sustainability perspective. In addition Bouriaud et al. (2013) compare the governance structures of private forestry. Overall the general approaches include mainly political sciences, sociology and economics.

For domestic research mainly public funding on national level has been used. Due to the small area of Estonia, all the observed studies describe the situation on national level. As the domestic researchers' community is very small, several articles describe the situation in various EU countries with specific Estonian based samples or descriptions (e.g. Sarvašová et al., 2014). The majority of articles are based on different kinds of surveys which are carried out by the authors, some articles or reports are based on the analysis of available statistical data or literature review.

3.2. New forest ownership types

First of all, as the current history of private forestry has lasted a little bit more than 20 years (since 1991), one can say that all forest owners are new or non-traditional forest owners. The further classification of owners, especially in terms of traditions depends on the sample of respondents. National statistics has two main private forest ownership categories - physical persons and legal persons (companies, associations, NGOs). In recent years the share of legal persons has been increasing (see table 3) which has partly been caused by the previous tax system (in force until the end of 2011), where private persons could not deduct silvicultural costs from forestry income.

3.3. Forest management approaches

One of the main changes in management approaches has been the establishment of forest owner associations. While the creation of FOAs started already in the early 1990s (Sarvašová et al., 2014) their development has been slow. FOAs have organized joint forest management activities, but there were only few organisations before 2009. The 2009 state support system motivated FOAs to carry out active forest management activities. One of the supported activities was the so-called "full service", where the theoretical maximum support provided to an FOA is 1.554€/m^3 per sold timber assortment. In this case the forest owner concludes a contract with an FOA, which on behalf of the owner organises the preparation of cutting areas, different types of felling, timber transport to buyers' yards and timber sales. If that kind of system is used, then the forest owner does not have any other tasks, he/she can just wait for payment from the FOA. If needed, with other special agreements an FOA can arrange also the reforestation of the felling area. Põllumäe et al. (2014a) and Teder (2014) have looked at these aspects.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to provide the most accurate information, it was decided to use national data sets in the country reports. In order to make this information comparable still, the information is collected in an international format which is used in the

Forest Resources Assessments by the FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses to which extent the national categories and definitions may be transformed into the international FRA data structure or how many inconsistencies exist between them.

4.1. Forest ownership structure

4.1.1. National data set

Estonian forests cover an area of 2.2 million ha (Yearbook Forest 2013, 2014). The forest area estimation depends on the forest definitions and calculation methods. Table 1 shows the ownership structure according to the national data. According to the Estonian Forest Act (2006), the technical definition of forest is "*a plot of land with an area of at least 0.1 hectares and woody plants with the height of at least 1.3 metres and with the canopy density of at least 30 per cent grow there*". As the Estonian Forest Act definition differs from international forest definitions, for statistical purposes the Estonian NFI report (Eesti metsad, 2010) gives also the comparison of some international datasets.

Table 1: National ownership categories in 2012 (NFI)

	Area (1000 ha)	Share (%)
State forest managed by RMK	848.8	38
Other state forest land, including municipalities	74.0	3
Physical persons' forest land	746.4	34
Legal persons' forest land, including churches	291.9	13
Forest land subject to privatization	272.8	12
	2 233.9	100

4.1.2. Critical comparison with national data in FRA reporting

Table 2 shows the differences between national data and the FRA 2010 report. According to national definitions, the Estonian forest land is 2,233.9 thousand ha, but according to the Global Forest Resource Assessment definitions it is 2,322.6 thousand ha and according to the Kyoto protocol and Intergovernmental Panel on Climate Change (IPCC) it is 2,253.5 thousand ha.

Table 2: Comparison of national ownership data to FRA reporting

FRA 2010 categories*			National data in 2012 (NFI)**		
	Area (1000 ha)	Share (%)		Area (1000 ha)	Share (%)
Public ownership	894	40	State forest managed by RMK	849	38
			Other state forest land, including municipalities	74	3
Private ownership	978				
...of which owned by individuals	783	34	Physical persons' forest land	746	34
...of which owned by private business entities and institutions	195	9	Legal persons' forest land, including churches	292	13
Other types of ownership	380	17	Forest land subject to privatization	273	12
Total	**2252**	**100**		**2 234**	**100**

** For the FRA 2010 report forecasting for 2010 was made by linear extrapolation, using data reported for 2000, 2005 and the latest inventory – NFI 2007. Thus, the possibility of alterations in time is taken into consideration (FRA 2010 Estonian Report).*
*** Yearbook Forest 2013 (2014).*

4.2. Unclear or disputed forest ownership

The biggest part of unclear ownership is related to the category which in national forest ownership statistics is called "forest land subject to privatization". The land restitution process in Estonia started in 1991, based on the legal framework which was established also in 1991. According to the

Land Reform Act (1991) natural persons or their legal successors, who were Estonian citizens as at 16 June 1940 and whose land had been unlawfully expropriated had the right to claim the return of or compensation for their land. In the beginning of the restitution process local governments restituted the land about which all the documentation was available and which did not involve any conflict situations. The land which was not reclaimed by legal successors or which was compensated for to the former owners or to their heirs was subject to privatization. Some land was not directly privatised, but given to the state, which started to sell the land in public auctions.

As the restitution and privatization process was slow, in February 2013, the Estonian Parliament changed several laws, which aimed to finish the restitution process by the end of 2016. According to the Estonian Land Board as at July 31, 2014, 95.6% of land in the land register database (Maa-amet, 2014), or around 190 thousand ha needs to be restituted or privatized. Public statistics of the Land Board on forest land restitution is not so detailed. At the end of 2013 the total restituted land area was 1.5 thousand ha and the area of "free privatized forest land" was 105 thousand ha (Maa-amet, 2014).

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions on buying or selling forests

In Estonia not many restrictions apply for buying/selling forest properties, however some limits exist or have existed earlier. Since March 2012, the Restrictions on Acquisition of Immovables Act is in force. This law defines some cases where the law as such is not applicable, but the general statement is that an Estonian citizen has the right to acquire forest land without restriction *("§ 4. (1) A citizen of Estonia or another country which is a contracting party to the EEA Agreement or a member state of the Organisation for Economic Cooperation and Development (hereinafter Contracting State) has the right to acquire an immovable which contains agricultural or forest land without restrictions"*) (Restrictions on Acquisition of Immovables Act (ROAOIA), 2012). Also a legal person from Estonia or from a Contracting State has the right to acquire forest land of less than 10 hectares without restrictions. If the forest land is bigger than 10 hectares, the legal person from a Contracting State has the right to acquire an immovable when it has been engaged, for three years immediately preceding the year of making the transaction, in forest management within the meaning of the Estonian Forest Act. If the legal person from a Contracting State does not meet the described requirements, forest land of more than 10 hectares can be acquired only with the authorization of the county governor of the location of the immovable to be acquired.

A citizen of a third country (natural person who is not a citizen of a Contracting State) has the right to acquire forest land only with the authorisation of the county governor, if the citizen has resided in Estonia permanently for a period of at least six months immediately before applying for the authorisation or if the citizen has been engaged in Estonia, for one year immediately preceding the year of applying for the authorisation, as a sole proprietor in forest management. A legal person of a third country has the right to acquire forest land only with the authorisation of the county governor if the legal person has been engaged in Estonia, for one year immediately preceding the year of applying for the authorisation, in forest management and if a branch of the legal person is entered in the Estonian commercial register.

Restrictions arising from national defence reasons: "*§ 10. (1) Any natural person who is not a citizen of a contracting party to the EEA Agreement or any legal person whose seat is not in a contracting party to the EEA Agreement is prohibited from acquiring immovables in the following areas*" mainly on sea islands and in listed cities and rural municipalities which are close to the border of the Russian Federation (ROAOIA, 2012). Before 2012 similar restrictions were established by other acts or by the Land Reform Act. To overcome the restrictions for legal persons, one of the simplest solutions is to start a company (legal person) in Estonia and then operate as a legal person of Estonia. Amendments to the Land Reform Act (1991) stated some restrictions for

privatization of vacant forest land, which were used mainly in the period of 2002–2010, e.g. good (meaning following all the provisions of the Forest Act) forest management experience in the territory of a particular local government, ownership of forest land of less than 100 ha, and in this case up to 20 hectares (in special cases 10 additional ha) were allowed to be privatized. Depending on the selling price of privatized land, payment in instalments for a period of 5 to 50 years was allowed. Land which was privatized as vacant forest land cannot be sold (a) before the full payment of the redemption price and (b) before five years have passed since the contract of purchase entered into force.

In the case of sale of state land by public written auctions held by the Land Board, the owner of the bordering immovable, whose immovable also includes a forest land parcel and who participated in the auction, but did not win, has the pre-emption right for the acquisition of the land at the auction price (Public auction procedures, 2014).

4.3.2. Specific inheritance (or marriage) rules applied to forest ownership

In Estonia there are no specific inheritance or marriage rules which apply to forest ownership.

4.4. Changes in the forest ownership structure in the last three decades

4.4.1. Changes in public and private ownership

To describe the development of the Estonian forest ownership structure, it needs to be started from the year 1940, the pre-Soviet era. In 1940 the total forest area was 1,473 thousand ha which was managed as follows: 717,021 ha (49%) were state forests, 734,661 ha (50%) were owned by farms and 21,369 ha (1%) by other owners. Additionally the farm forest area was divided as follows: 192,956 ha of cadastral forests, 170,836 ha of hayfields and grazing lands, and 370,969 ha of brushy lands (Meikar and Etverk, 2000).

In 1988 the Estonian forest area was 1,916.4 thousand ha and all the forests were state-owned. The state forest enterprises managed 1,152.2 thousand ha (60%) of forest land, agricultural forests attributed to 717.6 ha thousand ha (38%) and the rest of forest land (mainly used by the Soviet army) encompassed 46.6 thousand ha (2%) (ibid). State forest enterprises managed the forest land which was in state ownership before 1940; agricultural forests were managed by collective farms and these were mostly former (before 1940) farm forests. After regaining independence in 1991 the restitution process started, where the primary aim was that all the formerly privately owned (forest) land be restituted to the heirs of former owners. The latest data about the forest ownership structure are given in table 1.

4.4.2. Changes in public ownership categories

As indicated in table 3 there has been a slight increase in the area of state forests. This is mainly due to the ongoing land reform process. Some smaller areas which would normally be subject to privatization have been given to the state. This has occurred in areas where the prevailing ownership is state ownership. One of the aims is to decrease ownership fragmentation.

4.4.3. Changes in private forest ownership

The changes within private ownership (as well as in forest area) between 2010 and 2012 are shown in table 3. The amount of forest land without owners (forest land subject to privatization) has decreased due to the land reform process. During privatization, mostly forest companies have bought such land. In addition, the area of forest land owned by private persons has also been decreasing, as some individuals have sold their forest to different legal persons (companies). It is important to mention that overall the legal owners have gained forest ownership through the market, while most of the individuals have become forest owners in the process of restitution.

Table 3: Changes in forest ownership in 2010 and 2012

Forest land category	NFI 2010		NFI 2012		Difference
	Area (1000 ha)	Share (%)	Area (1000 ha)	Share (%)	1000 ha
State forest managed by RMK	806.1	36.4	848.8	38.0	42.7
Other state forest land, including municipalities	75.7	3.4	74.0	3.3	-1.7
Physical persons' forest land	757.3	34.2	746.4	33.4	-10.9
Legal persons' forest land, including churches	245.0	11.1	291.9	13.1	46.9
Forest land subject to privatization	327.9	14.8	272.8	12.2	-55.1
Total	**2 212.0**	**100**	**2 233.9**	**100**	**21.9**

Table 4: Number of private forest owners and private forest land area by ownership type and size of forest ownership in Estonia

Area class	Physical person		Legal person		Total	
	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)
0.1–0.5 ha	9 489	2 534	362	103	9 851	2 637
0.5–1 ha	7 467	5 366	306	227	7 773	5 592
1–2 ha	12 265	17 904	433	627	12 698	18 531
2–5 ha	22 755	75 450	733	2 413	23 488	77 864
5–10 ha	18 809	134 306	763	5 524	19 572	139 830
10–20 ha	14 047	195 624	543	7 611	14 590	203 235
20–50 ha	7 273	211 001	450	13 912	7 723	224 913
50–100 ha	942	61 869	179	12 424	1 121	74 293
100–500 ha	214	36 466	165	36 674	379	73 140
> 500 ha	10	7 307	67	183 445	77	190 752
Total	93 271	747 827	4001	262 960	97 272	1 010 788
Average area (ha)	8.0		65.7		10.4	
> 2 ha of forest land	64 050	722 024	2 900	262 003	66 950	984 027
Average area (ha)	11.3		90.3		14.7	
Share (%)	68.7	96.5	72.5	99.6	68.8	97.4

4.4.4. Main trends in forest ownership changes

Across Europe, the following drivers for ownership changes were identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned companies)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	3
• Privatization of public forest management (introduction of private forms of management, e.g. state owned companies)	1
• New private forest owners who have bought forests	3
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing lifestyle, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: COMPANIES AS FOREST OWNERS

As a result of the land reform, restitution started in 1991. Some persons who got back their land lacked specific forestry knowledge, they did not have sufficient financial resources or an interest in forest management, and they sold their land. Also the income tax regulations, which were in use in the beginning and middle of the 1990s, supported the sale of forest land instead of managing the forests as a private person. In the beginning of land sales local firms were buying the land and the price was rather cheap. Later, when the forest land market became more active foreign investors started buying the forest land and the prices also increased. As shown in table 3, in recent years the share of companies as forest owners has been increasing.

CASE STUDY 2: NEW TYPE OF FOREST OWNERS – FOREIGN CITIZENS

Generally, foreign citizens became forest owners as a result of restitution, if they were heirs of Estonian citizens, who were landowners as at June 16, 1940. In recent years forestry advisors have reported a new type of owners – foreign citizens who have bought some forest land (e.g. 20–50 ha) in Estonia, some of them are actively using the services of forestry advisors. As reported by the advisors, awareness of that type of forest owners is generally higher. Thanks to using the services of the advisors, they are better prepared and their questions are more specific compared with forest owners of local origin. It is still a rather small group of forest owners.

4.5. Gender issues in relation to forest ownership

According to the Forinfo study (2011) there were a total of 93,271 private individual (physical person) forest owners in 2010. Gender linked data are available for approximately 92% of them, i.e. 86,047 persons of whom 48,035 are male forest owners and 38,012 are female forest owners. Table 5 gives ownership information by gender and age classes.

Table 5: Forest ownership by owners' gender and age class (Forinfo, 2011)

Age	Women			Men		
	Number	Area (ha)		Number	Area (ha)	
		Total	Avg		Total	Avg
101-110	14	77	5.5	6	33	5.4
91-100	280	1 983	7.1	105	836	8
81-90	2 507	16 357	6.5	1 574	13 353	8.5
71-80	5 810	41 547	7.2	5 243	46 824	8.9
61-70	7 411	54 274	7.3	8 466	80 850	9.5
51-60	7 723	53 022	6.9	10 820	104 792	9.7
41-50	7 155	45 469	6.4	11 145	118 278	10.6
31-40	4 968	26 873	5.4	7 673	65 223	8.5
21-30	1 742	7 325	4.2	2 491	13 263	5.3
10-20	329	1 201	3.6	447	1 965	4.4
1-10	73	216	3	67	214	3.2
Total	**38 012**	**248 344**	**6.5**	**48 035**	**445 631**	**9.3**

4.6. Charitable, NGO or not-for-profit ownership of forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

In 2010, there were 97,272 forest owners in Estonia i.e. 4,001 legal entities (companies etc.) and 93,271 private persons (Forinfo, 2011). These private persons covered 74% of

private forests (~750,000 ha) while legal forest owners covered 26% (~260,000 ha). Out of the 4,001 legal owners most are private limited companies or joint-stock companies (altogether ~3,600–3,650). The rest of the owners (approximately 350–400) own about 5,000 hectares and they include associations (cooperatives), e.g. agriculture, dairy, machinery, and forestry; trust companies (commandite), farms (self-employed entrepreneurs), non-profit organizations (some FOAs, hunting clubs, nature and animal protection unions, sports clubs etc.), religious organizations (the largest forest owners as a whole in this other group of legal owners).

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts	X		
• NGOs with environmental or social objectives	X		
• Self-organised local community groups			X
• Co-operatives/forest owner associations	X		
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:			

As the real estate market of forest holdings is relatively active in Estonia, in some cases trusts or foundations have invested in Estonian forests. Generally, it is not done directly but via different companies. One of the known funds investing in Estonian forests is the Estonian Timberland Fund, which has been used also for pension funds and is managed by two of the biggest Estonian banks. As at July 2014, the Estonian Financial Supervision Authority database only contains a few investment funds, which specialise in timberland investments in Estonia.

There are around 200 hectares that belong to different NGOs with environmental objectives. It is unclear yet how and if these forests are being managed. Also it is not clear from the available data if any other NGOs or trust companies can be considered self-organised local community groups. If there are any, there are only a few and they are small. In addition only a few forest owner associations are forest owners. There is at least one commercial cooperative that focuses on joint forest ownership (e.g. the case example).

CASE STUDY 3: CO-OPERATIVE EESTI ÜHISMETS (ESTONIAN JOINT FOREST)

Several FOA activists, who got considerable forest management experience from joint sales of FOAs in 2012 started to think how to get additional profits from forest management in a way of co-operative ownership with the aim of buying forest land and managing it. The co-operative Eesti Ühismets was established in April 2013 and in October 2013 the first holding was purchased. The members of the association have to pay a membership fee and also make payments to the forest capital fund of the association. The fund is the source for buying forest land. In addition to the monetary payments to the fund, the members of the co-operative can give their forest land (or other real estate) to the co-operative. By this scheme the forest owner gives away his rights to the forest, but becomes a full member of the co-operative.

CASE STUDY 4: METSAHOIU SIHTASUTUS (FOUNDATION FOR FOREST CONSERVATION)

Private initiatives for protecting forest ecosystems also aim for land ownership. Metsahoiu Sihtasutus as a private foundation was established in 2002 by private persons and owns more than 50 ha of forests in strict nature reserves. This ensures that natural processes are protected irrespective of political decisions. These forests are not managed and people are not allowed to enter these areas.

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on the basis of self-management, collective actions and self-organization (of rules and decisions). Examples of a traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property

regimes is growing and it is a challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. An example of the new CPR regime is community woodlands in the UK, established within the last 20 years mainly in Scotland and Wales. Our interest in "traditional" and "new" common pool resources regimes (CPRs) in European forests is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of property rights. An ongoing practice shows that local land users' (without ownership share) leased use agreement may also be considered a CPR regime if they have the rights to determine management rules typical of commons (e.g. self-organisation and shared rights and responsibilities).

Thus proper rules on management (harvesting, decision making and a conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are key for sustainable use of CPR regimes.

However in Estonia there are no CPR systems that particularly address forest resources. But linked to forest ownership and management is wildlife management (policy) which somewhat corresponds to the definition of a CPR. It might be of further interest to compare this situation with some other countries (especially the CEE countries and western European countries). This has been a subject for a small-scale study overview by Põllumäe (2011).

5. Forest management approaches to new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness of this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different objectives for their forests there must be new kinds of management; if they lack the skills to do it themselves then there must be new service providers, etc. There are presumably implications in silviculture, technology, work organisation, business models, etc.

5.1. Forest management in Estonia

State forests are mostly managed by the State Forest Management Centre – RMK (*Riigimetsa Majandamise Keskus* in Estonian), which is a profit-making organization under the Ministry of Environment. Some state forests are also managed by educational institutions. The RMK is managing only state forests. Exemptions are some silvicultural works for nature protection purposes in forest land without owners (subject to privatization), which are organised by specialists of the Environmental Board and implemented by the RMK.

During the last three decades state forest management has been reformed several times, the last biggest reform was introduced in the summer of 2008. Currently the major forestry operations in state forests are outsourced to private companies or entrepreneurs (the majority of thinnings, clear-felling, timber transport to buyers' yards, etc.), some forestry operations are done by the RMK's own workers in combination with outsourcing (forest planting, some types of thinning (e.g. cleaning), etc.). The importance and extent of private companies (outsourcing) in state forest management is described by the fact, that in 2010 the RMK employed 851 people (including 345 workers), but according to RMK estimates the total number of persons employed in state forests was around 4,000 (RMK, 2011). One new practice in the RMK is that timber assortments are sold and delivered to buyers' yards, but the actual measurement as well as quality inspection is the buyers' task.

Private forest owners manage their forest by themselves (usually owners with very small forest plots) or by using private companies/entrepreneurs. This is done directly (the owner contacts the private company) or indirectly (via a forest owners association (FOA)). The FOAs usually do not have any workers besides forestry specialists or certified consultants who plan the work. Instead, FOAs usually have long-term contracts with certain entrepreneurs, which

gives assurance both for the forest owners and the private contractor. The use of FOAs in forest management activities started to increase after 2009, when the new set-up of regulations of state support for private forestry was established. The RMK in state forests uses much more regulated procurement procedures. Private forest owners usually, while contacting the contractors directly, agree on a object-based way. In case forest owners contact the FOA it is most possible that the FOA uses long-term contractors. Official forestry consultants have special licences (valid for at least 5 years) for doing consultations.

According to the Yearbook Forest 2011 (2013) there are almost 2,300 ha of municipal forest holdings, while according to the land cadastre there are 4,110 ha of municipal forests. All those municipalities have forest management plans (outsourced from special companies), but generally financial incentives are not primary decision goals.

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. Forest Owner Associations

For Estonia and Estonian forest owners there are a lot of new and innovative things in forest management approaches. For instance one new approach is managing forests through/with the help of forest owners associations (FOA). In Estonia FOAs started to develop in the beginning of the 1990s. The development of FOAs has been influenced by structural changes in the public sector. In the past, a variety of services (e.g. advice) was given to forest owners by state officials and only during the recent decade the importance of FOAs has risen. Nowadays approximately 7,500 - 8,000 forest owners are members of these organizations (~8% of forest owners). It is usually the larger forest owners who have made the decision to become a FOA member because the 8% of owners cover a little more than 300,000 ha of private forest land (roughly a quarter of the total private forests in Estonia). The Forest Act (2006) defines FOAs as non-profit or commercial associations whose main activity, according to the statutes, is forest management and whose members are natural persons or private legal entities who own forest.

5.2.2. Species and technology

Some new species have been introduced in private forest management. For example the growing importance of *Populus x wettsteinii* and *Larix x eurolepis* has emerged but the amount is still quite marginal. The machinery and other instruments used in the management of private forests (as well as state forests) have changed. Muiste et al (2006) underline: *"The distinctive feature of the 1990s was the rapid growth of harvesting volumes and the transition from the tree-length method to cut-to-length method in harvesting. Also the share of mechanized harvesting started to grow."*

5.2.3. International support

The use of EU and state funds has been a very important part of the development of private forestry. EU and state subsidies are concentrating on various forest management activities. EU support comes through the II pillar (Rural Development) of the Common Agricultural Policy (CAP). Although the Ministry of Environment is responsible for forestry, the implementation of CAP measures is the responsibility of the Ministry of Agriculture (www.agri.ee). EU support measures like young stand tending, reforestation of damaged areas, Natura 2000 payments (a first step towards a PES system), investments in infrastructure development etc., have been rather popular among forest owners and have made them more active in forest management. The majority of the above-mentioned support measures are managed by a state foundation formed in 1999 and called the Private Forest Centre (PFC; www.eramets.ee). Since this foundation is governed by the Ministry of Environment (www.envir.ee) it is also used to implement forest policy e.g. support to forest owners associations (FOA) depends on the number of individual members in the organization. The aim is to influence FOAs to increase their membership either by joining together or recruiting new members.

5.2.4. Forest Certification

Forest certification has been an innovative development in Estonia. Both PEFC and FSC schemes are in use; the PEFC is most commonly used in private forests (~110,000 hectares of private forests certified). As an example of new practices, Metsä Forest Estonia (a part of the Finnish Metsä Group) agreed with the Estonian Private Forest Union (an umbrella organization for private forest landowners and the holder of the PEFC group certificate) to pay an extra euro for birch pulpwood if it had the PEFC certificate (Eesti Erametsaliit, 2014).

5.3. Main opportunities for innovative forest management

The most important opportunities for innovative (new/improved) forest management in Estonia would be:

- The development of new and innovative markets/products e.g. carbon markets, biodiversity protection (PES), biomass/energy production, etc. An increased demand for these products could make the sector thrive towards innovation.
- Diversification of policy tools is needed and a more holistic approach in subsidizing private forestry would be necessary.
- There is still room for development in forest planning. The innovative use of the GIS could be enhanced.
- New organizational models are needed as the current concept of FOAs seems to become exhausted. The FOAs are quite limited by definition, they largely rely on state support and usually they are non-profit organizations because starting up a cooperative is made rather difficult. According to Estonian legislation (FOA as) a non-profit organization is not meant for profit earning, but direct reorganization from a non-profit association to a commercial association is impossible.
- There is still a huge number of forest owners who are not aware about their forest property. Further development of the private forest advisory system might be one solution to improve the situation.

5.4. Obstacles for innovative forest management approaches

The biggest obstacle for developing new or innovative forest management approaches in Estonia is the low profitability of forest management, which in one hand is linked to fragmented ownership but is also very strongly linked to modest activities by the private sector (i.e. FOAs) to change political courses. This could be partially because of weak participatory policy processes (i.e. people are used to “top-down” approaches).

Another part of obstacles includes the limited (or non-existing) knowledge of forest owners about not only forest management in general but sometimes also the actual location of the forest is unknown to owners. Naturally limited knowledge about the value of forest (harvesting potential), services that FOAs provide, extension and advisory possibilities, etc. are major factors. But it is not only the forest owners who lack some knowledge. Policy makers, forestry specialists, decision makers and extension foresters have operated in an environment of limited knowledge about forest owners, their motivations and values, ownership objectives and ownership structures. A major part of the policy decisions during the last two decades have been based on expert opinion or even some kind of “political will” rather than actual facts and analysis results.

CASE STUDY 5: PROTECTION CONTRACTS FOR WOODLAND KEY HABITATS

The establishment of woodland key habitats started in 1999. A woodland key habitat is an area up to 7 hectares which needs protection but which is outside of a nature protection area and which has a high occurrence probability of narrowly adapted, endangered, vulnerable or rare species. For protecting these areas in private forests the state has proposed a volunteer approach which means that a contract will be signed between both parties setting the area aside from management for 20 years. The state will reimburse the losses and expenses the owner must bare for the restrictions. It is a rare example of introducing a PES system. The problematic side of it is the fact that the compensation is not very large and it is calculated using the current market values of that particular site. The calculated flat rate is usually used for the whole 20 years. Forest owners are quite cautious in using such rigid schemes or they are not at all aware of these schemes. The scheme is operated by the state foundation Private Forest Centre (www.eramets.ee)

CASE STUDY 6: SUPPORT SYSTEMS TO MOTIVATE FOAS

Until 2009 the FOAs were relatively small, economically rather inactive, and they mostly organised knowledge transfer and mediated different support measures between forest owners and supporting institutions. In 2009 a special state support system was launched with the aim of motivating small non-industrial private forest owners as well as FOAs to engage in active forest management and timber sales. One of the preconditions for FOAs to get the support was the (yearly increasing) minimum number of members, which motivated interested FOAs to actively recruit new members, which was also one reason why some FOAs merged. As FOA support is a relatively bureaucratic process, some FOAs decided to operate in a way they did earlier ("small is beautiful"), without any support and they did not make any special efforts for increasing membership or starting new management models.

The (joint) forest management activities organised by FOAs were practised only by few organisations before 2009. The 2009 state support system motivated FOAs for active forest management activities. One of the supported activities was the so-called "full service", where the maximum support for an FOA can be 1.554€/m3 per sold timber assortment quantity. In this case the forest owner concludes a contract with an FOA, which on behalf of the owner organises the preparation of cutting areas, different types of fellings, timber transport to buyers' yards and timber sales. If that kind of a system is used, the forest owner does not have any other tasks; he/she can just wait for payment from the FOA. If needed, FOAs can arrange also the reforestation of felling areas according to other special agreements.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

The development of forest ownership has been very rapid during the last 20 years. It has been **directly influenced** by the Land Reform Act of 1991 (the key pillar of the change) which started the process of restitution and privatization (an overview provided by Meikar & Etverk 2000). While restitution has finished, there are still some privatization developments occurring. The Ministry of Environment is aiming to conclude these processes by 2017. In addition, there are more **indirect influences** that shape the development of forest ownership in Estonia. For example, the reactive and unstable forest policy environment, which might make forest owners feel unsafe in managing their property. Since 1991, there have been 3 different forest acts with several amendments: 1993 (4 amendments), 1998 (12 amendments) and 2006 (14 amendments, the last one entered into force on 1 August 2014). Some of those changes have had just some kind of political importance, where the representatives of forest owners have not participated in the preparatory process.

Also, strict environmental restrictions (different environmental policies) on the use of forest land could influence the development of ownership, encouraging some forest owners to sell their property. In some cases the forest owners have had the possibility of exchanging their forest land (if under strict protection) for alternative properties (Environmental Act, 2004).

Obviously, taxation policy has had a very big influence on forest ownership. In Estonia two important taxes are used in forestry – the land tax and income tax. The final rate of the land tax is determined by the council of a rural municipality and in several municipalities the forest land tax is higher compared to agricultural land. The income tax system for forest owners has passed several different stages; the general tax rate has decreased from 26% to 20%. From taxation point of view, there are differences between three groups of forest owners: physical persons, self-employed persons and legal persons (companies).

The simplified picture is that in the 1990s private forest owners as physical persons could not deduct silvicultural costs. The deduction of some documented felling costs in timber sales was possible, but they had to pay income tax from timber sales value. An exemption was made for forest owners who have got back their restituted property, for them the sales were tax free (see also Urbel-Piirsalu and Bäcklund, 2009). This was one financial motivation for some forest owners to sell their forest properties and somehow it was also a good starting point for trade with the forest properties market. Since 2004, it was possible to deduct also reforestation costs, but only in the case of transferring the cutting rights of forests, not when a forest owner was doing/organising the felling and timber sales (Aun, 2008). A self-employed person as an entrepreneur had more possibilities to deduct business related expenses, but in addition to income tax they had to pay also social taxes. Since 2008, self-employed persons have a right to deduct additional 2,877 EUR from their income from the sale of unprocessed timber received from the property which is belonging to him (Income Tax Act, 1999). Legal persons (mainly companies) as forest owners can deduct all the expenses from their income; until 1999 companies had to pay income tax on their profit, but starting from 2000 companies have to pay income tax only when their profit is distributed as dividends or in the case of other profit distributions in monetary or non-monetary form (Marastu, 2007; Income Tax Act, 1999).

The general opinion of small forest owners was that the Estonian tax system did not support sustainable forest management, e.g. the Estonian Private Forestry Development Plan 2006–2009 (Eesti Erametsaliit, 2006) stated the need for development of the tax system, which supports forestry needs. In February 2011, the parliament approved the Estonian Forestry Development plan until 2020 (Keskkonnaministeerium, 2010), which also stated the needs for changing the tax system. In July 2011 the Estonian Parliament passed the amendments to the Income Tax Act (Income Tax Act, 1999), which accepted special arrangements for the sale of cutting rights or timber assortments (entered into force on 1 January 2012). Currently the forest owner has a right to deduct forest management costs from sales income during the same year or within the following three years. Finally, the forest owner as a physical person can now legally deduct basic silvicultural costs and there is no need to manage the forest as a small company.

Forest ownership has been also influenced by agricultural policies (and subsidies). While some former agricultural areas started to be afforested (and some were afforested by the owners) during the 1990s, in the light of rising agricultural direct payments there was pressure to start producing crops. This might lead to deforestation in these areas which were formerly agricultural land. It might be possible that the ownership has been influenced also by wildlife/hunting policies to some extent. Hunting rights have been *de jure* given to landowners but *de facto* in recent decades landowners have not had much to say about hunting on their property.

6.2. Influences of policies on forest management

The biggest policy areas that influence forest management are forest and environmental policies. After regaining independence, the first Forest Act was entered into force in 1993. Before that the Soviet Estonian Forest Code was valid. The general principles of forest policy were approved by the parliament in 1997 (Approval of the Estonian Forest Policy, 1997).

In addition to the Forest Act several other legislative documents influence the management of private forests e.g. the Regulation on Forest Management laying

down specific rotation ages (see also Korjus et al., 2011) and rules for various other activities. Despite all those different changes forest management plans have almost always been necessary for forest owners. In principle management planning is voluntary, but nowadays forest owners, if they want to conduct management operations, have to have adequate forest inventory data in the Forest Register (a management plan is more a tool for the owners themselves). All the inventories and planning are done at the request of the owner by licensed companies. Private forest owners are eligible for support in financing the inventory/management plan. Also, the Nature Conservation Act applies to a significant amount of forests since roughly one third of the forests are covered with management restrictions (Sirgmets et al., 2011). The majority of different restrictions are being compensated for either by national funds (e.g. in the case of woodland key habitats) or by using EU funds (Natura 2000 payments).

Indirectly also agricultural policies influence forest management, mainly by the Common Agricultural Policy (CAP) and Rural Development policies. A range of different support measures is implemented which surely influence the management of private forests.

The taxation policy was hindering mainly reforestation in the case of which the majority of forest owners could not deduct silvicultural costs, especially when the planting was done 1 or 2 years after felling. The influence of the taxation policy existed until the year 2012 (described in the previous sub-chapter in more detail)

6.3. Policy instruments specifically addressing different ownership categories

Ownership categories are most often divided into two: private individual owners and private legal owners (companies). This is the most common way how a difference is being made. Rules have been adopted according to which support for companies/legal owners is a bit more limited and private individual owners are being favoured when providing financial support for forest management. There are also some consultants or forestry advisers who get funding from the state to reach forest owners and consult them, but their numbers are low and usually for most of them it is a second job. In addition, forest owners themselves should contact the advisers not the other way around. There are no other specific instruments which address different ownership categories (in particular new forest owners).

For reaching new or absentee forest owners most often larger campaigns are used. About 2013 a small project was launched by the Private Forest Centre in cooperation with a regional FOA to address forest owners who live in cities (e.g. the capital Tallinn). They launched a commercial on national television but the results or effectiveness of the whole project are still unknown. Also, specialists write newspaper articles but often these articles are published only in forestry related journals which these absentee or new forest owners do not come across. Some associations take part also in regional fairs. There is public interest in private forest management, but current policies do not really consider the diversity of forest owners (Põllumäe et al., 2014b).

6.4. Factors affecting innovation in policies

There is a great need for scientific understanding about forest ownership and forest owners. As mentioned before the majority of policy decisions have been made based on expert opinions. This could be one of the main accelerating factors for policy innovation. Nowadays we also have a good idea about the current ownership structure (a positive aspect for developing policies) yet it would be even greater to know in depth the trends in forest ownership changes. The amount of hindering factors is unfortunately large. The “tradition” of top-down implementation is still somehow influencing policy developments. The main initiator of policy developments is the state and participatory processes are still in their initial stages. It is very difficult for the private forest sector to have a clear say in different policy processes since the sector itself depends

quite much on state support. This is also somewhat linked to the preconceptions of people about political lobbying i.e. it is not a very common practice in/among smaller-scale organizations or "traditional" sectors (e.g. forestry) or it is rather weak. Ownership fragmentation and the wide range of forest owners' different needs and objectives do not stimulate innovation in policies. A good example would be one of the aims of the current National Forestry Development Programme until 2020 (Keskkonnaministeerium, 2010). It stresses the importance of forest owners' cooperation and sets ambitious goals for 2020 regarding forest owners' joint wood sales through FOA-s without even mentioning the possibility of having forest owners with multiple objectives. The document underlines among other things that the annual harvested volume is ~2/3 of the optimum and most of the "shortage" can be accounted to private forests. Policy objectives and needs are therefore more production-oriented. Mainly support schemes are used to stimulate the management of private forests. Teder (2014) has focused, for example, on the joint wood mobilization support.

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FINLAND

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1. Introduction

1.1. Forests, forest ownership and forest management

Forests cover 86% of Finland's land area and the area of productive forest land is 20.3 mill. ha (Finnish Statistical … 2014). According to the most recent statistics, the total timber stock is 2,357 mill. m^3 and the annual growth is 104 mill. m^3 which exceeds annual fellings by some 30 mill. m^3. The majority of Finland is situated in the boreal climatic zone. Fifty percent of the volume of the timber stock consists of pine (*Pinus sylvestris*). Other important species are spruce (*Picea abies*) with 30%, downy birch (*Betula pubescens*) with 12% and silver birch (*Betula pendula*) with 5%. The majority of Finnish forests are a mixture of coniferous and deciduous forests.

According to the Finnish Tax Administration, private individuals and families own 62% of the productive forest land in Finland. The state owns 26% of the forest land, private industries, such as forest industry companies, 9%, and other owners, 5% (Finnish Statistical … 2014). There are currently 347,000 non-industrial private forest holdings (NIPF) in Finland. All parcels owned by the same owner despite their location in the country exceeding in total two ha of forest land are included in the same ownership unit. On average, these holdings comprised of 30 ha of forest land. The corresponding number of forest owners is estimated to be 632,000 (Leppänen and Torvelainen 2015).

Finnish forests are managed by compartments, the average size of a compartment being less than two hectares. The rotation periods vary between 60 and 120 years, depending on the tree species and the site characteristics (Forest.fi). Around 15% of the regenerated area is reforested naturally and around 85% artificially, i.e. by replanting or seeding (Finnish Statistical … 2014). However, artificially established seedling stands usually contain also naturally-born seedlings. Site preparation is usually executed before regeneration.

In Finland, logging is based on the cut-to-length assortment system, which means that a trunk is cut into saw-timber and pulpwood when harvested. Most of the timber is sold by standing sales, so the timber buyer takes care of the logging and hauling, often using subcontractors (Forest.fi). Less than one fifth of the total cutting volume comprise of delivery cuttings where forest owners themselves take care of logging and hauling or organize the wood procurement by using subcontractors (Finnish Statistical … 2014).

1.2. Overview of the country report

According to the study results, timber supply from private forests, i.e. some 80% of domestic roundwood, is negatively affected by forest owners' age and female ownership, and in turn, positively by farmer ownership (Kuuluvainen et al. 2011, Kuuluvainen et al. 2014). Furthermore, multiobjective owners are most active, and recreationists and indifferent owners most passive in their timber harvests. Public subsidies seem to have a positive effect on stand improvement and forestry professionals have an important role in decision-making: a majority of forest owners seem to place strong trust in professionals and take their advice. Forest holdings are important to their owners as a link to the family or chain of generations and they also contribute to forest owners' identity building. Forest owners know the forest law quite well and are willing to obey it and they recognize the different ecosystem services, and often take them into account in their forest management.

In Finland, approx. 10,000 NIPF holdings change owners annually. However, only 15% of the forest holdings is purchased in the open market (Hänninen et al. 2011). The

majority of holdings is inherited from or donated by (45%) or purchased from the family and relatives (40%). The length of land tenure is used to define 'new' forest owners. Usually those owners who have owned their holdings less than five years are included in this category. Around every fifth owner belongs to this category of new owners (Hänninen and Ripatti 2007). New owners are also more often absentee owners and live more often in urban settings than long-tenure owners. Interestingly, ownership objectives of new owners seem to be as similarly distributed as among long-tenure owners (Hänninen and Ripatti 2007, Rämö and Toivonen 2009).

There are also differences in the timber supply behavior between short-tenure (less than five years) and long-tenure owners (Kuuluvainen et al. 2011, Kuuluvainen et al. 2014). On average, new owners have been more or less as active in their timber sales as long-tenure owners. The study results, however, imply that timber supply among the young, relatively low-income and 'new' forest owners is rather high. In addition, forestland area affected the mean-per-hectare harvest statistically significantly among short-tenure forest owners as opposed to long-time forest owners. Should the government aim to ensure active forest management in the future, it may want to use policies that promote multiobjective ownership, speed up ownership changes and support creation of large woodlots. This, in fact, is the general tendency in forest policy currently followed in Finland.

According to timber supply analysis (Kuuluvainen et al. 2011, Kuuluvainen et al. 2014), another type of new ownership, i.e. women sold one m^3/ha/yr (about 30%) less than men did. Female owners also sold less frequently, but larger quantities at a time than did male owners. Also farmers as compared to non-farmers sold on average one cubic meter more per hectare per year. As regards potentially increasing owner types with respect to the objectives of forest ownership, recreationists and indifferent owners sold approximately two cubic meters per hectare per year less than more traditional multiobjective owners.

New forest ownership types may fall within an uncertain class of forest owners with no clear understanding of one's own objectives and suitable service providers. They may rely on local forest management associations or search a loyalty customership from among the industrial service providers actively marketing their services for urban absentee owners. Alternatively, they may look for other service entrepreneurs providing soft forest management (Hänninen et al. 2011, Korhonen et al. 2012). New forest owner types may also stay outside the timber market and other services due to to being not yet properly recognized and served by the traditionally orientated service providers (Häyrinen et al. 2014).

Recent changes in the Finnish forest legislation provide new approaches in addition to the traditional even-aged forest management which has been criticized increasingly. For example, 56% of forest owners and 76% of non-owners disapproved clearcutting in a representative survey (Valkeapää and Karppinen 2013). The revision of forest law aims to increase forest owners' freedom of choice and to widen forest management possibilities (Ministry of Agriculture and Forestry 2011). These new approaches might satisfy the objectives of the individuals or organizations that previously have not owned forestland or traditional forest owners who have changed motives, or introduced new goals or management practices for their forests. Concerning uneven-aged forest management, the increasing outsourcing of forest activities may be an opportunity or a great challenge depending on the forest service providers' ability to adopt new practices. One of the greatest silvicultural challenges – and thus a call for innovative management approaches – is how to 'restore' uneven-age production after decades of even-age management.

Now there is a wider range of approaches available, i.e. traditional even-aged forest management, intensive short-rotation management and uneven-aged forest management. In developing new or innovative forest management approaches the main obstacles are the long traditions of the predominant practices and rather well optimized technical systems of forestry operations and wood procurement, forest professionals' attitudes and skills and lack of illustrative simulation tools for helping forest

owners to understand and choose between forest management alternatives.

In Finland, the state has not recognized private small-scale forestry as an entrepreneurial business but considered it rather as a financial investment: policy instruments have been adopted from the financial sector rather than from the SME business sector, which may have harmed the adoption of most efficient policy instruments enhancing profitable forestry business on the holding (enterprise) level. Instead, advisory services and silvicultural financing has been employed on forest owner/holding or forest stand level with aims of increasing e.g. the total area of young stand management or the total roundwood offered on the timber market. Moreover, forest holdings without an active farm attached are not considered as business enterprises in generational changes but treated as investments causing discontinuity in sustainable forest management and owners abandoning forestry entrepreneurship.

For a long time Finnish forest policy formulation has been dominated by discourse relating to fragmentation, passiveness of owners as timber suppliers and insecurity of long-term timber supply. The change of forest ownership from traditional farmer-owners increasingly to highly educated city-dwellers has been part of the discourse long before this change has actually taken place and affected timber supply and service demand. Policy innovation has suffered from organizational inertia. There has been a rather strong political lobby that has prevented creative policy innovations from being discovered or accepted. Also the ageing of forest owners has maintained a rather conservative profile of the owners, and the anticipated ownership changes have been delayed and perhaps caused some frustration among policy innovators. Regulation of access to forest resource information, such as National Forest Inventory results, as well as market regulation, have also been considered barriers in establishing new policies, institutions and activity models. However, as the overhaul of the Finnish forest policy has deregulated the market and organizations, changes in institutions, markets and practices are anticipated in the forthcoming years.

2. Methods

2.1. General approach

The country report aims to give a comprehensive overview of forest ownership issues in the country, based on a mix of methods. These include a review of literature and secondary data and the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (authors' own expert knowledge, expert interviews and results from studies). A literature review describes the state-of-knowledge in the participating countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. The data and case study analyses provided in the country reports will be analysed in subsequent stages of the COST Action.

2.2. Methods used

This report is mostly based on literature review and references are given accordingly in the text. For example, one of the most cited references is Hänninen et al. (2011), which is a basic description of family forest owners in Finland in 2009. In particular, several forest owner surveys have been conducted providing empirical literature. Statistical sources, such as the statistical service of Natural Resources Institute Finland (Luke), formerly known as the Finnish Forest Research Institute Metla, have also been utilized. Typically National Forest Inventory information and silviculture statistics are used via this service. Some parts of the report are based mostly on the expert assessments of the authors supported by a legislative review, such as the description of charitable, NGO or not-for-profit owners of forests. The assessment on the obstacles in developing new or innovative forest management is also based mainly on the expertise of the authors. The section concerning policy issues (6) does not include many references and is hence based mainly on expertise of the authors.

3. Literature review on forest ownership in change

The COST Action national representatives undertook a review and compiled information on changes in forest ownership in their countries based on peer reviewed and grey academic literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites etc.

The scope of the literature review was as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types and related policies and policy instruments.

The 10 most relevant publications were selected from the collected literature and described according to a pre-determined format. These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). All available literature was reviewed for this report but only those which are referenced in the text are listed in section 7.

The literature review considers the following questions:

- Which research frameworks and research approaches are used by researchers?
- What forms of new forest ownership types have been identified?
- Do any of these have specific forest management approaches?
- Which policies possibly influence ownership changes in the country and which policy instruments are directed at the needs of new forest owner types?

3.1. Research framework and research approaches

The main themes considered in the Finnish literature are:

1) structural changes of family forest owners, i.e. demographic changes and changes in forest holding size structure
2) changes in values and objectives of forest ownership
3) forest owners' forest management behaviour including silvicultural activities and timber sales behaviour
4) the effects of forest policy means on forestry behaviour such as the effects of cost–sharing and forestry extension services

The most comprehensive data on forest owners has been collected by the Finnish Forest Research Institute (Metla) by developing a monitoring system to collect nation-wide regionally representative data using a 10-year interval (Karppinen and Hänninen 2006, Hänninen et al. 2011). The researchers of University of Helsinki have also often been involved in the analysis of monitoring data. A private research organization, Pellervo Economic Research (PTT), has also conducted several forest ownership studies. The studies have mostly been funded from national public sources (state budget funds of the organizations, external research funding programs). Also private funding has been available, such as funding from foundations, forest industries and Agricultural Producers' Organization MTK. However, the role of this private funding has been significantly smaller than the state funding.

In timber supply analysis economic theory has been applied, e.g. Fisherian two-period consumption-savings model (Kuuluvainen et al. 1996) and utility-based Faustmann model (Favada et al. 2009). Economic approach has also been applied in stand improvement analysis, where investment decisions are theoretically described with a two-period model with amenity values (Ovaskainen et al. 2006). Also choice modelling method based on the random utility theory has been applied when examining the conditions of timber supply decision making (Rämö et al. 2011) Theories of social psychology have been applied as well, such as the Theory of Planned Behavior in the choice of reforestation method (Karppinen 2005) and in analyzing timber stand improvement decisions (Karppinen and Berghäll 2015), Schwartz's value theory (Karppinen and Korhonen 2013) and recently also the Theory

of Psychological Ownership (Lähdesmäki and Matilainen 2014a). Also customer value concepts derived from business and marketing research have been applied (Hujala et al. 2013). The basic approach in most of the studies is sociological or socio-psychological. The majority of the studies analyze quantitative nation-wide mail inquiry data but also regional quantitative data has been used. However, in particular, recently also the qualitative approach and interview data have been applied (e.g. Karppinen and Tiainen 2010, Lähdesmäki and Matilainen 2014a).

The main findings in the literature in addition to the monitoring of the development structural changes in family forest ownership (see p. 15-19) can be summarized as follows:

1) the negative effect of forest owners' age on the timber supply (m^3/ha/year) which can be interpreted either as a life-cycle effect or an age cohort effect or their mixture
2) the negative effect of female ownership on timber supply
3) the positive effect of farmer ownership on timber supply
4) the ambiguous effect of forest holding size on timber supply
5) the role of the objectives of forest ownerships (see p. 16-19) concerning timber supply: multiobjective owners most active, recreationists and indifferent owners most passive
6) the evidenced effect of public subsidies on the probability and extent of stand improvements
7) the important role of forestry professionals: majority of forest owners seem to place strong trust in professionals and take their advice
8) short-tenure new owners, more often absentee, urban owners
9) the ownership objectives of both new short-tenure owners and future owners resemble those of current owners
10) the decision-making of forest owners is based on multiple attributes, not only on profits or other economic measures
11) forest holdings are important to their owners as a link to the family or chain of generations and they also contribute to forest owners' identity building
12) forest owners know the forest law quite well and are willing to obey it
13) forest owners recognize the different ecosystem services, and often take them into account in their forest management decisions
14) there exists a non-responsive forest owner segment that stays unreachable by current economic-forestry-dominated services.

Forest owner studies have mainly focused on the forest owners as timber producers, growers and sellers. With increasing multiple and non-timber objectives, there is a need to study forest owners also as consumers of forest products and services in the future (Hänninen and Karppinen 2010). This could mean a special investigation of small holdings (less than five hectares) or studies of urban owners from the point of view of social sustainability or welfare. These small holdings can provide substantial recreational benefits for the owner or for the public through the more or less deliberate provision of public goods. There is also a growing literature on forest owners' role in maintaining and commercialising ecosystem services (Rämö et al. 2013), such as carbon sequestration. A technical problem with mail inquiries is the increasing number of non-responding forest owners, which underlines the importance of the analysis of non-response. The role of the qualitative approach could also be strengthened.

3.2. New forest ownership types

In Finland, the most relevant new owner type is individuals who previously have not owned forestland. The second relevant new forest owner type is the urban absentee owner segment. The third to some extent relevant new owner type is new legal forms of ownership for private land.

In Finland, approx. 10,000 NIPF holdings change owners annually. However, only 15% of the forest holdings is purchased in the open market (Hänninen et al. 2011). The majority of holdings is inherited from or donated by (45%) or purchased from the family and relatives (40%). The length of land tenure is used to define 'new' forest owners.

Usually those owners who have owned their holdings less than five years are included in this category. Around every fifth owner belongs to this category of new owners. Almost half of these short-tenure forest owners are wage earners while their share is one third among long-tenure owners. New owners are less often farmers than long-tenure owners but as many as every fifth of the new owners is already retired (Hänninen and Ripatti 2007). The average age of new owners is 54 years (Rämö and Toivonen 2009). New owners are also more often absentee owners and live more often in urban settings than long-tenure owners. Interestingly, ownership objectives of new owners seem to be similarly distributed as among long-tenure owners (Hänninen and Ripatti 2007, Rämö and Toivonen 2009).

There are also differences in the timber supply behavior between short-tenure (less than five years) and long-tenure owners (Kuuluvainen et al. 2011, Kuuluvainen et al. 2014). On average, new owners are as active in their timber sales as long-tenure owners. However, the average size of annual timber selling of the new owners is larger than among the forest owners in general (Rämö and Toivonen 2009). According to the model results, unlike for long-tenure owners, ownership objectives, main occupation (farmer) and gender did not affect the mean expected harvest for short-tenure owners. On the other hand, the negative elasticity of both owners' age and income level on harvest were clearly greater in absolute terms among short-tenure forest owners. This, combined with the fact that average harvest levels between 'new' and long-time forest owners are similar, implies that timber supply among the young, relatively low-income and 'new' forest owners is rather high. In addition, forestland area affected the mean per hectare harvest statistically significantly among short-tenure forest owners as opposed to long-time forest owners. Should the government aim to ensure active forest management in the future, it may want to use policies that promote multiobjective ownership, speed up ownership changes and support creation of large woodlots. This, in fact, is the general tendency in forest policy currently followed in Finland.

Although urban absentee owners have existed for a long time, they have emerged as a notable new forest owner type during the last decade. Until recent years, it has been mostly non-owners who have moved from the countryside to the towns and cities, while the urbanizing trend of owners has been relatively slow. Moreover, a majority of absentee owners have lived next to their forests in their childhood, which has maintained psychological attachment to the land (Hujala and Tikkanen 2008). During the last decade, however, new service needs have emerged among the absentee owners, and all major timber-buying companies as well as forest owners' associations have established service offices in cities and today actively organize seminars and fair events to the urban absentee owners. In addition, absentee owners' associations have been fairly recently established in several cities to organize activities and lobby for their interests alongside the more traditionally orientated forest management associations. Urban absentee owners are also potential customers of emerging e-advisory services and potentially active participants in owners' Internet communities (Hamunen et al. 2015).

We can also regard female ownership to be a new forest owner type although it has existed for a long time. Female ownership has been expected to increase. According to timber supply analysis, women sold one m^3/ha/yr (about 30%) less than men did. Female owners also sold less frequently, but larger quantities at a time than did male owners. Also farmers as compared to non-farmers sold on average one cubic meter more per hectare per year. As regards objectives of forest ownership (see p. 16-19), potentially increasing owner types, recreationists and indifferent owners sold approximately two m^3/ha/yr less than more traditional multiobjective owners.

As regards new legal forms of ownership for private land, there is no real estate investment trust (REIT) legislation concerning forest ownership in Finland. This has prevented major restructuring of company forest ownership, in particular. However, a new Jointly Owned Forest Act of 2003 has been employed to change jointly owned family forest holdings as jointly owned forests benefiting e.g. from tax incentives. Some of the jointly owned forests also have started to

expand their forest lands supported by the new legislation, which was also the target of the Finnish government.

In addition, forestry seems to have been left outside from attempts to prevent international tax competition. In Finland, legislation is applied to international concern debts, where subsidiary A of a concern lends to subsidiary B of the same concern. A concern may receive considerable tax benefits, if the taxation of interest revenues in the home country of the subsidiary A is low and the taxation of subsidiary B earnings is high. Therefore, international interest costs deductible in taxation of subsidiary are restricted. In Finland, restrictions for international concern debt interest deductions in case of limited companies are not applied to forestry, which is not regarded as business but financial investment. Therefore, new international forest owners have emerged, which have employed the so-called tax havens to transfer taxable forestry income from Finland.

3.3. Forest management approaches

For those new forest owners who did not own forest land earlier, there are mainly two main lines of discussed forest management approaches, the first being uneven-aged forestry (Kumela and Hänninen 2011) and the second re-emerged self-active small-scale forest management for recreational and game-related purposes. However, research has thus far not found significantly differing management approaches among these new owners. The most distinguishing feature of new forest owners is their slowly increasing urbanization, which means that more and more all-inclusive services and online services are demanded in order to manage forest ownership. The strong role of forest professionals in the advisory and forest management planning system in Finland prevents owners' own innovations from evolving. There are some signs that owners whose values and objectives notably differ from the prevailing economic-forestry-based service mindset rather place themselves outside the current forest institutions and appear in research as passive or non-responsive owners (Häyrinen et al. 2014).

3.4. Policy change / policy instruments

The lower tax rate (28% vs. 30-32%) on capital tax of timber sales serves as an incentive to form jointly owned forest. About 56% of forest owners see it as a nearly necessary condition for forming a jointly owned forest (Rämö and Tilli 2007) and 61% of a case study on present owners of jointly owned forest regard the lower tax important (Rämö et al. 2013).

The challenge presented by new forest ownership is unfamiliarity with forest management and forest law (Rämö and Toivonen 2009). The size of the holdings does not affect the timber supply directly as the small holdings sell as much timber per hectare as the larger ones, but it increases the transaction and operational costs of timber buyers.

From the perspective of emerging absentee owners, the recently established Metsaan.fi – service can be seen as a major policy instrument aiming to serve the new forest owners' motivations and lifestyles. The publicly funded service, available on the Internet, views the owners' forest information, provides information about cutting opportunities and valuable habitats and allows sharing the information with selected service providers.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in Finland. The most detailed information at national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. To make this information more comparable still, the information is also collected in an international format that is used in the Forest Resources Assessments (FRA) by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses how far the national categories and definitions may be transformed into the international FRA data structure and the extent to which there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

The total area of productive forestland in Finland is 20.3 mill ha, and the area of forestry land including also less productive and unproductive land is 26.2 mill ha (see Table 1). The major share of the productive forestland in Finland is owned by private owners, mostly NIPF owners, i.e. family owners. Their share is 61% and the state owns 25% of forestland. Forest industries or institutional investors owned by the forest industries have 8% of forestland in their possession. The remaining 6% belongs to municipalities, parishes and various kinds of communities.

Municipalities as well as parishes are normally regarded in Finland as local public ownership, although in some international definitions e.g. parishes are regarded as private entities. Both municipalities and parishes have rights for local tax collection. Other communities are mostly private, e.g. jointly owned forests are regarded as private entities. This rather imprecise categorisation with regard to private-public ownership comes from the national forest inventory methodology, which does not recognize small or spatially fragmented forest ownership groups with reasonable precision.

Table 1: The ownership of forest and forestry land in Finland

Ownership of forestry land						
	Inventory	*Private*	*Companies*	*State*	*Others*	*Total*
		1,000 ha				
11th National Forest Inventory						
Whole country	2009–2013	13,900	1,877	9,082	1,336	26,194
		53%	7%	35%	5%	100%
Ownership of forest land						
	Inventory	*Private*	*Companies*	*State*	*Others*	*Total*
		1,000 ha				
11th National Forest Inventory						
Whole country	2009–2013	12,355	1,665	5,144	1,104	20,268
		61%	8%	25%	6%	100%

Ownership categories:

Private: Non-industrial, private forest owners, heirs, private firms etc.

Companies: Limited companies and their pension foundations (excl. housing companies)

State: Metsähallitus (state enterprise) and other state organisations

Others: Municipalities, parishes and associations. Associations consist of co-operatives, jointly owned forests, limited partnerships, housing companies and foundations.

Forest land: Potential average annual increment of the timber stock at least 1.0 m^3/ha

Poorly productive forest land: Potential average annual increment of the timber stock more than 0.1 m^3/ha but less than 1.0 m^3/ha

Unproductive land: Potential average annual increment of the timber stock less than 0.1 m^3/ha

Forest roads, depots etc.

Forestry land = Forest land + Poorly productive forest land + Unproductive land + Forest roads, depots etc.

Source: Finnish Statistical…2014

4.1.2. Critical comparison with national data in FRA reporting

Another possibility is to employ an internationally comparable FAO definition for forest (e.g. 10% canopy cover of trees able to reach 5 m height) (Table 2). The amount of forest hectares is according to Global Forest Resources Assessment (2010) (GFRA) is in Finland 22.2 million hectares and the ownership classes are somewhat different compared to national classification. However, it must be recognised that the GFRA is a special case, and typical forest statistics in Finland are not available in this form.

Table 2: The ownership of forestland in Finland according to GFRA 2010 (see the report on the ownership classification in GFRA).

FRA 2010 Categories	Forest area (1,000 hectares)
	2005
Public ownership	6,988
Private ownership	15,168
...of which owned by individuals	12,765
...of which owned by private business entities and institutions	2,404
...of which owned by local communities	0
...of which owned by indigenous / tribal communities	0
Other types of ownership	0
TOTAL	**22,157**

4.2. Unclear or disputed forest ownership

Property rights can be described as a continuum from no rights at all to a full title to the land. All above mentioned owner categories have a full title to their forest land. However in Finland, as in many other countries, all forest visitors can enjoy a limited use right called Everyman's Rights or Freedom of Public Access. These rights are a commonly agreed way of using nature, they are not an actual subjective right and can be called the 'right of public use' (Laaksonen 1999). This traditional right allows visitors to hike, pick up berries and mushrooms, ski and even camp for one night (without making a fire) in the forests of all owner categories without asking for a permit from the forest owner. However, Everyman's Rights do not permit one to damage or disturb nature orcause unreasonable disadvantages to the forest owner. These rights do not apply the courtyard of the residence of the landowner. In addition, Everyman's Rights are based on occasional use of forests (Kuusiniemi et al. 2000). Even though the rights of access granted by Everyman's Rights are relatively clear, the concepts of unreasonable disadvantages and occasional use of forests are always disputable.

The Sami land ownership in Northern Lapland has been debated and investigated for a long time. The question has not been fully accomplished. For instance, the ILO Convention No. 169 concerning the rights of the indigenous and tribal people has not been ratified in Finland or Sweden. Norway has ratified the agreement (for ratification situation by countries, see: www.ilo.org/dyn/normlex/en/).

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

There are no more legal restrictions for the forest land market in Finland.

4.3.2. Specific inheritance (or marriage) rules applied to forests

Inheritance rules are defined in Inheritance Act 40/1965 and the respective taxation in Inheritance and Donation Act 378/1940. These rules form an incentive for division of land property and hence fragmentation of ownership. Forest property can also be owned jointly by private partnerships or heirs. Especially estates owned by heirs are often considered to be an unwanted type of ownership because of the decision-making problems. Due to the potential lack of unanimity, the forest management activities in these forests are often fewer than in other ownership forms, and this ownership type is often considered a passive one in their forest management.

4.4. Changes of the forest ownership structure in the last three decades

4.4.1. Changes between public and private ownership

Forest ownership in Finland is in a slow change. Since the 1950s, the national forest inventories indicate that the total area of forestry land has remained rather stable at 26.2 mill ha. Only in the 1960s and 70s was

the forestry land area temporarily larger. When monitoring forestry land development by major ownership groups (Fig. 1), it can be detected that private persons gained forestry land in the 1950s, mainly due to settlement policies after WWII. Private forest owners owned over half of the ceded land. Since the 1960s the forestry land area of private persons has been declining remarkably. The area of jointly owned forests has increased (private) and also some other owners, such as municipalities, have increased their ownership.

Because the group 'others' includes both private and public ownership of forestry land, it may be argued that private-public ownerships have in the long term remained rather unchanged. During the last three decades, however, the share of public ownership of forestry land has increased in Finland.

Since the 1970s the area under nature conservation or restricted use has threefolded. Most of this land is under state governance, but the responsible ministry has changed from the Ministry of Agriculture and Forestry to the Ministry of the Environment.

In the short term since 2006, the ownership development can be examined according to tax registers, indicating the productive forestland by ownership subgroups (Leppänen and Torvelainen 2015). However, the extent of productive forestland is greater in national forest inventory than in holding-based tax register. In the latter statistics the main group 'Private persons' in total has gained productive forest land, mainly due to increase of tax partnerships, whereas ownership by single persons or spouses together, and especially properties owned jointly by heirs, have had a decreasing trend in their acreage of productive forest land. In the main group 'Others', jointly owned forests, as well as foundations, have increased their ownership. All other groups in total seem to have lost productive forestland, although subgroup exceptions and annual variation exist.

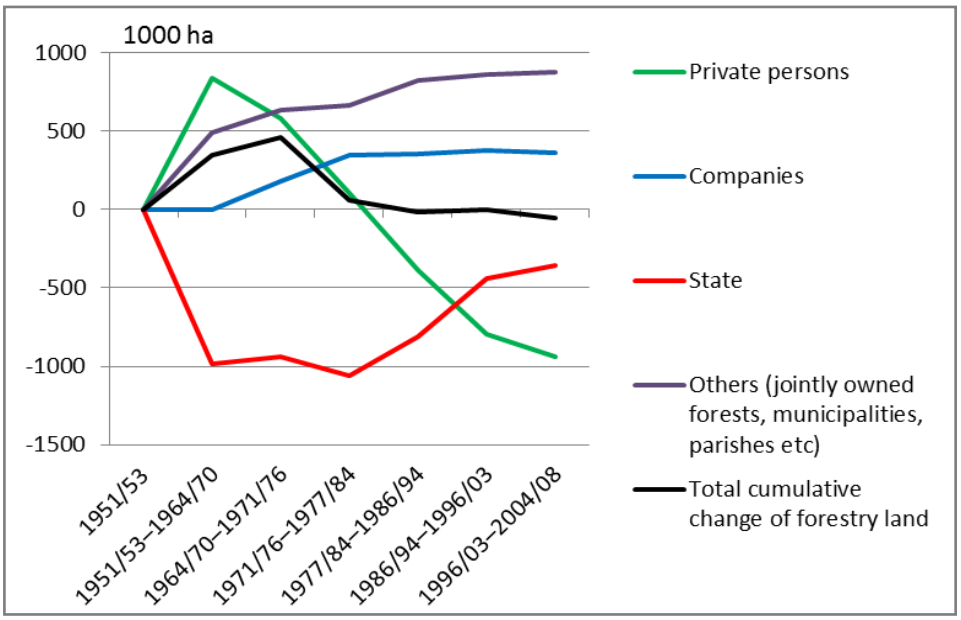


Figure 1: Cumulative development of forestry land in Finland in four major ownership groups, national forest inventory of 1951-53 indexed as a starting point (Finnish Statistical … 2014)

4.4.2. Changes within public ownership categories

Public ownership of productive forest land has been increasing since the 1960s. (Finnish Statistical … 2014). This is mainly due to land acquisitions by the state forest enterprise Metsähallitus. Forestry land in public ownership has been increasing both for conservation and forestry use. Some 10 years ago, the Ministry of Agriculture and Forestry rejected the forest land acquisitions by Metsähallitus for forestry purposes due to financial reasons. Today, Metsähallitus is selling forestry estates, but this development has been still rather moderate.

4.4.3. Changes within private forest ownership

The main changes occurring in the structure of NIPF forest ownership in the last three decades were a decline in the number of farmer owners, an increase in the number of absentee owners, partly related to migration to urban areas, and an ageing of the forest owners (Fig. 2). Fragmentation and an increase in the number of small forest holdings was taking place especially during the latter half of the 20th century. Since then, polarization has also taken place in the size distribution of forest holdings, which means increased numbers of both large and small holdings (Hänninen et al. 2011).

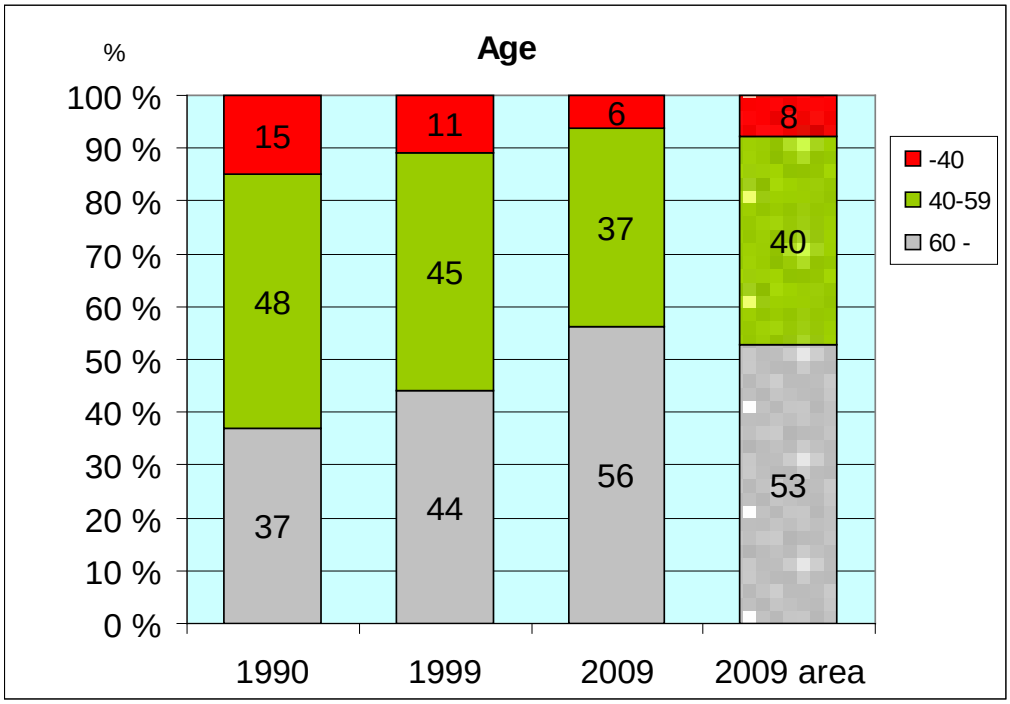
There are currently 347,000 NIPF holdings in Finland. This figure includes as one ownership unit all parcels owned by the same owner despite their location in the country exceeding two hectares of forestland in total. On average, these holdings comprised of 30 ha of forestland. The corresponding number of forest owners is estimated at 632,000 (Leppänen and Torvelainen 2015). The proportion of forest owners who are active farmers (i.e. main-occupied agricultural and forestry entrepreneurs) declined from one third to 16% during these three decades. This is no surprise, as the number of farms has decreased as a result, for example, of European Union membership. However, active farmers still own 26% of the total area of NIPF. If both main- and side-occupied farmers are included, farmers own 30% of the area of NIPF (excluding main-occupied forestry entrepreneurs without side-occupied agriculture) (Hänninen et al. 2011).

Forest ownership by wage earners and pensioners has also increased. More than half of all forest owners are at least 60 years old. The average age of forest owners has risen from 54 to 60 during three decades. This rise in mean age is due to the increased number of non-farming forest owners. Despite the overall movement in Finland to cities and towns, 55% of forest owners still live in sparsely populated rural areas and almost one fifth live in population centers or small towns. Twenty-six percent of forest owners live in urban areas of more than 20,000 inhabitants. Less than half (42%) of all forest owners reside permanently on their forest holdings, and 65% live in the same municipality with their holding (Hänninen et al. 2011).

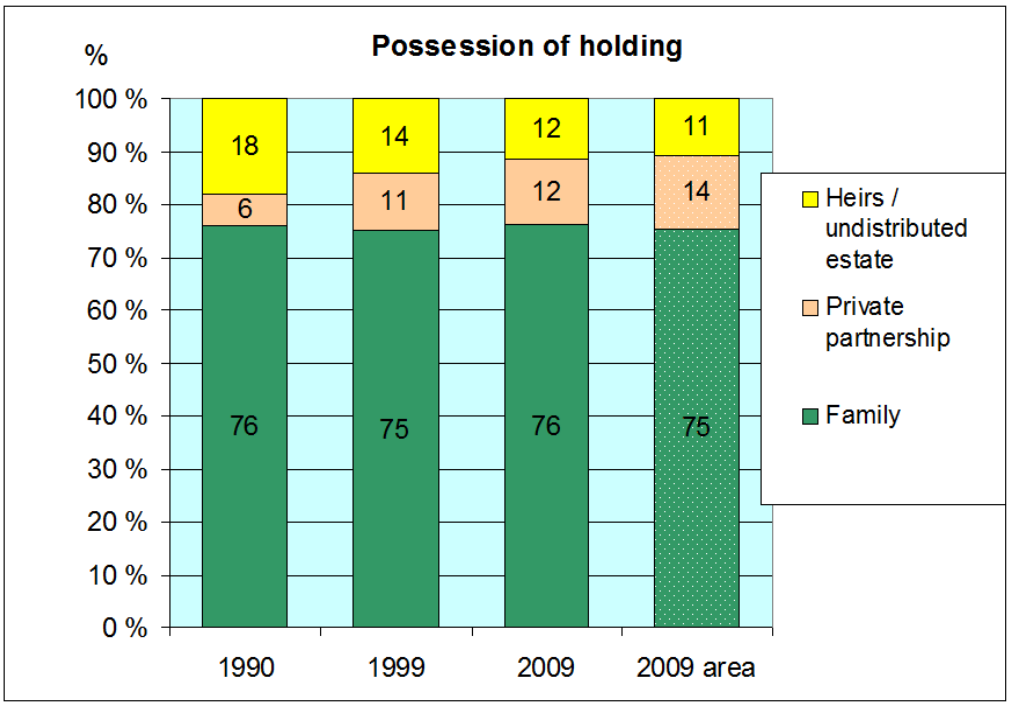
Forest owners have also been classified into five groups based on their stated objectives of forest ownership: ‘multiobjective owners’, ‘recreationists’, ‘self-employed owners’, ‘investors’ and ‘indifferent owners’ (Fig. 2). Multiobjective owners value both the monetary and amenity benefits of their forests. Recreationists emphasize the non-timber and non-monetary values of forest ownership. Self-employed owners emphasize the employment opportunities, labor income and outdoor recreation provided by the forest property. For the investors, the forest property is an asset and a source of regular sales income and economic security. The indifferent owners either do not have any specific objectives or did not reveal them. The largest group is multiobjective owners (30% of the owners) and the smallest indifferent owners (10%) (Hänninen et al. 2011).

Figure 2: a) Structural changes in family forest ownership in Finland (Hänninen et al. 2011)

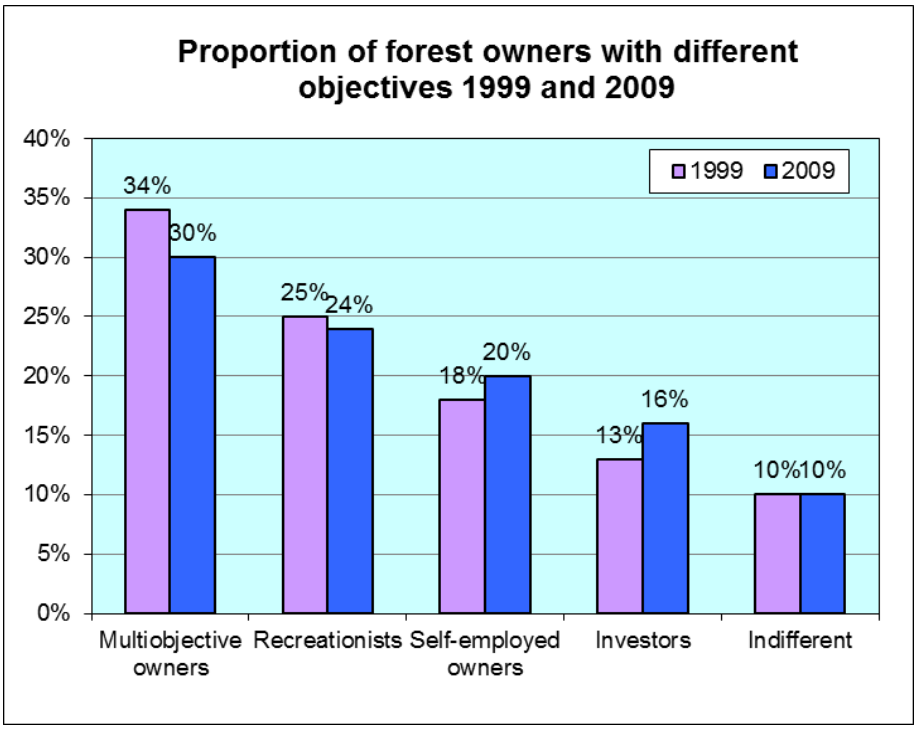
% of forest owners

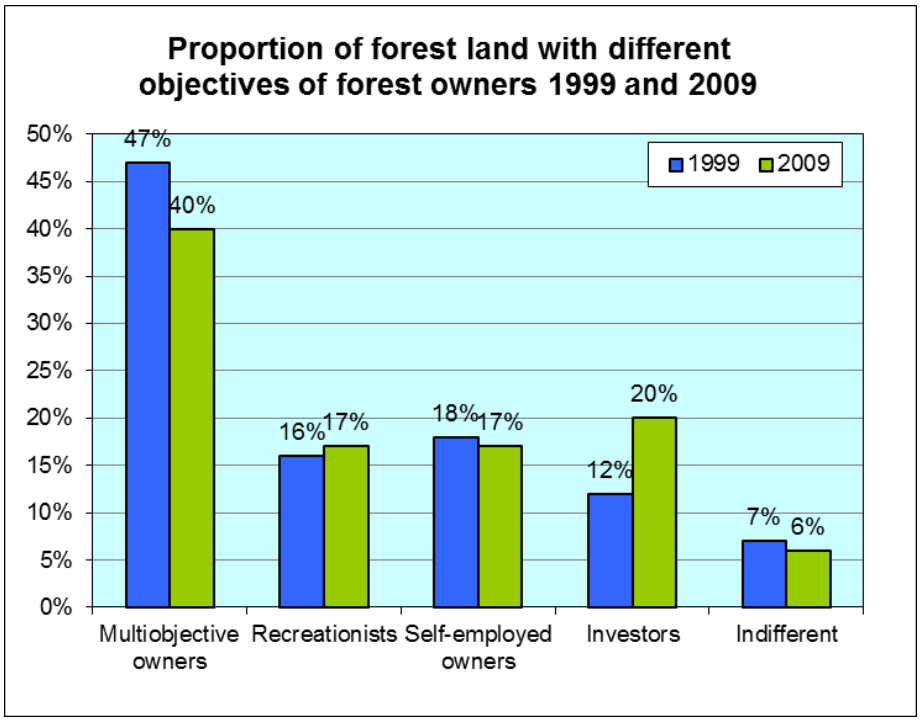


% forest owners



b) Structural changes in family forest ownership in Finland (Hänninen et al. 2011)





c) Structural changes in family forest ownership in Finland (Hänninen et al. 2011)

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests

- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

Trends in forest ownership: New forest ownership through…	**Significance***
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	**0**
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	**2** (The law concerning Metsähallitus, the state forest enterprise, is being renewed with the aim of making the forestry of Metsähallitus a limited company, or by other means deregulating state forest management)
• New private forest owners who have bought forests	**1**(Investment funds of various forms have in recent years acquired forestry land especially from forest industry companies)
• New forest ownership through afforestation of formerly agricultural or waste lands	**0**
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	**3** (The structural development has been described above in 4.4.3)
• Other trends, namely: 1) Incorporation of forest ownership of forest industry into separate companies	**2**(In the 2000s, two large Finnish forest companies gave up direct forest ownership by establishing two new companies to which they transferred their forests (Tornator and Finsilva). These two companies became the second and the third largest forest owners in the country, owning 610,000 and 135,000 hectares, respectively)
2) Formation and enlargement of jointly owned forests	**1** (Jointly owned forests have been formed in Finland since the late 19th century in order to improve roundwood supply from private forests. The revision of the legislation in 2003 relaxed the establishment of jointly owned forests resulting in e.g. family/relative owned new joint forests. Jointly owned forests have a specific fixed tax rate, which is lower than normal capital tax rate)
3) Enlargement of conservation areas (restricted or forbidden use) in state and private lands	**2**

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: THE CHANGE OF FOREST OWNERSHIP IN SOUTHERN OSTROBOTHNIA REGION,FINLAND

Changing life style, motivations and attitudes of forest owners

As in the whole country, forest owners' average age is growing in Southern Ostrobothnia. However, due to the strong agricultural activities in the region, the change is smaller than in some other parts of Finland. A relatively large share of the forests still change owners as a part of a farm. Typically, only one heir inherits or buys the forests when taking over the farming activities. Therefore, the agriculture affiliated forest owners typically inherit their forests when they are a little younger than other owners-to-be. The age structure of the forest owners in the region is estimated to be in 2025 similar to the age structure in the whole country in 2009. In 2009, 21% of the forest owners in the regions of Southern and Central Ostrobothnia lived in the urban areas with 25,000 or more inhabitants. It can be estimated that in 2025 this figure would be 40%.

Forest owners have a wide spectrum of values concerning their forests. In addition to the economic values also the conservation values are important to a growing group of forest owners. Also due to the very fragmented forest ownership in Ostrobohnia, the average size of forest holdings is smaller than in Finland in general. Therefore, the economic benefits of the forest are small and this may passivate forest owners' forest management. Many farmer forest owners use timber and biomass from their small holdings for their domestic use, and timber never enters the market. Forest management is often considered a recreational hobby due to a low profitability on the holding level, which may lead to non-effective management or negligence of forest management recommendations.

Source: Pohjala, J. 2014. Metsänomistajuuden rakenne Etelä- ja Keski- Pohjanmaalla vuonna 2025. In Matilainen, A. & Lähdesmäki, M. (eds.). Metsänomistuksen tulevaisuus Etelä- ja Keski-Pohjanmaalla. Selvitys metsänomistajakunnan muutoksesta ja palvelutarpeesta. Helsingin yliopisto Ruralia-instituutin raportteja 126.

4.5. Gender issues in relation to forest ownership

In Finland, there have been neither studies nor official statistics based on Land Register classifying forest owners according to gender. According to the forest owner survey (Hänninen et al. 2011) the share of female owners of forest owners is 25%, and the corresponding share of private forest land is 21%. The problem with the survey data is that the share of female owners has been underestimated. One questionnaire is sent to a forest holding and the recommended respondent is the person taking care of forestry matters in the family. It can be assumed that husbands in many cases take care of their wives' and joint forest properties (Hänninen et al. 2011).

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ('characterized or motivated by philanthropy; benevolent; humane' OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by ...	Yes	No	Uncertain
• Foundations or trusts	X		
• NGO with environmental or social objectives	X		
• Self-organised local community groups	X		
• Co-operatives/forest owner associations	X		
• Social enterprises	X		
• Recognized charitable status for land-owners	X		
• Other forms of charitable ownerships,:	X		

4.6.1. Foundations and trusts

In Finland, foundations are based on Foundations Act 109/1930. According to statistics on the ownership of productive forestland, there were 298 foundations as forest owners in the end of 2012. They owned 46,450 ha of productive forestland. Taxation of foundations is based on a fixed tax rate, which is substantially lower compared with other actors. The tax rate applied to e.g. forestry was 7.67% in 2014. Trusts for the public good may be based on Foundation Act or Associations Act 503/1989. Their forestry-related functioning and tax rates are equal to foundations. There are no separate statistics on associations as forest owners, but their forest land ownership is only minor (probably some thousands of hectares).

Foundation-based forest ownerships in Finland may have the aim to preserve and fund forestry culture and related research (e.g. Metsämiesten Säätiö, 'The Foundation of Finnish Foresters'), or to contribute to regional forestry education and regional/local economy (e.g. 'Forest Management School Foundation of North Savolax').

4.6.2. NGO with environmental or social objectives

There are non-governmental foundations and associations (and most probably also other organizational forms) with environmental and social objectives. One example of these is the Finnish Natural Heritage Foundation, established in 1995. Its main objective is to purchase old pristine forests with donation funds and apply for a permanent protection for them according to the Nature

Conservation Act 1096/1996. This particular foundation owned over 700 hectares of forest land in the end of 2013 (http://luonnonperintosaatio.fi).

4.6.3. Self-organised local community groups

Joint land and water areas belonging to several real estates are based on the Joint Area Act 758/1989. Every real estate has a defined share to joint area, based on e.g. the old tax value of the real estate. In the end of 2014 there were 374 joint areas corresponding to 10,500 hectares of productive forest. In addition, there are forestry-specific joint areas in Finland: jointly owned forests are based on the Act on the Jointly Owned Forests 109/2003. They have been formed in Finland since the Forest Act of 1886 in order to improve roundwood supply from private forests. There were 241 jointly owned forests in the end of 2012 to corresponding 318,500 hectares of productive forestland. Joint areas and jointly owned forests have a specific fixed tax rate, which was 28% in 2014. There are also different forms of regional collaborative management schemes, which often aim at enhancing some specific ecosystem service. Membership is voluntary and often loose if no compensation is paid for forsaking economic benefits (Rämö et al. 2013).

The Act on Jointly Owned Forests states that the JOF's main objective should be timber production. The area can be used to other purposes if it is economically or otherwise purposeful.

4.6.4. Co-operatives / forest owner associations

Forest co-operatives and forest owners' associations have a 'one man, one vote' principle in their decision making. Forest co-operatives are based on Co-operatives Act 421/2013. There are 67 co-operatives as forest owners in Finland, representing 3,600 hectares of productive forest land. Forest owner associations are based on the Associations Act 503/1989, or more specifically, on the Act on Forest Management Associations 534/1998 (renewed 2015). There are no separate statistics on the forest ownership related directly to the associations in Finland. However, these associations do not own forests as such but their member forest owners have a full title to their forestland.

4.6.5. Social enterprises

For instance, state forest business enterprise, Metsähallitus, has wide social responsibilities.

4.6.6. Recognized charitable status for land-owners

See foundations and associations for public good.

One third of NIP forest owners purposefully leave some areas for nature conservation out of their own initiative and without compensation (Horne et al. 2004). Forest owners also recognise the importance of their forest to the amenity values in the local area or even the benefits for the broader societal well-being (Rämö et al. 2013). As this charitable side of private forest management often takes place without authoritative intervention, there are no statistics available.

4.6.7. Other forms of charitable ownerships

Non-recognized forms probably exist, but they do not have any specific treatment in legislation.

CASE STUDY 2: JOINTLY OWNED FOREST OF KAUHAVA

Self-organised local community groups

The jointly owned forest in Kauhava covers 1,400 ha of forest land. It was established in 2010 and has 45 shareholders, of which some shares are owned jointly by heirs and private (tax) partnerships. One of the main partners is the town of Kauhava, which has invested 400 ha of forest land to the joint forest. The remaining 1,000 ha comprises private small forest holdings. More than half of the partners of the Kauhava jointly owned forest live outside the Kauhava municipality, mostly in the Helsinki region, which is located approx. 450 km from Kauhava. For these forest owners the main reason to join the Kauhava jointly owned forest was the administrative easiness of owning a joint forest and the guarantee of the proper forest management. One of the main reasons to join was also regular timber sales income. Since all partners benefit from all sales in the whole area, timber sale income is much more regular than in other private forests.

In addition to the distant forest owners, another large owner group in the Kauhava joint forest are people who plan to transfer their forests to the next generation. The forest owners living in Kauhava foresee that their heirs do not have the knowledge of or interest in forest management. By joining their forest to the jointly owned forest, the heirs can still keep their share of the forest holding and do not have to directly deal with the forest management issues. This provides a feasible alternative, since according to the studies, only a few forest owners are ready to sell the inherited forest, regardless of whether they have any use for it or not.

The fact that the town of Kauhava participated with large forest area provided the positive image for the joint forest initiative. The private forest owners trusted that the jointly owned forest will be properly taken care of, if the town also has a significant interest to take part in the initiative.

The management decisions in the jointly owned forests are made by the management board. Therefore, the main obstacle inhibiting the interest in the joint forest was the fear of losing the control over the decisions concerning inherited forests.

Source: Lähdesmäki M. & Matilainen, A. 2014b. Kokemuksia toimimisesta Kauhavan yhteismetsässä [Experiences from the joint forest of Kauhava]. Matilainen, A. & Lähdesmäki, M. (eds.). Metsänomistuksen tulevaisuus Etelä- ja Keski-Pohjanmaalla. Selvitys metsänomistajakunnan muutoksesta ja palvelutarpeesta. Helsingin yliopisto Ruralia-instituutin raportteja126.

4.7. Common pool resources regimes

Commons - forest common pool resource regimes (CPR) - are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regimes are pastures, forestland communities in Sweden, Slovakia, Romania, Italy and other European countries and irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is a challenge for this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. An example of a new (quasi-) CPR regime is the community woodlands in the UK, established in the last 20 years, mainly in Scotland and Wales. Our interest in 'traditional' and 'new' common pool resources regimes (CPRs) in the European forest is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users may also be CPR regimes if they have the rights to determine management rules even though they may not own the land itself. Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are key for sustainable use of CPR regimes.

In Finland, joint areas with forest and water areas, and some of the jointly owned forests, can be included into this category.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available; however, we are convinced that this is an issue: if owners have different goals for their forests, there must be new kinds of management; if they have not the skills any more to do it themselves then there must be new service offers etc. There are assumingly implications in silviculture, technology, work organisation, business models etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Finland

5.1.1. Forest managers

Private entrepreneurs or small-sized companies take care of some 80% of harvesting. They are often sub-contractors or companions of timber-buying sections of wood processing companies, sawmills or forest management associations. In early 2015 there are 81 forest management associations (FMA) with 330,000 members at the moment (for change in legislation see 6.1.2.). FMAs are forest owners' organisations and they have formed Unions, which are regarded as a part of the organisation of 'MTK', the Central Union of Agricultural Producers and Forest Owners. Since 2015 these unions have been cancelled and FMAs can be directly members of MTK. The purpose of FMAs is to promote profitability of forestry and the realisation of the other goals forest owners have set for forestry.

Individual forest owners often use consultancy, for instance for their wood-sales planning from local forest management associations. They report to provide consulting services in wood sales planning and wood sales transactions: about 80% of the activities related to timber production in private forests as well as approximately 75% of preliminary planning of timber sales are carried out by these owner organizations.

In many cases owners also outsource the whole timber sales process (invitations to bid, signing contracts, supervising the harvesting, handling the money), i.e. they give a power of attorney to the forest management association. The proportion of this kind of outsourcing forest owners is 35%, and they own, on average, smaller holdings (30% of the private forest area). Alternatively, the owners may be loyalty customers of timber-buying companies. The share of forest owners having an agreement at least on timber sales with a forest firm is 22% and their share of the private forest area is 31% (Hänninen et al. 2011). However, long-time contracts such as licensing or forest leasing are currently not used in Finland. The share of delivery cuttings where forest owners take care of logging and hauling by themselves or by hiring a contractor comprises approximately one sixth of the commercial roundwood removals in private forests (16%, Finnish Statistical … 2014). However, around half of the harvested roundwood and two fifths of the hauled roundwood is conducted by forest owners themselves or their family members. Typically farmers living on their holding are this kind of self-active forest owners. Hence, the share of self-active harvesting has declined during the past three decades.

As shown in Fig 3., the share of self-activity, i.e. the use of own family labor force, has been slowly diminishing also in silvicultural measures. Nowadays forest owners still typically do planting and stand improvement in their forests (Hänninen et al. 2011).

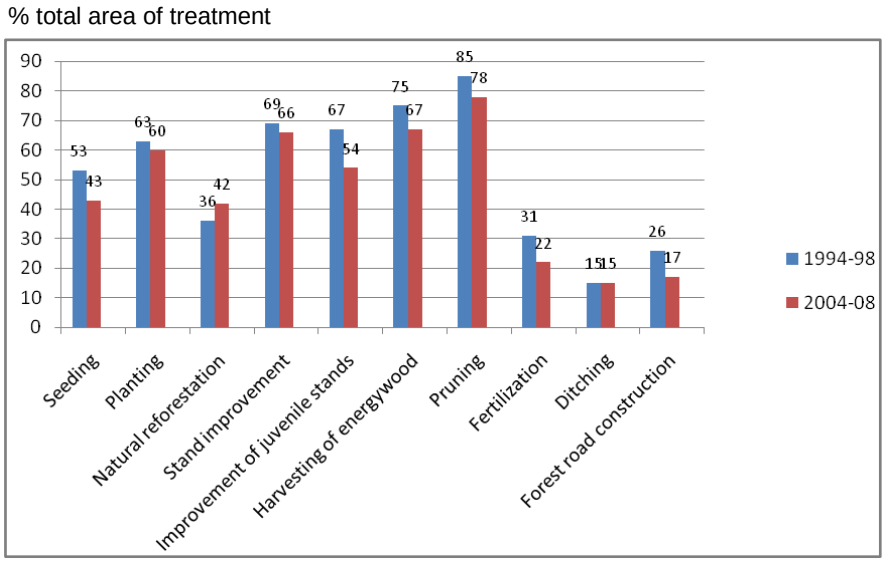


Figure 3: Change in the use of own family labor force in non-industrial private forests by silvicultural measures (Hänninen et al. 2011)

New forest ownership types may i) fall within an uncertain class of forest owners with no clear understanding of one's own objectives and suitable service providers, ii) rely on local forest management associations, iii) search a loyalty customership from among the industrial service providers that are actively marketing their services for urban absentee owners or iv) look for alternative service providers that would fulfil their wishes about soft forest management (Hänninen et al. 2011, Korhonen et al. 2012).

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. Uneven-aged forest management

Recent changes in Finnish forest legislation provide new approaches in addition to the traditional even-aged forest management, which have been criticized increasingly. According to Kumela and Hänninen (2011), one sixth of the forest owners see the current forest management activities, e.g. clear-cuts and use of heavy logging machines, unsatisfactory. The reform of forest law aims to increase forest owners' freedom of choice and to widen forest management possibilities (Ministry of Agriculture and Forestry 2011). Furthermore, because forest ownership is a field of business, controlling of the society should be decreased in order to promote the freedom of decision-making of forest owners (Ministry of Agriculture and Forestry 2011).

These new approaches might satisfy the objectives of the individuals or organizations that previously have not owned forestland or traditional forest owners who have changed motives, or introduced new goals or management practices for their forests. According to Asikainen (2013) and Asikainen et al. (2014), forest owners are clearly and broadly interested in the diversification of forest management and in testing alternative forest management practices. The typical silvicultural methods used in uneven-aged forest management are based on selective cutting where a single tree or a group of trees are removed for regeneration. Forest owners found uneven-sized forest management as the most pleasing alternative when aiming at good forest management and preserving environmental values (Asikainen 2013). Some recent studies (Pukkala et al. 2010; Pukkala et al. 2011) indicate that uneven-aged forest management can be cost-effective and more profitable than even-aged forest management when higher interest rates, e.g. 4-5%, are used in calculations. The interest of extending forest management towards uneven-aged and uneven-sized forest management has created new entrepreneurship. Some enterprises offer services for forest owners who do not see clear-cuts as options for forest management. Thus, new business models are needed in changing markets of forest management services.

5.3. Main opportunities for innovative forest management

5.3.1. Uneven-aged forest management

Concerning uneven-aged forest management, the increasing outsourcing of forest activities may be an opportunity or a great challenge depending on the forest service providers' ability to adopt new practices. One of the greatest silvicultural challenges is how to 'restore' uneven-age production after decades of even-age management. Forest owners may also realize after some time that the tempting option of uneven age production of roundwood might produce less timber sales income due to rather high harvesting costs and in the long-run the method may lead to a decreasing timber stock.

5.4. Obstacles for innovative forest management approaches

5.4.1. Traditional attitudes and practices

Up to recently, rather strict regulations of forest management in the Forest Act (1996) have been seen as obstacles in developing innovative approaches. This obstacle has been removed when the new, more liberal

Forest Act became effective in the beginning of 2014. Now there are a wider range of approaches available, i.e. traditional even-aged forest management, intensive short-rotation management and uneven-aged forest management. In developing new or innovative forest management approaches the main obstacles are:

1) Long traditions of the predominant practices and rather well optimized technical systems of forestry operations and wood procurement. It is culturally and technically challenging to break the prevailing practices in these circumstances. The change would require modifications in the procedures in the whole value network.
2) Forest professionals' attitudes and skills of suggesting innovative alternatives. Many forest professionals have a strong faith in the superiority of the predominant even-aged forest management with clear-cuts and artificial regeneration. It is very hard for them to start contemplating different alternatives in a neutral way.
3) Lack of illustrative simulation tools for helping forest owners to understand and choose between forest management alternatives. There is an evident and urgent need to design and learn to use such tools.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways. Firstly, policies directly or indirectly influence ownership development or even encourage or create new forms of ownership. Secondly, policy instruments are emerging in response to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management etc.

6.1. Influences of policies on the development of forest ownership

6.1.1. Fragmentation of forest holdings

Finland supports equal rights of siblings to inherit forest land. Through the decades, this principle has increasingly led to a situation in which family forest holdings are not any more left to the oldest male inheritor but split between heirs, leading to fragmentation of forest holdings. Currently there are no regulations regarding the size of holdings or parcels created in the transfer to the next generation. However, forest property needs to be sold with a price over 75% of the fair price to avoid donation tax, whereas an agricultural farm (possibly including forest as well) only needs to be sold with a price over 50% of the fair price. This has led to the situation that the receiver has not been able to buy the whole forest holding and it has been split.

The Ministry of Agriculture and Forestry has put a lot of effort in improving the forest holding size structure. The policy aim, declared in the National Forest Programme 2015 (2011), is that mean forest holding size increases from the current 30 ha to 50 ha by 2050. Regarding this aim, development projects and communication campaigns have been conducted (e.g. Vierimaa 2010, Ministry of Agriculture and Forestry 2012). The Ministry's project 2009-2012 yielded a boost in advisory campaigns and legal services aiming at advancing transfers to the next generation, in order to get holdings in the hands of a new younger generation that would be more active in forest management and timber sales. The aims included increasing the number and area of jointly owned forests (in order to cease fragmentation and enable cost-efficient outsourced forest management). In addition to the reduced taxing rate, the establishment of new jointly owned forests has been promoted with the aid of campaigns organized together by forestry organizations and the Land Administration. The above efforts have had observable but still rather little impact on forest ownership dynamics.

6.1.2. Forest Management Associations

Until 2014, Finnish family forest owners have had to pay an obligatory forest management fee (some two to four €/ha per year), which

has then been transferred to the local Forest Management Association with the aim to guarantee forest policy implementation on the grassroots level and guarantee the availability of forest management services for all forest owners. There is a reason to assume that this system has maintained the use of advisory services and timber sales activeness among smaller holdings and older owners.

Recently, Finland has decided to quit the forest management fee system in order to enable increased competition of forestry services in the market by revising the law concerning Forest Management Associations. The change is aimed to increase forest owners' freedom of choice and to improve the competitive position of other forest service providers. The Forest Management Associations will from the beginning of 2015 be private associations, which are funded by membership fees and business activities. They have the freedom to offer services without geographical limitations and, on the other hand, forest owners are free to choose whether to stay as members. This situation has hastened the efforts of FMAs to develop new competitive services, and simultaneously other market players have prepared for winning new customers. What kind of attention market players will place on small-holders remains to be seen. If they are not ignored but offered new appealing services, a new active forest owner category might emerge. The forthcoming years will show whether significant changes in advisory service market really take place and whether there is enough demand among forest owners that new types of services emerge. The pessimistic scenario is that only traditional services remain as profitable for the service providers and a large share of new forest owners with their diversifying emerging needs is left without proper services.

6.1.3. Field afforestation

Up to recently, Finland has subsidized afforestation of agricultural land with a full prize of saplings, materials and herbicides and 20–70% of planting work costs. The total area of afforestation was in 2012 some 1,700 ha, all on private lands. The new Act on Financing Forest Management will remove afforestation of agricultural fields from subsidy targets in order to simplify the financing administration and to allocate decreasing forestry financing to more effective targets in forestry.

6.2. Influences of policies in forest management

6.2.1. Forest management planning

Up to 2011, the state subsidized forest management plans (FMP) so that the owner only paid less than half of the total field inventory and planning costs. Since then, the forest resource data acquisition and maintenance system has renewed so that the state collects the forest resource data with a laser-scanning based inventory and offers basic information via a forest fact sheet for free for owners, but forest management plans and other planning calculations are market services. Along with deregulating FMPs, the distinction between public and private services has thus been made clearer. However, in the current situation, FMPs based on owners' own objectives are much more expensive than owners are familiar with, and for many owners the publicly funded recommendations are enough, although the public service does not include and takes no responsibility on considering sustainability and optimal treatment schedules on holding level. The owner may purchase an account to the Metsään.fi online information service with 40 €/year or 120 €/3 years, where s/he can see the basic information of his/her holding as well as harvesting opportunities. Service providers can reach holding-level forest information and offer their services only with the owner's specified permission, because the Finnish Data Protection Ombudsman has regarded the detailed forest property information as personal information.

Having a forest management plan has all the time been voluntary for individual family forest owners or group of heirs. However, for jointly owned forests, the specific Act for the jointly owned forests requires a forest management plan, but the share of this ownership group is only 2% of productive forestland in Finland.

Forest management plans are compiled to follow the guidelines for good silviculture, (Best Practice Guidelines for Forest Management) although taking into account the owner's special wishes of leaving some

specific stand outside harvesting or willingness to have more or less equal stream of income. The new Forest Act, in effect from the beginning of 2014, has no more strict requirements for final cuttings, and it explicitly allows selection cuttings and uneven-aged forestry. These are rather radical innovations in Finnish forest policy that has since 1950s relied strongly on even-aged forest management regime. For forest owners and their service providers the new situation means that one model of good silviculture can no longer be the strategy of preparing a forest management plan. This situation requires more attention to inquiring after the owner's wishes and more skills and tools to provide forest management alternatives from which the owner can choose. It is expected that the recent and still ongoing policy change will affect owners' goal structures. The objective is to respect owners' values and offer them more freedom in selecting forest management approaches.

A further notable matter in the current system is that many market players are offering forest owners FMPs and related market services with the background motivation of engaging them as customers. For example, a timber buying company may order and pay a FMP for a loyalty customer's holding. The price of the FMP may be 20 euros per hectare, and while the owner gets it free of charge at the point of delivery, s/he may pay the expenses in the form of hidden extra profit in forthcoming services or lower timber prices. This raises a question of honesty and ethics within the market-based advisory services.

6.2.2. Biodiversity: Key habitats and retention trees

The Forest Act determines valuable habitats that need to be set aside in harvesting or treated so that their characteristics remain. These habitats are defined typically as small and should not make a significant loss in economic terms. There are about 105,000 hectares of such sites, or 0.7% of private forests (Siitonen 2013) However, if a valuable habitat makes a significant loss, an owner is eligible to be compensated on the basis of the value of commercial timber. The owner is also entitled to compensation for the foregone forest revenue if he/she voluntarily offers a forest area for either a temporary or permanent protection within the METSO biodiversity protection policy program.

The Forest Act renewal in the 1990s brought retention trees to the agenda of final cuttings. The aim with retention trees is to increase the quantity, quality and diversity of decaying wood in economic forests and to keep economic forests suitable for a greater number of species. The idea of retention trees was not easily understood: many owners logged fallen retention trees away or thought that they were only seed trees and harvested them after a few years. Currently the situation is better: the concept of retention trees is included in the prevailing practices of private forests and preserving retention trees is included in the certification criteria. Also nowadays the best trees in terms of biodiversity (e.g. big aspens) are left in the forests, and more often retention trees are left in groups. However, while the relatively small number of retention trees has small impact on owners' timber sales incomes, the positive effect on biodiversity is also considered very small.

6.3. Policy instruments specifically addressing different ownership categories

6.3.1. Absentee and other new owner types

For new forest owners, the public Forestry Centre organization offers information seminars and training courses about the basics of forestry and forest ownership. Regional advisory campaigns and courses for female forest owners have also taken place. Association of distant forest owners has been promoted by means of training events as well as mass media communication focusing on how to establish jointly owned forests. The Metsään.fi online service has partly been motivated by the acknowledged need to offer opportunities for city-dwellers and other absentee forest owners to be better able to manage their forest ownership.

Absentee owners are regularly invited to attend fair events or investor evenings in the cities. These events are often jointly organized by public and private organizations. Since the 1990s, timber buying companies

have increasingly actively established service offices to larger cities, and forest owners' associations have followed the path in recent years. It seems, however, that these offices and services have mainly reached rural-urban owners (see Hujala and Tikkanen 2008) with rather traditional timber-growing objectives rather than being able to serve urbanizing forest owners with more diverse motivations related to multi-purpose forestry, aesthetics and biodiversity (see also Kumela et al. 2013). The public discussion on different new forest owner types contains a paradox: while the urban, female and nature-oriented new owner types have been forecasted long before their large-scale emergence, policies targeted specifically for those owner types have not yet been designed. Simultaneously, some new owner types are emerging without proper recognition (Häyrinen et al. 2014).

There seems to be a need to refine the sociological understanding of what in new owner types is really new and what the near and further future owner types will be like.

6.4. Factors affecting innovation in policies

In Finland, forestry as such has not been recognized as a business, but considered rather a financial investment, which may have harmed the adoption of most efficient policy instruments enhancing forestry on the holding (enterprise) level. Instead, advisory services and silvicultural financing has been employed on the owner or stand level. Finnish forest policy formulation has for a long time been dominated by discourse relating to fragmentation, passiveness of owners as timber suppliers and insecurity of long-term timber supply. The change of forest ownership from traditional farmer-owners increasingly to highly educated city-dwellers has been part of the discourse long before this change has actually taken place and affected timber supply or service demand. Policy innovation has suffered from organizational inertia. There has been no lack but rather too strong political lobby that has prevented creative policy innovations from being discovered or accepted. Also the ageing of forest owners has maintained a rather conservative profile of the owners and the anticipated ownership changes have been delayed and perhaps caused some frustration among policy innovators. Regulations of access to forest resource information as well as market regulation have also been considered a barrier in establishing new policies, institutions and activity models.

Policymakers' and main forestry stakeholders' focus has been on safeguarding the short-term operational environment of forestry, i.e. enabling the smooth timber market, negotiating sufficient budget funding for forestry subsidies etc. The policy framework has been reactive rather than proactive. Much of this changed in the beginning of the 2010s when the forest legislation renewal began. A dominant feature of the private forestry in Finland of the 2010s is the systematic effort to ease regulations. Releasing tree species choice, actively allowing uneven-aged forest management as an alternative to clear cuttings, relaxing remaining stock requirements and regeneration criteria, deregulating forest management associations, and open service-market for competition are among the renewals. These changes may be seen as rather radical developments in the operational environment. Many traditional action models will be replaced by new ones and the advisory service market will be redistributed.

CASE STUDY 3: DEREGULATION OF FOREST MANAGEMENT ASSOCIATIONS

In Finland, the Act of Forest Management Associations (1998) has determined an obligatory forest management fee that has been collected annually from small-scale forest owners with more than 4-12 (depends on the location in the country) ha of productive forest land. The collected funds have been directed to local forest management associations for maintaining advisory services and communication, with the aim of implementing national forest policy at the local level. Recently, the market neutrality of such a system was critically questioned. When deregulating forest services, the current forest legislation revision removed obligatory forest management fees. Forest management associations now compete freely with other service providers having voluntary membership fees and fees from services. In the Forest Management Association Päijät-Häme, which is one of the largest associations in the southern Finland, surveys on the members' willingness to stay as members and the amount of suitable membership fee have been conducted. New services concerning uneven-aged forest management and new IT tools to support advisory services and forest planning have been developed and the staff has been trained to improve customer service.

Source/Further information: Executive director Jari Yli-Talonen, executive board member Jussi Leppänen.

CASE STUDY 4: FOREST BIODIVERSITY PROTECTION PROGRAMME METSO

To halt the ongoing decline of forest biodiversity and to improve the acceptability of forest protection, Finland has launched an ambitious policy program for biodiversity conservation that relies on voluntary participation of small-scale forest owners, monetary compensation of protected forest areas and intensive communication efforts between owners, authorities and service providers. The METSO program has been successful in making forest owners' attitudes more positive towards forest conservation. The cooperation between authorities has improved, and the program has contributed to the institutional adaptation of forest sector actors to take biodiversity aspects better into account in everyday activity. It is expected that in the course of forest land ownership change, the demand of forest conservation services will increase among forest owners, and the METSO program offers a promising frame for being ready for that. However, the challenge remains to safeguard as good ecological impact as possible, and there are still tensions between forest and environmental authorities, NGOs and lobby organizations concerning the priority between temporary and permanent protection schemes.

Further information: Paula Horne, author of METSO evaluation report 2012 (Laita et al. 2012).

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FRANCE

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1. Introduction

1.1. Forests, forest ownership and forest management in France

In 2012, France has some 16.4 million ha of forest, from which 75% are under private ownership (12.3 million ha). 10% are state public forests ("*Forêt domaniale*" in French) and 15% are municipalities forests ("*Forêt communale*") (IFN, 2012).

Beyond this figures, forest ownership is very diverse in particular in the private sector. According to the results of the national survey carried out by the Ministry of Agriculture, Agro-food Industries and Forest in 2012, 1.1 million of private forest owners (with holdings >1ha) are possessing 9.6 million ha of forest. Privately-owned forests are highly diverse: 62% of the private forest ownership are small-scale properties (1-4 ha) and only 1% of forest owners have more than 100 ha, but this category of large properties represents 30% of the private forest surface. With an average size of 8.5 ha, the French forest ownership is very fragmented.

From a sociological point of view, the socio-economic profiles of private forest owners are also very different. The most of private forest owners are rather old (64 year old in average), retired (54%) and live in rural areas (61%) and they have often inherited their property (75%) (MAAF (Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt), 2013). For most of them, forest is not the main business but rather a family inheritance and, potentially, an additional income source. As the Ministry survey shows, 66% of the forest owners are emotionally attached to their forest but only 34% expect to produce wood (See table 7 in annex). In a changing world exposed to climate change, economic crises and new form of regulations, some questions can be raised about the capacity and the willingness of these traditional forest owners to change their habits, to innovate and to participate actively to the forest economy. Besides this traditional category, new forest owners' profiles emerge. Younger, more urban, these owners are potentially more disconnected from traditional forestry networks and could have different expectations from forestry, not always dedicated to wood production. Furthermore, mobility plays an increasing role for this younger generation of forest owners who will probably have to go further away from home and from their forest estates to study and to build their career. Some of the questions that arise from this are: How will they be connected to their forest then? With whom will they discuss forestry issues? Will they delegate forest management and to which organisation?

Other structural factors may also influence the future behaviour of forest owners, in particular forest policies. Since the last two decades, terms as sustainability, multifunctionality, biodiversity, close to nature forestry have come in vogue thanks to the proactive mobilization of environmental NGOs. In the same time, competiveness, technological innovation, global wood markets have also continued to leave its mark in the forest industrialists' discourses. Most of these new watchwords are included in the French forest policies. However, this particular and contradictory framing of forest policies is not always very clear for forest owners and managers. Despite the wide range of policy tools (regulation, incentives, information and education) used to influence their decisions and behaviour, forest owners do not always feel concerned by policies orientations. Many forest owners do not manage their forest in accordance with policies goals despite incentives and sometimes coercive policies. Even with clear and coherent policies, forest owners' attitudes are not always ruled by the strict submission and passive obedience to rules. With contradictory goals, fuzzy policies and lack of

public financial supports, their commitment may really be weakened. Furthermore, forest owners' practices, motives and values towards forest and forestry are as diverse as their socio-economic profiles. Despite these difficulties, some behavioural changes can be identified. Social and environmental issues are taken into account by some forest owners; others are adopting new business models as wood energy, tourism activities, non-wood products marketing, etc. These examples show that forest owners are nor totally insensitive to forest policies and opinion discourses nor completely driven by these external factors.

1.2. Overview of the country report

With this report, we do not search to give an exhaustive description of the forest ownership in France but to remind some fundamental characteristics of the French forest ownership structure and to underline emerging issues that could be studied in future research programmes. Among the main features, we can notice the following elements:

- **French forest surface has been continuously growing** during the last two centuries. In 1830, the forest surface was estimated between 8.5 to 9.5 million ha (Cinotti, 1996). In 2013, the forest surface reached more than 16 million ha with a forest cover rate around 30% and an annual increment of 0.6%. However since the last five years, forest surface is stabilizing under the pressure of urban expansion and demand for farmland;
- **75% of the forest is private** and the number of forest owners has stabilized between 1999 and 2012. Despite this stability, some continuous trends have been confirmed, as the regular increase of the forest owners with the legal status of individual person (+11%) and legal entities (business entities and institutions), the decrease of joint estate (-30%) and finally the relative stability of the total number of private forest owners (1.129 million of forest owners with more than 1 ha);
- **Fragmentation of the private ownership**: The average size of the private ownership has been slowly decreasing from 8.8 ha to 8.5 ha. Fragmentation remains one of the main characteristics of the French forest ownership despite the efforts done to limit this phenomenon, in particular since the Modernisation Law passed in July 2010;
- **Forest as an additional but small source of income**: Despite 93% of the French forest belongs to individual, very few of them are full-time professional. Less than 6% of the forest surface should provide regular income to their owners who only represent less than 2% of the private forest owners. Nearly all the forest owners do not earn their living from the forest, which represents only a small part of their financial assets;
- **A better integration of forest owners in professional forestry networks**: 5% of the forest owners were members of a professional forestry organisation in 1999. They are 7% in 2012. Only 2% of the forest owners declared to attend often at meetings dealing with forest issues in 1999 and 5% in 2012. 32% of forest owners also read "often" or rarely" technical reviews. Despite low rates (compared to the whole population for forest owners), these figures shows that efforts to raise forest owners' awareness, to enrol them in forestry networks or to educate them to forestry are successful on a mid-term (See table 8 in annex);
- **The growing role of the cooperatives**: When we add up figures about forest owners who are member of a cooperative, or who take advice from experts, the figures have increased from 9% to 13% between 1999 and 2012. The members of cooperatives has doubled in ten years (from 60 000 to 120 000 members in 2010);
- **Evolution of social demands related to ecosystems services** could become a new market outlet if a system of offset, public support or market tools are implemented (carbon credit funds; offset for ecosystem services as biodiversity conservation, payments for outdoor activities);

- **Wood energy market has been increasing continuously** since the last five years. More competition exists between traditional and new wood purchasers and that situation can benefit to forest owners. It could slow down the decrease of round wood prices and stimulate the wood market;
- **A large range of policy tools and instruments**: National public authorities have implemented some specific instruments for the attention of the forest owners. Some tools deal with the financial aspect of forestry as tax deductions and exemptions (wealth tax, property transfer tax, property tax, incomes tax) and subsidies (operating funds to support public bodies' activities and intervention expenditures for forest owners, forestry operators, sawmill and collective organizations). Others tools aim at controlling that sustainable forest management is correctly implemented at an individual level: simplified management plans over 25 ha (PSG[8]), guidelines for best practices (called CBPS in French);

  Coordinated actions to mitigate ownership fragmentation: If PSG is primarily an individual forest management guide for the forest owners, some collective instruments have been set up to promote collective actions and in particular to increase wood mobilization. Between 2000 and 2010, 307 Forest development plans(PDM[9]) have been initiated by the Ministry of Agriculture and Forest and implemented at local scale;
- **The strengthening and the professionalization of the networks** of forest managers and advisers: With the growing complexity of policy regulations and technical operations, traditional knowledge is still not sufficient to manage forest. External advices and assistance become unavoidable for forest owners who want to optimize their profits;
- **Extension programmes and tools in progress**: The National Forest Extension Services (CNPF and CRPF) initiated last years, partly in collaboration with the national forest owners associations, some specific tools to better understand the profiles, motivations, attitudes and decision processes of the forest owners. A national barometer of forest owners' opinions has been set up (Resofop), and many studies have been carried out on these themes at regional and national level. A national actions plan for e-information and pedagogical tools is in progress that will take in consideration those new forest owners. Its aim is both to better identify them, and to better meet their expectations. This action plan will also aim to define specifications for the development and use of IT tools and software for mobile phones, and especially for the young private forest owners.

2. Methods

2.1. General approach

The country report aims to give a comprehensive overview of forest ownership issues in the country, based on a mix of methods. These include a review of literature and secondary data and the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review describes the state-of-knowledge in the constituent countries of the UE and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. The data and case study analyses provided in the country reports will be analysed in subsequent stages of the COST Action.

2.2. Methods used

For the French country report, several

[8]PSG – Plan simple de gestion (simplified forest management plan)
[9]PDM - "Plans de développement de massif"

sources of quantitative and qualitative data have been used, with a particular attention to:

- The national data sets and reports from the Ministry of Agriculture in charge of forestry. Preliminary results of the survey carried out in 2012 among a sample of 6000 forest owners has been used even if not analysed exhaustively (MAAF (Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt), 2014). Online tables from the National Forest Inventory have also been used and in particular for the period 2008-2012 (IFN, 2012);
- A literature review on international and national databases (Scopus, Web of science, Cairn, Persée, Infodoc AgroParisTech, etc.). Research equations with keywords in French and English have been submitted with central notions as “forest owner”, “Forest ownership”, in specific disciplinary fields (“social sciences”, “forestry”, “environment sciences”) and for a specific country (“France”);
- Reports and scientific communications from a diversified range of organisations working with forest owners and managers have been consulted, in particular from the national centre for private ownership (CNPF) and the national public forest service (Office national des forêts - ONF);
- Website from institutions in relation with forest owners and managers' organisations as the French federation of municipalities forests (FNCOFOR), the national Union of forest cooperatives (UCFF), the national union of private forest owners (FNFSP), etc.

3. Literature review on forest ownership in change

The COST Action national representatives undertook a review and compiled information on changes in forest ownership in their countries based on peer reviewed and grey academic literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review was as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviours, management approaches for new forest owner types, and related policies and policy instruments.

The 12 most relevant publications were selected from the collected literature and described according to a pre-determined format. These detailed descriptions of publications can be found in the full single country report (http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). All available literature was reviewed for this report but only those which are referenced in the text are listed in section 7.

The literature review considers the following questions:

- Which research frameworks and research approaches are used by researchers?
- What forms of new forest ownership types have been identified?
- Do any of these have specific forest management approaches?
- Which policies possibly influence ownership changes in the country and which policy instruments are directed at the needs of new forest owner types?

3.1. Research framework and research approaches

In France, researches in forestry (i.e. botany, physiology, genetics) exist since the mid 19th century (Arnould, 2002; Dupuy, 1998). However, almost no research was carried out in social sciences except in the field of economy. One consequence of this lack of interest of the public authorities has been the lack of data on forest owners and ownership until the 1980s. The first significant sociological researches in forestry were carried out by Buttoud (1979) and Normandin (1981, 1987). Since then, researches and studies on forest owners and ownership have taken three main directions:

- **Creation and collection of statistical data on forest ownership and forest owners' and their socio-demographic characteristics at a national level.** Three main national surveys have been carried out by the Ministry of Agriculture in charge of forestry in 1987, 1999 and 2012 among a representative sample of forest owners (5 000<n< 6 000) at a national level. Results had been published two or three years after the surveys have been carried on, in 1987 (Ministère de l'Agriculture, 1987) and 2002 (MAP (Ministère de l'Agriculture et de la Pêche), 2002). The results of the survey 2012 are expected to be published in 2014 and 2015. While these national surveys give a very good overview of the forest owners' population at different periods, the level of analysis is basic (frequency table, and cross tabulations). Time between two surveys is a bit long and not with regular intervals (10 years at least). Moreover, some emergent issues are poorly informed (motivation of forest owners for wood energy, for payment for ecosystems services). To fill the gap between national censuses, the French private forest federation has created in 2009 an monitoring system of the forest ownership called RESOFOP, based on a representative sample of forest owners through 5 inter-regions (600<n<3000). Two surveys have been conducted in 2009 and 2011 (CREDOC, 2010; Toppan, 2011). RESOFOP 3 is forecasted by the mid 2015. This observatory is very useful to have regular and quick overview about emerging and topical issues and several specific analyses have been realized with stronger statistical methods;
- **Typology of forest owners and ownership.** To analyse in depth the practices, the motivations and the attitudes of forest owners, quantitative and qualitative surveys have been carried out by research institutes (INRA, LEF, IRSTEA, FCBA) and some regional centres for private ownership (CRPF). These studies have been still realized at a regional scale (AFOMAC, 2008; Boissier et al., 1993; CRPF Aquitaine, 2006; CRPF Centre-île-de France et CRPF Poitou-Charentes, 2010; Gleizes, 2012; Sébastien et Ferment, 2001) with smaller samples (50<n<500) but they have mobilized stronger statistical methods as correspondence analysis or multiple components analysis (MCA) (Deuffic et Lyser, 2012; Didolot, 2003). Many sociological studies also try to understand in depth and with qualitative surveys why and how forest owners interact with forest in the framework of a larger community (the local forest networks, the market actors, the rural municipalities, the regional urban centres…). The variables used to build these typologies are often related to the main objectives for forestry, the level of investment in forestry management, the degree of interest for environmental issues, the social integration in forestry network, the level of education, etc. Despite the high level of regional disparities of forests in France (from alpine to Mediterranean forests), most of these studies find common forest owners' profiles: the "forest entrepreneur / leader" or "timber producer", the "hedonist" or "inheritance conservationist", the "passive outsider", the "disenchanted", the "close-to nature forest owner", the "farm forest owner", etc.
- Attitudes **of forest owners towards emerging issues.** For a decade, a few research laboratories have been focusing on emerging issues in the field of forestry. The main laboratories are the LEF (Laboratory of forest economics in Nancy), IRSTEA-ETBX (research unit in social sciences in Bordeaux), the FCBA-EEP (research unit on energy, economy and prospective in Paris). Their researches mainly deal with the behaviour of forest owners towards emerging issues in the field of forestry as biodiversity (Garcia et al., 2012), biofuels (Deuffic et Lyser, 2012), risks assessment (Brunette et al., 2009; Couture, 2009; Couture et Reynaud, 2008), payments for ecosystems services (Angeon et Caron, 2010; Gadaud J. et M., 2010); the

economic assessment and acceptability of new outlets from the point of view of forest owners (Abildtrup et al., 2012), the collective management of forest resources at a local/regional scale, the acceptance or refusal of policy tools by forest owners (Buttoud et al., 2011; Sergent et al., 2013), the econometric analysis of production decision of forest owners (Kéré, 2013; Peyron et al., 1998), the social interaction and integration of forest owners in forestry networks, the attitude of forest owners towards recreation (Dehez *et al.*, 2009), risks and climate change, etc. Manifold methodological tools are used in economy (choice experiment method, hedonist price method, Willingness to accept/to pay methods, etc.), in sociology (grounded theory, discourse analysis, social network analysis) and in policy sciences.

With the implementation of the Natura 2000 directive, many studies have been carried out to understand the origin of the opposition of forest owners during the 2000s (Alphandéry et Fortier, 2001, 2007; Fortier et Alphandéry, 2005). Since 2010, research orientations are dealing with the condition of implementation/acceptance by forest owners of carbon markets, risk insurance contracts, wood energy markets, recreational services (Dehez, 2012), etc. However some information is still missing concerning the evolution of the forest owners profiles (who are the new forest owners?), and about the evolution of traditional forest owners towards new issues:

- What are the attitudes of forest owners towards emerging markets opportunities as wood energy, ecosystem services (carbon, water, amenities)? Two regional studies have been recently implemented in the framework of the IEE AFO programme (Intelligent Energy Europe-Activating Private Forest Owners to Increase Forest Fuel Supply) about wood energy, but would need to be extended. But on other topics such as the preservation of water resources for example, there have been no studies at all;
- What are their attitudes towards the addition of new or successive environmental imperatives (biodiversity, eco-label)?
- Why do they refuse/adhere to forest policy tools? What do they mobilize for?
- What are the barriers and drivers of adoption of innovation by forest owners?
- Does a collective identity of forest owners exist and which are the characteristics of this identity (professional values, ethical values)?

3.2. New forest ownership types

The French literature and statistical data on “new forest ownership” and “new forest owners” are not very abundant. Firstly, the definition and categorisation of what is new is not clear since it could include:

- “New” forest owners who have recently acquired their forest. However nothing is written about the significance of the time scale for the adjective “recent”. “Recent” may refer to a period of 1 year, 3 years, 5 or 10 years;
- New forest owners who have inherited recently (for 1, 2 or 5 years) but who have also been managing forest with their parents for several decades;
- New forest owners could also be “traditional” forest owners with “new” forest management practices, goals or motivations. But some new practices are just a pragmatic and inescapable change that have started 10 years ago and which have become visible for the last 2-3 years;
- New forest owners which adopt traditional or old-fashioned practices (but this kind of forest owner is not really a “new” forest owner as he can be described by practices that researchers already know).

Concerning new kind of ownership, examples are rare in France. However new forms of legal entities are emerging to promote the grouping of forest owners in some structures that allow forest owners to develop some common actions or to build collective equipment. But behind these collective “free

associations", forest owners still own their forest individually.

In the national surveys (MAAF (Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt), 2014; MAP (Ministère de l'Agriculture et de la Pêche), 2002), there is no specific definition of new forest owners/ownership types. However, one item is systematically asked to the interviewees and allows us to extrapolate about the definition of what could be a "new" forest owner. The question is "when have you acquired (purchased or inherited) your first forest property?" In the 1999 survey, 9% of the forest owners answered they had acquired their forest in the last 3 years and 12% in the last 9 years. 75% of the interviewees became forest owner by donation (inheritance whereas parents are still alive) or by inheritance (after parents death). 23% of the interviewees became forest owner as they firstly had bought forest (after this purchase, they could also inherit from their parents to increase their real estate capital) (see table 9 in annex). About 200 000 ha change hands, from one owner to another, each year: 100 000 ha are gifted or inherited and the other 100 000 ha are bought and sold. If 55 000 ha are purchased by forest owners seeking to enlarge their estate, 45 000 ha are purchased by "new forest owners" (MAP (Ministère de l'Agriculture et de la Pêche), 2002).

These figures give us an insight of the proportion of what could be considered as "very new" forest owners (less than 3 or 5 years) and "new forest owners" (less than 10 years). But we do not know anything more about this group in the two surveys (are they more urban, more environmentally friendly, more profit–oriented, etc.). That is clearly a **significant lack** in the French statistical data concerning the sociological profile of new forest owners.

Beyond the national surveys, more information about the "new forest" owners can be found:

- When they interact for the first time with a forestry professional (expert, forest association representative) or when they attend to information meeting organised by the regional centre for private ownership. 25% of the forest owners belong to one of this kind of social professional networks (it also means that 75% of the forest owners never ask or meet a professional). However we do not know the proportion of new forest owners in these networks;
- When they assist to trainings in the framework of FOGEFOR. FOGEFOR are continuous training sessions in forest management and has been created in the mid 1980s in order to learn forestry to forest owners and in particular "very new forest owners" (basic level) or to improve their knowledge on basic principles (CNPF, 2006). More than one thousand forest owners assist to these training per year (figure 1) (CNPF, 2012, 2013).

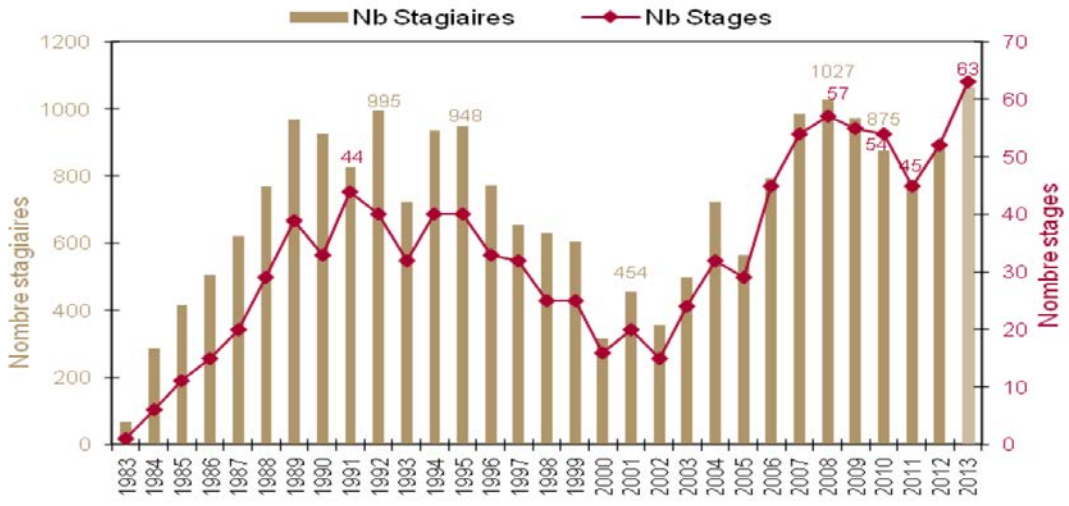

Figure 1: Number of training sessions ("Nb stages") and trainees ("Nb stagiaires") in the FOGEFOR continuing education system (Source CNPF, 2013)

Training sessions are organised according to different level (from basic notions to professionalization), at a regional scale, one day per month during one year (figure 1). Since 2006, more and more forest owners are searching for mid or high level of education. If that trend shows a wish of the trainees to acquire better knowledge, the demand for basic/initiation courses, specifically addressed to "new" forest owners, has been stabilizing for the last 6 years (CNPF, 2012). Some hypotheses should be explored to analyse if there is only a transfer of the new forest owners' demands towards mid of high level session, or a real disinterest of new forest owners to forestry education (a hypothesis could be a total delegation of the forest management to experts and forest companies).

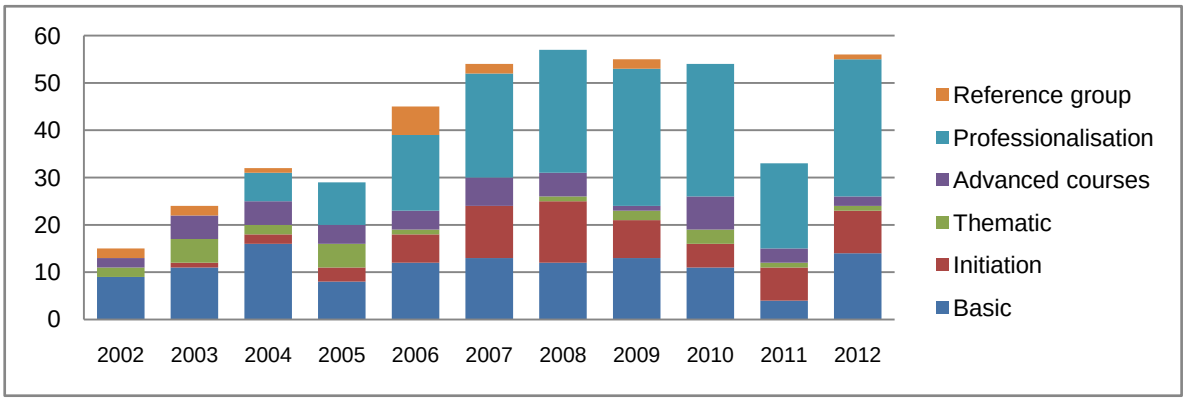

Figure 2: Evolution of the type of training sessions provided to forest owners in the FOGEFOR (Source CNPF, 2012)

In 2006, the national centre for private forestry carried out a survey (n=111) to figure out the profiles of the forest owners who came for the first time to the "basic" or "initiation" courses (CNPF, 2006). In the idea of the designer of the questionnaire, these forest owners should have been "beginners". However "beginners" did not correspond systematically with "new forest owners" since 14% of the sample were not forest owners at all, and only 26% had been forest owners since less than 10 years. 60% of the trainees had been forest owners for at least 10 years. 81% of the trainees came in order to learn to manage their forest, 37% in order to realise a specific forestry operations (afforestation, thinning, cutting), 14% to have forest management plan for the next 15-20 years (figure 2) (CNPF, 2006).

3.3. Forest management approaches

From the end of the World War II to the mid 1980s, the main objective of the French forest policy was to make up the deficit of the wood production sector. Many forest owners have adopted new silvicultural approaches and devices (mechanization of site preparation and tree planting, genetic selection, fertilization and use of phytocides), in particular in regions with a high potential of productivity (Sergent, 2013). In the mid 1960s, some new functions as recreation and outdoors activities have been given to forest surrounding big cities (Buttoud, 2003; Dehez, 2012; Kalaora, 1993). While this social role has been dedicated firstly to the public forest ownership, the private forest owners also contributed more or less intentionally to these new demands (Deuffic et Lewis, 2012). In 2001, the French Forest Law on the multifunctional role of forests provided for schemes with a voluntary contract, in terms of which private forest owners were paid to maintain an open-access forest for nature-based recreational activities. However Gadaud et al. (2010) have shown first that contractual arrangements have introduced more confusion and have been therefore suspected of being more harmful in terms of risks ("more people in forest, more fires"). Second, in a context in which forest values other than timber revenue are a motivation to own forest properties, the economic valuation of forest amenities from the forest landowners' point of view remains indispensable.

The Forest Law that entered into force in 2001 also introduced the environmental function of the forest as a new goal to reach for forest owners. Conversely to the Natura 2000 Directive that was rejected by the French forest owners representatives during the 1990s (Alphandéry et Fortier, 2001, 2007), the integration of biodiversity in the forest management practices has become less conflicting since the 2000s. Depending on their cultural and ethical values (but not necessarily on social variables as their age, their level of education or their status of “new” forest owners), forest owners may consider biodiversity as a financial burden (due to the extra costs of “best practices”), a sub product (biodiversity does not hamper the production but it does not improve it either), a problem (biodiversity is the opposite of what should be a cultivated forest) or an ally (biodiversity strengthens the resilience of the forest stands) (Deuffic et al., 2012).

Specific forest management approaches also emerge in the field of wood energy with a specific interest of policy makers for new forest owners or, to be more precise, to forest owners who have not been integrated in the forest sector until now. These small-scale forest owners often have woods with low added value that could perfectly be suitable for wood energy uses. Some studies (Chabé-Ferret et al., 2007; Gauthier, 2010) have shown that these profiles of forest owners already harvest wood for their self consumption. However, some difficulties persist to persuade these forest owners to harvest and to sell their wood to energy producers: wood prices are often considered as too low, small plots have no access, forest owners are not familiar with the wood energy sector and its particular way to speak about the woody resources (lower heating value, megawatt/hour…) (Dehez et Banos, 2014; Deuffic et Lyser, 2012).

3.4. Policy change / policy instruments

There are numerous and recurrent modifications in forest policy in France (that makes things difficult to understand particularly for the forest owners). Those policy changes and policy instruments do not take in consideration the existence of the new forests owners, as defined in the introduction; and none specific instrument has been elaborated for this specific category of forest owners.

Long-term demographic, socio-economic and cultural trends have gradually favoured the emergence of the "new owners" as defined in the introduction. The whole architecture of the so called “Forest development system” of the French private forest was modelled on the scheme of the agricultural development, in the idea that timber production was central, and that the main need was to professionalize as far as possible the forest owners. Since the 1980s, the occurrence of new contextual elements and issues has changed the situation:

- the rise of the environmental and societal demands, and their consideration by public authorities;
- the concern expressed by those public authorities to mobilize “more and better”, especially for wood energy, while respecting the criteria of sustainable forest management;
- the increased risks and major events in the forest in the recent years (storms, drought, pests);
- the relative weakness of the timber market, and the increasing management costs compared to the income derived from the forest;
- as consequence, the change of attitude since the 90’s among the forestry players and owners unions who now try to promote and be remunerated for the provision of environmental services (carbon, water, biodiversity, …) and other (amenities, health, ...).

All these elements are likely to induce (have induced in some cases) new instruments and new practices implemented by the Ministry of Agriculture and Forest such as:

- PDM (plan of mobilisation, concentrating and targeting resources of development in a given geographic area, with a consultation process with local stakeholders);
- CFT (charters of forest development which are co-constructed between various actors in a development project for a forest area), contracts between

private/public actors for the supply of various goods and services, development of insurance systems better suited, etc.

But a shared strategic vision is still lacking at national and regional levels (see Part IV) between multiple stakeholders and partners, and above all a consistent and clear operational link between this vision, and the emergence of those new practices, and the adaptation of the policy and the legal framework within which they operate - especially as forest management depends on six different legal codes (Codes of forest, environment, rural, health, heritage, urban planning, etc.).

In this context, a more detailed understanding of the characteristics of the so-called "new forest owners" is needed, both for researchers and for practitioners. A better knowledge of their motivations and of the emerging issues they have to face would be very useful to develop relevant and innovative policies, and to adjust policy instruments concerning private forest (regulations, grants, tax relief, advisory system, etc.).

4. Forest ownership

This chapter aims to give a detailed overview of forest ownership in the UE. The most detailed information at national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. To make this information more comparable still, the information is also collected in an international format that is used in the Forest Resources Assessments (FRA) by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses how far the national categories and definitions may be transformed into the international FRA data structure and the extent to which there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Statistical data are often scattered in different collection methods and different calculation modes. For example, the first national survey about forestry and ownership structure (1976-1983) takes into account all the forest owners (Ministère de l'Agriculture, 1987) but the second and the third national surveys (1999 and 2012) are only based on forest owners who have more than 1 hectare.

It seems also easier to estimate the surface of forests thanks to GIS, Lidar and others technologies nowadays. Concerning forest ownership, only one instrument exists at a national and local level, the Land Register (“Cadastre” in French), which should identify all landowners (and potential tax payers). Nevertheless, the Land Register database is not periodically updated and still not computerized in small localities.

Despite these difficulties, we have chosen two main official databases dealing with forest property:

- The National forest inventory (IFN) database established between 2008 and 2012;
- The national survey carried out in 2012 by the Ministry in charge of Forest and based on a sample (not an exhaustive census) of 6,000 forest owners.

According to IFN (2012), the forest ownership distribution is the following:

Table 3: Forest ownership

	Surface	Rate
State public forest	1 506 000	10%
Municipality forest	2 557 000	15%
Private forest	12 360 000	75%
Total	**16 424 000**	**100%**

(source IFN 2012)

Concerning the private forest ownership, the survey carried out in 2012 provides slightly different figures as they identify 1,129 million private owners covering 9.637 million ha. The difference (2.7 million ha) could be explained partly by the intentional omission of the very

small scale forest owners (less than 1 ha). If we rely on the official survey, 7.2 million ha are in the hands of individuals or joint estates and 2.4 million ha belong to private legal entities or institutions (MAAF (Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt), 2014).

During the last decades, the forest ownership has changed in some significant aspects:

- The number of individual forest owners has increased, and represents today 73% of the total number of forest owners in 2012;
- The number of legal entities has also increased from 3 to 5%;
- Conversely, the number of joint estates and co-ownerships has decreased.

While the number of private forest owners has been increasing during the last decade, the average size of the private ownership has been slowly decreasing from 8.8 ha to 8.5 ha. Fragmentation is still one of the main characteristics of the French forest ownership despite the efforts done to limit this phenomenon, in particular since the Modernisation Law passed in July 2010.

Table 4: Distribution of the private forest ownerships according to their legal status and its evolution between 1999 and 2012

	1999			2012		
	No of forest owner	**Surface**	**Average surface**	**No of forest owner**	**Surface**	**Average surface**
Individual	739 000	5 148 000	7	829 000	5 393 000	7
Joint estate	168 000	1 099 000	7	116 000	680 000	6
Indivisible property and Co-ownership	175 000	1 628 000	9	111 000	1 118	10
Subtotal of natural person	**1 082 000**	**8 145 000**	**8**	**1 055 000**	**7 191 000**	**7**
Forest group (*groupement forestier*)	10 000	1 125 000	110	12 000	1.338 000	112
Forest property investment company (*société civile immobilière*)	30 000	604	20	44 000	643 000	14
Others legal entity				17 000	466 000	28
Subtotal of legal entities	40 000	1 730 000	43	73 000	2 447 000	33
Total of forest owners	**1 122 000**	**9 875 000**	**8.8**	**1 129 000**	**9 637 000**	**8.5**

(Source MAAF 2014)

Definition of the legal status in the table above:

- **Individual** (*personne physique*) are people who own personally the forest. In the 1999 and 2012 national surveys, an individual is considered as being a forest owner if he has got at least 1 ha of woodland. The forest owner can do anything in compliance with laws and regulations. If this freedom could be considered as an advantage, individual properties are sometimes too small to attract buyers of wood or forestry contractors.
  - *Example: Ms Martin owns 20 ha; she is the only individual who has the full rights on the property.*
- **Joint estate** (*communauté matrimoniale*). This legal status designates the common owners of a forest property after wedding. It allows creating bigger management unit than two separates properties.
  - *Example: If Ms Martin gets married with M Dupont who owns 10 ha, they may decide to keep their own property separately (20 ha + 10 ha under the legal status of individually-owned forest). If they decide to buy new forest stands (50 ha), they may create a joint estate; if they divorced, each partner will get half the property they acquired in common (25 ha per spouse).*
- **Indivisible property and Co-ownership** (*indivision et copropriété*). Many individuals have the same rights on the property but none of them has specific, personal and integral rights on the property (or part of the property) as there is no physical division of the property between the heirs.
  - *Example: After the death of the parents, each 3 children has a part of the forest (egalitarian inheritance: 33% per child) but the allotment stays physically undistributed; the management of property under this kind of legal status is often more complicated with the succession of generation.*

- **Forest group** (*groupement forestier*). The forest group is a real estate company adapted to the almost exclusive management of forest property. Each forest owner (or investors) brings his individual property (or money) in exchange of shares. This legal entity is a way to manage collectively a forest estate and to limit the fragmentation of the inheritance between heirs who may sell their shares if they do not want to inherit their part of the forest. In the event that the assets include other assets, there are others formulas of grouping properties and assets which could be more adapted such as rural land or real estate company (see below).
- **Forest property investment company** (*société civile immobilière*). This legal entity is very similar to the forest group but it can also integrate other types of assets and not only forest (as buildings). The tax rules are a bit different in comparison with forest groups.

Concerning Public forest, two main categories of public-owned forest exist in France:

- **The State public Forests** ("*forêts domaniales*" in French) are the private domain of the State but its use (*usus*) is public (except military camps). The State cannot sell the forest or only in very specific circumstances and with the agreement of the French parliament. The State delegates the forest management to a special public body – the *Office national des forêts* (ONF) – that is under the joint authority of the Ministry of the Environment and the Ministry of Agriculture and Forest;
- **The municipalities forests** ("*Forêts communales*" in French) are the private domain of the communes (and more rarely other public institutions). If forest management orientations are decided by the town councillors, the daily management is under the responsibility of the ONF which apply management decisions.
- **The local commons forest areas** ("*Biens et forêts sectionnales*"): this legal entity is very specific of the Massif central region. The area only owns to the inhabitants of a small hamlet (a sub "section" of the village) and not to all inhabitants of the municipality. However the forest is managed with the same legal rules as the municipality forest.

Another distinctive feature (in comparison with other European countries) is the very small proportion of the private forest (around 1 or 2%) which belongs to forest companies, as paper mills or sawmills (Buttoud, 2003). If these companies had acquired forests estates during the 1960s, they often sold them during the 1980s as they found other ways to secure their supplies and as the legal obligation imposed by the state to invest in forest disappeared. Today, only a few banks, insurance companies and semi-public companies (as the *Caisse des depôts et consignations*) still own forests.

Despite 93% of the French forest belongs to individuals, very few of them are full-time professionals. Buttoud (2003) has estimated that 4,000 forest owners were full-time forest professionals and around 40,000 others forest owners considered forestry as a secondary professional activity. Finally, less than 6% of the forest surface should provide regular income to their owners who only represent less than 2% of the private forest owners. Nearly all the forest owners do not earn their living from the forest, which represents only a small part of their financial assets.

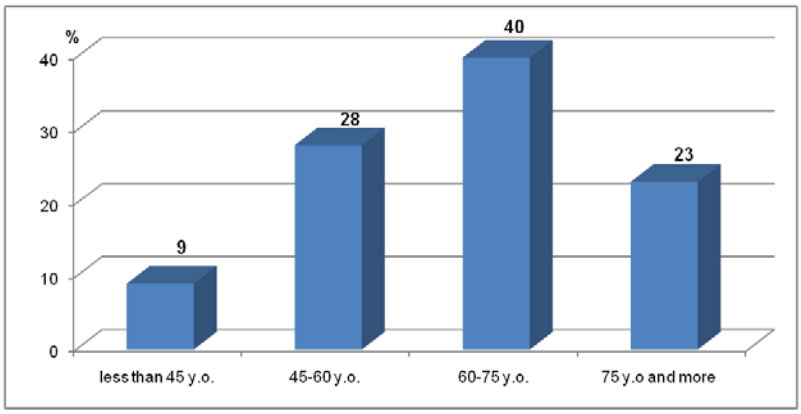

Figure 3: Distribution of forest owners by age class (2012) (source MAAF, 2014)

There is no significant change between 1999 and 2012 surveys in terms of the distribution of individual private forest owners by age class (table 3). The age class distribution of forest owners (only the sub total of the natural persons) clearly shows that a majority of the forest owners (63%) are over 60 years old (average 64 years).

Concerning the professional occupations of forest owners, pensioners and retired people are the first group of forest owners in numbers (56%) and surfaces (53%). Farmers are the second largest group, in numbers (16%) and surfaces (17%), but they have fallen steadily since thirty years. Currently, they are catching up by the group of higher managerial and professional occupations (11% in number and 11% in surface) and by the employees and lower managerial occupations (12% in number and 10% in surface). Forest owners who have professional occupations with the forestry based sector are still few (1%) but they own 3% of the forest surface.

Table 5: Professional occupations of forest owners

Occupations	Number of owners	%	Surface (in ha)	%
Retired people	528 000	56%	3 209 000	53%
Farmers	157 000	16%	1 055 000	17%
Forestry sector occupations	13 000	1%	181 000	3%
Higher managerial and professional occupations	87 000	11%	640 000	11%
Employees and lower managerial occupations	120 000	12%	623 000	10%
Workers and lower supervisory technicians	10 000	1%	34 000	<1%
Others	7 000	1%	28 000	<1%
Never worked, long-term unemployed, No answer	23 000	2%	200 000	3%
Total	**944 000**	**100%**	**6 070 000**	**100%**

(Source MAAF (Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt), 2014)

In France, more than 70% of forests are privately owned, with a higher concentration in the western part of France. Consequently, 70% of the volume of standing timber is located in private forests, although the average standing timber volume is lower in the private forest than in the public forest (153 m^3/ha vs 183 m^3/ha) (Tissot et Kohler, 2013). However, the strong fragmentation of forest ownership severely hampers logging. In 2000, according to the CNPF, forest owners owned an average 8.8 ha but not in one piece. They were divided into 5 blocks. Woodlands are therefore highly fragmented, with an average size of 1.8 ha per management unit. Whereas logging and skidding costs can only be reduced by working on plots representing relatively large volumes, property groupings and access rights are needed. This process is very time-consuming and success is not guaranteed.

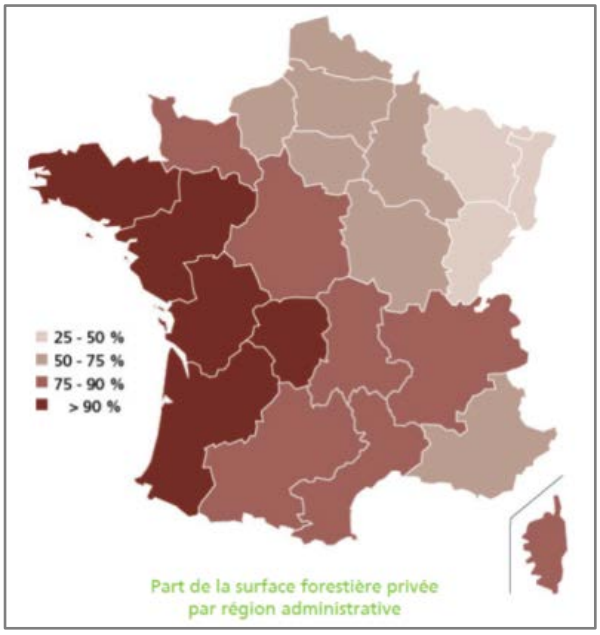

Figure 4: Percentage of privately-owned forests per region (IGN, 2013)

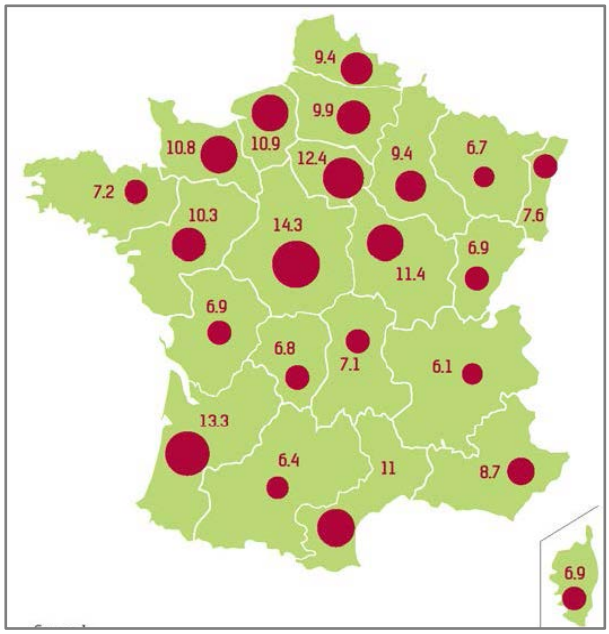

Figure 5: Average area of privately-owned forests by region in ha.
(FPF (Forêts privée française), 2009)

Concerning their place of residence, 99% of the forest owners are French citizens. Almost all of the 1% remaining is citizen of one of the European Community Member States and hold only 0.8% of the French forest area. Third-country citizens are very few (0.1%) but the average size of their ownership is around 39 ha. A half of these forest owners are legal persons. At the national scale, forest owners live mainly in rural areas since 63% of them live in local units less than 2,000 inhabitants (MAP (Ministère de l'Agriculture et de la Pêche), 2002). Forest owners who live in the Paris region are few (3%) but hold some 10% of the forest area. However most of forest owners live close to their forests since 87% drive less than one hour to go to their forest (MAAF (Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt), 2014)

According to Sergent *et al.*(2013) who studied the forest ownership in the south western part of France, most regional and local stakeholders point out a withdrawal and, more generally, a lack of interest for forest management from "new" owners. These opinions are difficult to confirm but there are eminently clear arguments in favour of that. First, forest management is often not the main source of income. Secondly, mobility plays an increasing role in ours societies. Peoples go farther away from home to build their career and lives. Thirdly, inheritance remains the most dominant mode of transmission, with consequences in terms of fragmentation of private forest holdings. A combination of these factors leads to think that "new" owners who are not living close to their forests could increase. Besides, the largest owners, and even more the legal persons, have often a remote home or head office location. For one-half of them, it is in the Paris region. In this case, forest management is totally delegated to forest consultants.

4.1.2. Critical comparison with national data in FRA reporting

Some divergences exist between sources concerning the total forest area:

- According to the National Forest Inventory (IFN, 2012), French forests cover 16.4 million ha. Public forests consist of: 1.5 million ha of state forests and 2.5 million ha of municipal forests. By taking away the public forest surface from the total, the private surface area displayed by IFN is 12.4 million ha;
- For the national forest services (*Office national des forêts* - ONF), there are 1300 state public forests covering 1.8 million ha and 14000 municipality forests covering 2.8 million ha;
- And for the Ministry of Agriculture, according to the first results of the 2012 national survey, 9.6 million ha are privately owned and shared between 1.1 million of forest owners (MAAF (Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt), 2014).

These differences can be explained by the definitions and the methodology used by these three organisations that are slightly different. In the national survey carried out by the Ministry of Agriculture and Forest, only forest owners with more than 1 ha have been integrated in the sample of the two last national surveys carried out in 1999 and 2012. On the top of that, the sample of forest owners has been based on the list of the Land Register, which is not always updated concerning land use (MAAF (Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt), 2013). On the opposite, the National Forest Inventory also integrates forest clumps smaller than 1 ha. Finally, the IFN method tends toward overestimating the forest

surface whereas the Ministry survey underestimates it.

Finally, in this report, we keep the ONF figures for the public forest and the Ministry survey figures for the privately-owned forest that is to say 4.6 million ha of public forest and 9.7 million ha of private forest (>1 ha).

Table 6: Public and private forest surface in France

FRA 2010 Categories	Forest area (1000 ha)	Forest area (estimation MAAF 2014)	Forest area (1000 ha) (estimation ONF, 2012)	Forest area(1000 ha) (estimation IFN 2012)
	2005	2012	2012	2012
Public ownership	4 026	4.600		
Private ownership	11688	9 637*	11 200	12400
...of which owned by individuals	9 823	7 191		
...of which owned by private business entities and institutions	1 865	2 447		
...of which owned by local communities	0	0		
...of which owned by indigenous/ tribal communities	0	0		
Other types of ownership	0	0		
TOTAL	**15 714**	**15500**	**15 800?**	**16900?**

**private ownership: 9.6 million ha according to MAAF, 11.2 million ha according to ONF, 12.4 million ha according to IFN*

4.2. Unclear or disputed forest ownership

In France, property rights have been relatively clear and stable for decades. There is no significant controversy in terms of the rights on the land. Some very specific situations sometimes may induce troubles as:

- The status of usufruct and bare property. Usufruct is the right to enjoy things owned by another property, as the owner himself, but at the expense of preserving its substance. The beneficial owner never has the right to cut timber trees outside the set cuts, and that he is entitled to against cuts copse. The evolution of forestry has caused case law, where it appears that: the thinning does not necessarily return to the beneficial owner, the situation is appreciated to varying degrees depending on silviculture practiced; the pine and poplar trees are tall trees and grant back to the bare owner.
- Some conflicts sometimes appear about the organisation, which should manage the municipality forests. Normally, the forests of municipalities and territorial communities are the property of the municipality/community but the forest management plans are under the supervision of the National Public Forest Service (ONF). Some municipalities are contesting this monopoly and would want to attribute forest management to private experts.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

No legal restrictions exists to buy or to sell forest. There is only one specific clause in the Modernisation Law of Agriculture (2010). In order to improve the grouping of forest stands, this law has created a “pre-emptive right”. If a forest owner wants to sell a forest stand, he has to inform all his neighbours first. These neighbours will have the right to buy the forest in priority. If the neighbours are not interested by the forest, the seller will be allow to accept offers from others non-neighbouring buyers.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no specific rules for forests transfer between generations. Inheritance is egalitarian between all the children. Heirs may decide to manage their inheritance individually or collectively. If heirs want to avoid property fragmentation, two French

legal status called "*Société civile immobilière*" (SCI) [Forest property investment company] and "*Groupement forestier*" [Forest group] may keep the estate in one piece after inheritance.

Concerning marriage, if the forest owners want to marry, spouses may put in common the future forest stands they will buy (French legal status "*Communauté matrimoniale*" or "*Communauté de biens*" [Estate community]) or they may buy the forest separately and individually (French legal status "*Personne physique*").

4.4. Changes of the forest ownership structure in last three decades

During the last three decades, the ownership legal categories have not changed significantly. Despite this stability, some continuous trends within private forest ownership have been observed:

- The regular increase of the forest owner with the legal status of natural person (+11%) and legal entities (business entities and institutions), the decrease of joint estate (-30%), and finally the relative stability of the total number of private forest owners (1.129 million of forest owners with more than 1 ha);
- The light decrease of the average size of the property (8.8 ha in 1999; 8.5 ha in 2012). Those trends are not new as they have been mentioned in the last three national surveys (1987, 1999, and 2012).

4.4.1. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies);
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company);
- New private forest owners who have bought forests;
- New forest ownership through afforestation of formerly agricultural or waste lands;
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: CHANGING LIFE STYLE, MOTIVATIONS AND ATTITUDES OF FOREST OWNERS (E.G. WHEN FARMS ARE GIVEN UP OR HEIRS ARE NOT FARMERS ANY MORE)

Example 1: The Mediterranean forest owner - between passivity and new opportunities.
A qualitative survey (Gleizes, 2012) has been carried out in the Mediterranean forest near Toulon in the south eastern part of France in 2012. It shows that forest owners have very different attitudes towards their forests and in particular towards management of forest fires risks. Forest owners who do not live at place and who do not manage their forests any more have often forgotten the risks of fire or do not really care about it. On the opposite, forest owners who still live in the area are still fighting against forest outbreaks. If some of them are still interested in traditional outlets as wood energy for domestic uses or agro-pastoral uses, others invested in innovative form of valorization as silvo-tourism, or high added value mushrooms harvests (truffles with mycorrhizal trees).

Example 2: After two severe storms in southwestern France (1999, 2009), new forestry production models are proposed to forest owners. The first models propose to produce high quality timber based on maritime pine long rotation (40-60 years). Three others models consist in shortening the rotation (from 50 to 35 years or less). The fifth scenario aims at producing both timber and wood energy on the same plots and the last one proposes to introduce new species to produce wood energy (Eucalyptus and Robinia). If forest owners are persuaded that they have to change their forestry models, they are not always convinced or attracted by all the scenarios. Despite the institutional discourses, which promote to intensify the production and to invest in genetically selected varieties (maritime pine or eucalyptus), a new trend appears by some disenchanted forest owners: a "slow forestry" model and with the lowest investment as possible (low investments for low benefits instead of expensive investment for uncertain benefits in a medium or long term). Another trend consists in earning money with by-products as mushroom and traditional firewood but this is just an additional source of revenue. This kind of diversification is also suitable for forest owners who live at place as these activities are time-consuming and require a physical presence of the owner (to pick, or to organize the mushroom picking, or to control the firewood harvest and sale).

4.5. Gender issues in relation to forest ownership

Table 7: Ownership by gender in 1999 and 2012 (Source MAAF 2002 and 2012)

	Number	Surface
Male (1999)	630 000	4 632 000
Female (1999)	272 000	1 865 000
TOTAL	**904 000**	**6 497 000**
Male (2012)	659 000	4 433 000
Female (2012)	285 000	1 637 000
TOTAL	**944 000**	**6 070 000**

Besides basic statistical data, few qualitative studies have been carried out concerning relationship between gender and forest ownership and management. One qualitative study (Faugères, 1998) has explored the role of spouses in forest management in the alpine mountains. This study intended to identify the main characteristics of women's role in male sector as forestry is perceived to be, and also to elaborate the first steps of a methodology. The authors have chosen Haute-Savoie (a French county near Geneva), which is one of the French regions where forest ownerships are the most fragmented. There are 120 000 ha of private forest and 100 000 private owners, with an average of almost 1 ha each. Researchers focused on ownerships larger than 4 ha and found 2 800 properties (unfortunately the French registration "cadastre" does not specify when both members of a couple are owners; it retains one name only and most of the time it is that of the husband). The average size is 8.8 and 9.5 ha for women and men; and the average age is 69 for women and 65 for men. Researchers have interviewed 15 people (male and female owners, wives and daughters) in 10 ownerships. The main themes they have talked about were their life and links with the ownership, their defined role and activity in forestry, their training and plans for transmission. The main characteristics are: the wide diversity of their activities, and their absence in local area networks (associations, links with forestry administration and trade union). Their activities are then internal to ownerships, taken like a hobby rather than an activity valorised and valorising and we have noticed some kind of responsibility's transfer on men. The authors have also noticed that most of people (women and men) are not trained in forestry, except younger generations.

There are no ongoing studies regarding gender issues. One project is initiated based on the data of the national surveys carried out in 1999 and 2012. It will analyse the impact of the gender on the management of non-industrial private forests (NIPF).

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("characterized or motivated by philanthropy; benevolent; humane" OED) organisations.

The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Despite the extensive definition of ownership that is contained in this section (charities, cooperatives, foundations, NGOs, etc.), very few alternative forms of forest ownership exist in France. The most important are the forest cooperatives and some examples of forest that belongs to associations or semi-public institutions.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts	X		
• NGO with environmental or social objectives	X		
• Self-organised local community groups	X		
• Cooperatives / forest owner associations	X		
• Social enterprises			X
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

CASE STUDY 2: EXAMPLE OF FOREST OWNED BY FOUNDATIONS

Forest owned by foundations or trust

Fundation is a legal status for an organisation that is rarely used in France. From the 1.3 million associations (44 000 environmental associations) in France, there are only 2 000 foundations. Very few of them are dealing with forest issues. Furthermore, most of them do not own forest but they raise public awareness about forestry. One of the most important and older foundations is the "Foundation for the Protection of the Mediterranean Forest". Located in a forest domain of 45 ha near Aix-en-Provence, this foundation has been created in 1989 under the aegis of the France Foundation and the regional Council of Provence-Alpes-Cotes d'Azur. The foundation publishes a quarterly review (*Forêt méditerranéenne*) and manages an eco-museum on the Valabre forest.

Another foundation "*Pour la forêt*" [For the Forest] is a specific fund under the aegis of the "Fondation de France" and the French Public Forest Service (ONF). It aims to help for the reforestation, the creation and the sustainable management of forests in relation with the local authorities. In memory of the World War I, ONF has also developed a partnership with the "*Fondation du Patrimoine*" to preserve the historical site of the "*Forêt de Verdun*", which was one of the most dramatic battlefields in 1916. The foundation helps to create forest paths, conservation of the trenches traces, creation of a route on the specific biodiversity associated with the natural reforestation of the battlefields. The Fondation de France also provides funding to the association "*D'arbre en Arbre"* [From Trees to Trees] to promote and to contribute financially to the plantation of forests (poplars) in the less afforested region of France (Nord-Pas-de-Calais).

The "*Institut de France*" which puts together the French academies (arts, science, literature) holds several forest domains such as the forest associated to the castle of Chantilly (7 800 ha), the royal abbey of Chaalis (1 000 ha) that are located in Paris surburbs and the Forêt des Agreaux (1 000 ha) in the south western part of France. Those forests are dedicated to timber production and recreation. Others foundations are dealing with forest as Gred'oil (specialized in environmental compensation). To sum up, these foundations have often inherited forest from donators and they raise public awareness (by media event, funding support) but they represent a low forest surface.

Forests owned by self-organised local community groups

A very important way to manage collectively the forest owned by private forest owners are the "*Associations syndicales de gestion forestière" (ASA or ASL)* [Forest Management Union Associations]. This kind of association is a way to manage collectively private properties. If the forest owner does not lose his property rights, he accepts to manage a part or the totality of his forest collectively. The forest owners who have decided to participate to the association elect a management council. The financial contribution of forest owners to collective forest operations is proportional to the surface owned by members. Three main types of legal status exist:

1- The "*Association Syndicale Libre* (ASL)" is a free union association of private forest owners who decide collectively to implement a collective forest management plan or to create collective infrastructure. The ASL is often created for the construction, maintenance or management of works, the execution of works and for the implementation of actions of common interest: prevention of natural risks (fire, etc.) or health, pollution and nuisances; preservation, restoration and exploitation of natural resources (wood, etc.), layout or maintenance of rivers, lakes and water ways and utilities plans, or enhancement of properties (forest);

2- If less than 1/3 of the forest owners disagree to participate to the ASL, the others 2/3 may ask for the creation of a "*Association Syndicale Autorisée* (ASA)" [Licensed Union Association]. This ASA will be decided by the regional state authority (the "préfet"). It has the status of a public institution. It works in a private utility purpose, under the supervision of the préfet and has public power to perform certain work of public interest (forest roads, forest fire prevention equipment) and specifically enumerated in the law, and to raise mandatory contributions;

3- The last type of forest owners association dedicated to forest management is the union association of forest management. The forest law provides for the establishment of unions associations of forest management to establish forest management units. These associations include the owners of woods, forests or afforested lands as well as lands used for pastoral included as accessory in their perimeter.

Forest owned by co-operatives/forest owner associations

The most important alternative form of ownership is the cooperative (figure 6). In France, there are 20 regional forest cooperatives. Each of them is independent and has its own economic strategy, but their interests and positions at a national level are defended by the Union of French Forest Cooperation (UCFF). 120 000 forest owners are members of the forest cooperatives and they total ownership is 2.2 million ha. The cooperatives employed 900 workers with a global annual sales around 350 million €

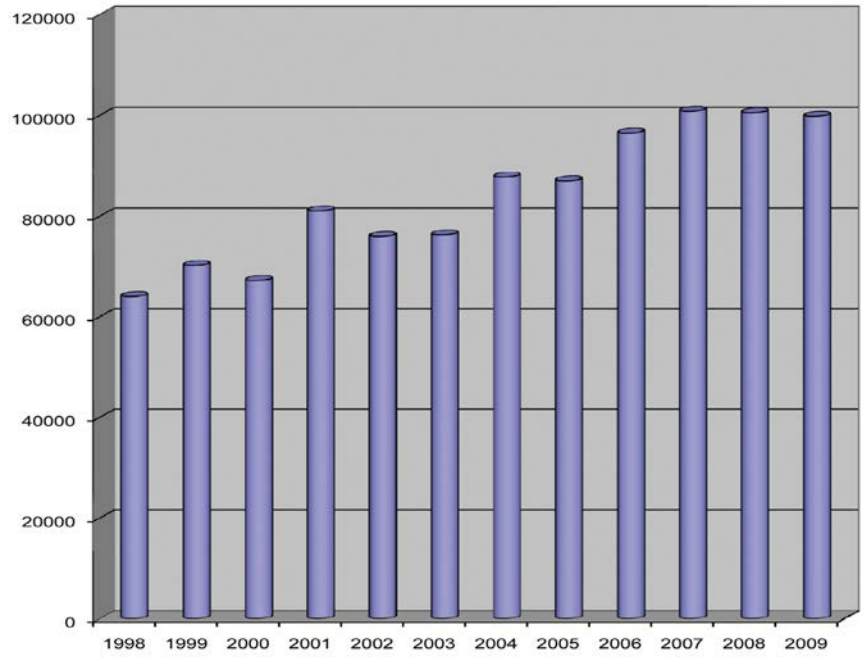

Figure 6: Number of members of the cooperatives (1998-2009) (Source UCFF 2013)

4.7. Common pool resources regimes

Commons - forest common pool resource regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self- organisation (of rules and decisions). Examples of traditional CPR regime are pastures, forestland communities in Sweden, Slovakia, Romania, Italy and other European countries and irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is a challenge for this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. An example of a new (quasi-) CPR regime is the community woodlands in UK, established in last 20 years mainly in Scotland and Wales. Our interest in "traditional" and "new" common pool resources regimes (CPRs) in European forest is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users may also be CPR regime if they have the rights to determine management rules even though they may not own the land itself. Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are key for sustainable use of CPR regimes

CASE STUDY 3: "*Propriétés Sectionnales*" IN THE MASSIF CENTRAL (AUVERGNE)

Forest common property regimes are quite common in the mountains in central part of France (Massif central). They are also frequent in the Alps, associated with mountains pastures. In both case, they are traditional common pool resources regime. In the Massif central, they are a matter of the common law, and their management is being defined by the villages/hamlets to which they belong. Forest management is decided by the inhabitants of the hamlets. Their importance decreases because of the depopulation of these remote rural areas and of the pressure of the Statute Law which does not want to recognize this form of organization. City councils and the state forest public service (*Office national des forêts*) puts pressure to integrate these "*propriétés sectionnales*" inside the municipality forest, in particular when no more inhabitants live in the hamlet and when the forest is not managed any more. In the Alps, the same kind of legal and very specific entity also exists but they are managed almost exclusively as grassland and pastures. Forest valorisation is almost inexistent.

5. Forest management approaches for new forest owner types

The Cost Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in France

5.1.1. Forest organisations

The French Forest Reform Act of 2001 has reaffirmed that the political authority on the forest policy is entrusted to the State (Sergent et al., 2013). The French State is responsible for overseeing the implementation and application of the legislation (Forest Code) and developing national strategies and policies. According to this legal framework, the French forest policy aims at regulating the activities related to the management of forest areas and to the economic development of the wood-based industry. The forest policy also participates in the development and implementation of other policies including rural development, promotion of employment, biodiversity conservation, water and soil protection, natural risk prevention. The State is also involved in the management of the forest of the country (both public and private one) by financing and contracting with two public bodies Office National des Forêts (ONF) and Centre National de la Propriété Forestière (CRPF).

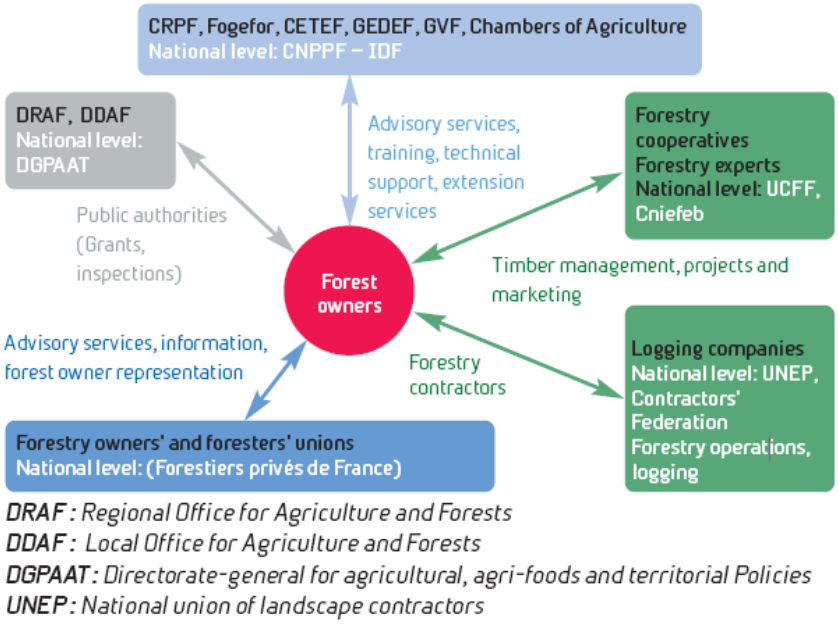

Figure 7: State administrations and professional organisations of the French forest sector(Source: FPF 2009)

Concerning public forests, the Office National des Forêts (ONF) [state forest public service] is a national public forest enterprise which is in charge of the management of the public forest, i.e. the state-owned forests and the others publicaly owned forests (mainly by municipalities). Since 1827, all these public forests are managed in accordance with the legal framework of the forestry regime. ONF was established in 1964 to implement this forestry regime. ONF activities are of a twofold nature, on the one hand, it carries out an exclusive public mandate on the management of public forests and, on the other, it is engaged in a commercial activity in competition with other market operators. The management orientations of State public forests are decided at a national level through a long-term objectives contract between the State (Ministries of Agriculture, of the Environment, of Finance, etc.), the ONF and since 2012 with the National Federation of Forest Municipalities (FNCOFOR). Furthermore, the national directives and orientations are specified at a regional level through forest regional orientations and regional directives and schemes for forest planning (see figure 8). Finally, at a local level, a management and planning document is defined for each state and municipality forests. In both cases, the ONF is the official manager. For municipality forests, orientations are discussed with the local authority (in particular with town councillors).

Concerning private forests, the Centre National de la Propriété Forestière (CNPF) [National centre for private ownership] is a national public body which both offers a technical support to private forest owners and is responsible for the approval of sustainable forest management plans (compulsory or voluntary) (FPF (Forêts privée française), 2009). It is a public institution under the supervision of the Ministry of Agriculture and Forestry. It was established in 2009 by the merger of 19 previously independent agencies: 18 Regional Centres for Private Forest (CRPF), National Professional Centre for Private Forest (CNPPF) and the Institute for Forestry Development (IDF). The CNPF contributes to forest development activities through guidance, coordination, research, training and the dissemination of knowledge on forests. Its guidance and coordination activities mainly involve the Regional Forest Owners' Centres (CRPF). Applied research, training and knowledge dissemination are the responsibility of the IDF forest utility service, the CNPF's qualified technical institute. The IDF's mission is to conduct and disseminate studies relevant to forest development, acting as an interface between research centres and forest development officers, who mainly work through the CRPF. It supports and coordinates the national network of forest development organisations, including the

CETEF (Centre for Technical and Economic Forestry Studies) and development groups.

Depending on the authority of the CNPF, the CRPFs are mandated by the State as public organisations to pilot and develop forest management policies for privately owned forests, by:

- drawing up Forestry Management Plans for each of the 22 French Regions;
- approving Simplified Management Plans (PSG) submitted for private woodlands covering more than 25 ha (35 148 eligible PSGs for a total area of 3 518 000 ha in 2013);
- drawing up codes of silvicultural practice and keeping a register of owners;
- approving Standard Management Rules.

As development organisations, CRPFs foster the creation of joint forest management groups. Over 1 000 joint contracting associations have been set up, covering more than 110 000 ha. The CRPFs also provide training and information for foresters in order to promote a range of silvicultural methods. Each year, the CRPFs contact over 400 000 foresters, and 37 000 attend individual or group training sessions. These forestry development activities call on networked technical and economic references. The CRPFs and other professional forestry bodies are involved in the FOGEFOR woodland management training system, which offers initial and continuing training for forest owners through group training sessions (CNPF, 2013).

5.1.2. Forest managements tools

Concerning Forest Management Plans for private forests, several tools are proposed by the Forest Law. Some are mandatory, others are voluntary (see chapter IV for more information). The simple rules are: over 25 ha, every forest owners must have a Forest Management Plan (PSG in French). Between 10 and 25 ha, forest owners may choose to implement a Voluntary Management Plan (voluntary PSG, CBPS or RTG, for more details, see the table below). Under 10 ha, almost no specific management plan is proposed.

In 2013, 3.518 million ha and 35 148 properties were covered by PSGs (In 2013, 23 450 owners have subscribed to a CBPS which corresponds to 240 736 ha. 2611 RTGs covering 38 908 ha have been approved. If one compares these figures with the 12.4 million ha of private forest, that means that one third of the private forest has a forest management document (and 82% of the surface where there are compulsory), knowing that this percentage increases year after year (in particular RTG and CPBS). 25% of the private forest surface and 80% of the public forest is certified (PEFC) (5.2 million ha in total).

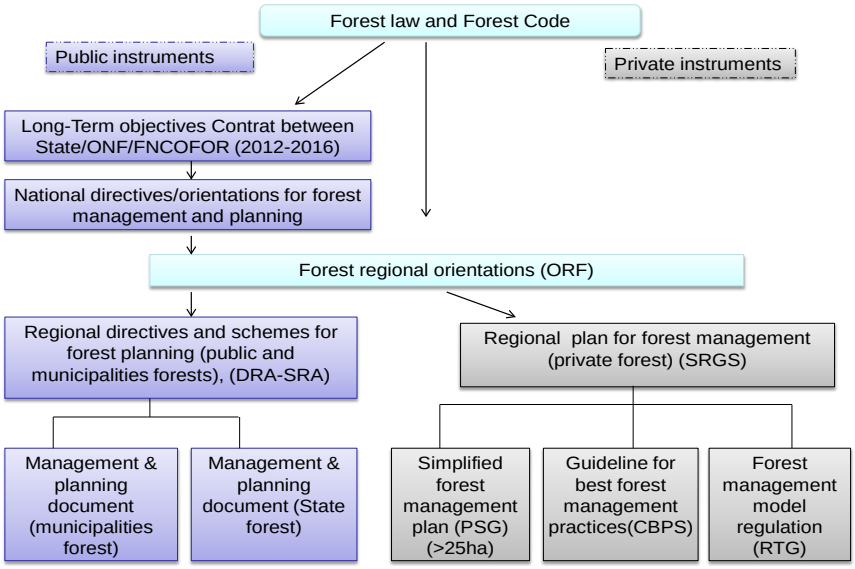

Figure 8: Forest Policy instruments for public and private forests from a national to a local level

The main policy tools and instruments dedicated to forest management in public and private forests exist for a long time (since the 1960s). They are relatively stable even if some significant change occurred during the last decades. According to Sergent (2013), the institutional framework for the forest sector has remained quite stable over time. The State keeps control on the regulation policy and is always involved in the management of public forests (ONF) and in the support of the management of private forests (CNPF and subsidies). However, this model of organization is now being questioned. In fact, the reforming programs of the general public sector lead to a decrease of the means devoted to forest policy and some stakeholders criticize the State for his lack of efficiency. In this context new forms of authority are emerging. First, local authorities seem to be more and more involved in forest policy. Recently, regional councils have been appointed as managing authority for the European Agricultural Funds for Rural Development Funds (EAFRD) for the period 2014-2020. Second, the PEFC forest certification system is well developed in France and has been reformed in 2012 to improve his credibility and his efficiency.

Despite the stability of forest policies and policy instruments, others structural changes have affected the way forests are managed.

- Firstly, the total number of private forest owners is stable (-2%), but the legal status of the different kind of properties has changed significantly. Joint estate has decreased (- 30%) whereas individual ownership has increased (+12%), confirming the long-term tendency to the fragmentation of forest properties. The most new significant trend is the huge increase of the legal entities (+82%), but that may simply reflect the change of legal status between the different categories of ownership (from individual property to Forest property investment company – the French legal status called “SCI”– that may limit the fragmentation of the estate after inheritance). In 2012, these legal entities managed 26% of the private forests in France (+40% in ten years).
- In the last three decades, the farmer-owned forests are decreasing in surface and in number. In the 1999 survey, 300 000 farmers owned 1.5 million ha of forests. However the average surface was lower than the national average (5 ha against 8.8 ha). 50 000 ha per year are not managed anymore by farmers who sell their forest when they retire or after their death. This trend is parallel to the decrease of the number of farms in France between the last two decades (-34% of farms for the period 1988-2000 and -26% for the period 2000-2010). If farm-forest ownership had been promoted by the rural development public policies during the 1970s as a way to manage new naturally-afforested lands and to provide an income supplement, this forest management model has not resisted to economic assessment. Farm forests woods are often self-consumed, and partly marketed as wood energy. Whereas this source of wood energy often comes from traditional woodland and from hedges, some farmers also show a real interest for more modern silvicultural systems such as short rotation coppices they assimilate to agronomic practices. An interesting contribution of farm forests is also noticed in the Mediterranean region when the agro-sylvo-pastoral model contributes to prevent forest fires although some farmers prefer more artificial food systems (no grazing, enclosed breeding);
- A better integration of forest owners in professional forestry networks: 5% of the forest owners were members of a professional forestry organisation in 1999. They are 7% in 2012. 2% of the forest owners declared to attend often at meetings dealing with forest issues in 1999 and 5% in 2012. Despite low rates (compared to the whole population for forest owners), these figures show that efforts to raise forest owners’ awareness, to enrol them in forestry networks or to educate them to forestry are successful on a mid-term;
- The growing role of the cooperatives: When we add up figures about forest owners who are members of a

cooperative, or who take advice from experts, the figures have increased from 9% to 13% between 1999 and 2012. The members of cooperatives have doubled in ten years (from 60 000 to 120 000 members in 2010). The strengthening and the professionalization of the network of forest managers and advisers can be explained by several factors:

- As many forest owners are living in cities and sometimes far from their forest estates, they often delegate forest management tasks to expert and cooperatives;
- The size of wood firms (sawmills, paper mills, etc.) are growing continuously and they need to have a purchasers' network that amalgamate the offer. This trend is reinforced by the increasing use and cost of heavy machinery to log wood and to carry out timber of the forest that only cooperatives and big forest contractors can afford;
- With the growing complexity of policy regulations and technical operations, traditional knowledge is still not sufficient to manage forest. External advices and assistance become unavoidable for forest owners who want to optimize their profits.

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. A new forest management approach with the concept of Payment for Environmental Services (PES)

The concept of PES has emerged as a way of involving beneficiaries of forest ecosystem services in the financing of their provision. PES system is newly developed economic instrument that requires users of forest services and consumers of forest products to financially contribute to the costs of their provision. They represent a new challenging but motivating economic tool: challenging because it may involve changes in traditional forest financing structures, but motivating because it may contribute to the economic sustainability of the forest activity and its related ecosystem services.

The concept of PES could be seen as a driver of a new forest management approach in encouraging forest owners not to focus exclusively on wood production but also on environmental services (ES) provision.

The history of the concept of PES could be summarised as follows:

- At the international level, in 2005 the MEA defined four types of ES: carbon, biodiversity, water and landscape;
- At the European level, commitments were taken (Oslo, 2011) to protect European forests with an explicit objective of PES: the total value of ES provided by European forests is estimated so that the value of these services can be taken into account in national policies and in market mechanisms such as payments of environmental services;
- At the national level, the "Grenelle de l'environnement" (2009) indicates that one objective of France is to stimulate the timber industry in protecting forest biodiversity, to recognize and to increase the value of forest ES, to pay the additional ES of forest;
- The European directives and the "Grenelle law" were translated in the forest Code (2011) as follows: the forest policy favours incentive and contractual measures in finding financial compensation to provided services when constraints or additional costs are supported.

So, with PES that is a new market-based instrument, French forest owners explicitly become ES providers. This new economic tool which has to change the forest management in favouring the provision of ES (i.e., a multifunctional forest management that recognizes ES, their management and their preservation), leads to a new forest owners' type: "a provider of environmental services" who is paid to do it.

Implementing PES depends on several factors: the nature of the target ES, the relationship between forest practices and the resulting ES, the scale of provision, etc. In France, few PES are implemented. This

instrument is new and not well-known, so in general, we can only identify pilot actions (in the 2010s). The objective of these pilot actions is to test this instrument, to analyse the results (does PES work well in a specific context with specific actors?). The lessons learned from these experiences will help to improve it, to establish contracts in order to implement PES in a larger scale. For these reasons we cannot talk about PES *stricto sensu* but rather about actions that increase the value of ES provided by forests.

For example, markets related to watershed protection are relatively new. The state of the art reveals that contracts established between forest owners and local or public authorities, or industries are not still established but there are pilot actions in which a town is the forest owner, protects the watershed through different measures and thus provides the ES:

- Example 1: The city of Masevaux (Haut-Rhin) owns forest lands supplying catchments and manages the water service. To protect the sources captured in mountain, the city has an adapted forest management through forestry actions dedicated to drinking water: removing dead wood in the upstream catchments, cable skidding, "kits loggers" against accidental pollution, etc. (Fiquepron et Picard, 2011).
- Example 2: Numerous local authorities have invested in afforestation of lands near drinking water catchments. For example, since 2000 the city of Rennes afforested more than 70 ha of land around one of its water catchment areas. This afforestation has contributed to the decline in nitrates levels of waters and avoided an expensive change of resource (Formery et Persuy, 2010).

The particularity of these two examples is that the municipality is the payer and the service provider whereas the PES principle is that the beneficiary of the ES pays the provider of the ES. Through these examples we could see a new forest owners' type: a local authority that owns forest to provide an ES to society (in these cases, a good quality to drinking water).

Other experiences are related to biodiversity. For example, the *Conseil général de l'Aude* (a county council in the Southern France) has established a policy in favour of sensitive natural areas to preserve and to enhance biodiversity and finances several actions such as naturalist inventories. The forestry group of Sambres (Aude) owns peat bogs and 700 ha of forests and benefits of this policy in offering guarantees of sustainable management through its forest management plan. This is an example of an owner of an endangered peat land who receives a contribution for its maintenance (CRPF Languedoc Roussillon, 2013).

5.3. Main opportunities for innovative forest management

Evolution of social demand related to ecosystem services could become a new market outlet if a system of offspring, public support or market tools are implemented (carbon credit funds, offspring for ecosystem services as biodiversity conservation, payments for outdoor activities, etc.).

These new types of management we could call "specific environmentally-oriented forest management" are an opportunity for the forest owner to obtain diversified source of income (an income from the provision of ES in addition to the sale of timber) and a way to mitigate risks on a medium term. However, new forms of management are also seen as a source of risks as some of them are not totally assessed from the economic/ technologic point of view (PES not always stabilized, changing rules in the wood energy sector, no clear vision of what could be a real disruptive technology in the wood sector).

Wood energy market has been increasing continuously since the last five years. More competition exists between traditional and new wood purchasers and that situation can benefit to forest owners. It could slow down the decrease of roundwood prices and stimulate the wood market.

5.4. Obstacles for innovative forest management approaches

Some attempts to implement PES reveal some difficulties. Several French projects (for

example, projects Gestofor[10] and Alpeau[11]) seek to establish contractual links between actors of water and forest to promote a forest management preserving the quality of water for consumption. These projects highlight some obstacles in the provision of ES by forest owners and in establishing contractual relationship between them and other stakeholders. They reveal a lack of information and communication: forest owners do not always know what they have the right to do and how they can manage their forest to provide specific ES. So, there is a need to improve communication between the different stakeholders, to establish education and practical guides (i.e., best practices) towards forest owners to help them in their decisions.

Moreover, the fragmentation of the land tenure is a constraint, because it makes difficult the identification of interlocutors. One solution may be a land grouping through purchases and sales of lands, a grouping of owners by creating a trade union of forest management (ASGF) or a forestry group (*groupement forestier*).

This latter solution was used in the following action:

- A water union financially contributes to the management of a defence zone against forest fire along a strategically fire defence road (DFCI) (See: www.sylvamed.eu/?page_id=1122).
  The Massif des Maures (Var) is an area very vulnerable to fires with a lack of forest value and therefore a lack of forest management. An artificial lake (La Verne) is located in a fully forested watershed dominated by cork oak, supplying water to the touristic town of Saint-Tropez. A convention on the protection of the watershed of La Verne and based on the study of revision of fire prevention plan was signed between the SIDECM (the union for the drinkable water distribution of the Corniche des Maures that manages the hill reservoir supplying 9 municipalities of the Gulf of St Tropez) and the SIVOM du Pays des Maures et du Golfe de Saint Tropez, that sets up the County Plan for the prevention of forests against fire, for a period of four years. The SIVOM supports the administrative and technical implementation (creation of brush cleared area, maintenance of vegetation by grinding, stump removal and planting seedlings in the case of a pastoral maintenance), and the SIDECM ensures self funding which is 20% for creation of work and 40% for maintenance of existing works, which represents for four years 72.400€ (9€/ha/year). The SIVOM is the direct beneficiary of the PES and the owners of surrounding forests are the indirect beneficiaries.

[10] The project Gestofor is financially supported by the EU, the Midi-Pyrenees Regional Council, the Adour-Garonne water Agency and the regional agency of Health. See: www.crpf-midi-pyrenees.com/datas/ pdf/guide_foret_captages_eau.pdf and www.sylvamed.eu/docs/GESTOFOR_etude.pdf?phpMyAdmin=aB65QHjTP8Xf4LRMjkiDbdpJzmf

[11] Alpeau is an Interreg project France – Switzerland. One purpose is to consolidate and perpetuate the role of forests for the sustainable conservation of drinking water, and to establish direct contractual links between communities and the forest stakeholders. See: www.alpeau.org

CASE STUDY 4: A NATURA 2000 CONTRACT

Since 2009, the new owners in the forest of the Arnoux (34 ha on the commune of Montfuron in the Alpes-de-Haute-Provence), partly located on the Natura 2000 site of the Massif du Luberon, have carried out a forest management plan (PSG) that includes an ecological goals. This latter allows to list plant and animal species particularly interesting for protection and to plan a sustainable management of their heritage by taking into account its ecological wealth. To foster the fauna and flora protection, a forest Natura 2000 contract named "Senescent/Old Growth Woodland" has been proposed to the owners. This contract pays the owners if they preserve old oaks. This contract is a real example of PES (CRPF Languedoc Roussillon, 2013). For the State Forest Authority, it is an incentive measure to preserve old trees where the major part of the forest biodiversity is concentrated; and for the forest owner, it is a commitment not to cut these old trees and not to make forest interventions for 30 years. The owner receives a compensation which corresponds to the income loss associated with the immobilization of the trees anddepends on the number of trees retained per hectare.

CASE STUDY 5: A PAYMENT FOR FOREST CARBON

In Rhône-Alpes, the Free Union forest owners' Association for Forest Management (*Association Syndicale Libre de Gestion Forestière* - ASLGF), which is primarily a tool for the mutualisation of management, has become a support to the local forest development with its "carbon" action. In 2008, a first action has focused on 6.5 ha of coppice forests for 5 owners. The ASLGF and its members have sold 80 tons of CO_2/ha of thinning for €700/ha, covering approximately 50% of the cost of implementing the thinning. In 2012, this "carbon" action has been renewed on a surface of 40 ha with a new partner: the Bank of Neuflize OBC. 3200 tons of CO_2 have been sold to this bank at a price of €10/t which finances thinning works in private forest. This action was carried out through an improved forest management that is to abandon the clear cutting for the benefit of an uneven-aged high stand. Without the ASLGF structure it would have been difficult to group together 40 ha of thinning of chestnut trees, and without a bundled PSG it would have been impossible to bring the level of guarantee legitimately claimed by the financial partner. So, the ASLGF could be seen as a support to boost the private forest management. This action demonstrates the interest of forest carbon compensation: the "improved forest management" approach shows that beyond a private investment the forest management responds to a demand of society that is the fight against climate change, and that the forest owner becomes a real actor in such global issue (Casset, 2012). In France, Regional Councils (Aquitaine, Midi Pyrenees) have already created their own carbon funds, but the track for the recognition of forest services in the fight against global warming is relatively new.

CASE STUDY 6: PES SUPPORTING THE RESISTANCE OF A WATERSHED TO EROSION AND TURBIDITY - A PILOT ACTION (2012-2013)

Forest owners receive technical and financial support from government and regional or local councils for adapting their forest management to improve the stability of forest stands and their resistance to erosion to protect the watershed against erosion and turbidity. To do that, a method to evaluate the vulnerability of a watershed to erosion and turbidity in relation to different forest stand characteristics was put forward. This action concerns the river Siagne watershed (520 km^2 in southeast France) and was elaborated by the CRPF Provence Alpes Côte d'Azur. This action is a step towards PES: the recommendations for management favourable to erosion and turbidity reduction should be integrated into a future framework to implement PES. The outputs from the adapted forest management measures simulated in the model should be evaluated and supplemented by field research on the actual impact of management on the supply of services. This would stimulate the collaboration between the various stakeholders and consequently improve decision-making about future forest management in a more integrated and locally orientated way (Slovenia Forest Service et al., 2013).

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways. Firstly, policies directly or indirectly influence ownership development or even encourage or create new forms of ownership. Secondly, policy instruments are emerging in response to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

The exercise of authority in the French forest sector has for a long time been devoted to the State. This dominant form of policy authority, based on the state-centred model of representative democracy, empowered the State to make legally enforceable decisions and to deliver policy outcomes which are considered as consistent with the general interest. The legitimacy of the legal authority of the state has long been reinforced by the expert authority provided by the forest

administration which has been well recognized for his skills and knowledge in forest related issues. Nevertheless, this state's monopoly of forest policy authority tends to erode as authority migrates down to newly empowered regional and local governments and to private bodies and NGOs that acquire previously 'public' responsibilities (Kahler et Lake, 2004). The French Forest Reform Act of 2001 has reaffirmed that the political authority on the forest policy is entrusted to the State. The French State is responsible for overseeing the implementation and application of the legislation (Forest Code) and developing national strategies and policies. According to this legal framework, the French forest policy aims at regulating the activities related to the management of forest areas and to the economic development of the wood-based industry. The Forest policy also participates in the development and implementation of other policies including rural development, promotion of employment, fight against the greenhouse effect, preservation of biodiversity, protection of soil and water, and natural risk prevention.

National public authorities have also implemented some specific instruments for the attention of the forest owners such as:

- Tax deductions and exemptions (wealth tax, property transfer tax, property tax, incomes tax);
- Subsidies (operating funds to support public bodies' activities and intervention expenditures for forest owners, forestry operators, sawmill and collective organizations). Subsidies dedicated to farmland afforestation were planned in the 1980s with 20/80 EU regulation concerning afforestation of the farming land, but for some reasons, the application remains low. In some regions, the structural funds can support this afforestation. In France, during the last 50 years, 5 million ha of agricultural land have been abandoned, out of which 3 million have been afforested (partly by natural regeneration, partly by plantation, but the precise sharing is not known);
- Legislation (Management documents see below, clearing regulations);
- Regional plans for wood mobilization (Multi-year regional plan for forest development – PPRDF in French).

Up to now there is no specific instrument regarding the privatisation and decentralisation in France, and the next Forest Law, which is under discussion at the Parliament, plans the possibility of nationalization, under conditions, of vacant properties without known owner.

Concerning regulations related to inheritance rights, the French Law (Civil Code) plans that every heir has a minimal part of the inheritance; but there is no impact concerning the division of the forests, especially thanks to the existence of the family forest groups (Groupement forestier) and others legal forms of property as Société civile immobilière (SCI) [Forest property investment company]. Furthermore, a new legal entity has been created by new Forest Law in July 2014 so called the GIEEF (Groupement d'intérêt économique et environnemental forestier) [Groups of economic and environmental forest interest]. GIEEF aims to avoid fragmentation and to encourage "a coordinated forest management enabling a better wood mobilization and an improved environmental performance". The minimal surface of a GIEFF is 300 ha (or at least 100 ha if there is more than 20 private forest owners). The creation of a GIEFF is voluntary and the legal status can be chosen by the private forest owners themselves (association, forest property investment company, forest group, etc.). A forest management plan is compulsory on at least 50% of the GIEEF surface.

6.2. Influences of policies in forest management

Since 1963, forest owners of more than 25 ha in one piece have been required by the law to create a statutory document called the "Plan Simple de Gestion" (PSG) [Simplified Forest Management Plan], to be validated by the Regional Centres for Forestry Property (CRPFs). This document is described in the Forestry Code and integrated into the Sustainable Management Policy of French Forests. The number of PSGs has increased since 2010 because the law no longer limits their relevance to forests exceeding 25 ha in

one piece. They are compulsory if the forest owner of more the 10 ha wants to get a financial subsidy. PSGs can also be created on a voluntary basis for plots between 10 and 25 ha or if several owners join their forest plots to create a PSG (collective PSG). PSGs must be in compliance with the legal code concerning forest and the Regional Woodland Management Schemes (SRGSs) set up by the CRPFs to define the woodland management practices adapted to each region. Each PSG describes the stands and the annual program of timber cutting or work to be done by plot or subplot. Wild game management and legal environment regulations are also included in the PSG. This document provides an overview of the past management and an analysis of economic, environmental and social challenges.

Small-scale forest owners can either subscribe to a Code of Good Forestry Practices (CBPS), which makes forest management easier and permits them to receive subsidies from the State, or contract a Forest Management Standard Regulation (RTG). The RTG document describes forestry measures to be applied, advisable rotation and species to be used, and the major environmental issues that should be considered.

Table 8: Different types of forest management plans for private forest in France

Name of the FMP	PSG : Simplified management plan (Plan simple de gestion)	CBPS: Guideline for Best management practices (Code de bonnes pratiques)	RTG Forest Management standard regulation (Règlement type de gestion)
Degree of legacy	Compulsory for >+ 25 ha	Voluntary (0-25 ha)	Voluntary (0-25 ha)
Duration	10-20 years	10 years	10 years
Redactor	Forest owner	Forest Stakeholder representatives	Forest cooperative or certified expert
Controller	Centre for private forestry property	Centre for private forestry property	Forest cooperative
Where and how the FMP is elaborated	In the forest owner property with the facultative help of an expert	In a deliberative arena with the forestry stakeholders	Between the forest cooperative and the State forest services

At present, 3.4 million ha and 32 000 properties are covered by PSGs. In 2011, 18 759 owners have subscribed to a CBPS which corresponds to 189 827 ha. 2023 RTGs covering 29 645 ha have been approved. If one compares these figures with the 12.4 million ha of private forest, that means that one third of the private forest has a forest management document (and 82% of the surface where the management plan is compulsory). This percentage increases over the year (in particular RTG and CPBS).

Forest owners in France are not compensated for restrictions in harvesting imposed by the state.

If PSG is primarily an individual forest management guide for the forest owners, some collective instruments have been set up to promote collective actions and in particular to increase wood mobilization. Between 2000 and 2010, 307 Plans de développement de massif (PDM) [Forest development plans] have been implemented at local scale. 2.5 million ha were concerned by these specific collective management tools which aim:

- To concentrate and coordinate private forest advisors' actions on small-scale forestry;
- To avoid the splitting of forest properties and to facilitate the grouping of forest plots;
- To realize collective equipment (forest roads, wood storage places, etc.);
- To improve forest management by trainings.

6.3. Policy instruments specifically addressing different ownership categories

Neither policy instruments nor organisational concepts that specifically address different ownership categories exist in France. However different levels of advisory systems and organizations are implemented to educate private forest owners on forest management basis.

- At a regional level, every regional centre for private ownership (CRPF) has to propose training sessions to all voluntary private forest owners. The most fundamental and structured education programmes are called FOGEFOR. FOGEFOR are continuous training sessions in forest management and have been created in the mid 1980s' in order to learn forestry to forest owners and in particular "very new forest owners" (basic level) or to improve their knowledge on basic principles. More than one thousand forest owners assist to these training per year (see fig. 1). This extension programme is adapted for each region but some basic "courses / knowledge" are provided: tree ecology and pest, silviculture, Forest management planning and legal duty (tax), wood marketing. Whereas Fogefor are partially publically financed (EU and French State), each trainee have to pay with a minimal amount of fees to balance the cost of these continuing education programmes.
- At a local level, CETEF, GPF, GDF, are others para-public organizations generally under the supervision of the CRPF that provides free advices to private forest owners. Thanks to their proximity, 1000 to 3000 private forest owners are contacted per year by these organizations in each 22 French regions; 22 000 private forest owners are contacted by the CRPFs per year (CNPF, 2012);
- Forest cooperatives are other important sources of advices. 120 000 private forest owners (representing 2 million ha) are member of French cooperatives. Most of them get advices from the local cooperative consultant (not necessarily every year but for the most important silvicultural operations);
- Forestry experts: there are 170 professional Forestry experts in France. This title is a professional mandate strictly regulated by the law and by a professional structure, (the CNEFAF). Forestry experts managed 800 000 ha in France and mainly large-scale properties. Private forest owners pay for their advices.

To educate private forest owners to forest management, FOGEFOR training sessions are organised by the regional centres for private ownership (CRPF) according to different level (from basic notions to professionalization), at a regional scale, one day per month during one year. Since 2006, more and more forest owners are searching for mid or high level of education. Whereas former trainees still wish to improve their knowledge by attending upper level courses, the demand for basic/initiation courses, specifically addressed to "new" forest owners, has been stabilizing and even decreasing for the last 6 years (CNPF, 2012). Some hypotheses should be explored, e.g. if there is only a transfer of the new forest owners' demands towards mid or high level session, or a real disinterest of new forest owners to forestry education (a hypothesis could be a total delegation of the forest management to experts and forest companies). In 2006, the national centre for private forestry carried out a survey (n=111) to figure out the profiles of the forest owners who came for the first time to the "basic" or "initiation" courses (CNPF, 2006). In the idea of the designer of the questionnaire, these forest owners should have been "beginners". However "beginners" did not mean systematically "new forest owners" since 14% of the sample was not forest owners at all, and only 26% had been forest owners since less than 10 years. 60% of the trainees had been forest owners for at least 10 years. 81% of the trainees came in order to learn to manage their forest, 37% in order to realise a specific forestry operations (afforestation, thinning, cutting), and 14% to have forest management plan for the next 15-20 years.

The National Forest Extension Services (CNPF and CRPF) partly in collaboration with the national forest owners associations has initiated some specific tools (such as Resofop, already mentioned) to better understand the profiles, motivations, attitudes and decision processes of the forest owners. This observing system also gains to be used to better understand local and regional expectations in terms of continuing education and to develop more specific services for owners.

A national actions plan for e-information and pedagogical tools is in progress – that took in consideration those new forest owners – the aim is both to better identify and know them, and to better meet their expectations. In the Region Limousin, a programme is starting aiming to define specifications for the development and use of IT tools and software for mobile phones, and especially for the young private forest owners.

It has to be noticed that historically, what has been (and is still) a positive factor for the development of private forests is the emergence of a "half-professional" elite of forest owners, who are the main representatives in the associations – and the main interlocutors of the extension services. Some of them are even very close to the policy decision makers. However, new forest owners do not automatically recognize them as their spokesman. New forest owners expectations are also focused on new forestry models (such as valuation of amenities, biodiversity conservation, outdoor activities, wood energy, etc) and not mainly on timber production as supported by the older representatives of the traditional private forest ownership. In that sense, the integration of the new forest owners, who do not necessarily share the same objectives, motivations, neither the same culture (and who are spread in a very wide range of profiles) is not necessarily ensured.

Many legal tools already exist in France to stimulate the association of the small forest owners. The two main forms of aggregation are the forest community and trade union associations.

- The forest group (groupement forestier or GF), created for the preservation of the family heritage, is a corporation owning the fund. It is well suited to the acts in forest management but is now abandoned because of the constraints and difficulties arising in the succession of generations. This formula is often unwelcome for grouping the small independent owners who remain attached to their ownership borders.
- The unions, which avoid this obstacle because each member keeps the ownership of his plot.
- The Authorized Unions (ASA) were the preferred instrument for the grouped reforestation of smallholdings funded by the National Forestry Fund. The presence of a public accountant facilitates the management and the payment of the public funds, but the rules of the public accounting handicap forest management.
- Free Association (ASL) is a highly recognised formula for its flexibility of management. Many ASL are now eligible for all forms of public support for forestry investments (grants for forest roads, fire protection equipments). They also require that a solution should be found to the problem of value-added tax (VAT) on grants received by this organisation. If no solution to this issue is found, the fate of the formula will be compromised, as owners who gather are penalized because they have to increase their self-funding.

6.4. Factors affecting innovation in policies

Top-down policy formulation, lack of association, lack of political lobby, information provided at a lower intensity than needed can be considered as barriers for French forestry. An article by Buttoud (2011) underlined some main features of the French process of elaboration of public policies in the forest sector (example of the national forests strategy), that are still present, even if time changes appear:

- The central role of the State and public experts with the leading role of the senior civil servants, educated in normative techniques for public management (acting as advisers to decision makers, and are sometimes the main forces promoting decisions);
- A conventional top-down normative approach (many "Reports", after consulting both experts and lobbyists – individual contacts, with no common transparent discussions among stake-holders; no iterative and participatory process; participation restricted to a consultation with selected stakeholders); the French way of discussing policy issues is basically

constituted in a bilateral manner involving discussion between individuals. The initiative always comes from the public body, which has the authority to collect ideas, views, positions and criticisms expressed by the stakeholders. No real common forum exists where the various stakeholders may meet and negotiate a final compromise;

- The law is still the prominent instrument to guide public decision (the only formal expected result, and normative framework is considered to be the guide, in any kind of public policy; added to that, for the high level of centralization, any change introduced in the public arena has to be translated in legislative norms).
- For topics other than timber production (promotion of environmental services, recreational activities and protection of forests), less procedures exist for involving the stakeholders and the public. However the Forest law introduced in 2001 an innovative tool to stimulate communicative approach with other groups of actors. This tool labelled the “Charte forestière de territoire (CFT)” [Forest Charter for territory] was originally conceived as an arena of debate, inviting all social actors to discuss about the role of forests at a local scale. But asymmetry of knowledge and power often lead to discussions between traditional forest stakeholders, rather than renewing forest projects.

This system does not facilitate the cooperation and the negotiation of compromise between the stakeholders of the forest sector (and with the other partners), that are more often driven into conflicting strategies, and especially in a context of economical tensions and budget restrictions.

CASE STUDY 7: THE PROFITABILITY OF THE PUBLIC INVESTMENT IN THE PRIVATE FOREST SECTOR IN REGION LIMOUSIN

This case study is developed in an article by Thierry du Peloux (2013) It describes the positive impact of public policy for supporting the private forests management. The Limousin forest is mainly in private ownership (for 95% of its surface). The change in the forest sector of this region from 1968 to 2008 particularly well illustrates the result of the improvements implemented in the private forests with the support of the National Forestry Fund (FFN) from 1947 to 1997.

Following the results of the National Forest Inventory in 2007, the area of coniferous forests of Limousin is 192,300 ha, of which the softwood plantations established with the help of FFN from 1947 to 1997 are of 160,000 ha. While the indigenous species were mainly Scots pine, the plantations of fir, spruce, Douglas fir and larch, reached 150,000 ha in 2007, mainly resulting from the assisted reforestation years from 1947-1997. The article demonstrates the profitability for the government and the broader community to invest in private forests (6.5 million € per year of additional VAT, 25.4 M € / year in additional taxes and social contributions, a 5-fold increase of the cadastral income, 750 new jobs in rural areas, sustainable and that cannot be relocated.

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8. Annexes

8.1. Forest ownership structure – detailed tables

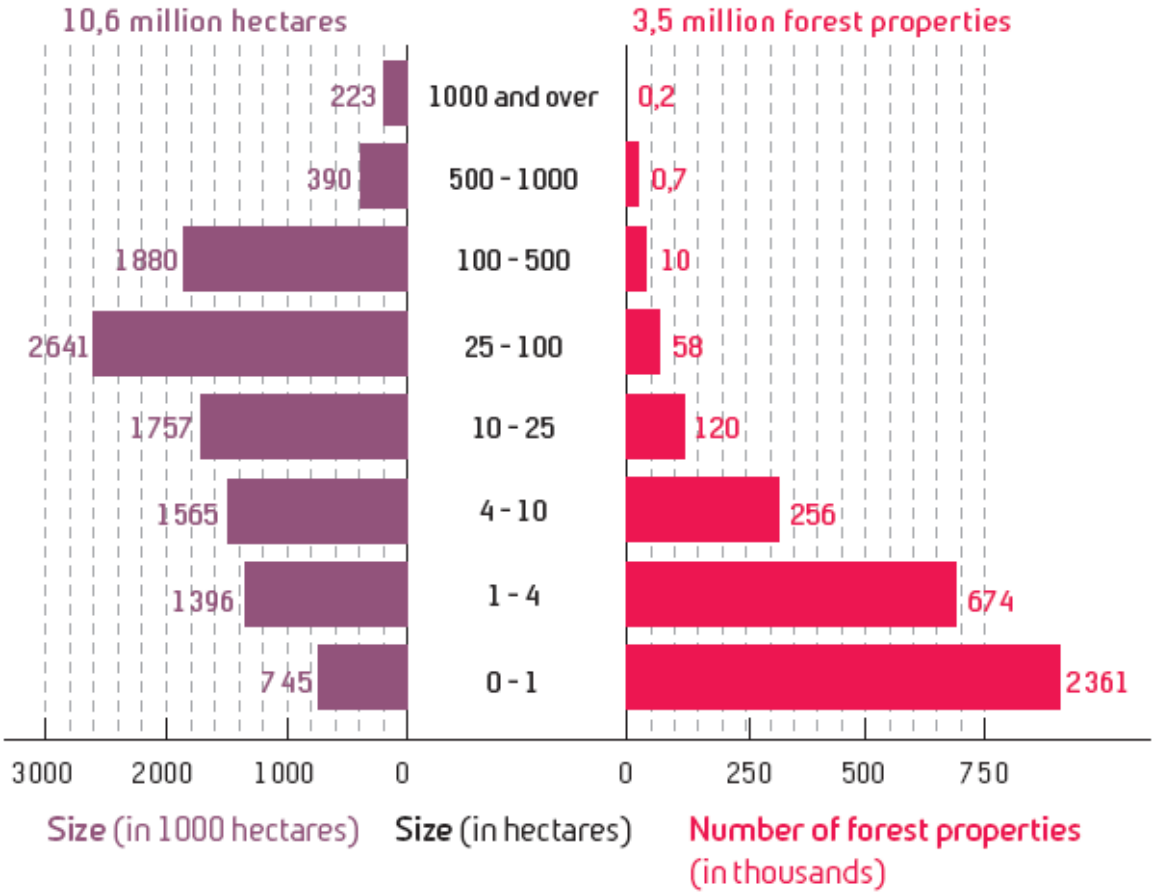

Figure 9: Privately-owned forests by size (source CNPF, 2005)

Table 9: Forest owners' expectations towards forest management

Forest surface	**Total**		**1-4 ha**		**4-10 ha**		**10-25 ha**		**25-100 ha**		**+100 ha**	
Private Forest owners' expectations and objectives	% of PFO	% of surface	% of PFO	% of surface	% of PFO	% of surface	% of PFO	% of surface	% of PFO	% of surface	% of PFO	% of surface
No expectations	8	4	10	9	7	7	4	4	4	4	1.4	1
Emotional attachment	66	60	67	66	65	64	65	65	64	63	56	50
Creation of a family patrimony/asset	35	44	32	33	35	37	45	46	46	46	47	50
Tax advantages	1	4	0	0	1	1	2	2	3	3	9.6	10
Hunting area	11	15	9	9	13	13	16	16	16	16	18	17
Timber production	34	39	32	33	39	39	32	32	33	34	44	49
Biodiversity conservation	11	11	11	11	8	7	12	13	14	136	10	9
Others NWFP	3	2	4	4	2	2	4	4	1	1	0.5	1
Others expectations	6	7	6	5	8	7	4	4	5	5	7.1	10
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source MAAF, 2014

Table 10: Forest advisory networks and tools

Use free advices from a CRPF* forester	**Total**	**1-4 ha**	**4-10 ha**	**10-25 ha**	**25-100 ha**	**+100 ha**
Use free advices from other forester	6	2	9	10	22	41
Attend to FOGEFOR training session	2	1	4	5	5	6
Attend to other continuing education session	1	1	12	8	16	
Rarely read technical review	4	2	3	7	12	22
Often read technical review	19	16	20	28	23	23
Rarely go to forest information meetings	13	7	15	26	44	65
Often go to forest information meetings	10	6	12	19	22	29
Total	10	6	12	19	22	29
Use free advices from a CRPF* forester	**100**	**100**	**100**	**100**	**100**	**100**

*CRPF=regional centre for private ownership

Source MAAF, 2014

Table 11: Way of acquiring the first forest estate by nature of legal entity

Legal entity	**Total**		**Individual**		**Joint estate**		**Indivisible property and Co-ownership**		**Other legal entities**	
	Number of PFO (by 1000)	Surface in 1000 ha	Number of PFO (by 1000)	Surface in 1000 ha	Number of PFO (by 1000)	Surface in 1000 ha	Number of PFO (by 1000)	Surface in 1000 ha	Number of PFO (by 1000)	Surface in 1000 ha
Purchase	36	40	32	34	66	65	20	18	59	55
Donation / Settlement	19	18	21	22	10	13	12	20	11	10
Inheritance	44	38	46	44	23	21	66	62	19	19
Planting	1	1							1	1
Land exchange	0	0							0	0
Others	0	0							8	13
Total	**1 128**	**9 630**	**828**	**5 390**	**116**	**680**	**111**	**1 116**	**73**	**243**

Source MAAF, 2014

GERMANY

Marc Koch, Carolin Maier

1. Introduction

Germany's forests have traditionally been managed by their owners following the principle of sustainability which was officially "invented" in 1713 by Hans Carl von Carlowitz in Saxony. The biggest challenge today is to adapt the forest stands to the effects of climate change and maintain proper management of stands owned by new types of owners that have been emerging.

State forests are typically owned by the federal states. State owned companies or forest administrations are entrusted with the management of these areas. The second biggest share of public forests is owned by **local authorities**, namely towns and villages. The **public forests** are usually managed by forest professionals following management plans which cover a period of 10 to 20 years. A forest inventory assessment provides the basis for harvesting, thinning and juvenation measures. Monitoring systems, ownership responsibility and high training standards of forest professionals make sure that forests stay in good condition. All in all the publicly owned forests are managed according to societal demands. In the recent past, e. g. according to CBD, public forests were partially taken out of production to provide greater areas for nature conservation (National Parks with high proportion of forests in the states of Thuringia, Rhineland-Palatine, Baden-Wuerttemberg and Hessen). In trying to meet stakeholders' and the public's demand for information, the management of public forests has become more transparent. Figures about timber production, nature protection measures and efforts to improve recreational opportunities in the forest are provided in annual reports or online in a much more detailed manner than 20 years ago. It can be concluded that public forests are managed sustainably and on behalf of the citizens. The nationwide inventory (Bundeswaldinventur - BWI) confirms this impression showing a moderate increase of the standing stock over the last period and the increase of mixed uneven aged stands, dead wood and habitat trees.

Much of the research efforts in Germany in the last 15 to 20 years have been focused on the private forest sector and in particular on small scale owners´ aspects. Private forest ownership (48 % in Germany) is much more diverse than the public forests. Given the numerous owners (almost 2 million private owners) and their respective diverse goals we find a great variety of management philosophies including no management at all. The forest management requirements concerning private forests, which are defined by the Forest Act, are not as demanding as those related to public forests. Big forest holdings (> 20 hectares) thus typically follow an economic rational. Timber production is here viewed as the most valuable outcome of forest management. However, the vast majority of private forest owners (e.g. Bavaria 98.8 %) hold forest properties smaller than 20 hectares. Table 1 shows the distribution by forest holding size. More than 57 % of the privately owned forest holdings are smaller than 20 hectares.

Table 1: Distribution of privately owned forests in Germany by holding size (Source: BWI)

Ownership-Size-Classes	Private Forest area in ha
from 0 to 20 ha	2.759.825
from 20 to 50 ha	391.322
from 50 to 100 ha	272.647
from 100 to 200 ha	241.872
from 200 to 500 ha	327.211
from 500 to 1000 ha	256.150
over 1000 ha	574.696
Aggregate	4.823.722

Small scale forest holdings present a challenge with respect to meeting current public policy goals. Among the issues are:

- Undesirable subdivision of forest land (fragmentation), mainly caused by property distribution among multiple new owners.
- Increasing number of private forest owners.

Apart from restitution of previously state-managed forests after the reunification of West and East Germany, the number of forest owners listed in the land register is increasing, mainly forced by unprepared successions.

- Structural deficits often prevent economically viable and cost-competitive management.

Unclear boarders of the property, lack of access-roads, fragmented parcels, several co-owners, small amount of timber per measure etc. result in unreasonable transaction costs for owners as well as potential trade partners.

- Increasing share of forest owners following an “urban” life style.

These owners are characterised by different preferences and motivations with regard to forest ownership compared to traditional (mostly farming) owners. They are not dependant on income generated on their forest and typically do not have a connection to the land use sector such as farming or forestry.

2. Methods

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

This report was compiled based on a literature review and quantitative data. We relied on a combination of academic and grey literature on the subject of private forest ownership, as well as statistical data provided by forest administration and other studies.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners’ motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc The 10 detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which

policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Literature about new forest ownership types has focused on the evolution of ownership change (Schraml, 2003, 2012), the description and characterization of new forest owners (Bittner & Härdter, 2003; Härdter, 2003; Schlecht & Westermayer, 2010; Schraml, 2003), the challenges this new clientele creates for counselling and outreach efforts by the forestry administration, and how to overcome these (Bittner, 2003; Kraft, Beck, & Suda, 2003; Ziegenspeck, Härdter, & Schraml, 2004). A smaller amount of literature is dedicated specifically to new private forest owners resulting from restitution and privatization efforts in East Germany (Froese & v. Oldershausen, 2010; Spinner, 2003). A recently initiated project is looking into a fairly new field of research: forest ownership by environmental/conservation organization and foundations (Jäkel, 2013).

Research is primarily carried out in the four forestry faculties and the research institutes of the state forest administrations. Some applied studies were recently carried by consultants. Funding for these studies is most often provided by the ministries in charge of forest policy in the respective states, the Federal Ministry for Food and Agriculture, as well as the Federal Ministry for Education and Research. In some cases, funding is provided by the German Environmental Foundation (Deutsche Bundesstiftung Umwelt - DBU) or the German Research Foundation (Deutsche Forschungsgemeinschaft - DFG).

The methods employed range from quantitative surveys to qualitative interviews and case studies. Oftentimes a combination of different methods is applied. Most of the studies are regional scope, focusing mainly on Southern Germany, for example on parts of Bavaria or the Black Forest area in Baden Württemberg.

3.2. New forest ownership types

Private forest ownership change in Germany has been shaped by large-scale, long-term socio-economic developments as well as the reunification and subsequent privatization of previously state-owned forest land in the country's eastern states (Schraml & Volz, 2003). Both have resulted in new private forest owner types and more heterogeneous small scale private forest ownership overall.[12]

Until about the 1950s, small scale private forests were mostly owned by farmers who managed their forests primarily for wood production. Yet the link between agricultural profession and forest ownership has to a large extent disappeared as a result of modernization and social change. Two causal drivers are typically distinguished: one, the development of a service-based economy and associated changes in the agricultural sector, including overall reduction in the number of farms and agricultural employment. While agricultural land tends to be sold or rented to other farmers in the process, forest land often remains in family ownership. As a consequence, a much of today's private forest owners are not associated with agriculture by profession or ownership of agricultural land. The second driver of change is systemic-sociological in nature. It refers to the increasing complexity of social and economic systems, necessitating higher levels of education and leading to questioning of traditional norms and values. As a result of both of these changes, non-agricultural private forest owners often lack the technical expertise and equipment, as well as the time and physical proximity to manage their land, as it is no longer part of their occupation. Instead, forest management has become a leisure activity to this relatively new type of private forest owner, often associated with non-monetary management goals, such as conservation or recreation (Härdter, 2003; Volz & Bieling, 1998).

Unlike in West Germany, where agricultural forest ownership decreased over several decades, private forest ownership in East

[12]Capital investments companies (e.g. timber investment companies, real estate investment trusts) do not play a major role in Germany.

Germany experienced a more abrupt end to agricultural forest ownership under Soviet rule. Following reunification, efforts were made to restitute forest land to the previous owners or their descendants. The resulting new type of forest owner shares many of the characteristics of the new forest owner in West Germany: lack of specific forestry expertise or equipment, great distance between place of residence and forest property, and no monetary expectations or ambitions towards their forest. However, unlike in West Germany, studies report a negative attitude towards their forest among East German new owners of restituted land (Spinner, 2003), whereas research found positive attitude in West Germany, often associated with pride (Ziegenspeck et al., 2004). In addition to restitution, forest land was privatized - often in larger parcels of up to 1000 hectares - starting in the mid-1990s (Spinner, 2003).

3.2.1. Types of private forest owners and their motives

Until the early to mid-1990s the dichotomous distinction between farming and non-farming forest owners was deemed sufficient. Yet more and more, it became apparent that forest counselling and advising programs targeted at farming forest owners were reaching few of the non-farming forest owners. Thus, a more refined characterization and differentiation among non-farming forest owners had become necessary (Schlecht & Westermayer, 2010). A good amount of literature has since been dedicated to describing and categorizing the new forest owners that have emerged over the past few decades. The terms used to refer to this group often reflected the “missing” features of new forest owners in comparison to the traditional farming forest owner. Among the terms used were non-farming forest owners, non-resident or absentee owners, non-industrial private owner etc. Yet no single typology has been established in the policy field or management practice (Schraml, 2012). The most commonly used approach to characterize the ‘new’ clientele is that of ‘urban forest owners’ (Schlecht & Westermayer, 2010). While still viewed as the counterpart to farming forest owners, the focus is on the forest owner’s lifestyle and the features they do have. The term ‘urban’ refers to the ongoing social process of urbanisation, which has changed people’s lifestyles in terms of occupation, place and type of residence, norms and values, as well as the relationship to forests. Individuals can be placed on a continuum ranging from ‘relatively traditional’ to ‘very urban’, reflecting the extent to which urbanization and modernization are reflected their lifestyles. Thus, geographic location is not the deciding factor in where on the spectrum an individual falls (Schraml & Härdter, 2002).

Generally speaking, individuals placed on the ‘rather traditional’ or ‘rather urban’ end of the spectrum differ in terms of age, household income, occupation and professional standing. Forest owners on the ‘traditional’ end of the spectrum tend to be retirees, have low to medium income, engage in forest management activities themselves, and have both monetary and non-monetary interests their forest property. Yet the economic interest is often limited to avoiding expenses associated with the ownership of the forest, rather than making a profit. Non-farming forest owners with a high level of urbanization tend to be members of the active workforce with relatively high income, limited leisure time in which they pursue many different activities. This group has neither the financial need, nor the time to dedicate to active forest management. As a result, they are much more willing to outsource management of their forest to third party providers. As of early 2000, about 60% of non-farming forest owners can be considered very urban, and about 40% traditional (Bittner & Härdter, 2003; Härdter, 2003; Schraml, 2003).

An overview on different typologies of small-scale private forest owners is provided by Schaffner (2001), showing the diversity of approaches to describe this group of forest owners, reflecting both structural characteristics, behavioral patterns, and values.

Overall, studies have found evidence that non-farming forest owners generally do take interest in their forest property. However, with increasing levels of urbanization, their interests are less production oriented and instead more consumption oriented (recreation, conservation, pride) and also less likely to engage in forest management

activities themselves (Bittner & Härdter, 2003).

3.3. Forest management approaches

One of the challenges at the local level resulting from the more heterogeneous private forest ownership is the inaccessibility of part of this group to the forest administration. Traditional outreach and counseling programs implemented by forest administrations often do not reach all non-farming forest owners. Bittner and Härdter (2003) suggest that forest administration should try to consider the non-farming forest owners preferences and limitations, for example in terms of location and timing of forest administration's events. The authors suggest that such efforts will not only benefit the more or less urban forest owner, but also the forest administration. As non-farming forest owners are in many ways similar, and connected to other parts of society than farming forest owners, building relationships with this group might prove valuable in creating a link between society and forest administrations at large. Likewise, many of the non-farming forest owners are interested to manage their property for conservation purposes. By supporting them the forest administration can come closer to reaching policy goals related to forest conservation. Finally, providing the kind of service that is likely to reach non-farming forest owners may also prove a profitable endeavor. A study looking at the same issue was conducted by Kraft et al. (2003). Similar to Bittner and Härdter (2003), the authors suggest trying to find new methods for communicating with and engaging the new clientele of non-farming forest owners, for example by using new technology and media outlets, as well as adjusting the timing of events to create a stronger awareness, in particular among the more urban private forest owners.

In particular non-farming forest owners on the 'very urban' end of the spectrum often do not engage in forest management activities themselves, but instead pay third-party providers or the forest administration to do the work. In the state of Baden-Württemberg, one in four very urban forest owners hired the forest administration to manage their forest (Bittner, 2003). Another alternatively, private forest owners may choose to join a forest owner association, which also provide a wide range of forest management services. The details vary between regions as the states have chosen different extension systems, privately or public organized. In general forest policy, consulting services by the administrations and financial aid programs are decided upon and carried out at the state level.

CASE STUDY 1: FOREST OWNER ASSOCIATIONS IN BAVARIA

Bavaria has been supporting forest owner associations for decades. Their professionalization was pushed by regulations for financial support, so that they got bigger by the time (by merging). In addition, they employed more and more qualified personnel. Those associations offer every kind of service a forest owner needs to manage his forest. At the same time, the level of service provided by the forest administration was cut, leaving a gap for forest owners associations to fill. Those associations are underlying market rules so they have to be profitable. Currently, forest owner associations in Bavaria manage to be profitable in combination with subsidies given by the state (from 3 to 5 million € per year, when certain efficiency criteria are fulfilled). The associations offer their services to members and every forest owner that wants to be a member must be included. It seems as if equilibrium has been found, between the search of associations for new members on one hand and the demand of forest owners to be a paying member of an association on the other hand, which is essentially determined by the transaction costs. Another hurdle might be that most of the association members are traditional forest owners and the ways of communication are as traditional as the associations themselves. Small and "non-traditional owners" might thus not be reached by those associations. Those owners who are drifting away from being a forest owner may only have the choice to sell their parcels, give them up in a land consolidation measure, or sign a full-service contract with a forest association, which can receive subsidies from the forest administration every year per contract (up to 150 €) depending on the property size and the management measures appointed.

3.4. Policy change / policy instruments

Private forest ownership change in Germany has been shaped by large-scale, long-term socio-economic developments. Apart from active policy intervention following reunification in the form of restitution and privatization efforts regarding previously state-owned forest land in the country's

eastern states (Schraml & Volz, 2003), private forest ownership change has not been the result of active policy intervention. In general, agricultural policy and rural development policies aim to slow down and ease the consequences of the ongoing processes.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

It is important to note that Germany is a federally organized country with significant authority given to the states, in particular in the area of forest policy. It is not possible to provide an exhaustive review of the situation reflecting the specificities of every state, as it would exceed the scope of this report.

4.1.1. National data set

The Federal Forest Act gives a definition of ownerships types. According to paragraph 3 of the Law on Forests for Germany, only three ownership types are distinguished:

1. Forest owned by the country or the states (Line 1 and 2 in the table)
2. Forest owned by public bodies (mostly local authorities like towns or villages)
3. Privately owned forests are those, which are not underlying the two other categories.

The forests in the eastern part of Germany which could not be returned to the former owners or their descendants have been privatized. If certain parcels show unique or unusual environmental qualities they may be given to non-profit conservation foundations free of charge (see also Jäkel 2013).

Table 2: Forest ownership distribution in Germany (2002)

Area in 1000 Hectares	Area covered by trees	Area temp. without trees	Area for tree growth	Area without tree growth but serving forestry	Total forest area	%
Federal forest land	383,30	6,10	389,40	19,90	409,30	3,7
State owned forest land	3132,30	15,90	3148,20	128,40	3276,60	29,6
Forest owned by public bodies (e.g. Town forest)	2073,10	13,80	2086,90	73,30	2160,20	19,5
Privately owned forest land	4676,00	29,30	4705,30	118,40	4823,70	43,6
Forest land provided for restitution	389,50	1,40	390,90	15,00	405,90	3,7
Aggregate	**10654,2**	**66,5**	**10720,7**	**355**	**11075,7**	**100,0**

Source: BMELV (2014) http://berichte.bmelv-statistik.de/SJT-7010200-2002.pdf latest check :25.03.2014

4.1.2. Critical comparison with national data in FRA reporting

Table 3: Forest area according to FRA categories in 2005 and 2014

FRA 2010 Categories	Forest area (1000 hectares)	
	2005	2014
Public ownership	5846	5933
Private ownership	4824	5166
...of which owned by individuals	n.a.	n.a.
...of which owned by private business entities and institutions	n.a.	n.a.
...of which owned by local communities	0	
...of which owned by indigenous / tribal communities	0	
Other types of ownership	406	320
TOTAL	**11076**	**11419**

Between the figures for 2005 (delivered by the Bundeswaldinventur 2002) and 2014 there has been a follow-up of the nationwide forest inventory (Bundeswaldinventur 2012) which sums up the forest area from the random samples. This method contains statistical deviations. That means that the figures cannot be compared without correction. More detailed analyzes will follow. The term “other types of ownership” includes those forests which will be privatised due to restitution of state owned forests in the former GDR. Currently there are still approximately 320,000 hectares in this category which means that in the meantime 85.000 ha have been privatized.

4.2. Unclear or disputed forest ownership

Areas with unclear ownership are mostly limited to land still reserved for restitution (see table 3: 320.000 Hectares). As long the restitution process is ongoing these forests are held in trust. The process of restitution is still going on and it will take approximately another 10 to 20 years till it is finished. It can be assumed that these forests will eventually be privately owned forestland.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

The buying or selling of forest property is regulated by a federal act called “Grundstuecksverkehrsgesetz” which translates roughly to like “Rules for selling or buying a piece of land”. Based on a law initially passed in 1918, the current version was passed in 1961 and last amended in 2008. Its main goals are: 1) to secure the continued existence of agricultural and forestry holdings businesses by protection against sell-offs of their land; 2) the protection of nature and the environment by preserving and strengthening agricultural and forestry structures; 3) to guarantee food security for the population.

For these reasons, the sale of agricultural and forestry holdings or parts of it, is legal only with an administrative permit following a special approval process. Obtaining such a permit is required for any sale of parcels bigger than one hectare.

But a lot of parcels are not part of an agricultural or forestry holding any more. So those parcels can be sold to other private persons or institutions without such a permit.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no inheritance rules that apply specifically to forest ownership. However, the above described paragraph may apply, if more than one descendant wants to take over ownership of a farm or forest holding, and no agreement can be found, a court will make the decision for them. It may decide that the enterprise has to remain whole and who will be the owner, in which case he or she has to pay money to compensate the other/s.

In addition, there are several regional schemes, which should be mentioned as a special feature in this context, such as the

"Closed Farms". Most of these farms have been established in the late Middle Ages. And due to the federal structure of Germany, there are still valid regulations at the country or regional level[13].

Namely these "Closed Farms" which only can be inherited by one successor, can be found in the southern black forest (Baden-Württemberg), in parts of Westfalia (Northrhine-Westfalia), in the Rhön (Hessen) and some other regions[14]. These regulations cover farmland as well as forestland. The proportion of the forest is higher in mountain regions (southern and western parts of Germany) than in lowland areas (northern and north-eastern parts).

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

There are still about 320.000 Hectares[15] of public land to be privatized in the restitution process after Germany's reunification.

Other changes between public and private ownership are marginal. Where it occurs, it comes from:

- open market selling e. g. when towns and villages are buying parcels from owners with no interest in forest land anymore or died persons with no (interested) successors. These authorities are likely to buy when the parcels which are offered are appropriate to round the forests already owned or no private persons like to purchase the parcels. Some municipalities are running internet based platforms where forest land can be offered. Local buyers (especially with neighbouring parcels) will be provided if they are willing to buy so that holdings can get bigger.
- In regions where municipalities are under financial pressure it might happen, that forests (or parts of it) are sold. In those cases usually private buyers purchase these parcels. Normally town forests are serving more issues than timber production especially water supply, noise reduction or local recreation. In these cases selling the forests is usually no option.
- State owned forests usually are not to be sold and the other way round there is no policy that state forest enterprises or entrusted administrations are scanning the forest land market (which is not very transparent) to buy additional hectares. There are only few cases und these are very individual.

4.4.2. Changes within public ownership categories

In different federal states of Germany (e.g. Lower Saxony, Saxony and Bavaria) state forest enterprises have been founded. Only in the case of lower Saxony these enterprise "owns" the forests legally. If the company no longer exists, the forests are automatically owned again by the state of Lower Saxony.

Otherwise there are only cases with no measurable effect, for example caused by exchanges of forest parcels due to infrastructural projects.

4.4.3. Changes within private forest ownership

Currently there is no trend that can be observed.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private

[13] E. G. Badisches Gesetz, die geschlossenen Hofgüter betreffend (BadHofGG). http://www.ruby-erbrecht.de/erbrecht-abc/b/BadHofGGGesetzestext.php?dir_no=669 (latest check: 22.Sept. 2014)

[14] Source: http://de.wikipedia.org/wiki/Anerbenrecht (latest check: 22. Sept. 2014)

[15] Source: www.bund.de/DE/Behoerden/B/BVVG/BVVG-Bodenverwertungs-und-verwaltungs-GmbH.html (latest check: 22. Sept. 2014)

forms of management, e.g. state owned company)

- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	2 in former East Germany, 0 in western States
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	2
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

4.5. Gender issues in relation to forest ownership

The German land surface is divided into parcels. All owners of land parcels are recorded in the Land Register. Forest ownership in Germany can be analyzed by those organizations that have access to these data. A preferable way to handle the collected information would be to have the state forest administrations (Bundesländer) analyze the data and report the results to the federal government.

With few uncertainties, it is possible to determine the type of ownership (single, female and male ownership, co-ownership with of both genders, cooperation of heirs, etc.). For Bavaria[16](south-east in Germany) the state forest institute evaluated the land register data from 2009. Out of 456.000 identified property relations 23% were “single female ownership”, about 47% were in “single male ownership”. 28% of the ownerships were “joint ownership of both genders”. The rest is owned by institutions. The share of forest owned by women in “single female ownership” is about 8% of the total forest area in the state of Bavaria. Compared to the forest owned by private persons the share of “single female ownership” is about 16% or 200.000 hectares. For other states in Germany (Thuringia, Baden-Wuerttemberg and North-Rhine-Westfalia) the proportion of women in forest ownership is estimated to be around 20 % (2008). Forecasts predict that the proportion of women will continue to rise.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic (“Characterized or motivated by philanthropy; benevolent; humane” OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to

[16] Figures are not published, but available at the Bavarian state forest institute: Marc.Koch@lwf.bayern.de
Enzenbach, B.; Krause, E.; Kirchner, S. (2008): Wald ist nicht nur Männersache. LWF aktuell 62, S. 20-21.

dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts	X		
• NGO with environmental or social objectives	X		
• Self-organised local community groups		X	
• Co-operatives/forest owner associations	X		
• Social enterprises	X		
• Recognized charitable status for land-owners	X		
• Other forms of charitable ownerships, namely:			X

4.6.1. Forests owned by foundations or trusts

The German Environmental Foundation (Deutsche Bundesstiftung Umwelt – DBU), is one of the largest conservation foundations whose board is made up of government-appointed members. It owns about 60.000 hectares of land that have been transferred from public ownership to this foundation to care for the special environmental qualities in these areas. Much of its property is located in East Germany and was given to the Foundation in the privatization process of previously state owned land following reunification. Another source of are pieces of land previously used by the military. Similarly other forest-owning foundations that are associated with the conservation organization also acquire and manage forest land for conservation purposes. One of the largest is the NABU foundation which is associated with NABU (nature conservation organization) owns about 200.000 hectares of land, however not all of it is necessarily forested. (http://naturerbe.nabu.de/stiftung/wirueberuns). See also 4.6.2 of this report.

4.6.2. Forests owned by NGO with environmental or social objectives

The most recent state of this issue is comprehensively shown in the following paper: “German forest ownership in change: environmental foundation as the new “big players”” by Kristin Jäkel (2013). She provides a good overview of the situation: “Research conducted by DBU (German Environmental Foundation) shows that there are over 400 institutions (not only environmental foundations) who own about 391.000 ha of land in general (DBU 2012). In addition to this, there is also a large amount of land in the property of ‘pure’ environmental organizations. Research by the author shows over 40 environmental foundations that own and/or possess forest land.

4.6.3. Forest co-operatives/forest owner associations

The most recent state of this issue is comprehensively shown in Schraml and Selter (2011).

The authors describe two cases where common forest management was established among private small forest owners in the Southern Black Forest in the very south west of Germany and at the transition from low mountain range to the Northwest German Plain. In both case studies a new commons was founded. Individual management rights were transferred to a forest owner association, but the right of selling the property remained with the individual forest owners. No changes were made to the land register. The associations tend their members’ forest properties and make decisions concerning all management activities. Both new commons

grant their members the option to extract fuel wood, and any profit made from the forest is transferred to the proprietors. The forest owners, as members of the cooperative, keep the ownership of their individual properties and take part – to a greater or lesser degree – in governing the cooperative. The legal and the executive heads of the associations are elected democratically. A legal framework regulates the relationship between the cooperative and its members. The authors find this new cooperative helped solve a number of problems the private forest owners faces before the cooperative was founded, such as lacking equipment and expertise to effectively manage their forest. Crucial to the

success of the cooperatives was also the opportunities for participation of a range of stakeholders, including of course forest owners, community stakeholders, forest associations and more in initial meetings. Furthermore, a neutral facilitation of these meetings was listed as an important factor in creating trust in the newly created rules. Another important factors was that the funding was provided by the 'Nature Park Southern Black Forest', an organisation dedicated to regional development and on the other hand by the federal state of North Rhine-Westphalia. As a consequence, the participants were clearly removed from the sway of particular interests that usually comes together with financial support provided by representatives of either industry or nature conservation. It also became clear that separating the general decision-making section from the operational management decision-making section was important for building trust. The former in the form of the association's general membership meeting, resided in the hands of the forest owners and the latter was with state contractors. Those forest owners with no forestry expertise in particular, advocated this separation. They saw the role of the forester as a guarantee for knowledge-based management decisions and, consequently, as a safeguard against the possibility of more proficient association members seeking to use their knowledge to dominate the organisation.

4.6.4. Social enterprises

Yes, there are social enterprises owning forests, such as insurance companies, however these are few and far between and thus do not have great relevance in the bigger picture.

4.6.5. Recognized charitable status for land-owners?

See 4.6.1 and 4.6.2 of this report.

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are crucial for sustainable use of common pool resources.

Common land use has a long tradition in Germany and is practiced on about 2.4% of the forestland. "Due to the agrarian and societal change and as a result of dividing time and again a parcel of land in each case of succession, about two million people in Germany own small pieces of forest land decoupled from agriculture" (Schraml & Selter, 2011, p. 17). Resource use associated with small-parcel forest ownership is not characterized by over-use, but by underutilization in Germany as well as other countries. For example, in many parts of Europe, North America and Japan, there have been unanimous reports of the new, non-material motivations guiding the actions of forest owners, and of their failure to avail of the timber increment. Schraml and Selter (2011) accompanied two initiatives with the aim to establish common forest management over several years, one located in the Southern Black forest and one in the Northwest Plains. Both initiatives succeeded. *See also (Prömse, Amann, Selter, & Schraml, 2008; Schlueter & Schraml, 2006).*

EXAMPLES OF BACHELOR THESES

Several bachelor theses have been written analysing CPR´s in Bavaria, North-Rhine-Westfalia and Baden-Wuerttemberg using the "Principles" by E. Ostrom.
Further information can be obtained from Marc Koch (Marc.Koch@lwf.bayern.de) and Ulrich Schraml (Ulrich.Schraml@forst.bwl.de)

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Germany

Forest owners typically manage their land independently and on their own. However, there is a clear trend in recent decades toward increasing use of contracting service providers for forest implementing forest treatments. This is true for both larger and smaller scale forest property. Small scale private forest owners either work directly with contractors themselves, or work with forest owners associations or the state forest administration to organize and hire third party contractors.

Licenses tend to be short term what means usually only for a special measure like thinning a special stand or a bunch of similar but scattered stands in one year, in some cases longer term when the contract partner is a forest owner association (e. g. 5 year management contracts).

The number of third party contracts has generally increased over the past 3 decades, however these developments can differ between states and regional ownership conditions (see also footnote 13).

New forest ownership types typically organize forest management activities through forest owner associations, only seldom are 'new commons' initiated and established (see also section 4.6.3 in this report).

5.2. New or innovative forest management approaches relevant for new forest owner types

There are not new techniques to report that relate to the new forest owner types. There are changes in terms of the organization of forest management – see section about Forest owner associations in this report.

We are planning to provide more detail on new initiatives in Bavaria that may be relevant in the context of new forest owner types even though they are not targeting this group specifically.

5.3. Main opportunities for innovative forest management

Schraml and Selter (2011) have suggested the expansion of new forest ownership patterns may provide the foundation for the establishment of "new commons" (see section about new commons in this report).

Bittner and Härdter (2003) have suggested forest administrations should view the needs of new forest owners for management service providers as a potentially profitable service gap.

Both of these options provide private forest owners with access to expertise and equipment they do not have, but that is necessary in order to manage their property.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

Private forest ownership change in Germany has been shaped by large-scale, long-term socio-economic developments. Apart from active policy intervention following reunification in the form of restitution and privatization efforts regarding previously state-owned forest land in the country's eastern states (Schraml & Volz, 2003), private forest ownership change has not been the result of active policy intervention. Generally speaking, agricultural and rural development policies aim to slow down these ongoing socio-economic processes.

The restitution process following reunification drastically changed forest ownership structure in the states that used to make up the German Democratic Republic. Initiated in 1995, between 38% and 60% of previously state-owned forest had been privatized by 1999. To understand the motivations of those purchasing these lands, Spinner (2003) conducted a survey of those who had recently acquired forest land. The primary motivation was ideational, such as family tradition, symbolic value. The second most common motivation were conservation goals. These owners tended to view conservation objectives to be compatible with active forest management. Almost as common was the goal to become more self-sufficient regarding the owners' own use of fuel wood or timber, and to a lesser extent, to sell timber for profit. Only few listed tax benefits or financial investments as their motivation to purchase forest land.

The buying or selling of forest property is regulated by a federal act in Germany called "Grundstuecksverkehrsgesetz" which translates roughly to like "Rules for selling or buying a piece of land". Its main goals are: 1) to secure the continued existence of agricultural and forestry holdings businesses by protection against sell-offs of their land; 2) the protection of nature and the environment by preserving and strengthening agricultural and forestry structures; 3) to guarantee food security for the population.

For these reasons the sale of agricultural and forestry holdings or parts of it, is legal only with an administrative permit following a special approval process. Obtaining such a permit is required for any sale of parcels bigger than one hectare. A lot of parcels are not part of an agricultural or forestry holding any more. These parcels can be sold to private persons or institutions without a permit. Rules on whether or not, or to what extent property can be divided during a sale can differ depending on the region.

Afforestation policy comes from the European Union but is losing relevance. Since the year 2000 there is no significant increase (European Commission 2011). Spontaneous afforestation is actually more relevant than planned afforestation. Another reason why there is still a positive balance in the total forest area in Germany is that forest loss due to construction projects must be compensated for and in the past, the factor was more than 1.0

Apart from exemplary new legal forms of ownership which tend to be region-specific in scope there are no systematically introduced new forms of legal ownership.

6.2. Policy instruments specifically addressing different ownership categories

No new types of advisory systems have been developed. Rather an intensification of traditional approaches has taken place. Hereby it has to be mentioned, that all over Germany the Forest Services in the federal states have been restructured following the

special needs of every state. So due to this reforms the number of the employees has been reduced up to 30 % following budget constraints. Advisory-measures for "New owners": Actually there is a pilot-project in Bavaria: New forest owners were identified by comparing the data of the present land register (forest plots only) with the state two years before. So "new" (by the time owning the forest) forest owners can be identified. These owners are contacted by the local forest Service office with the offer to meet the forester in the forest and get advisory how to manage the forest and so on. This approach follows the idea, that there is a "window of awareness" people face in this initial phase of (now) being responsible for a forest. So far there are no results that can be shown here. *Further information is available at: Marc.Koch@lwf.bayern.de*

In Bavaria, the communication of the forest sector in general is changing. This might not necessarily be the result of an effort to reach "new" or "non-traditional" forest owners. There is still the will to reach as many forest owners as possible (with reduced manpower s.a.) and above that to show all people what managed forests provide for the whole society. One measure to meet this goal is to bring forestry into the cities. There are 2 to 4 information weekends in different regions of Bavaria every year. Beside the public announcements of these "Events" by posters or newspaper-articles, all forest owners in this region receive a letter which invites them personally to join this event. Scientific lectures are given as well as practical information about forest management, how to find the boarder of your property and so on. Evaluation of these events show, that a high proportion of visitors are small scale forest owners. *More information is available at: Marc.Koch@lwf.bayern.de.*

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GREECE

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1. Introduction

1.1. Forests, forest ownership and forest management in Greece

About half of the country is covered by forest and other woodlands. The major portion of forests is composed of sub selection and selection stands with the remaining of even-aged stands. A high percentage of forests is managed as coppice forests, consisting mainly of even-aged stands. Their condition from the point of view of density, quantity and quality of the growing stock is not satisfactory, mainly due to human impact during the past, such as fires, grazing, land clearings, illegal fallings, as well as lack of systematic silvicultural treatments. An ecological land classification, mapping and evaluation of land utilisation have been recently completed for the total area of Greece. A hierarchical land classification and mapping system was developed with four levels of intensity: land region, land district, land association and land type. Mapping is at the scale of 1:50,000, and the map units were described by the kind and state of natural regeneration, type of landforms, soil depth, erosion presence, slope and aspect. Land evaluation was carried out for forestry and agriculture uses, and for the risk of soil erosion (Nakos, 1983; Christodoulou and Nakos, 1990). The forest land use conflicts are matter of the existing trends in public and private sectors and are caused by a number of macro-demographic and economic factors (Vakrou, 1998), such as: social changes, institutional changes, modern style of life, population growth, urbanization, changing attitudes of people, the affluence and improvement of living standards, the technological change, the economic development, the existing properly rights, political and cultural changes. Destructive human activities such as illegal cuttings and clearances, as well as overgrazing (by goats particularly) are also responsible for forest decline (Anthopoulou *et al.*, 2006). The estimation of the current land capacity for grazing is a useful tool for forest managers for a scientific use of their land. Grass and shrub competition to forest regeneration can be reduced by judicious grazing management and it decreases the need for herbicide application. Hardwood forests are more vulnerable than coniferous forests to grazing damage (Table 1).

Table 1: Major land use categories (%) of Greece according to the First National Forest Inventory (Ministry of Agriculture, 1992).

Land use category	Area (ha)	Cover (%)
Woodlands	6,513,000	49.3
Rangelands	1,700,000	12.9
Agriculture	3,959,000	30.0
Urban/other	1,024,700	7.8
Total	**13,196,700**	**100.0**

Nakos (1983) reported total forest land in Greece covers 65.5%, with the highest share of high forests (19.5%), (Table 2).

Table 2: Main land categories of Greece (Nakos, 1983)

Land use categories	Area (ha)	%
Forest land	8,460,000	65.6
High forests	2,512,000	19.5
Exploitable	1,793,000	13.9
Un-exploitable	719,000	5.6
Other wooded land	3,238,000	25.1
Range land	2,490,000	19.3
Other forest land (rock outcrops, etc.)	220,000	1.7
Non-forest land	4,430,000	34.4
Agriculture	3,960,000	30.7
Others	470,000	3.7
Total land (exclusive water)	12,890,000	100.0

Regarding the ownership structure, 63.5% of the forests are state owned, 12% are owned by local communities and the rest 22.5% are privately owned by monasteries, or individuals, groups, various organizations and foundations.

Forests were not classified by ownership size in the National Forest Inventory (NFI,1992). The areas of the Inventory are classified by ownership size as it can be seen in table 3 and table 4.

Table 3: Distribution of forest and other wooded land by size class and state and community structure (First NFI, GSF&NE, Ministry of Agriculture, 1992)

Size class (ha)	State			Community		
	Number	Area (1000ha)	Percent %	Number	Area(1000ha)	Percent %
0-10	31	0.183	0.004	18	0.123	0.021
11-20	18	0.289	0.006	11	0.159	0.029
21-50	36	1.302	0.027	33	0.849	0.145
51-100	39	0.269	0.006	44	2.344	0.400
>101	1,361	4,824.602	99.957	599	582.513	99.405
Total	**1,485**	**4,827.000**	**100.000**	**705**	**586.000**	**100.000**

Table 4: Distribution of forest and other wooded land by size class on private structure (First NFI, GSF&NE, Ministry of Agriculture, 1992)

Size class (ha)	Private		
	Number	Area (1000 ha)	Percent %
0-10	613	3,241	0.767
11-20	139	2,986	0.706
21-50	146	7,043	1.666
51-100	77	8,116	1.920
101-500	151	51,235	12.120
501-1000	56	57,930	13.704
1000-1500	27	45,707	10.813
>1500	56	246,463	58.304
Total	**1,265**	**423,000**	**100.000**

The size of forest holding is of decisive importance, because the exploitation of a small forest holding cannot be carried out on competitive base. The prohibition of fragmentation of forest property by The Forest Law contributed to the maintenance of relatively large forest holding. Thus, there are few small-sized state and private forest properties in the country. In Greece, private forest holding of 2-50 ha constitutes 3.2% of the total forest land, one of the smallest percentages in Europe.

1.2. Overview of the country report

1.2.1. General overview of Greece

Greece is situated in south-eastern Europe and it is endowed with splendid scenery, historical and archaeological interest. The total area covers 13.2 million hectares (ha), the population is approximately 11 million people and the land use is affected by the Mediterranean climate. Greece is

predominantly mountainous country, with the altitude ranging from sea level to approximately 3,000 m (mount Olympus), and the land surface is broken up by hills and high mountains, usually steep and eroded. Moderate (40-70%) and steep (>70%) slopes are dominant and the dense drainage system is characterized by relatively narrow, deeply incised channels. Approximately 700 torrents carry a large load of debris after heavy rains each year, and soil erosion is a serious problem. The basic land uses are forestry, agriculture and grazing.

The forest lands cover a high percentage (65.5%) of the total area (8.4 million ha), and according to the First National Forest Inventory (1992), 49.3% of the land is covered with forests, from which 25.4% are high and productive forests and 23.9% low forested lands that are mainly used for grazing and soil protection. In recent years, many natural areas have been declared as “protected”, 320 sites (2.7 million ha) listed in the European Network “NATURA 2000” and Special Protected Areas (SPAs) aiming to protect wild and vulnerable species of flora and fauna. Many changes of the Greek forestry have taken place throughout the history until today.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The methods that are used for writing Greek report were: review of the bibliographic references from the network and libraries, meetings and interviews with Greek official authorities and Greek private forest owners.

At the end of September the meeting with the private forest owners was organized in order to discuss and find conclusions about their situation and problems in Greece. These findings are included in this report. The Greek Cost Action team held four meetings from June to December 2014, at the Forest Research Institute in Thessaloniki. At those meetings were attended the president and vice president of the Greek private Forest Owners Association as well as members of the Public Forest Authority.

From the private forest owners’ view, emphasis needs to be placed on the very different economic circumstances of public and private forest management. Public forest is financed by the state while private forests owners must finance their management from the sales of their products (wood).

For the first time digital maps of the Ownership status of the Northern part of Greece have been produced by the WG1 and presented to one of the meetings.

A lot of effort needs to be taken and many things into consideration in order to achieve a forest management approach which will clarify the needs of the market and the obligations for the sustainable growth.

3. Literature review on forest ownership in change

3.1. Research framework and research approaches

The majority of the data about the forests in Greece comes from the results of the First National Forest Inventory (NFI) (Ministry of Agriculture, 1992).The First NFI in Greece was initiated in 1963 and covered 11,377,000 ha or 86.2% of the entire country (National Inventory of Greece 1992). Areas not covered by inventory were primarily agricultural lands which amounted to 1,819,000 ha or 13.8% of the country area. This inventory was conducted as a joint project between the

Hellenic Forest Service and the Food and Agriculture Organization of the United Nations (FAO).

Policy measures to ensure and promote forestry in the mountainous areas of Greece (Vakrou, 1998).

Apart from their productive and environmental functions, the forests of Greece are also called upon to fulfill a distinct social role, by promoting rural development and guaranteeing mountain communities an income. Several instruments have accordingly been developed, to finance, regulate, communicate and evaluate the appropriate policies. Most of these are presented and an assessment of their impact is included, taking into account the conflicting interests between various land uses, the multipurpose objectives Greek forests are called to fulfill and, last but not least, that forestry is an active within the rural development process and cannot be viewed outside this context.

In 2000, the Greek Ministry of Agriculture published a publication (in Greek and English) related to criteria and indicators for a sustainable management of forest in Greece (Albanis *et al*., 2000). The "Criteria and indicators for the Sustainable Forest Management in Greece" is a commitment undertaken by our country from its participation in the Helsinki Process, which was taken on at the Second Ministerial Conference on the Protection of Forests in Europe, held in Helsinki in 1993. All the Process member-states have committed themselves to develop criteria and indicators for sustainable forest management at the national, sub-national and forest management unit level. This document is a first attempt to develop criteria and indicators at the national level for the Greek forests.

Sustainability should be a binding principle in managing forests and natural ecosystems in general, for the material goods that can be produced by forests, as well as for their non-material goods and services. The attempt to ascertain if sustainability is implemented in forest management, made the development of evaluation tools necessary. Such tools are the criteria and indicators for sustainable forest management.

The framework for the development of criteria and indicators for the sustainable forest management at the national level is the list of Pan-European Criteria and Indicators adopted at the meetings that followed the Second Ministerial Conference held in Helsinki, in which Greece regularly participated.

Assessment of Greek forests protection and management (Tambakis et al., 2003)

The main goal of this work was to investigate the citizens' views on their relationship with the Forest Service all over Greece. Although the view expressed was relatively positive, much has still to be done in order to reverse the neutral attitude of some citizens. Furthermore, the citizens' awareness about the European Union funding programs to convert rural areas into forest plantations needs to be assessed. The population in the Central and Northern areas of Greece was better informed compared to the islands and Thrace.

The existence of good relations with the Forest Service allows better information of citizens.

Finally, most Greek citizens believe that forests are neither managed efficiently nor protected properly, and therefore they foresee an ominous future. Citizens maintain that management is directly related to forest protect on and to the future of the country's forests.

Allowable interventions in forests and forest lands in Greece (Goupos and Papastaurou, 2000).

Many interventions are allowed in forests and forest lands and they refer to deforestation, installations for various activities. If the purpose of such interventions is agricultural exploitation, they must be important to the national economy. If these interventions take place for a different use, then they must be of benefit to the public. Forests cannot be deforested. However, they can be used, under certain terms, for arboriculture or certain activities such as the installation of camping grounds and children resorts, the installation of various military works, the installation of various cultural works, the construction of public projects, the installation of industries, the installation of stock-breeding stations, various tourism facilities, mining and

quarry works, road openings, installations for serving visitors in the forests. The granting of public forests is allowed for the construction of installations for climbing and winter sports, for mines and quarries, for camping grounds and children resorts, and for military installations. Forest lands can be deforested under certain conditions. Moreover, they can be subject to demands for installations of almost all activities. Public forest lands can be granted to physical or corporate bodies, under public or private law, for almost all uses, and in accordance with the terms of the applicable legislation in force.

Legal restrictions on forest ownership in Greece (Goupos and Papastaurou, 2000).

Because of its important social role, forest ownership is subject to a number of restrictions beyond the ones of the Civil Code which are in force for all categories of real property. The main provisions that enact legal restrictions in forest ownership are dispersed within laws and decrees addressing forests and forested areas.

Legal restrictions in forest ownership refer to the use, to the usufruct or to the disposal of property. The principal aim for setting legal restrictions is the conservation of the character and use of forests and forest lands. Most of the legal restrictions in forest ownership do not create an obligation charging the owner for the benefit of third persons but create an obligation of the public authority. The implementation of such obligations requires an increase in the number of forest employees, proper organization of the forest service, supervision in the application of provisions of forest legislation, an increase of criminal penalties, reinforcement of the police in the area of forest administration, and mainly, political stability in forest policy and in forest ownership.

In compensation for restricted forest ownership it is necessary that the state takes measures in favor of the owners such as tax releases (preferential treatment), subsidies, etc. in order to increase and preserve forests and forest lands in our country.

Local people's perceptions of planning and management issues in Prespes Lakes National Park, Greece (Trakolis, 2001).

Local people's perceptions of planning and management issues were investigated in Prespes Lakes National Park in north-western Greece, 24 years after designation. Ensued conflicts due to lack of local community participation in the designation procedure and in the decision-making process thereafter necessitated this research. Knowledge of the park and its aims, source of information about aims, necessity for works and facilities, attitudes toward certain policies, and effectiveness of administration and management scheme, were studied by means of a questionnaire survey. Respondents were contacted by systematic sampling, which resulted in 201 cases for analysis. Poor knowledge of aims associated with education of people was revealed and the managing authority (the Forest Service) as source of information was mentioned in only one case. Forest recreation facilities and improvement of accessibility were considered of high priority, as means of possible tourism development of the area. A policy of non-intensive agriculture with compensation for loss of income, if the wetlands of the park were in danger, seems acceptable, younger ages accepting it more easily. The need for a new administration and management scheme with the participation of local communities in the decision-making process was revealed, supported mainly by the younger age groups. Finally, the results indicated that the information derived from such research could help managers of protected areas to resolve arising conflicts.

Valuing Mediterranean forests towards total economic value, Greece (Kazana and Kazaklis, 2005).

Publication giving details about valuing Mediterranean forests towards total economic value, the case of Greece. Special issues that are given at this publication are:

1. Introduction
2. Forest resources
3. Institutional aspects
4. Contribution of the forest to the national economy
5. The values of Greek forests
6. Towards the total economic value of Greek forests
7. Conclusions and perspectives

Cost action E19: Forest Forests for the future. National forest programmes in Europe. Greece: Sustainable forest management and the challenge ahead for Greek state forestry (Papageorgiou et al., 2004).

National report giving details about sustainable forest management and the challenge ahead for Greek state forestry. Special issues that are given at this national report are:

1. Introduction
2. Supporting and impeding factors
3. Participatory mechanisms
4. Negotiation and conflict resolutions
5. Intersectoral approaches
6. Long term iterative planning
7. Other elements of Greek national forest policy
8. Conclusions

Perceptions and preferences of the local population in Eastern Macedonia and Thrace National Park in Greece (Pavlikakis and Tsihrintzis, 2006).

In order to achieve socially acceptable management solutions, a survey of the local population of the National Park of Eastern Macedonia and Thrace in Greece was carried out. With the use of an appropriate questionnaire, face-to-face interviews were performed. The survey aimed to: (1) involve the local population in decision-making by classifying the issues to be studied according to the importance they have for the ecosystem inhabitants, e.g., regarding people's income, and landscape aesthetics and ecological value; and (2) contribute to an appropriate and representative future management scheme. The investigation concerned local people's socio-economic status, their knowledge about the ecosystem area, their activities in the park area and their opinion about the ecosystem assets and services. Among the outcomes, biological factors such as flora and fauna and landscape aesthetics emerged as the most valuable ecosystem assets. Furthermore, the majority of those surveyed were willing to pay for the protection and the proper management of the park area.

Land use changes in the Greek woodlands (Spanos et al., 2009).

Publication giving details about land use changes in the Greek woodlands. Special issues that are given at this publication are:

1. Introduction
2. Land information about Greece
3. Main land uses categories in Greece
4. Land use changes in the Greek woodlands
5. Conclusions

Cost action E47: Forest vegetation management in Europe. Current practice and future requirements. National report Greece (Papachristou et al., 2009).

National report giving details about forest vegetation management in Greece. Special issues that are given at this national report are:

- Country background
- Treatments and alternatives
- Ecosystem responses
- Society and vegetation management

National forest inventory reports. Greece (Meliadis et al., 2010).

Publication giving details about the national forest inventory of Greece. Special issues that are given at this publication are:

1. Development of the Greek national forest inventory
2. General Use of the Results
3. Current Estimates
4. Sampling Design
5. Estimation Techniques
6. Current and Future Prospects

DSS in Environmental Governance: the case of forest management in Greece (Tasoulas et al., 2011).

Lately, as sustainability has been globally a key goal at local and regional level, environmental governance and management issues, related to decisions that verify performance have also gained a continuously growing focus. DSSs designed for this purpose can use multi criteria analysis and indicators to implement sustainable forest management. This DSS application includes

6 variables for the forest and by using the specific programming code based on If – Then statements of Visual Basic, automatically selects and decides management measures to propose to the forest manager as an output for each variable. This happens by estimating the interaction of different variables in the forest, which concerns the allowance or conflict case of two different uses. The manager can accept, reject or complete the proposed measures. Such a DSS application can easily be connected to other software as GIS or CAD and can easily be expanded to many new technology applications.

3.2. New forest ownership types

The physical and cultural environment has been characterized by the Constitution of Greece (1975) as an object of great interest, and consequently it is in need of special adjustment. Also the Constitution prohibits the changes in forest land use. According to article 24, *"change of forests and forest land allocation is prohibited unless the national economy or agricultural require exploitation for the benefit of the public"*. (Tahos A.I., 1987 and Vavouskos K., 1983). Allowed interventions in forests and forest areas are basically regulated by Law 998/1979 "on the protection of forests and forest lands of our country in general". Interventions in forests and forest areas are classified into following categories: 1) deforestation, 2) granting of public forests, 3) granting of public forest areas and 4) granting for installation and various activities according to the provisions of legislation. According to the Greek Constitution is not allowed new forest ownership types.

3.3. Forest management approaches

The main forest management approaches for Greece are:

- Wood-production (including boat building)
- Non wood production: resin, honey, livestock, mushrooms, pharmaceutical wild-plants
- Social uses: wildlife, recreation, hunting.

Main multiple functions of forests in Greece:

- Production of wood for national and local needs
- Production of non-wood products (resin, chestnuts, mushrooms, honey, berries, etc.)
- Protection of soils on steep slopes from water erosion
- Regulation of water flow of mountain streams
- Provision of food and forage for wild animals
- Provision of grazing for domestic animals
- Provision of recreation opportunities
- Provision of wildlife opportunities.

For our country, the same laws are followed in public and in private forests and the basic purpose of forestry today is the creation of ecologically healthy forests with a desirable structure, being capable for a perpetual production of the maximum possible quantity and best wood quality of various categories in conjunction to a very high public-beneficial effect.

Under this concept, the conversion of coppice forests into high ones consists the best protection mean of the forest ecosystems and a highly scientific target for the global economy and for the global ecosystem as well (Hatzistathis A. and Hatzistathis T., 2003).

3.4. Policy change / policy instruments

According to Vakrou (1998) several instruments prescribed and developed through the process of the current forest policy formulation in Greece have been used for regulating forestry in mountainous areas. These are the following:

<u>Regulatory instruments:</u>

- Prohibition of change of land use of forests and forested lands
- Regulation and restrictions for grazing
- Supervision of forest management
- Protection of forest and forest areas against all dangers, i.e. soil erosion, wildfires, illegal loggings, torrents,

insects, landslides, etc.

- Reforestation policy
- Regulations for special protected areas (National parks, nature monuments, avifauna, wildlife, recreation and historical sites, etc.)

Economic instruments:

Direct

- Forest funds, which are directed towards forest development and management projects
- Relations between state and private forests
- National program for the “Environment” and “Agriculture”
- EU regulations.

Indirect

- Granting of management rights to Forest Co-operatives
- Provision of facilities and productive investments
- Support to mountain communities and forest workers.

Informational instruments:

- Extension Service of the Forest Authority
- Forest educational program for forest workers
- Information on legislative issues and programs provided to private owners, co-operatives, NGOs and the general public.

Development of a forest economy in the mountainous areas of Greece can play a vital role in the survival and sustainability of these areas. These lands represent the arena for the application of forest policy. Recent trends suggest that even though forestry can represent the basic force driving development, it cannot be the only one. Other forms of economic activity, like tourism agriculture, small scale processing enterprises (agrifood, articrafts, etc.) need to be developed in parallel and coexist with other activities developed in mountainous areas. New instruments need also to be developed in order to assist older ones against land use of conflicts. Giving away some state land, preferably forested areas and grazing lands, might decrease pressure and allow the Forestry Service to concentrate its efforts and resources on more efficient policies and actions.

Private forestry needs assistance in order to be more productive, but also more economic rewarding for those who exercise it. The state as a forest owner assumes also a social function by providing recreation, game for hunters, protection against torrents and floods and other environmental benefits and maintaining the forest resources of the country. The same functions are also provided by the owners of private forests, since they do not impose any restrictions in the use of their forests by the public; forest owners be assisted, for example with specific tax breaks which will help enhance the potential profitability of the forests, in order for them to assume a more active role in the rebirth of the Greek mountains.

Trakolis et al. (1998) have identified the following points that need immediate attention in the near future:

- Identification of the perceptions and attitudes of forest workers and members of the forest co-operatives dealing with the exploitation of Greek forests, towards management inputs and forest policies.
- Perceptions and attitudes of the mountain communities towards management inputs and forest policy, as well as establishment of the existing types of property rights and perceptions and communication of the existing agreements.
- Attitudes and reactions of forest visitors to the various management measures.
- Examination of the historical development of these property rights and determination of the way in which these rights have affected management practices, forest protection and the formulation of forest policy.
- Evaluation of the results of the application of E.U. Reg. 2080/92 for the afforestation of abandoned or marginal agricultural land.
- Assessment of the total economic value of forests and their contribution to the National Accounts.

- Evaluation of forests and prescribed forest policies and management in regional development, through their role in the creation of a cultural identity and a distinct image for the region, leading subsequently to the promotion and enhancement of development opportunities.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in Greece. The most detailed information at national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. To make this information more comparable still, the information is also collected in an international format that is used in the Forest Resources Assessments (FRA) by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses how far the national categories and definitions may be transformed into the international FRA data structure and the extent to which there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

The first attempt for a NFI held in 1836 was more or less an empirical inventory of the country's forest and other wooded land. The results were published in 1842 by the consul of Bavaria and Hannover. The main point is that at that time the total area of the country was 4,761,000 ha, i.e. 1/3 of the current total area. The New Greek state which was formed at that time included Peloponnese, Central Greece and some islands, while the remaining of today's area was under Turkish occupation. Information for this inventory came from Kontos, who adapted inventory data from the silvicultural and forest policy point of view (Kontos, 1921).

In 1929 the results of a second "inventory" were published without providing any information on the methodology used. At this time the area of the country was almost the same as today, slightly different, due to the fact that in 1929 the prefecture of Dodecanese was under Italian domination.

The two inventories mentioned above are only of historical value and interest and the results are not comparable with current data.

Nowadays, the majority of the relevant data about forests comes from the results of the **First National Forest Inventory(NFI)** (Ministry of Agriculture, 1992). The First NFI in Greece was initiated in 1963 and covered 11,377,000 ha or 86.2% of the entire country (National Inventory of Greece 1992). Areas not covered by inventory were primarily agricultural lands which amounted to 1,819,000 ha or 13.8% of the country area. This inventory was conducted as a joint project between the Hellenic Forest Service and the Food and Agriculture Organization of the United Nations (FAO). This forest inventory was conducted in ten inventory regions of unequal sizes. The inventory regions of the 1963 Greek NFI were:

1. Central Greece (or "Work 81")
2. Mornos
3. Evinos
4. Peloponnisos
5. Western Greece
6. Eastern Macedonia, Thraki.

The first region was inventoried in 1965, and the inventory subsequently expanded to the other regions. In 1985, the first phase of the inventory, consisting of interpretation of aerial photographs and the field measurements, was completed. In 1991, the entire NFI was completed, and the results were reported in a handbook titled "Results of the First National Forest Inventory". The purpose of the NFI was to improve the database on Greece's forests and soil resources. For each inventory region, data that were collected and recorded included: soil morphology and watershed network, rocks – soil data, climatic data, vegetation data, land use of the non-forested areas, and distribution of forests. The users of the results are the Hellenic Forest Service and the Hellenic Statistical Service.

The forest regions or eco-regions according to the NFI are shown in figure 1. A scientific study of these zones may explain the distribution of forests in Greece.

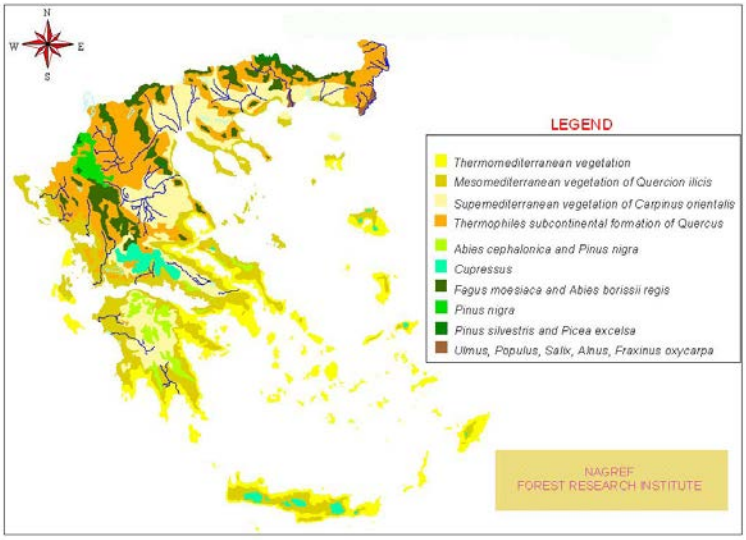

Figure 1: Eco-regions, according to the NFI. (General Directorate of Forests and Torrent Control, Ministry of Agriculture, 1964)

Based on the State Report of the Inventory (1999-2000) about half of the total area of the country is covered by forest and other wooded land (Figure 2). The most important portion of the forest is composed of sub selection and selection stands while the remaining is of even-aged stands. Forests managed as coppice totally consist of even-aged stands. The structure of the forest appears as a one-storied, two-storied and multi-storied.

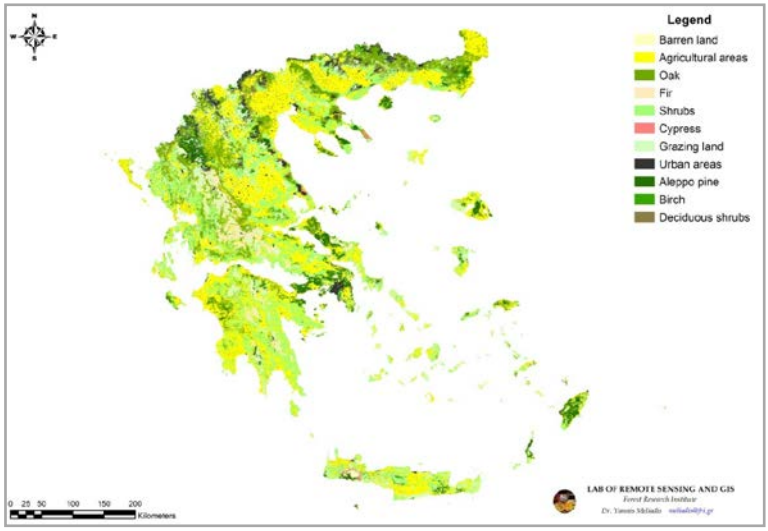

Figure 2: Vegetation map of Greece (Ministry of Agriculture, www.geodata.gov.gr)

According to, Albanis et al 2000, the forest area per capita is only 0.32 ha which is a very small proportion compared with international norms (that is in average at least 5 ha per capita). The absence of the second NFI, makes the assessment of the development of some basic forest parameters during the years impossible.

The distribution of Greek forests by the ownership structure is the result of historical, social, economic and political conditions. The political culture of Greece is characterized by an instrumental rationalist decision making process where the public authority is the only entity responsible for making choices in favor of the “common good”. This dominant political framework applies in forestry whereby the common interest is defined in an extra-societal way without considering the interests and needs of different users. Within the forestry department, national forest policy is made at a central level by a close circle of

well-intentioned forestry specialists. The high percentage of state forests 65.6% is considered as favorable, because it best serves the social role of forests. The more mountainous a country is the higher should the percentage of forests under state management be, since the state with the funds, personnel and framework it has at its disposal, proves to be a better manager than private forest owners. Consequently, in mountainous countries the protective and social role of forests better promoted.

Forests are not classified by ownership size in the 1992 NFI. The areas of the 1992 inventory are not classified by ownership size. The size of a forest holding is of decisive importance, because the exploitation of a small forest holding cannot be performed on competitive basis. There are few small-sized state and private forests in the country. In Greece, private forest holdings of 2-50 ha constitute 3.2% of the total forest land, one of the smallest percentages in Europe.

Table 5 shows the main categories of forest ownership. State is the main owner of forest land in Greece.

Table 5: Distribution of forests ownership in Greece (ha). (Albanis *et al.,* 2000)

Forest Ownership	Conifers	Broadleaves	Total	%
State	591,000	1,053,000	1,644,000	65.42
Municipalities	93,000	208,000	301,000	11.98
Monasteries	53,000	57,000	110,000	4.37
Organizations	9,000	3,000	12,000	0.48
Co-operatives	N/A**	N/A**	246,000	9.79
Individuals	N/A**	N/A**	200,000	7.96
Total			**2,513,000**	**100**

** *N/A: not available*

State forest management and exploitation encountered various difficulties in the past due to the ordinary and traditional rights of grazing and fuel wood felling on forest land. In the forests owned by municipalities, is managed in accordance to the needs of the municipality residents and some surplus is made from sale. The monasteries category includes forests belonging to monasteries and charitable foundations. Cooperatives own the forests in various ways, as natural or legal persons. They are distinguished into two categories.

a) Joint forest property by state and other natural or legal persons
b) Joint forest property by natural or legal persons. All non-state forests are subject to state forest policy and works carried out in them are under state control and supervision.

Eventually the individuals are also private owners, or people or private companies.

More detailed distribution of the forest ownership categories in different geographical areas of Greece presented in Table 6.

The figures 3 and 4 show graphical distribution of forest ownership by category and total Greek forests.

Table 6: Forest ownership in Greek geographical areas (ha) (1999-2000) (Ministry of Environment Energy and Climatic change, 2010).

Geographical areas (Prefectures)	State	Municipalities	Monasteries	Organisations	Cooperatives	Individuals	Total
Thrace	247,007	2,080	382	0	2,823	33	252,325
Macedonia	518,624	76,855	56,838	2,217	61,961	32,615	749,110
Ipeiros	86,459	80,184	3,285	62	33,753	3,021	206,764
Thessaly	86,328	99,829	18,052	10	38,093	26,036	268,348
Sterea Ellada-Evoia	420,787	12,801	16,903	1,305	87,729	67,381	606,906
Peloponisos	222,735	2,154	9,958	802	6,189	41,992	283,830
Ionian islands	350	5,453	493	1,744	803	11,382	20,225
Aegean islands	61,715	13,613	3,815	5,085	2,532	14,200	100,960
Crete	0	8,558	220	0	11,962	3,210	23,950
TOTAL	***1,644,005***	***301,527***	***109,946***	***11,225***	***245,845***	***199,870***	***2,512,418***

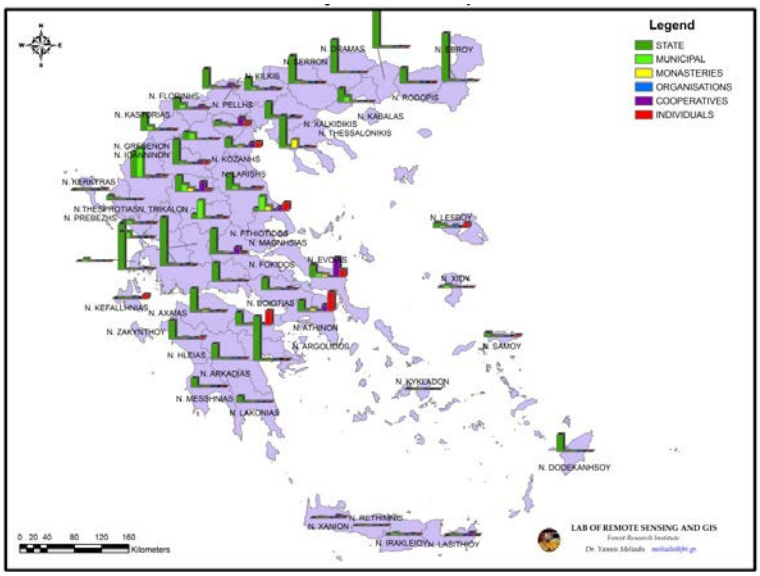

Figure 3: Distribution of forest ownership categories in Greece

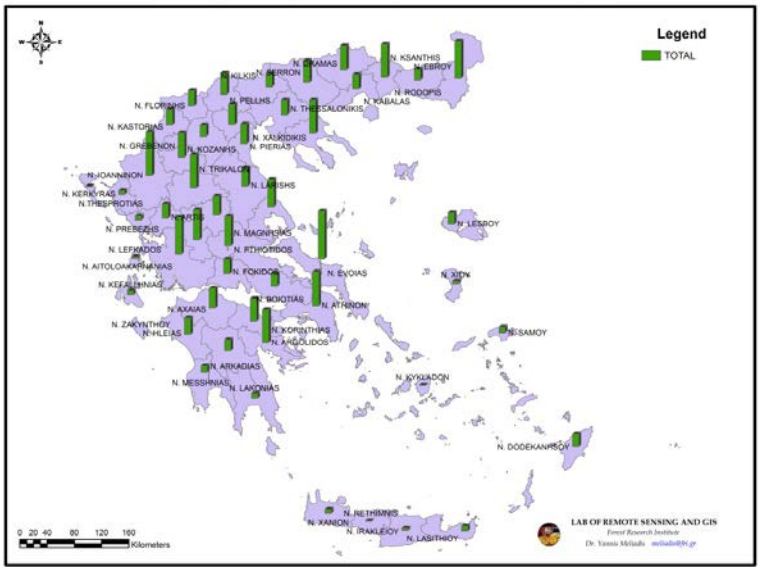

Figure 4: Total distribution of forest in Greece

Forests and forestlands have not yet been mapped in a systematic and scientific way. They cover about 6,505,499 ha, that is, 49.3 percent of the total country area (National Inventory of Forests, Ministry of Agriculture, 1992). According to the Greek Ministry of Rural Development and Food (2005), privately owned forests cover about an area of 199,870 ha. Municipalities, charitable foundations and monasteries own forest areas of 422,698 ha (Vogiatzis, 2008). The Hellenic Forest Service administers the rest of lands as public lands including grasslands. Grasslands are dominated by specific non-woody vegetation (low formations of shrubs, phryganas) with canopy cover less than 15 percent, located in lowlands or hills with elevation up to 200 m, Ministerial Circular No. 159140/1077/1980, and they are mainly spread over Greek islands and the coastal zone. On the mainland, they may be found in transition zones between forestland and rural areas. It is estimated that these lands cover approximately 1,600,000 ha (WWF Hellas, 1999).

In Greece, the coexistence of various forest species and bushes rich native flora, led to a composition of forest vegetation was distinguished by the diversity of forms and characteristic peculiarity. The diversity of forms is due to factors acting together, influenced and continues to have an impact

on vegetation of our country. The main ones are the following: The geographical position of Greece is such that it can accommodate plenty of flora elements from three different phytogeographic regions. The species of the Mediterranean, Mid Europe and Asia appear to forest vegetation in Greece and compose the rich flora in number and origin of species. The climate is with more or less expressed Mediterranean character.

Two more factors are characteristics of the Greek ecosystems:

1. The heterogeneity, instability and vulnerability (common characteristic in all Mediterranean countries).
2. The shortage of an authorized land registry (affecting forest ownership in many ways).

4.1.2. Critical comparison with national data in FRA reporting

According to the FRA data, Table 7 the forest land in Greece is 3,923.00 ha, Public ownership is 3,005.31 ha and the private ownership in total is 897.69 ha. This is the only data from FRA.

The difference comes from different years of data collecting and different terminology used for forests and forest lands.

Table 7: Forest Ownership according to FRA 2010

FRA 2010 Categories	Forest area 2005 (1000 hectares)
Public ownership	2907
Private ownership	845
...of which owned by individuals	N/A**
...of which owned by private business entities and institutions	N/A**
...of which owned by local communities	N/A**
...of which owned by indigenous / tribal communities	N/A**
Other types of ownership	0
TOTAL	**3752**

** *N/A: not available*

4.2. Unclear or disputed forest ownership

Not available data.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

Restrictions are set by the Private Law (Law of Neighbours, decrees 1003 and next of Civil Code) and Public Law with regard to public interests (reasons of security, hygiene, building alignment, etc.) (Vavouskos 1979, Georgiadis 1975, Balis 1961, Furkioti 1949, Stimfaliadi 1954, Tousis 1966, Kassimatis 1972). Article 17 of Constitution protects the liens (ol. State Council 1094/1987, Nom. b. 35/1987). The Private Law imposes restrictions by defining the content of ownership as related to its social content is compatible with article 17 of Constitution, even if the value of ownership is decreased due to the interference of the legislation or due to administrative regulations (State Council 37/1988, Nom.b. 37/1989, ol. State Council 695/1986, Nom.b. 34/1986) provided that the restrictions do not imply the annihilation of ownership (State Council 1743/1985, Nom.b. 34/1986).

Furthermore, division of a forest property either by distribution or by sale or by any other action is prohibited without the permission of the Minister of Agriculture (Article 60 par. 1 Forest Code). The Minister of Agriculture has a unique role and may grant such permission if forest development and preservation is facilitated (State Council 284/1960, 1306/1971, 1826/1979, 4220/1980) (Goupos and Papastavrou 2000).

A transaction that would contravene article 60 of Forest Code (Supreme Court 540/1965, 908/1972, 606/1976) is invalid. Permission is necessary, too, in a judicial partition, when the State is a joint-proprietor (State Council 284/1960) in a situation of approval or modification of building alignment (State Council 762/1967, 2760/1975). In case of expropriation, the consent of the Minister must be declared, except cases where the Minister co-signs the alienation (Gn. Legal Council of the State 426/1962). The donation

of a part of a forested area (Gn. Legal Council of the State 457/1961) and the previously agreed purchase of a defined proportion of the property are invalid if permission for the partition has not been claimed and granted by the Minister of Agriculture (Supreme Court 540/1965). This does not concern the acquisition of parts of forests and forested lands with usus fructus (Supreme Court 540/1965, 606/1965, State Council 1251/1975) (Goupos and Papastavrou 2000).

Right of State preference (State privilege): If a proprietor intends to sell a forest or forested land either totally or in fictitious shares, he is obliged to notify the chief forester in a written statement. The application is then forwarded to the District

Forest Council, which decides whether the State intends to acquire the land. If the procedure is not followed, the transaction can be annulled by bringing an action of the State to the Competent District Court within two years. Notaries have to verify whether the procedure is followed, to refer to it in the contract and to forward a copy to the Chief Forester. In case that a month has passed since the submission of the statement or in case that the proof of ownership (deed of property) is judged inadequate by the Forest Council, the deed of property is forwarded to the Ownership Council. The latter can proceed with the sale within a time limit of two years, and with a purchase price at least equal to the price indicated in the statement to the Chief Forester.

The State privilege is not valid in the following cases:

- if the area is less than 5 hectares,
- if the forest is enclosed in an urban area or has already been an urban area.
- if the forest belongs to a construction company and the transfer concerns only part of a forested area among members of the company provided that there are no different provisions in relevant town-planning legislation.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no specific inheritance or marriage rules applied to forests in Greece.

4.4. Changes of the forest ownership structure in last three decades

There are no significant changes in ownership statue in Greece.

4.5. Gender issues in relation to forest ownership

There are no gender issues in Greece.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic (“Characterized or motivated by philanthropy; benevolent; humane” OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

From above mentioned types of ownerships by specific organisation, in Greece exist only self-organised local community groups and co-operatives associations.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives		X	
• Self-organised local community groups	X		
• Co-operatives/forest owner associations	X		
• Social enterprises		X	
• Recognized charitable status for land-owners			X
• Other forms of charitable ownerships, namely:			X

Self-organised local community groups are citizens of municipalities which have hold rights of forests but not the municipality itself.

Forest co-operatives are forest workers who usually live in mountainous areas and sustain their livelihood from logging.

Both of them are very small in numbers and in the total percentages of Greece.

4.7. Common pool resources regimes

There are no common pool resources regimes in Greece.

5. Forest management approaches for new forest owner types

In Greece, there are no new forest owner types. There are only allowance interventions by the law in forests and forest land in Greece. Only in 1930, was given title of ownership for the rehabilitation of refugees after the Asia Minor Catastrophe and the exchange of resident population between Greece and Turkey.

5.1. Forest management in Greece

Forests in Greece cover 25.4% of the country's total area (3.359 thousand ha). According to Albanis *et al* 2000, Table 8, approximately two thirds (65.5%) belong to the state and the remaining 34.5% belong to private entities, local authorities, monasteries, and other welfare institutions. Municipalities are the second larger owner with 12 per cent of the forest cover. Forest cooperatives own 9.7 per cent while the forestland owned by private individuals accounts for only 8 per cent of forestry land.

Table 8: Forest ownership in Greece

Forest ownership in Greece	ha	%
State	1,644,000	65.5
Municipality properties	301,000	12.0
Church	110,000	4.4
Welfare institutions	12,000	0.4
Joint ownership (forest cooperatives)	246,000	9.7
Private	200,000	8.0
Total	2,513,000	100

As far as the forests which belong to municipalities are concerned, the personal needs of the community's inhabitants are satisfied first and if there is a surplus, it is marked (Albanis, *et al*, 2000).

Forest cooperatives represent forest workers who usually live in mountainous areas and sustain their livelihood mainly from logging. Cooperatives work along with the forest authorities and forest owners on harvesting forest products and, to a lesser degree, on trading these products. Cooperatives based on voluntary membership that own only a limited portion of forest land (9.7 per cent). Despite their prosperous past, their future viability is declining as forestry has failed to provide year-round employment and sufficient income; locally-produced timber is out-competed by cheap imports from Eastern Europe. Forest cooperatives have little political power and have limited institutional influence on policy to ensure their economic viability in the long run. Another form of forest co-operative is the one that is more interested

in developing the forestland it owns or has rights on, by building secondary homes and developing forest related tourism activities (Papageorgiou, *et al*., 2004).

The Forest Owners Association (FOA) in Greece, founded in 1926, is the main actor for non-state forests. As a result of the small share of private forestry in Greece (8%), the Society has about 120 members, even if the total individual private forests are closed to 3,000. Private forests are primarily coppice enterprises, producing mostly fuel wood, having low profitability and providing limited employment in rural areas. (Papageorgiou, *et al*., 2004). According to Greek society of Forest Owners their main objectives are (Oikonomou, 1980, Oikonomou 2014):

- Forest protection from arbitrary abuses and use changes
- Implementing sustainable management
- Compensation of private forests in the same way as public forests
- Liberalization of wood market
- Fair taxation and business finance.

The planning and management of state forests is centralized at the national level under the supervisor of the Ministry of Environment through its separate General Secretariat of Forest and National environment. At the regional level, forest management is divided into state forest districts, each run by a respective Forest directorate or Forest District Office, which are the statutory bodies with real power on the ground and with responsibility for the implementing the management plans.

The Forest Service has the entire responsibility for the management of forests and forested lands under its ownership, plus the responsibility of examining and approving the management plans for private owner forests. It is imperative that those management plans incorporate all environmental, ecological, socio-economic and productive conditions for the forest under consideration.

Forest planning as defined in Forest Law 998/79 aims explicitly at the planning of the forest resource mainly for timber production. The main planning tools are forest management plans, which are drawn up by the Forest Service for most state forests or by freelance foresters for private, communal and, in some cases, state forests, and approved by the regional Forest Directorates. All forest management plans are conducted according to the law of perpetuity in yield estimations and aim for the preservation of the forest-avoiding clear felling, improving natural regeneration by selective cuttings and reforestation after fire – as the sustainable utilization of timber. The planning period is ten years for the state forests and five years for private forests. The forest management plan is mainly a technical report focusing on sustainable timber yield without taking into account consideration the non-timber products and services of the forest resource. The management plan is not part of a long-term planning process pursuing the sustainability of the resource. On the contrary, its primary aim is to ensure maximum sustainable timber yield. In light of the National Forest Programme concept, however, it is imperative that management plans be extended and altered thoroughly to provide for balanced economic, ecological, social and cultural goals. Currently there is some progress in this direction, with the Forest Service trying to apply the integrated management of forests, taking the fullest possible account if natural processes and making provisions not only for timber production but also placing specific emphasis on other functions such as nature conservation, biodiversity, soil protection, aesthetic, environmental education, forest recreation and rational use of water resources (Papageorgiou, *et al*., 2004).

Today, in practice the basic rules that apply to every management plan based the six criteria and indicators for the sustainable forest management (Albanis, *et al*., 2000):

Criterion 1: maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles.

Criterion 2: maintenance of forest ecosystem health and vitality.

Criterion 3: maintenance and encouragement of productive functions of forests.

Criterion 4: maintenance, conservation and appropriate enhancement of biological diversity of forest ecosystems.

Criterion 5: maintenance, conservation and appropriate enhancement of protective

functions in forest management (soil and water).

Criterion 6: maintenance of other socio-economic functions and conditions.

In practice, except the above criteria, taken into consideration the following rules:

- Identification of important ecosystem services
- Ensuring the sustainability and longevity
- Recommendations to reduce soil erosion sensitivity
- Identification of recreation activities
- Management measures for promoting water quantity and quality
- Taken into consideration non-wood products (honey, resin, livestock production, mushrooms, pharmaceutical plants, etc).
- Preservation of wild flora and fauna diversity
- Protection from various dangers (wildfires, soil erosion, landslides, diseases form insects, etc.)
- Delimitation and determination of protection measures for landscapes of special nature beauty.
- Generally, taken into consideration the National legislation and specific European and International obligations for the protection of nature and protected areas.

5.2. New or innovative forest management approaches relevant for new forest owner types

According to the data supplied by the National Forest Inventory and the data reported by Albanis, *et al*. (2000), over half of the forest and other wooded land in Greece (51.58%) is managed for production purposes, 5,18% for tourism-recreation, 14.4% for hunting and 28.84% for grazing (Kazana and Kazaklis, 2005).

Today, throughout Greece there is an increasing awareness of the necessity to apply and implement management practices that consider the multiple values in the woodlands on the long term sustainable basis. The new forest ecosystem should be a stable, upgrading, and adapted to the climatic and soil conditions, more resistant to fire and insect pests, with a normal potential of fauna and flora. For the reestablishment of a future forest we should take into consideration the rules of multiple and social uses of woodlands (as watershed management, wildlife, recreation, hunting, aesthetics, education, etc.), as well as the long-term protection from various dangers (as wildfires, soil erosion, storms, diseases due to insects and fungi, etc.) (Kazana and Kazaklis, 2005).

In our days, many public and private forests are managed for tourism-recreation, environmental education and wildlife protection uses. The tourism-recreation public land includes national parks, aesthetic forests, natural monuments, wetlands, recreational sites, urban forests, coastal forests, shelterbelts along highways and forest areas surrounding lakes (Kazana and Kazaklis, 2005).

Also water protection is one of the main management goals for the whole forest and other wooded land in Greece, due to the extent and intensity of erosion and torrential phenomena (Albanis, *et al*., 2000).

Another forest management approach in public forests is conservation. According to the United Nations Economic Commission for Europe/Food and Agriculture Organization (2000) classification, 1.03% of the Greek forest and other wooded land is placed under the International Union for Conservation of Nature (IUCN) categories I and II, i.e. virgin forests and National Parks. The same source also records 17.67% of the forest and other wooded land as IUCN land categories III and IV, i.e. aesthetic forests and other specially protected areas. However, this classification cannot be used to derive a good estimation of the productive land area as, in the National Forest Inventory; no distinction of land was made on the basis of the protection function of the land according to the IUCN categories.

5.3. Main opportunities for innovative forest management

The forestry sector is the primary sector of

the economy of Greece with significant added value and multiplicative importance, both for the secondary (trading-forest woody and non-wood products and wood industry) and the tertiary sector of the economy (tourism). It also offers a range of environmental services (creation and protection of soil, water resources protection, carbon storage, etc.) which, although not easily classified in a productive sector, acquire value gradually growing. Forests cover about 49% of the territory and about 77% of them owned are publicly owned. Yet credits to forestry not exceed 0.35% of the state budget in recent years.

The main opportunities for Greek innovative forest management are (WWF, 2011):

- There are many scope for increasing forest production and improving the quality and value of produced forest products (technical and industrial wood), and enlargement of forest production in new directions, the non-wood products (mushrooms, truffles, chestnuts, hazelnuts, cranberries aromatic and medicinal plants, honey, etc.) and services (forest recreation and mountain tourism). It is estimated that the economic value of forest goods, which are not valued and included today in the country's GDP, much higher than the value of the recorded hitherto forest production.
- Beyond the scope for improving the quality of the wood produced in forests can develop alternative business activities in the secondary sector like utilization of woody biomass for energy and other purposes.
- Important aspects of green development can be promoted through forestry, while protecting the natural environment. Save carbon - reducing greenhouse gas emissions and contribution of forestry to the new market of 'carbon trading' contribution to renewable energy sources (water / hydro, biomass), renewable natural and organic products to help improve the quality of life (leisure, inspiration and health), aiding the conservation of genetic resources, biodiversity and natural heritage comprehensively. The above also opens new horizons in the field of green economy and marketing.
- There are opportunities to promote alternative forms of development with emphasis on natural resources and protected forests of the country.
- There are possibilities to promote certification systems of sustainable forest management and labelling of forest products produced and hence opening new markets, but also promote a better image for the management practiced in our forests.

5.4. Obstacles for innovative forest management approaches

The main obstacles for Greek innovative forest management are (WWF, 2011):

- Thumbnail financing forestry and lack of investment resulting in state forests to farms poorly and not be able to plan and exploit the productive potential of forests, nor to protect forests from growing threats in recent years.
- Problematic logging system with significant deficiencies in the organization of wood harvesting in forests with significant negative effects both on forestry work and at the same forest ecosystem. The forest holdings, as units of production and development are almost idle, while forestry operations are often carried out without substantial supervision and forestry cooperatives, degraded and significant weaknesses, are on the verge of dissolution.
- Serious deficiencies in the information system and statistical forestry in all directions (natural environment, and establishment of forest productivity, forest inventory, forest ownership and land use, forest management, forestry, etc.) leading to weakness of the design development and mobilization resources and potential.
- Fractured and poorly performing system administration of forestry services. Forestry Services in two ministries (Ministry of Environment, Ministry of

Interior), inappropriate governance structures Forest Service, external interference, dispersion and fragmentation of responsibilities of management responsibilities and protection forests, are some phenomena which render impossible the formulation of forest policy in the country and lead to ineffective management and inadequate protection forest.

- Protection system fire cracked and ineffective. Domination of perception that forest protection is identified with repression and neglect prevention.
- Convoluted and inefficient forestry legislation.
- Anachronistic context of forest management. Weathered context configuration (since 1965) and inefficient methods and management practices make it difficult to continue logging operations and forest production especially in environmentally sensitive areas (N. 2000 Network, National Parks, Aesthetic Forests, etc.)
- Faulting coupling forestry and environmental policy and ineffective management of protected forests.
- Incomplete support for forestry research, standard forestry research by the Act, serious lag of regional forest services in the field of technology and absorbing new knowledge.
- Serious problems and rigidities in the secondary sector and forestry. Inadequate standardization of forest products, problematic further exploitation of timber and other forest products and difficult to exploit new products, such as wood pellets with resulting in reduced competitiveness and are net imports - exports.
- Poorly coordination between the private sector processing / marketing of forest cooperatives and forest service that directs forest production.
- The very lacking adoption of modern systems of quality certification of wood and good forest management, resulting in significant lost opportunity to promote the market.
- Unable organization of a multifunctional forestry system, which combines protection, social services and producing a variety of products, thus losing significant economic benefits for the country.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

Actors participating in Greek forest planning, management and other actions

In Greece, there are various actors that participated in Greek forest planning and forest management (Trakolis *et al*, 1998, Vakrou, 1998, Papageorgiou *et al*, 2004), but the final decisions were taken via Forest Service, through the laws and directions derived from the Ministry of Agriculture. The distribution of Greek forests by ownership structure is the result of historic, social, economic and political conditions.

Papageorgiou *et al* (2004) reported that institutions include organizations promoting and advocating norms, and people, policies and rules that impact upon forestry policy. Major police actors in Greece and the linkages between them do not seem to have changed following the changes in policy objectives in all forest sectors except nature conservation.

Intersectoral approaches serve to co-ordinate forest-related policies with other sectoral policies and programs. In National Forest Programs the overall intention is the coordination of the economic, ecological and social interests in forests (Hogl, 2002). Forest policy in Greece is connected with other national policy areas, such as agriculture,

environment, urban, the economy and development (Smiris, 1999). The fulfilment of objectives in each of these sectors has created conflicts and has influenced the goal formulation and decision-making process in the forestry sector. Moreover, effective mutual co-ordination mechanisms to resolve conflicts are largely absent. The competency within various departments and ministries overlaps in some policy fields, such as nature conservation. An example is the framework for protected areas in Greece until 2010 when the Forest Sector moved to the Ministry of the Environment. Within the Ministry of Agriculture's responsibilities, and particularly within the authority of the General Secretariat of Forests and Natural Environment, environmental conservation applies to national parks, aesthetic forests and natural protected monuments. Hunting issues, such as the relevant legislation and regulation, are also under the responsibility of the Ministry of Agriculture. The Ministry of the Environment, on the other hand, under law 1650/86 was granted more power to deal with environmental issues and is responsible for taking care of managerial actions in wetlands and other protected areas, including NATURA 2000 sites.

Undoubtedly the overlapping jurisdictions correspond to an inter-ministerial problem solving system that, it can be argued, had created more confusion and further difficulties, and which consequently has been highly bureaucratic and inefficient. In addition, there is often a lack of coordination between various departments within the same ministry.

6.1. Influences of policies on the development of forest ownership

The increasing mandate for forest expansion through afforestation of arable and degraded land depends mainly on the efficiency of afforestation schemes as well as how new forests are accepted in comparison with agricultural land use values. Results of a landowner comparative survey undertaken in two varied rural areas in Greece, seek to enlighten why local landowner groups are resistant to the planting of land with trees. This is partly attributed to the long-driven agrarian character of these areas. To some landowners, forestry is envisaged as antagonistic, rather than synergetic to agriculture and thus not socially acceptable. Although it could also be the result of other factors, such as the administrative barriers or limited knowledge available to farmers, the research establishes grant aid funding for forestry as a continuous and potent impetus for farmers to participate in planting schemes in rural areas. Forest policy should involve decisions more related with the regulation of subsidies to buy contributions of forestry to meet environmental and social objectives in addition to the productive ones (Kassioumis et al. 2004).

A major incentive for the establishment of forest plantations in Greece was provided by regulation 2080/92, which involves subsidies for the afforestation of agricultural land and the conservation of forest plantations, as well as premiums to compensate for loss of income. It also includes subsidies for the improvement of forested areas, which are granted to farmers, their cooperatives and associations, monasteries, businesses and to any natural or legal private entity, which owns a farm whose revenue accounts for 25% of their income (Arabatzis, 2000). From 1/1/1993 to 31/12/2002, 16,465 applications were approved. The land that corresponds to that number of applications is 35,840 ha and the eligible costs are 194.6 million Euros (Ministry of Agriculture, 2003). The planting of broadleaves accounts for 35,096 ha, i.e. 98% of the total afforested area. The poplar cultivation (broadleaf species) that took place on agricultural land from the 1950s onwards seems to have determined the decision to plant broadleaved forest species. Furthermore, another reason is that the broadleave forest species established (black locust, walnut and chestnut trees) were of a shorter rotation than conifers (Arabatzis 2005).

6.2. Influences of policies in forest management

Forest planning today as defined in Forest Law 998/79 aims explicitly at the planning of the forest resource mainly for timber production. The main planning tools are forest management plans, which are drawn up by the Forest Service for most state forests or by

freelance foresters for private, communal and, in some cases, state forests, and approved by the regional Forest Directorates. All forest management plans are conducted according to the law of perpetuity in yield estimations and aim for the preservation of the forest – avoiding clear felling, improving natural regeneration by selective cuttings and reforestation after fire – as well as the sustainable utilization of timber. The planning period is 10 years for the state forests and 5 years for private forests. The forest management plan is mainly a technical report focusing on sustainable timber yield without taking into consideration the non-timber products and services of the forest resource. The management plan is not part of a long-term planning process pursuing the sustainability of the resource. On the contrary, its primary aim is to ensure maximum sustainable timber yield (Papageorgiou et al. 2004).

6.3. Policy instruments specifically addressing different ownership categories

The Forest Service is responsible for providing information on legislative issues, rights and obligations regarding forests. The Forestry Service informs private owners of all regulations and measures available for improving the status of their estate and collaborates in creating the necessary plans for the application which is to be undertaken. There is a similar approach and procedures for all private forest owners and the management plan is compulsory for all forest owners regardless the size of the ownership. The Forest Service also, in close cooperation with several NGOs, prepares projects and undertakes action aiming at improving the Greek forest environment and the conservation of species in these areas.

6.4. Factors affecting innovation in policies

A National Forest Program (NFP) process has not yet been initiated in Greece. The prime reason for this is limited political will, which results in a lack of commitment towards multifunctional sustainability. The small economic output of the forestry sector in Greece, when examined from a macroeconomic point of view also accounts for the low level of commitment shown by the government. The central Forest Authority – represented by the General Secretariat for Forests and the Regional Forest Directorates and District Forest Offices – is the sole public entity for forest management, but remains a highly bureaucratic and slow-reacting body with an overwhelming timber-oriented professional mindset. These inherent attributes have so far acted as an impending factor to a substantial NFP. In time, however, a NFP is likely to arise as a new topic on the political agenda, as a process distinct from the existing national forest strategy, for reasons largely stemming from the inherent weaknesses of dominant forest planning traditions with respect to promoting sustainable forestry and providing for a continuous exchange between the multitudes of stakeholders. Any new planning framework will need to generate new approaches to integrating major stakeholders into policy formulation, as well as improving iterative planning and intersectoral coordination (Papageorgiou *et al.*, 2004).

CASE STUDY 1: THE IMPLEMENTATION OF DIRECTIVE 92/43/EEC FOR THE CONSERVATION OF NATURAL HABITATS AND WILDLIFE AND THE CREATION OF THE EUROPEAN NATURA 2000 NETWORK

Greece has great landscape biodiversity, for the same reasons that it has great genetic, species and habitat biodiversity. The landscapes range from the semi-desert of Eastern Crete to the Scandinavian (northern) of Rhodope and the Alpine of Mts. Olympus, Smolikas, Timfi, Voras and the other mountain ranges of Northern Hellas. Within the relatively short distance from town Amphipolis to Central Rhodope one meets all the landscape types from the Mediterranean, with olives, holm oak and Arbutus sp., to the northern landscapes of boreal conifer forests with Norway spruce, Scots pine and birch.

The implementation of Directive 92/43/EEC for the conservation of natural habitats and wildlife and the creation of the European NATURA 2000 network will contribute significantly to biodiversity conservation. The greatest strength of the directive is that it aims to protect species and habitats via a network of protected sites. This will provide comprehensive protection of biodiversity, the principal aim of the directive and the NATURA 2000 network.

Unfortunately, the Annexes to the directive listing the natural habitat types and plant and animal species of Community interest do not make allowance for the great biodiversity found in Hellas. A significant number of habitat types and an even larger number of native endangered species of the country s wealth of flora and fauna have been left out of these Annexes. The competent Hellenic authorities must work to ensure that these habitat types and native plant and animal species are included in the forthcoming adaptation of the Directive. The inventory being drawn up as part of the implementation of Directive 92/43/EEC in Hellas could contribute significantly to this goal, as could the researchers whose dedicated work has made it possible.

Incentives to private forest owners(private forest owners or associations, and tenants of privately owned land such) to take appropriate measures to protect areas of the NATURA 2000 network, to avoid the deterioration of natural habitats and habitats of species as well as disturbance that affect species, as long as such disturbance could be significant in relation to the objectives set by Directive 92/43/EEC and 79/409/EEC, and to resolve specific problems arising from the application them. The NATURA 2000 areas in private forest areas amount about 60,000 ha. During the previous programming period 2007-2013 the subsidy for these areas was 10,000,000 Euros. Unfortunately, due to lack of information from the Ministry of Environment and less interesting from the beneficiaries because of bureaucratic procedures, there was not any application for this specific measure.

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8. Annexes

Case studies

Private forestry in Greece, as far as the forest management is concerned, follows the Greek rules for sustainability. The coppice system is applied to different species under a wide range of ecological conditions and with very different growth potential. The repeated coppicing along the centuries, the total exploitation of the above ground biomass at short intervals, often associated with uncontrolled livestock grazing, have led to an over-exploitation of the forest and to its degradation. The coppice system, with different rotation cycles varying from 20 to over 30 years, has been and is still applied to broadleaved forests, from oaks to chestnut and beech. The last three years, in the middle of the economic crisis and fiscal consolidation, the Greek state has increased very much the taxis on fossil fuels and caused very high increase import fuel wood from Balkan countries.

Below are describing three Greek pilot forests (two private and one public/University) that based on new approaches taken into consideration the innovative aspects, environmental issues and multiply uses (climate change, carbon storage, enhance

flora and fauna diversity, LCA criteria of forests and forest products, recreation, wildlife protection, ecotourism, non-wood products, etc.).

CASE STUDY 2: PRIVATE FOREST OF "KASTANIA" (PIERIA REGION, N. GREECE)

Individual Forest (Owner: Theodoros OIKONOMOU, Chairman of Greek Forest Owners Association)

A case of oak coppice is the private forest "Kastania" that is located in Kastania village (Pieria region) and it is 60 km from Thessaloniki. The total forest surface is 1,500 ha (see figure below), from which the nature forest covers 1,300 ha and the remaining 200 ha are reforestations. It is located in the north-east hills of Pieria mountain, between 100 and 400 meters above sea level. This appears a typical oak coppice forest (Greek Quercus frainneto woods) as defined by directive 92/43/EU (cod. Corine 41.B or 9280 NATURA 2000).

The dominant vegetation type in the region is the broad leaved formation with Quercus frainetto. In the east lower part of the forest and in restricted areas the ever green formation of holm oak and horn beam and white oak (Quercus pubescens) can be found. The ravine forest consists mainly of oriental plane (Platanus orientalis) and white poplar, willows, whereas sporadically on slopes lime-species (Tilia sp.) are found. The "Kastania" forest was a case Greek study of a new management approach "Life Cycle Assessment in a coppice Greek forest" that based on LCA rules (COST Action E9: Life Cycle Assessments of Forests and Forest Products). Life Cycle Assessment (LCA) constitutes a new and useful tool in service of the forest management. Also, the above analysis with her objectivity, the integrated approach and other characteristics contributes positively to the decision-making, the sustainable forest management, the certification of forest products and services, etc. During this work were selected different kind of various criteria of forest structure, biodiversity and environmental and protection (Grigoriadis et al., 2003, Grigoriadis et., 2001).

The new approach and policy of "Kastania" forest management is to increase the coppice oak cutting rotation. At the present time the forest has achieved economic self contribution and seems to ensure its own perpetuation. It makes a modest contribution to local and national production of wood and to forest employment, as well as to soil protection, water flow management and carbon storage.

CASE STUDY 3: PRIVATE FOREST OF "BURAZANI-KONITSA" (IOANNINA REGION, HEPIRUS)

Individual Forest (Owner: Georgios TASOS)

Another Greek case, is the private forest "Bourazani" that is located near Konitsa village (Ioannina Prefecture, Epirus region) and managed with new approaches (except wood production) aiming to promote the ecotourism. The total area covers 204 ha, it is located in the north-west Greece in Pindos mountain and near the National Park of Aoos river. Today, it is managed as "Environmental park" and "Wildlife resource" since into forest there are interesting species with high diversity of flora and fauna and the woodland covers a unique aesthetic landscape.

The flora and fauna is very rich. There are 850 wild plant species, 51 wild orchids, 113 butterflies, 172 wild birds, 12 fishes, 17 reptiles, 22 limpellula (insects with big wings) and rich wild mammals. The main forest species are broadleaves trees, as oaks (Quercus frainetto, Q. macadonica), Coryllus avelana, Aesculus hippocastum, and two conifers (Pinus nigra and Abies borissii regis). In the entrance of the area is a Hotel, a Physical historic museum and an Information Center. Also, in the area (except the indigenous mammals) are hosted six wild species (Dama dama, Cervus elaphus, Carpa aegagrus var. cretica, Ovis amon mousimon, Capreolus capreolus, Sus scrofa) aiming to promote the environmental education.

The new approach and policy of "Burazani" forest is to manage for ecotourism, environmental education and wildlife protection.

CASE STUDY 4: PUBLIC / UNIVERSITY FOREST OF "TAXIARCHIS" (HALKIDIKI REGION, CENTRAL MACEDONIA)

Individual Forest (Owner: Aristotle University of Thessaloniki)

The Forest University Taxiarchis is one of the two university forests, in Greece. It has been established as University Institute in 1934 and has been granted to the Aristotle University of Thessaloniki by the Ministry of Agriculture. The forest is located at Cholomontas mountain, at the central part of Chalkidiki (altitude from 320 m to 1,625 m) 70 Km far from Thessaloniki. It is covers an area of 5,835 ha, of which 3,895 ha is forested, 234 ha is partially forested, 1,492 ha is arable land and 85 ha are various land uses.

The flora of the area is very rich (more than 1,100 wild species, 38 if which are under high protection) and mostly made up of deciduous natural forest species with extensive reforestations of conifers (30% of the total area). Major forest is productive species of oak, beech and chestnut and protective shrubs of evergreen broadleaves (holm oak, briar, arbutus, holly). The rotation period for oak and beech trees is about 120 years and the cutting cycle at seven years. For the evergreen broadleaves the rotation period was set 30 years. Of special interest are the fir sapling groves, cultivated in private fields for the production of Christmas trees and offering an extra source of income for the local population.

The fauna is greatly diverse, consisting of mammals, like boars, rabbits, roebucks as well as predatory species like wolves, foxes, jackals, weasels, ferrets, badgers and squirrels. Additionally, the avifauna is very rich with many predatory birds including several species of hawks and a few species if eagles. In total, 134 species of birds have been recorded, 52 of which are migratory, 46 breeding visitors, 27 visitors, 9 winter visitors and 4 are not breeding

in the area.

"Taxiarchis" forest territory is a part of the Natura network and according to the 92/43/EEC and 79/409/EEC directions of European Union; it has been declared a protected site for predatory birds.

The main forest products are oak, beech and pine firewood, as well as charcoals, while present to a lesser degree is also carpentry. Finally, a total of 50-60 forest workers are employed annually in the various woodcutting activities. Pastoral activities make up another part of the local activities. Locally bred are stocks of sheep, goats, cattle, swine and chicken, with numerous units applying biological methods of breeding. Apiculture takes up the last part of the local occupation activities, with honey of excellent quality being produced.

The management plan aims to the even-aged and group selective seedling form for oak and beech stands and the even-aged deedling form for the conifer plantations. The new approach and policy of "Taxiarchis" forest is to manage for education (from students), research and ecotourism.

Figure 5: Orientation map of Private forest "Kastania" (source: GoogleEarth)

Figure 6: Orientation map of Private forest "Burazani-Konitsa" (source:GoogleEarth)

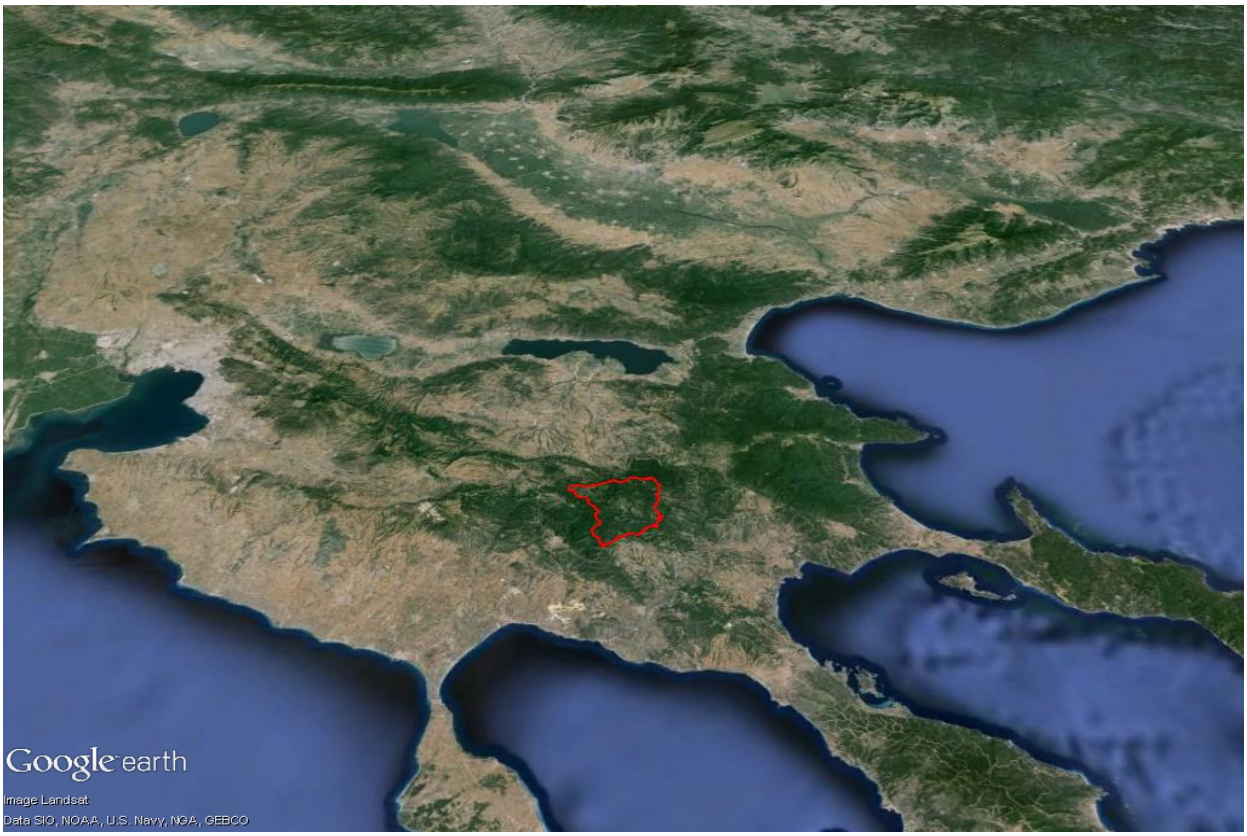

Figure 7: Orientation map of Public/University forest “Taxiarchis” (source: GoogleEarth)

HUNGARY

Laszlo Jager, Endre Schiberna, Tamás Gábor Ali, Kitti Horvath

1. Introduction

1.1. Forests, forest ownership and forest management in Hungary

Hungarian forestry has several controversial features. Its contribution to the GDP is hardly measurable, on the other hand forestry is still considered an important factor in employment. The forest cover is around 20%, as after the plough-land the forested land it is the second largest field of cultivation in Hungary. The country can be described by various climatic factors, the yearly precipitation range is between 400 and 1000 mm, altitude range covers 100 m – 1014 m. These two factors result a wide span of site conditions in Hungarian forestry from semi-arid deserts to cold hills. In term of biodiversity, Hungarian management plans describe 115 tree species, where conifers (spruce, scotch pine, black pine) covers only 15% of forest cover and the majority of the forests are consists of broad leaved trees: mostly beech, oaks and turkey oak. Non-native species as improved poplars and black locust are also important and generate conflicts with nature protection movements. Another significant factor of Hungarian forestry is that the historically low forest cover has been doubled for the last 50 years, but forests are still considered as a scare resource and forest management is strictly regulated and supervised by state. From legal point of view forestry is regulated by a new forest law which was accepted at 2009. Forest law highly considers nature protection issues and strictly regulates forest management, society considers wood as an environment friendly material, but attacks forest managers at the same time even in case of the most environment friendly forest removals.

1.2. Overview of the country report

Approximately half of Hungary's forest is in state ownership the other half is in private ownership, while other forms (churches, communities, etc.) are not significant. Private ownership emerged after the political changes of 1989-1990, when land privatisation started (Gál, 1999). Private forests are affected by extremely fragmented ownership due to the problems and difficulties of ownership transformation after the political changes in 1990. Restitution process started in 1992 and finished around 1998. The process can be described mostly with the use of compensation vouchers and use of auctions where there was a great possibility to formulate joint ownership (Jager, 2008). While there are complains about fragmented ownership status practically in every country, Hungarian situation is still different. It is common that more than 200 hundred owners share a single forest compartment and smaller owners have around a few square meters of forest area only.

To understand current forest policy and status of private forests in Hungary, we have to consider the following facts:

- heritage of the socialist system
- very strong state administration and planning rules
- haphazard restitution process and fragmented ownership structure
- strict separation of forest ownership and forest management
- large share of joint ownership
- high importance of forest management compared to forest ownership
- large share of low motivated private forest owners
- intensive heritage processes
- intensive state policy to block out foreigners from land market
- significant restrictions on land market
- high demand toward fuel wood.

As several factors show into different directions, difficult to provide estimations of further development of private sector.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

Report was prepared within the cooperation of University of West Hungary, Forestry Research Institute and National Food Chain Safety Office, Forestry Department being central body of state forest administration.

Report is based mostly on literature evaluation. Most of this literature is available only in Hungarian language. Also legal background was studied and national experts were asked to express their opinions.

Theoretical approaches related to policy, economics and sociology with various data collection (e.g. questionnaire survey) and analysis method are applied in the studies. The scope of the study is national, because of the size of the country and because all the related legislation is national level (there's no autonomy for municipalities in this field and the same legislation is valid all over the country).

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). The 10 detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

There are two significant forest research centres in Hungary:

- ERTI Forest Research Institute (from 2014 affiliation of Agricultural Research Institute) and
- Faculty of Forestry, University of West Hungary.

Private forestry receives much less attention in Hungarian forestry science than it should, due to the following factors:

- traditionally, forest research focused on natural, biological and factors as damages, die back, forest protection, growth rate etc.
- agriculture and forestry are strictly separated due to the lack of traditional farm system which is typical in Western Europe, agricultural research does not address forestry issues.
- state forestry and private forestry has only very limited connections, most forestry research activities cover topics which are important for state forestry (eg. nature protection restrictions, public relations, permanent forest cover, etc).
- it is difficult to gain reliable information from private forestry, part of their activity is hidden from tax office, employment is not registered, difficult to evaluate self-employment, etc.

If the privatisation is studied as a whole, it must be understood that between 1990-1995 Hungarian society and economy went through so significant changes, mostly because of the scale of industrial privatisation that agricultural and especially forestry privatisation was seen only as a marginal issue. To support this evaluation, it can be mentioned that Mihalyi Peter, university prof. doctor of Hungarian Academy, in his work “Encyclopaedia of Hungarian Privatisation” does not mention forestry at all.

3.2. New forest ownership types

Forest privatisation started in 1992, its peak was in 1996 and was practically finished in 1998. There is obviously no research from the previous decades.

In the first years of privatisation, its significance was not realised as main state policy was to keep private forests in large management units, similarly to the communist type co-operations. In no great changes were expected in the procedures of forest management and forest administration.

Within the Forestry Faculty, first research addressing private forest was launched in 1998. Jager carried out a country wide questionnaire among new forest owners, to collect opinions and attitudes of these forest owners. Approximately 2000 opinion of new forest owners were collected.

Economic questions of private sector were studied by Schiberna, E. in his PhD work.

It must be mentioned that private forestry sector is based on the triangle of owner-manager- contractor as it will be explained later in detail. As Horvath, S. presented his PhD work in the field of contractors; three major actors were covered by in-depth scientific evaluations.

University of Sopron was also a member of several international research activities addressing forest ownership issues. The main objective of the GoFOR project was to study and evaluate evolving practices of new modes of governance in the field of forest policy and in adjacent policy domains (like nature conservation policy, rural development policy etc.). The program had several implications to private sector also.

Multifor.RD achieved a European level of comparison of forest owners’ behaviour and attitudes. Hungary was found to be the most traditional and most resource oriented.

3.3. Forest management approaches

A specific feature of Hungarian forest management is the very strong state influence and regulation. State Forest Administration does not only supervises or approves management plans but prepare these plans for both state and private managing bodies. As a result, only very limited freedom is given to forest managers, management activities are regulated, strictly supervised and carried out in a traditional way.

In 2003 a forest accountancy network was established to gain reliable economic information from private forestry sector. This system was maintained for three years and its results were published by Schiberna, E.

As it was mentioned above, another important feature of Hungarian private sector that private sector can be described the triangle of owners- managers-contractors. Due to the large number of forest owners, management decisions and administration is carried out a framework organisation, an appointed person, e.g. forest manager. On the other hand forest work, activities are not executed directly by manager but contractors are applied.

3.4. Policy change / policy instruments

Forestry was always exposed to state politics. Intensive nationalisation during 1950-1960 affected seriously forestry sector. Large afforestation program in the same period, which modified species composition and doubled forest cover was also policy-driven.

Privatisation itself was based on a political decision, explained in detail in chapter 6.1.1. It must be understood that privatisation was executed in a very short time, without previous practices, without considering the effects in detail. While idea of land privatisation was supported by the society as a whole, errors in the execution resulted an extremely fragmented ownership structure. From this point, battle was lost at the very beginning and private sector has been trapped in fragmented ownership for twenty years.

In the last two decades there was no political decision to clarify the situation, on the contrary, all political documents emphasised the importance of slow, but steady improvement. As an example, it can be stated that when new forest law was adopted in 2009, ministry officers declared that ownership questions were not addressed in forest laws.

The state forest administration itself was not interested in the clarification of the ownership structure as it might result the fragmentation of management structure (instead of large co-operations, associations and other umbrella organisations single farms would impose more administrative burden on state forest administration.)

National Forestry Program[17] was adopted in Hungary by Governmental decision 1110/2004. (X. 27.). It covers the period 2006-2015 and describes the current situations clearly, as area of private forests in Hungary is 800.000 ha, average ownership size is 2 ha/person (400.000 forest owners) and defines the expected results at the field of private forestry. These are the following:

- decrease of non-managed areas
- development of large private contractors (integrators) to offer services on a contractual basis
- increase the perception of forest within the triangle of general public – owner – manager
- increase of forest cover, efficient land use, employment in line with rural development
- more efficient public access and public use in private forestry
- close to nature forest management, permanent forest cover in private forestry

One may note that improvement of the ownership structure was not overemphasised in NFP goals. National Forest Program is in line with following state policy documents:

- National Environmental Program
- National Regional Development Program
- National Rural Development Plan
- Agricultural and Rural Development Operative Program
- Regional Operative Program
- National Agri-environmental Program
- Vásárhelyi Plan, (National Hydrology and Flood Prevention Plan)

National Educational Base Plan.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national

[17] http://erdo.kormany.hu/download/9/5a/20000/Nemzati Erd%C5%91program a 2006-2015 k%C3%B6z%C3%B6tti id%C5%91szakra.pdf

level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

In Hungary, land registry system was settled around 1860. Today it is a country wide, legally approved comprehensive system, covering the whole country, supported by GIS system and a robust digital database. It is the only source of legally accepted ownership, e.g. in case of a sale of a land new ownership will emerge only if contract is registered into this database.

Around mid '90s, when due to land privatisation approximately 300.000 new owners had had to be registered in a relatively short time, land registry system suffered significant delays. In was common that new owners received evidence of their property only with several years delay. Today the land registry system is up to date, sale contracts are registered on the very day of their issue.

As a consequence of this national database, state registers detailed information about land owners (e.g. number, gender balance, age distribution, etc.) Database is open for public on a case-by-case basis; aggregated data is not open for public.

4.1.2. Critical comparison with national data in FRA reporting

Hungarian forest administration uses two categories to describe forested areas:

- area of forest 1 933 600 hectares (20,8% of total area) includes forests only
- area allocated for forestry purposes is 2056600 hectares (22,1% of total area) This second category includes forest roads, open areas in forests, etc.

FRA tables refer to first category, providing net forest area. Note the increase of the forest cover (250 thousand hectares between 1990 and 2013) due to intensive afforestation programs, mostly in private sector.

Table 1: Public and private forest surface in Hungary (Source: Nebih, 2013 – Short report of main facts of forestry in Hungary, 2013.)

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2013
Public ownership	1792	1132	1150	1150
Private ownership	4	699	831	865
...of which owned by individuals	4	403	559	731
...of which owned by private business entities and institutions	0	103	138	0
...of which owned by local communities	0	194	134	134
...of which owned by indigenous / tribal communities	0	0	0	0
Other types of ownership (municipality, church, mixed).	5	75	2	41
TOTAL	**1801**	**1907**	**1983**	**2056**

It seems to be a significant theoretical mistake that local community forests are regarded as private forests. Expression "local community ownership" seems to be equal or similar to municipality ownership, represented by city council.

This form cannot be considered as private ownership, as its several features are similar to state ownership. It is recommended to separate three basic ownership forms: state, private and municipality.

4.2. Unclear or disputed forest ownership

The ownership system in Hungary is clear, well recorded and maintained. Land registry system is accurate and contains proper

geographical data. Legal basis can be found in 1997 years CXLI Law of Land Registry System. Within private forests, there is a dominance of undivided common ownership. Some owners own very small areas (only as small as a few square meters (!)); in some cases data is not accurate (e.g. owner has died already or wrong, missing data was recorded during the privatisation and few owners can not be identified) but in general terms the data is accurate and subject of permanent state supervision. In case of state ownership, ownership rights are represented by National Land Fund Administration organisation. Legal basis form: 2010 years LXXXVII Law of National Land Fund.

As private owners may offer their land for National Land fund, within 1% of land there is undivided mixed ownership with both state and private owners within same land parcel. This imposes further management problems and difficulties with statistics.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

Between 1992 and 1994 there were no restrictions on land purchase contracts. First law of land ownership was adopted in 1994 which stated maximum private ownership limit as 300 hectares, and excluded foreigners from Hungarian land market. For this reason legal bodies were also banned to purchase land with some exclusions as state, churches, etc.

In the mid ’90s Hungarian agricultural land was relatively cheap, foreigners, especially Austrians had been looking for ways to purchase land in Hungary, more or less contravening the national legislation. Typical solution was to purchase and pay the land for private owners, but cover the transaction with long term rent and purchase option. These contracts were called “pocket contracts” saying that these are not registered at State Land Office but were kept in pocket instead. A key concept of the conservative government was to forbid and prevent these contracts. Legislation was modified several times to increase the barriers against foreign land owners.

Hungary became a EU member country in 2004 and a 7 year derogation was obtained to maintain restrictions against free market of agricultural land, and this derogation was extended for another 3 years and finally land market was opened only in 01.05.2014. As a preparation against foreigners, new land legislation was adopted by the parliament as 2013. CXXII. Law of the Agricultural and Forestry Land Purchase and Rent.

The core concept of the legislation is to provide restrictions against free market of land as strong as possible. To achieve this target, tools were the following:

- person without agricultural or forestry education/qualification is allowed to purchase maximum 1 hectares of land.
- pre-emption rights are provided to state at first level and local agricultural producers in several grade when these person may enter into land purchase contract instead of original buyer with the declaration that they accept the conditions (e.g. price, etc).
- local land committees shall be formulated of local landowners and exclusive right is granted for them to support or reject any land purchase contracts based on the evaluation of the proposed sale contract and its effect on ownership situation. No wonder how local committees will vote.[18]
- state agricultural authority will approve land ownership contract when local committee support has been expressed.

These rules now are examined in detail by both EU level and Hungarian Constitutional Court in order to justify that new legislation is in line with EU rules and freedom of ownership.

4.3.2. Specific inheritance (or marriage) rules applied to forests

In relation to civil law regulations, new civil law codex entered into force in 2014 as 2013.

[18] Due to the delay in legislation, local committees have not been formulated but State Land Administration Office acts as a substitute of these committees.

V. Law of Civil Code. Heritage rules are described in book 7. There are no specific rules about land and forest heritage with one exception: Heir may refuse heritage of land and animals if he or she is not involved in agriculture, while keeping other pieces of heritage. (This is the only case when heir may choose which part of heritage he or she accept, in other situations heir can only refuse the heritage as a whole. 7:89 §).

The basic rule of heritage law that all assets are divided among offspring is also valid for agricultural land. Heirs may reach a common agreement within the heritage process to distribute the heritage in a different way (e.g. by keeping the land in single ownership) but others must be compensated.

In relation with marriage, there is only one rule which affects ownership: in case of divorcing, parties may exceed 300 hectares of land ownership limit (17§ (c)). The reason behind the rule is to prevent splitting of the managed area.

Experts usually agree that in order to prevent further fragmentation, specific heritage rules should be adopted. There are some predictions about the number of forest owners to be doubled in the next ten years due to the current age distribution of the owners and heritage processes.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

In Hungary significant changes took place between 1992 and 1998, within the so called privatisation process. Details are described in chapter 4.4.3

4.4.2. Changes within public ownership categories

Forestry act determines that only state owned body may act as a manager of state owned forests. Since there are 22 state forest companies in the country, there has been a long discussion to merge them into a holding structure.

4.4.3. Changes within private forest ownership

Another source of increase of private forestry is afforestation. Intensity is more or less in line with changes of subsidy system (Figure 1).

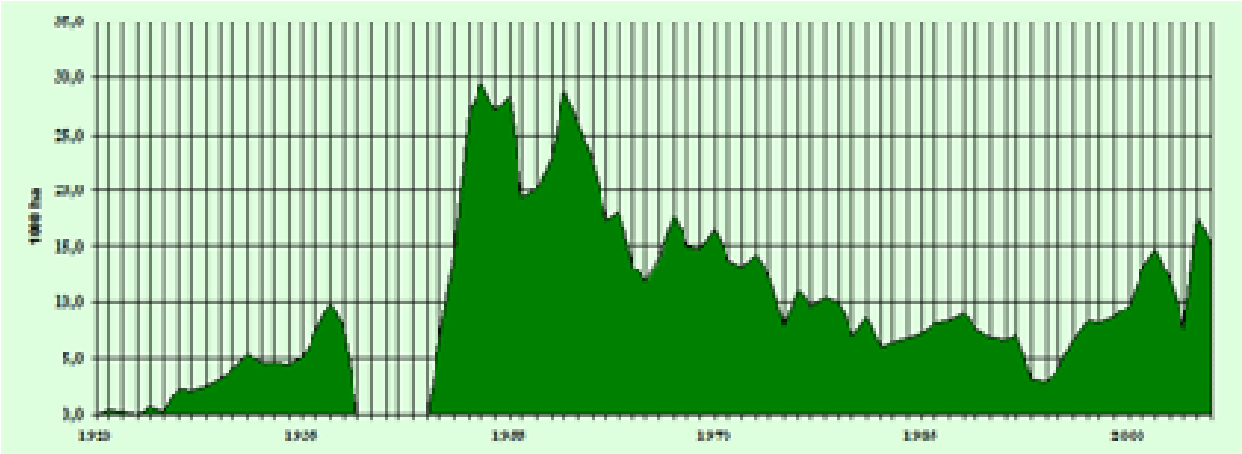

Figure 1: Afforestation activities in Hungary 1920-2010

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)

- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

New ownership types were formulated after the transformation of the previous political regime. The change in civil rights in 1989 enabled the privatisation, and the actual privatisation process started in 1992 and lasted until 1998 (Schiberna 2007).

After 1994 business associations were not allowed to buy new forests, neither joint forest ownership companies (but new properties can be involved by members). Because of these restrictions the expansion of the share of these ownership types slowed down (Lett 2006).

In 1994 a new law was introduced about joint forest ownership, and then the first overall law about the forests after 1989 was introduced in 1996, which became invalid by 2009 with a new forestry law, which is also expected to change in some terms in the following years.

Between 1989 (practically 1992) and 1994 business associations were allowed to by new properties, which enabled foreign citizens to buy land at very low price compare to the western countries (private people from abroad were not allowed to purchase land). It was terminated by policy in 1994, when only individuals could buy property (Lett 2006). From the owners point of view the distance from the forest is an important problem: those living far from the property have not got a close relationship with the forest. This and the undivided ownership are the reasons for today's lack of management (Jáger 2001).

Inadequate distribution of subsidies between forests and arable lands is a problem which should be solved by new policy instruments (Jáger & Mészáros 2001). A possible solution is provided by implementing the standard output evaluation, which enable forest owners and managers to get a higher portion of subsidies (Schiberna et al. 2011).

The greatest difference in comparison with other Eastern-European countries that process did not aim to recover the original or historical ownership structure existed in a given time or time period.

Two different processes were applied: compensation and land re-allocation. Compensation vouchers were given to people whose property had been nationalized or who suffered in any forms from political reasons. Compensation vouchers were then used in auctions where a part of the state owned forests were sold. According to Jager (2008) these auctions facilitated greatly the formulation of common ownerships.

In the framework of land re-allocation, the forests of former agricultural co-operatives were re-allocated among the members of the co-operatives. During the socialist time members owned the co-operation, and co-operation owned the land, within the new form private owner (one or more person for each parcel) was named inland registry system, while the co-operation only could rent the land from new owners. Transformation was achieved using several methods, owners could choose in first step, random selection was used in case overlapping claims, and land committee was nominated to finalise the process.

While there are complains about fragmented ownership status practically in every country, Hungarian situation is still different. It is common that more than 200 hundred owners share a single forest compartment and smaller owners have around a few square meters of forest area only.

As a general rule, apart from churches only private persons may own the forest and other agricultural land. Any other bodies are excluded from land ownership by law.

The problem of unmanaged forests is mainly related to urban, absentee, and non-traditional or non-farm owners. The share of this area in private ownership is slowly decreasing (Benkő 2005), but with its 166289 ha in 2012 (NÉBIH 2013) it still represent a considerable problem.

The number of private forest managers were 37134 in 2012 with an average property size of 19,16 ha (NÉBIH 2013).

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	***3*** *- most important forestry process of the last three decades*
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	**0**
• New private forest owners who have bought forests	***1*** *– obviously there is a secondary market and people are selling and buying forest land, but heritage process and further fragmentation is much stronger; pre-emption rights hinder free forest market*
• New forest ownership through afforestation of formerly agricultural or waste lands	***1*** *– in the early 2000 years the yearly afforestation reached 15.000 hectares (0.75% of forest cover) but currently this number is around 3000 hectares; afforestation subsidies cannot compete with agricultural subsidies*
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	***1****- economic factor of forestry is much stronger in Eastern European countries as wood price is harmonised in European market but general incomes are much lower in eastern countries*
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

4.5. Gender issues in relation to forest ownership

State land registry system records the name of the owner from which the gender can be determined. The society does not consider gender issue to be important in case of land and forest ownership, especially within traditional rural villages where women refuse to answer questions of their forest as they insist that this is a business of men. Data exists theoretically, but not available.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives		X	
• Self-organised local community groups	X		
• Co-operatives/forest owner associations	X		
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

As it was expressed above, core part of national land ownership legislation is to keep land in national ownership. Major tool is to forbid any company/legal body ownership in land market. Strictly speaking co-operations, associations do not own the land but act as

managers of the forest. However landowners have a membership in these bodies, so distinction is mostly a legal question.

Co-operations are described by 2006 year V. law of Co-operations. Minimum membership limit is 10 members in establishment procedure. Biggest difference between co-operation and association is that in co-operation members have equal vote rights (e.g. one person one vote) while in forestry associations membership vote is determined by share (owned area).

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

4.7.1. Theoretical framework

Most studies dealing with common/joint forestry /forest associations, etc. refer to Ostrom and her publications as a scientific reference and to the well know theory called 'tragedy of commons' – it implies that common pool resources cannot be managed efficiently as free riders gain their maximum benefit at the cost of the others and this will lead to overexploitation. Additionally, terminology problem has been noted by several authors. Robert Home in 2009 describes private forests as follows:

"Land ownership, although sometimes regarded as a continuum or spectrum, can be divided into three basic types:

- Private property, held by individuals and other legal entities. […]
- State land, controlled by public bodies, which may be central, regional or local authorities, or parastatal bodies.
- A range of land rights that can be loosely categorised as communal or 'third sector' (terminologies are debated)."

Other sources use the expressions common land, communal land-owners cooperative small-scale forest management, community woodland. The expression '**forest association**' in some articles which is very confusing as this phrase is also used to describe a forest vegetation types.

It is important to distinguish three major forms which may fall under the terminology / expression of "common":

- village/municipality forests
- pure common pool resources where everybody may use the given area – e.g. there is no management body (for example mushroom collection in public forests)
- joint ownership when there is a large but definitive number of owners. In this case common management faces with two basic questions: decision making and distribution of benefits.

Pure common pool resources (where there are unlimited, non-defined users) indeed can be found in forestry sector. Currently in Europe recreation and significant part of non-wood forest resources are allocated and utilised as a pure common pool resource. In some countries hunting is allocated similar way. Good example of pure common pool

resource is carbon dioxide reduction where free rider countries benefit from the efforts of others.

Obviously municipality forest is a complete different form of ownership.

In case joint ownership the size of the group (e.g. joint owners) is defined. This means that it is well-known who the owners are. In this case the question is what kind of legal forms are offered for these owners, how to share ownership and manage forest together.

4.7.2. Historical background

In Hungary, and within the former Austro-Hungarian Empire (Slovakia, Croatia, Transilvania) the feudal system collapsed after 1848-49 revolution. Position of peasants was transformed to freeholder. Core part of this transformation was land allocation to peasants. Forest land was allocated with the obligation of joint management and ownership. Every person had a 'share' subject of further heritage. Its name in Hungarian was "közbirtokosság". Legal basis was renewed in 1935 by adopting new forest legislation and its name was changed to erdöbirtokosság (common forest possession body). Ownership was common – in such term that everybody has a share – similarly to the way ownership exists in companies (gmbh, etc).

In the communist regime most of these forestry commons were transformed into co-operations during the process of land reallocation when single agricultural farms were merged into large agricultural production units (Russian type co-operation, "kolhoz").

During the restitution/privatisation process the legal basis has been changed: see 1994 XLIX law; and in most cases land ownership unit now was allocated (named) to private persons. In such a way these legal bodies cannot be considered as CPR as owners can determine which their forest compartment/subcompartment is and they can leave the management body if they wish. To make it more complex and difficult, joint ownership exists within these managing bodies.

CASE STUDY 1:SZENTGAL FORESTRY ASSOCIATION

The largest forest common is located in village Szentgal manages 1400 hectares of forest. The forest association is owned by 400 owners, who at the same time are the owners of the forest area. Since this form of management has a long historical tradition in this area, new forest owners accepted to form a forest association during the privatization process. In many other cases, however, there is a permanent conflict between the owners and the management body. The owners mistrust the management and demand closer control over the financial decisions, but they are unable to change the managers who usually are able to dominate the general assembly of the association.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Hungary

5.1.1. Natural factors

Hungarian forest management can be described with the following factors:

- large differences in environmental factors as precipitation between 500-1000 mm
- dominance of broadleaved forests
- high importance of nature protection movements and restrictions

Private forests have a somehow different tree species composition, compared to state forests, as 2/3 is the share of black locust and poplar.

5.1.2. Economic factors

Some economic features have been mentioned in the first chapter. As general salary level is lower in Eastern European countries, same wood price is regarded as a higher economic value. Currently EU subsidies increase further the profitability of private forests. Due to high energy prices and high level of fuel wood demand there are no problems in domestic wood markers.

5.1.3. Management plans

Forest management planning is highly developed and centralised in Hungary. Reasons are mostly historical. Forest management regulations have a long tradition in Central Europe. During the medieval ages, mining especially gold mining was a core part of the economy. As inner structure of mines demanded a huge amount of wood, shortage of available timber forced the kings to regulate forest management as early as the XVI. century. Countries as Austria, Czech Republic, Slovakia, Hungary, Slovenia, Croatia (the previous Austrian Empire) have the similar history, background and knowledge about forest management.

In Hungary the forest law as early as 1879 contained a detailed description and regulation of the process of forest management planning. Later on, when Hungary became a communist state after the second world war, a so called 'planned economy' was established similarly to other countries in the region under the Russian influence. This meant that planning became the core concept of the economy while factories, and land was nationalised. State covered all aspects of economic production with five years plans. These plans hardly were successful but in forestry. Due to the long harvest periods forest management planning process can easily provide good short and long term predictions if actual situation is known. Because long term forestry planning was successful, the communist state supported further improvement of centralised management planning. Moreover, this system has been maintained after the political changes in 1989. As a result a very detailed and accurate system has been applied in Hungarian forest sector. Key features of the actual Hungarian forest management planning system are the following:

All forest compartments are subject of forest management planning, irrespectively of size, ownership, tree species or purpose.

All the forests are visited, inspected and measured by state forest service every ten years to measure and describe the actual forest status and decide about:

- the interventions are necessary in the next ten years,
- time of final harvest and regeneration method,
- future stand type (after the regeneration).

Description of the forest means determination of all the features of the forest as height, diameter, volume, density, tree species composition, growing stock, annual growing rate, average growing rate, etc.

Forest management plan is produced by state forest service for owner/manager of the forest by a nominal fee.

These plans are provided at stand level, forest unit level and district level as:

- the ten-year district forest plan (district forest plan),
- the ten-year forestry operational plan (operational plan),
- the annual forestry plan (forestry plan).

Aggregate data is collected and maintained centrally as Forestry Database. This database was established in 1976 and now contains 35 years of key features of all the Hungarian forests.

In the first decades participation process was very limited, even the forest manager had no right to participate in the planning. Today forest law allows participation for a broad circle and the owner, NGOs, local councils, nature protection groups can affect the planning process.

5.1.4. Forms of management

Current management situation is described in table 2.

Table 2: Management structure in forestry. Source: Nebih, 2013.

Ownership type	Management arrangement	Forest area (1000 ha)	Number of management units
State	State forest companies	1 055	22
	Other state	90	371
	Unknown – state	11	-
Municipal	Municipalities	11	810
Other public*	Other public	6	312
	Unknown – other public	4	-
Subtotal - public		1 177	1 515
Private**	Forest associations	105	822
	Forest co-operations	10	40
	Companies	115	1 208
	Private individuals	445	34 212
	Other private	37	852
	Unknown - private	166	-
Subtotal - private		878	37 134
TOTAL		2 055	38 649

** Other public includes: church, foundations, associations, etc.*

*** Private ownership can be classified as private individuals, group of individuals (common ownership) private companies, private associations. However, there is no information on the distribution of these ownership types.*

The state and public bodies own 56% of the total forest area. According to legal regulations state owned forests can only be managed by state owned companies or public institutions. Municipal forests has only a less than 1% share in the total forest area, therefore their role is rather limited within the forestry sector.

The rest of the forests (43%) belong to private owners, mostly to private persons who typically own forest in undivided common ownerships. Approx. half (51%) of the private forest area is managed by an individual forest manager based on ownership rights or a contract with the owners. Companies and forest associations are managing 13% and 12% of the private forest area, respectively. While companies can have a wide range of activities besides forest management, forest associations can only be established for forest management purposes.

The common characteristic of all forest management organizations is the fact that forestry operations are typically carried out by forestry contractors. Even the state forest companies tend to outsource forestry works rather than employ forest workers. Sometimes they own heavy machinery and key machinery, but they lend them to their contractors.

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. Informed and trained forestry professionals

According to Hungarian forest legislation, all forest managers are obliged to have a contract with a forestry professional to obtain advice and supervise activities. All issued documentation mast be signed both manager and advisor. For private forest owners and managers the most credible source of information is forestry professional. Therefore any new technologies or improvements can be promoted in the private forestry sector through forestry professionals. In many cases forestry professionals not only give advice to forest owners and managers, but also they are directly involved (in a formal or less formal way) in the decision making process.

5.2.2. Subsidy schemes

Subsidy system in forestry in Hungary is entirely relies on EU co-funding. New form of co-operations among forest managers, new (mostly environment friendly) technologies, forestry practices and other innovations can effectively be supported by subsidies. Many of them are strongly linked to the subsidy

itself, so they will disappear when they are not subsidised anymore.

Subsidy system increases profitability of forestry sector to a great extent. It is evident the profit is a key factor for owners to agree and start forestry management activities. In this way EU subsidies, even if they address a environment friendly management, Natura 2000 support or any other specific measures, play a key factor to reduce area of non-managed forests.

5.2.3. Forestry integrator

Forcing forest owners into common forest management units was only partly successful. In the year 2000, 385 thousand hectares of forests were unmanaged, mostly because the forest owners had no up to date information about their obligations and opportunities regarding their forests. Research also shows that lack of organizing power (capable, informed and interested actor) in a region had significant effect on why forest owners were unable to start the management of their forest.

Forest policy addressed this issue with subsidising the operation of forestry service centres called “Forest Integrators”. Integrators were private enterprises operating as companies or self-employed persons, and they were supposed to present the organizing power in their region mentioned above through their various services.

Forest integrator is a strategic alliance as integrator provides expertise by consulting, thus the partner forest enterprises can benefit from the integrator’s marketing skills and business experience. The consulting service is based on a long-term contract, while the other services of the integrator such as forestry operations and timber trade are negotiated in the specific cases (e.g. the integrator is competing with other actors on the market in these transactions).

According to the plans of the Ministry of Agriculture who provided the subsidy, 100-150 such forest integrators would have been established. However, there were no more than 60-70 forest integrators in the country in an uneven geographic distribution. Even though there is unpublished evidence of their positive effect on the organized operation of the private forestry sector, financial support was terminated in 2009, because it did not fit into the EU subsidy schemes, and the Ministry of Agriculture could not finance it from national sources. Anyhow the program is considered as successful as most of the Forest Integrators continued their business without support and kept their business co-operations with their partners.

5.3. Main opportunities for innovative forest management

There are several opportunities to improve forest management in private forests:

New legislation should be adopted to actively modify ownership structure. Area of very small owners (100-1000 m^2) should be nationalised and reallocated to larger owners. Cost should be covered from EU subsidies, wood sales, long term state loans, etc. Participation in this program should be optional for larger owners (1000- 5000 m^2).

Forest market should be regulated separately from general agricultural land market as within the field there is a very strong state supervision.

Simplified land sale process should be introduced in case of sale of very small forest areas. Currently it is obligatory in pay for a lawyer even if sale is between fellow owners and area is just a few square meter.

Simplified management planning rules shall be introduced for small forest management units.

State forest service should actively support farmers, single forest owners. Administrative punishments should be reduced. Currently any administrative error (e.g. missing documentation, overharvest, delayed information) results extremely harsh punishment fees. (As an example: 80 euro/m^2 punishment fee is imposed on forest manager if harvest is approved in management plan but manager did not inform State Forest Service about the actual time of the harvest in 30 day advance).

Joint management and administrative uses should be introduced for farmers, who manage both forest and agricultural land.

5.4. Obstacles for innovative forest management approaches

Describe the most important factors that hinder forest owners from adopting or carrying out innovative (new) forest management (e.g. laws, regulations, institutional arrangements, biodiversity conservation designations, forest operations, logistics, access to resources, education and training of forest owners, managers or workers, and so on). Please list these factors in order of priority, and for each provide a short description.

From Previous explanations it must be obvious that biggest obstacle of the improvement of private forest sector is the **fragmented ownership** structure. In most case the number of forest owners on each parcel is so high that any co-operation communication, common agreement (even to reach simple majority) seems to be very difficult.

Some experts emphasise the lack of **subsidies**, but in fact Hungary could not spend EU subsidies allocated to private forestry. On the other hand, in some case application or subsidy related administration is complicated. Applying forest managers have to comply with a number of rules and requirements, and any failure would result in the loss of their subsidies. Forest managers also have to pre-finance these subsidies for the time they are actually transferred, which can take a year or even longer period of time.

Forest policy is changing over short period of time. As forestry is a rather conservative way of production, any new approach needs time to be implemented. In an environment where legal regulations, market conditions, and subsidies can change in a few years forest owners and managers are sceptical toward new ideas.

Forest legislation does not support single farmers; physical separation of forest compartment is a complex and costly process. Restrictions imposed on land market also block further reduction of fragmentation.

Forest owners still has **limited knowledge** regarding their forests and forest management. Sometimes even the location of their forests and with whom they own the forest was confusing to many of the owners.

Since the privatization was taking place in a time of turbulent changes the decisions were made under political and economic uncertainties, and based on limited information, most of the decisions were heavily influenced by opinion leaders e.g. big owners, and forestry professionals.

CASE STUDY 2: 'Szabó' FOREST INTEGRATOR.

'Szabó' Forest Integrator is an enterprise of a professional forester, who has been working in private forestry since the privatization. This enterprise provided various services for the partner enterprises including consulting, contractor works and timber trade. After the program for the promotion of forest integrators was terminated the forestry enterprise continued its operation, and also the co-operation with the partner forest managers still goes on.

'Szabó' Forest Integration is a centralized co-operation in which the core enterprise provides services to partner enterprises. Direct co-operations among partner enterprises are not a typical part of a Forest Integration. 'Szabó' Forest Integrator was able to develop a forest service centre capable of providing services for 6500 hectare of forest.

There is a mutual advantage in this type of co-operation. The mid-term co-operation provides a stable operational area for the Forestry Integrator. For the partner enterprises the Integrator is a source of free expertise and a business partner whose reliability is very important if the partner enterprise is not well informed in forestry matters.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

6.1.1. Historical overview

Politics always had a strong influence on forestry in Hungary. After the 2nd World War, when communist system was introduced in Hungary, practically all private forests were nationalised. Nationalisation was achieved in several steps, but by early '50 there had been no private forest in Hungary. As a parallel process, agricultural land was also nationalised to formulate co-operative production units.

Period of 1950-1970 is usually considered as golden age of Hungarian forestry when – using significant state support – forest cover was almost doubled in Hungary. Most of these new forests were established and managed by co-operatives. Land of co-operatives was theoretically private land, but in practice it was managed like state ownership. This means that co-operative members had no influence on management decisions and they received salary instead of shares of profit.

6.1.2. Politics related to restitution

After the political changes in 1989 there were different standpoints and opinions of privatisation in general and land privatisation/restitution. Most political parties opposed land restitution but after the first free election in 1990 the winning party (MDF – Hungarian Democrat Forum) had no majority and formed a coalition with FKGP (Small Farmers Party). FKGP had only one requirement to be a coalition partner and it was the 'land reform' e.g. privatisation.

It was also a political decision that privatisation would not be restitution but a kind of land reallocation as it did not address to restore the historical ownership structure, contrary to almost all Eastern European countries.

Technical solution was to provide compensation voucher for those who suffered any loss or harm in the communist period. Owners of compensation vouchers may participate in land auctions or could use vouchers for other purposes. Theoretically this process would allow achieving an ownership structure which is in line with current needs of participants. Experts agree that one of the biggest obstacles of a sound ownership was the possibility of down bidding process. Starting price was always 3000 HUF/gold crown which could be reduced in few steps to 500 HUF in case of no interest. This very low price was so tempting for participants that they even accepted the consequence: joint ownership. Gold crown was a historical measurement unit referred to the profitability of the land; usually forests were at the level of 4-7 gold crown/ hectare.

6.2. Influences of policies in forest management

6.2.1. 1992-1996: execution of restitution and land allocation

Main feature of forest policy between 1992 and 1996 was that execution overtook policy. Process of restitution and reallocation was started practically immediately after the political decision, while other elements of effective policy – especially legal elements - were missing.

While restitution was almost finished by 1996, most important pieces of law became effective only at the end of this period:

- 1994. LV. law on agricultural land law entered into force in mid-1994,
- 1994. XLIX. law on forestry commons became effective in 1995,

and the famous 'green package, including:

- 1996. LIII. on nature protection,
- 1996. LIV on forests, forest protection and forest management
- 1996 LV. on game protection, game management and hunting

came into force only in 01.01.1997.

These pieces of legislation did not formulate private forest ownership but took as granted, a coat after the rain, according to the well-known Hungarian saying.

6.2.2. 1996-2000: struggle on management rights

As privatisation gradually finished, it became evident for new owners that there was a very

high pressure from state forest service to keep large private forest areas under one forest manager (called common/joint management). This was mostly because Hungarian forest law defines very strict administrative tasks, and management planning rules on forest managers irrespectively from size. It is obvious that forest service was worried about how to achieve administrative inspection of 300,000 forest owners instead of 3000 large private management units with the same detail and accuracy.

Struggle reached even the level of constitutional court who declared in its decision of "1347/B/1996 constitutional court decision" that obligations and restrictions imposed on new forest owners (e.g. the obligation to carry out joint forest management) is in line with national constitution.

Gradually it came into light that due to the administrative burdens and conflicts between new forest owners, low interest of urban forest owners, several thousand hectares of forests were left unmanaged. Obviously forest service showed no interest in reduction of non-managed area.

6.2.3. 2000-2004 Preparation to EU accession

Around 2000 state forest policy changed – so to say – in silence and forest administration gradually gave up the previous policy of forcing joint forest management. New rule says that a single ownership unit can be subject of individual management rights, and common/joint management is obligatory only if there are more than one owner in that single piece of land. In other words a forest owner may obtain the position of an independent forest manager irrespectively of the ownership structure of adjacent land. This was a significant movement, however the previously established joint/common management units have been conserved.

Society showed less and less interest toward private forestry and ownership structure as EU accession became the leading policy movement. Every research body prepared papers about "possible effect of accession…" and establishment movement of Natura 2000 network was started. This gave more power to nature conservation, and more and more pressure can be seen from nature conservation.

6.2.4. 2004-2008: peak of afforestation

As a new member country, Hungary's primary aim was to meet EU legislation. The country started the preparation to the new seven year financial period 2007-2013, established National Forestry Program and started to implement the agricultural subsidy system. As a consequence, a little less interest was given to private forestry. Forestry subsidy system suffered significant delays with the exception of subsidies targeted afforestation, and yearly afforestation level reached 15,000 ha again.

The portion of these unmanaged forests was 50% in 2000 (Schiberna et al. 2011), then 29% in 2006 within the private forest sector (Schiberna 2007). This seems a rather impressive development, but overall evaluation shows that every third hectare in private forestry was kept unmanaged for a period of at least 15 years. Additionally, active management does not always mean a solution for the problem of ownership.

6.2.5. 2008-2014: Energy forests

After 2008 the increasing EU agricultural subsidies changed profitability of agricultural production significantly. The result was lower and lower level of afforestation activities. In 2009 new forest legislation was adopted, with little simplified administration rules and great attention to state forestry and permanent forest cover. Profitability of forestry increased significantly due to the increasing energy prices. The government put much attention to employment and state forests employ several thousand unskilled workers but no significant improvement of private forestry sector is achieved.

After 2014, land market system was transformed completely but its effect on forest ownership structure is not positive. Currently the core part of agricultural policy is to exclude foreign owners from land market. These movements have effects on private forests too.

6.3. Policy instruments specifically addressing different ownership categories

According to national forest policy, forest law was based on “non-sectorial approach”, e.g. there were similar rules for both state and private forestry. There are only three chapters in which ownership categories are distinguished. These are the following:

- state forests are non-trade able with the exception of small parcels below 5 hectares

- non wood forest products can be collected by general public only in state forests

- permanent forest cover shall be maintained in 25% of natural forests in state forestry. There are no such restrictions in private forests.

To extend the area of uneven aged forest is a priority guaranteed by law since 2009. There are several studies about the economic effects of the new approach, but these studies are not related with the ownership types (Schiberna, 2009).

Based upon recent legislation the uneven aged stands are favourable. There are several studies (from economic and silvicultural approach) about the management types which makes possible to convert forest into uneven aged forest. A study how these management types work in case different private forest ownership types is yet lacking.

6.4. Factors affecting innovation in policies

20 years after the start of restitution process, private forestry is still staggering with fragmentation, bad ownership structure and non-managed forests. It is evident now that:

- within larger forestry commons and co-operations there are serious inner conflicts; minority rights are not efficiently protected and larger forest owners easily overplay the small ones;
- state forest authority is not interested in the reduction of non-managed private forests
- fragmentation will be doubled every 10 years due to intensive heritage processes
- on a commercial basis ownership structure will not be improved due to the expenses and difficulties of land purchase rules.

State should reconsider ownership structure and establish new legislation to reduce number of forest owners; to formulate independent farm based forest ownership. Legislation is the only tool to clean the current forest ownership by transferring 1-10-100 m^2 ownership rights to larger ones with automatized compensation process; by formulating 1-5 ha ownership parcels, correlating with forest management subcompartment system.

It is difficult to answer to the question, why the state was so passive in the field of non-managed private forests. A legal answer can be that ownership is a constitutional right where state must interfere with utmost care and minimum force. An economical answer can be that wood price was very low before EU accession and there was no real economic demand for higher output. From the point of nature oriented NGOs the lack of management is the best way of management. From administrative point of view state (as a forest owner) was always state forest oriented and gave much less attention to private forests.

But maybe the most important argument that land policy has/has only a single aim in private sector: to keep foreigners away from Hungarian land market.

The greatest innovation of state policy was to give up the original concept of joint management: according to the regulations until 1998 new forest owners had to manage their forest together if their forest land units were connected and formed a single forest area, and if it had belonged to a single forest management unit before the privatisation. After the change of this concept, a single land unit (few hectares) may obtain the status of individual management.

CASE STUDY 3: MECSER 031/11 LAND PARCEL AND ITS OWNERSHIP STRUCTURE

In her diploma work, Andrea Meditz investigated non managed private forests. Mecser 031/11 is a 24 hectares parcel with 8 forest subcompartment, where there are 143 forest owners. Biggest ownership share is 1.33 ha, average ownership 0.15 ha/person, smallest forest owner has only 31 m^2 of forest.

The area contains 8000 m^3 of softwood; age of forest stands is between 28-58 years. Total value is equal to 300,000 euro (considering 30 euro/m^3 wood and 2000 euro/ha land price).

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It is a mystery why forest management has not been started as wood can be harvested immediately. Further delay will result serious economic losses. Most of the forest owners are local, but average age is over 60 years. Obviously a kind or organisational power is missing to start forest management.

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8. Annexes

8.1. Case examples of problem areas

1. Fragmented ownership and heritage process

Examples are presented through the number of private owners within one landownership unit. The sample area that containing 17 villages is located in the region of the Western-Danubian Hills. The total area is 21.221 hectares, the forest cover is almost 50%. The study investigates only the privately owned land and forests and excludes the state owned forests. The total area is

therefore 11.752 hectares. The distribution of private land according to the way of cultivation is shown in the following table.

Cultivation	Area (ha)
Plough land	5380,35
Forest	4459,54
Meadow, pasture	1539,30
Other	373,75
Total	**11752,96**

Distribution of private forest land can be seen in figure 2:

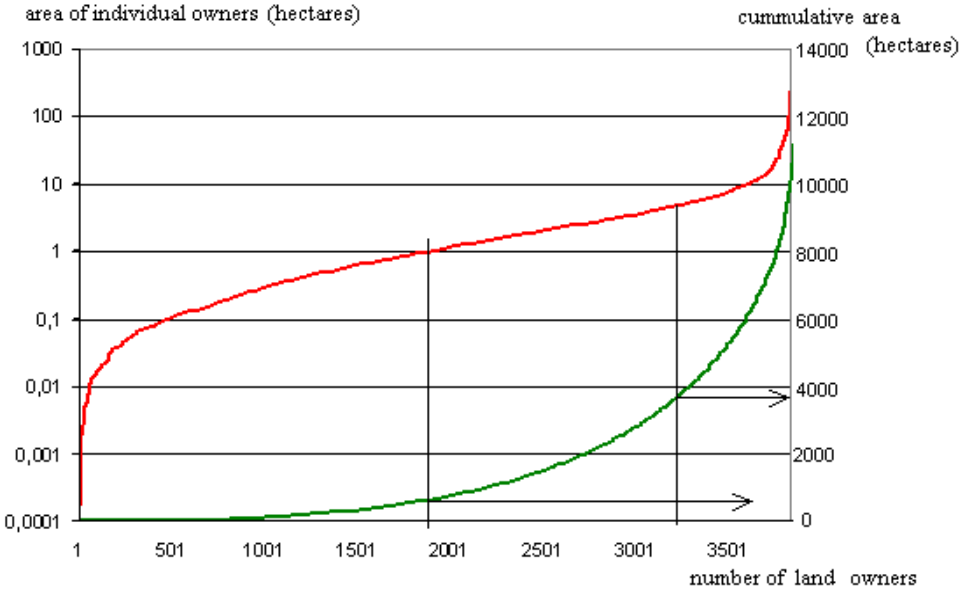


Figure 2: Distribution of private forest land

All together there are 4000 forest owners, of which 500 owners are below 0.1 hectares threshold. There are 2000 persons with cumulative area of 500 hectares. Approximately 700 persons own 2/3 of total area.

2. Land ownership units are much larger than forest management sub-compartment units

Village	Land reg nr.	Forest subcompartment code	Area
Recsk	0336/1	35A	3,48
Recsk	0336/1	35B	2,24
Recsk	0336/1	35C	4,44
Recsk	0336/1	35D	7,2
Recsk	0336/1	35E	2,95
Recsk	0336/1	35F	0,41
Recsk	0336/1	35G	0,96
Recsk	0336/1	35H	6,92
Recsk	0336/1	35I	0,65
Recsk	0336/1	35J	1,49
Recsk	0336/1	35K	6,71
Recsk	0336/1	35L	5,09
Recsk	0336/1	35M	0,56
Recsk	0336/1	36A	12,47
Recsk	0336/1	36B	4,63
Recsk	0336/1	36C	12,49

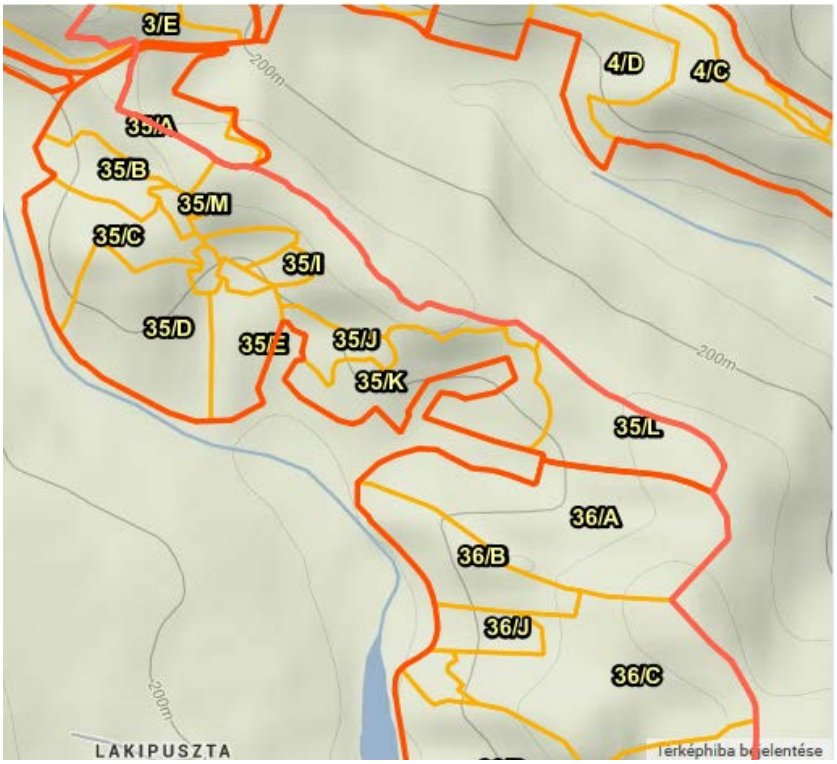


Figure 3: Forest subcompartment system.
See: http://erdoterkep.nebih.gov.hu

One possible method to reduce the number of forest owners and undivided forest ownership is to divide the land into smaller units. Example presents problems of physical separation and distribution of forest land. All the forest sub-compartments belong to one ownership unit – while forest age structure and value is different in each sub-compartment.

IRELAND

Áine Ní Dhubháin, Vincent Upton, Mary Ryan, Kevin Keary

1. Introduction

When Ireland gained independence in 1922 approximately 1% of the land area was under forest. To address this low level of forest cover a state afforestation programme was launched. However, in an effort to protect the agricultural sector, a policy decision was made to restrict afforestation to marginal or sub-marginal agricultural land (Gray, 1963). Various planting targets were set during the first 60 years of this afforestation programme; and while these targets were generally not met, by 1980 almost 5% of the land area was under forest. The restrictions that had been placed on the type of land that could be purchased for afforestation meant that these state forests were established on impoverished soils. This limited species choice to exotic conifers, most commonly Sitka spruce (*Piceasitchensis* (Bong.) Carr.), which currently accounts for 52% of the total forest cover (Forest Service, 2013).

In 1988 Coillte Teoranta, a private limited company, was established. Its main purpose was to manage state forests on a commercial basis. It currently manages 389,356 ha of forest.

Afforestation by the private sector was minimal during much of the 20th century in Ireland. For historical reasons there was no tradition of private/farm forestry in Ireland. It has only been since the 1980s, with the introduction of European Union-subsidised afforestation grants, that private land owners, particularly farmers, have afforested their land. The level of private afforestation has grown steadily since then, peaking in 1995 when 17,353 ha were planted (Forest Service, 2007). The increase in private afforestation coincided with a decline in state afforestation and since 2001 state afforestation levels have been negligible. The shift to private afforestation also resulted in better quality land being afforested. This has resulted in increasing levels of broadleaf planting; by 2012 broadleaves accounted for 31% of the afforestation programme. The success of the afforestation programme is supported by the latest statistics from the Forest Service indicating that 10.5% of land in Ireland is now covered in forests (Forest Service, 2013).

To summarise, the past 30 years or so have witnessed a major change in forest ownership in Ireland. The State accounted for 85% of the total forest area in 1980; currently state forests account for 53.2%. The major shift to private ownership has largely been undertaken by first-time forest owners, of whom the majority are farmers. These new forest owners have little experience or knowledge of forest management; addressing this lack of knowledge and ensuring effective management of these new private forests is one of the key challenges facing the forestry sector in Ireland.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

A variety of methods were used to prepare this report. First, a review of the scientific literature on forest ownership and management in Ireland was conducted. Additionally previous reports on the forest industry in Ireland including policy documents were reviewed. These were particularly useful in outlining historical trends in ownership. Statistical data were obtained from the national forest inventories and specific queries on these statistics were addressed to the national representative responsible for completing the FRA country reports. To a large extent the report relied on the expertise of the authors; all of whom are very familiar with forests and forest ownership in Ireland.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Research to date has generally employed national surveys of farmers with forestry to ascertain their reasons for planting and their management goals for their forests (e.g. Ní Dhubháin et al., 2010). It has additionally focussed on the knowledge of forest management among farm forest owners (e.g. Ní Dhubháin and Wall, 1999; Ní Dhubháin and Greene, 2009). Statistical modelling approaches have been adopted to examine the characteristics of farmers with forestry (Collier et al., 2002; Howley et al., 2012). Qualitative approaches in the form of interviews have also been conducted which have sought to describe these motivations in more detail (Duesberg et al., 2013). There has also been a particular emphasis on examining barriers to farmers planting forests, related to economics, policies and attitudes (McDonagh et al., 2011; Upton et al., 2014; Duesberg et al., 2014a). Financial analysis of the outcome of planting by farmers has also been conducted to examine its potential impact on farm incomes (Breen et al., 2010; Upton et al., 2013).

Research on forest owners is primarily undertaken at University College Dublin and Teagasc (Agriculture and Food Development Authority). The involvement of private, forestry and agricultural consultants in forest research also occurs but has been limited in this area of research. A dedicated funding section of the Department of Food, Agriculture and the Marine oversees forestry research funding (COFORD) and is the primary funder of forest management and forest owner research. Internal organisational funding may also be employed for forest management projects. Other national research organisations also fund forest

research such as the Environmental Protection Agency but focus on other themes.

Significant findings include a lack of knowledge and experience concerning management amongst new forest owners (Ní Dhubháin and Wall, 1999; Ní Dhubháin and Greene, 2009; Ní Dhubháin et al., 2010; Ryan et al., 2012), mixed levels of interest in engaging in management, strong preferences amongst farmers to remain in agriculture rather than enter forestry (Duesberg et al., 2014b) and the significant influence of physical factors, such as soil quality, in understanding afforestation patterns and decision making by farmers (Upton et al., 2014).

Gaps in the research surround identifying the most appropriate and effective way to transfer knowledge to new forest owners, how to efficiently manage a dispersed private estate of small plantations, how to counteract negative views of forestry in some regions.

3.2. New forest ownership types

In contrast to the situation in other European countries, forest ownership in the Republic of Ireland was dominated by the State until the end of the 20th century. This was despite the fact that at the start of that century, the entire forest estate which amounted to 105,000 ha (i.e. 1% of the land area) was in private ownership, typically located in old estates. Government policy, once Ireland gained independence in 1922, was to focus on a state afforestation programme with the aim of generating a home-grown supply of timber. Private sector involvement in afforestation was negligible and neglect of the extant private estate continued so that by 1973 when an inventory of private woodland was conducted there were only 81,000 ha in private ownership (Purcell, 1973). The low level of private afforestation was attributed by Gillmor (1998, p. 11) to the "lack of forestry consciousness and knowledge; the tendency to associate forestry with the former landlord class and later with the State; the small size of farm holdings and the competition with agriculture for the scarce land resource; the state subsidies and incentives offered to agriculture; the long term commitment inherent in the conversion of land from agriculture to the very different use of forestry; the fear of detraction from entitlements to social welfare and other benefits; and the uncertainly with regards to future marketing prospects for timber".

It was not until the launch of the first round of EU funding for afforestation in 1982 (under EC Reg. 1280/80) that private sector involvement in afforestation was triggered. This scheme was targeted at farmers living in the western, more disadvantaged parts of the country with the aim of providing them with an alternative source of income. It provided up to 85% of the costs of forest establishment (Howley et al., 2012). In the initial years of the scheme uptake by farmers was low. The introduction of 100% establishment grants and a scheme in 1987 to compensate farmers for income foregone removed a major barrier to afforestation. In 1989, private planting exceeded state planting for the first time (Fig. 1). The introduction of the Forest Premium Scheme in 1990 "provided the most important new incentive for forestry development in Ireland to date" (Howley et al., 2012, p. 35). This provided compensation for the agricultural income foregone and planting rates accelerated (Fig. 1). However despite the increases in grant and premium rates the general trend since 2000 has been downward (Breen et al., 2010).

The historical context outlined above illustrates that there is no tradition of private ownership in Ireland and hence no "traditional" forest owner. The very small number of land owners who engaged in forestry in the 20th century were typically the remnants of the landlord class that remained following the Land Acts of the late 19th century that transferred ownership of the land from landlord to tenant. The estimated 20,000 land owners (Forest Service, 2014) who afforested land for the first time during the years 1980 to 2012, can all be classed as "new" forest owners. Differential premiums rates are payable to farmers and non-farmers. Using this information the Forest Service (2013) estimates that between 1980 and 2012 85% of the forest owners can be classed as farmers, which equates to 82% of the area afforested in this time period. Limited information on the characteristics of these owners is retained on the Forest Service database and what is known about them can be gleaned from surveys that have been conducted.

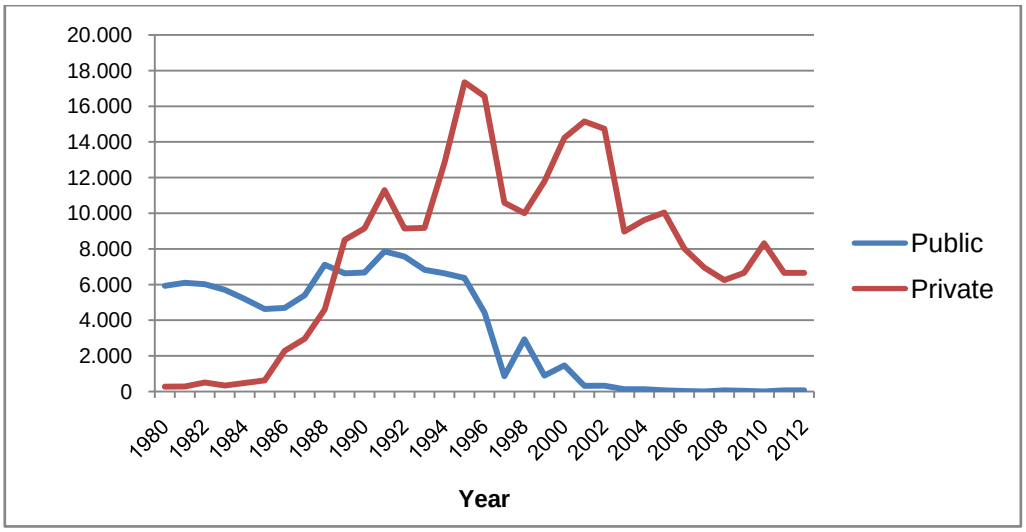


Figure 1: Public and private afforestation rates (hectares) in Ireland.
(Source: Forest Service 2013)

In 1995, a survey of 108 private forest owners who had availed of grant-aid for afforestation found that many private forest owners have multiple objectives for their forests (Ní Dhubháin and Wall, 1999). Ninety percent intended to produce timber for sale. The production of timber for domestic use (e.g. for fencing or for firewood) was also a popular use for the forest (45%), as was the provision of recreation for the owner and his/her family (42%). A more recent survey of forest owners indicated that 49% had multiple objectives but that the majority of owners had timber production as an objective (Ní Dhubháin et al., 2010).

3.3. Forest management approaches

New forest owners in Ireland are primarily farmers who have planted a portion of their land holding in the last two decades. Statistics from the Irish Forest Service suggest that 82% of the area planted since 1980 has been undertaken by farmers (Forest Service, 2013). Establishment of these forests was overseen by professional foresters as a requirement of receiving funding from the state. This frequently involved foresters managing the total process of afforestation and establishment up to year 4. The Forest Service only requires those forest owners who have broadleaf plantations in excess of 5 hectares or conifer plantations in excess of 10 hectares to submit management plans (Forest Service, 2011). These must be written by a professional forester. Input from land owners was perceived as limited which may have resulted in a disconnect between land owners and their forest (Ní Dhubháin and Wall, 1999). This may have been exacerbated for land owners who were motivated primarily by receiving the annual premium. Thus, forest policies directed at private land owners have generally taken a top down approach to date. Questions surround the interest and ability of new forest owners to undertake management of their forests directly (Ní Dhubháin et al., 2010). Given the spike in private planting in the mid-1990s the thinning of private forests is a significant concern at present. Teagasc estimates that only approximately 6,000 hectares, of the 20,000 hectares that should be, are currently being thinned annually (Casey and Ryan, 2012). A number of initiatives have been undertaken to counter this disconnect and to encourage greater engagement by land owners in the management of their forests. One approach to knowledge transfer to new forest owners has been the establishment of producer groups and cooperatives. This has been driven by local forest owners themselves with the assistance of Teagasc (Casey, 2010).

Forests in Ireland are generally managed under an intensive clearfell system with the maximisation of net present value as the primary goal. The relatively high growth rates and highly mechanised nature of harvesting in Ireland results in relatively short rotations. Management has typically followed the British

Forestry Commission Yield models intermediate thinning approach but the development of dynamic models has introduced greater flexibility into management options. However, use of yield models and forest planning has primarily been the concern of professional foresters. To date forest thinning has primarily been undertaken by contractors on behalf of timber processors and other purchasers who buy timber standing from land owners.

Afforestation and management has focused on coniferous species, particularly Sitka spruce. The proportion of broadleaves being planted has increased in recent years and research is being conducted on appropriate management of broadleaves (Figure 2). Interest in continuous cover forestry (CCF) systems is increasing. Pro Silva Ireland was established in 2000 and promotes CCF in Ireland and has encountered growing numbers of small forest owners at their field days.

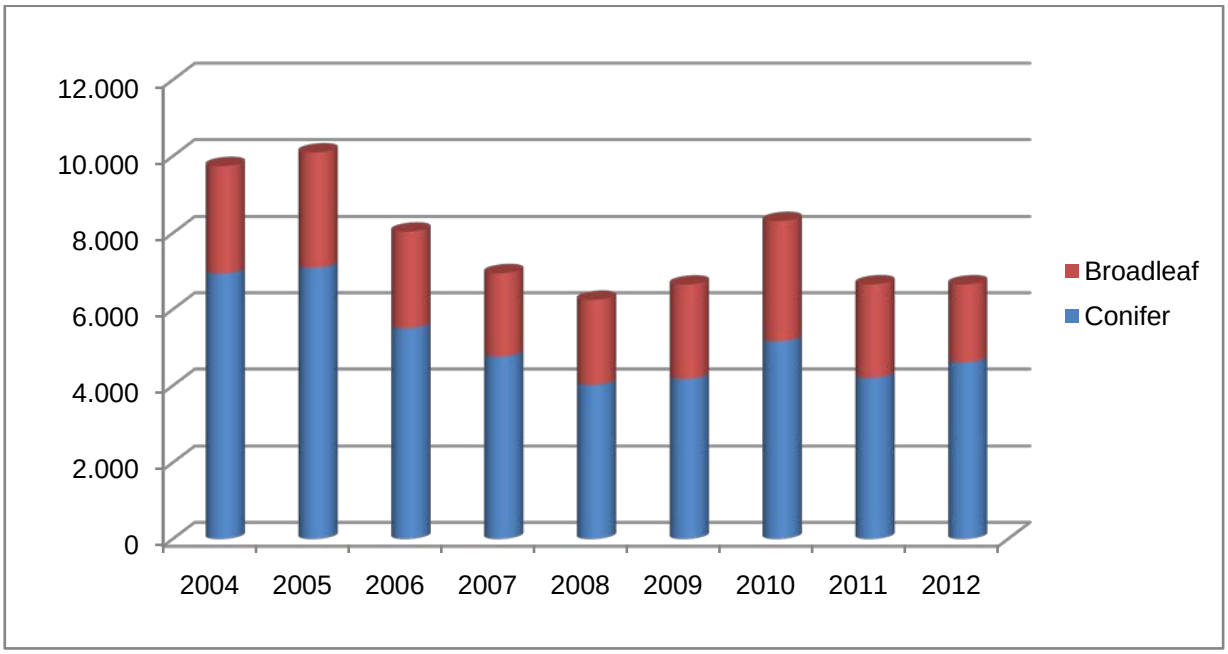


Figure 2: Afforestation rates by species type. (Source: Forest Service (2013a))

3.4. Policy change / policy instruments

The emergence of private forestry in Ireland can almost be entirely attributed to the availability of policy instruments of establishment grants and forest premiums. Eighty percent of those surveyed in Maguire (2008) indicated they would not have planted their land if grants and premiums were not available. McCarthy et al. (2003) used a panel regression model to explore the factors that influenced afforestation rates in Ireland. They found that the afforestation grant and premium payments significantly influenced the decision to afforest land. The rationale for making these financial supports available was the afforestation of land privately owned so the policy tool has proved successful. However the afforestation targets set by the Government have not been reached despite the availability of these incentives. In the Government's most recent policy document (DAFM, 2014) the failure to reach targets was attributed to a number of factors, including (a) reduced funding in 2003 which undermined confidence in afforestation for a number of years, (b) the dramatic increase in land prices, (c) the success of competing land schemes e.g. Rural Environment Protection Scheme (REPS), (d) the progressive withdrawal of Coillte from afforestation since 1997 following an adverse decision by the European Commission on its eligibility for premium payments although this was in part mitigated by the entrance of private investment sources such as pension funds and (e) constraints on land availability due to increased regulatory requirements. Recent surveys have identified cattle farmers as the

group of farmers most likely to convert land to forestry (Ryan et al., 2008) however the loss of the cattle subsidies and direct payments which were available to these farmers may have acted as a disincentive to afforestation (Ryan et al., 2014).

It is important to note that there is a requirement that the forest stands that attract grant-aid from the Forest Service must be capable of producing a commercial sawlog crop of wood where commercial wood is defined as timber suitable for industrial end use (Forest Service, 2011), which clearly reflects the major objective of the afforestation programme, i.e. timber production.

The need to provide training for the new forest owners was acknowledged in Government policy (DAFF, 1996) and hence training courses are available to forest owners. These are funded by the Government and are generally provided by Teagasc and recently focus on aspects of preparing owners to thin their stands and market their timber. There are also courses to help forest owners to manage broadleaf stands. Attendance by owners is voluntary and studies have shown that the uptake is poor (Ní Dhubháin and Greene, 2009; Ní Dhubháin et al., 2010). It has been suggested (e.g. DAFF, 1996) that attendance at training courses should be a prerequisite to the receipt of the forest premium payments but this suggestion has never been implemented.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on the national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

The total forest estate in Ireland is 731,652 hectares of which 53.2% is publicly owned (Table 1). Public forests are defined in the National Forest Inventory (NFI) as all state owned forests (Forest Service, 2007). Coillte Teo (the Irish Forestry Board) accounts for almost all of the publicly owned forest. The remainder of the public forest estate is managed by the National Parks and Wildlife Service and comprises a number of National Parks and conservation forests managed primarily for amenity and conservation purposes. A number of local authorities (e.g. City and County Councils) also manage some amenity forests, the area of which is extremely small. Almost 47% of the forest estate is in private ownership. A National Forest Inventory was conducted in Ireland for the first time in 2007 (Forest Service, 2007). A second inventory has recently been completed (Forest Service, 2013).

The NFI distinguishes two types of privately owned forests; private (grant-aided): this is privately afforested land which was in receipt of financial subsidies in the form of establishment grants and/or afforestation premium payments since 1980; and private (other) these are non grant-aided plantations) (Forest Service 2007).

Table 1: Forest ownership in Ireland

Ownership	Area (ha)	%
Public	389,356	53.2
Private (grant-aided)	212,202	34.0
Private (other)	93,742	12.8
Total	731,652	100

Source: Ireland's NFI 2012.

4.1.2. Critical comparison with national data in FRA reporting

The NFI data are used to produce the FRA report and similar ownership definitions are used in both reports. The NFI was conducted in 2007 and in 2012 hence some interpolation and extrapolation is used to give the figures for the FRA years, i.e. 2005 and 2010. From the 2015 report onwards private ownership data will be separated into area owned by individuals and areas owned by businesses. The 7 year gap in the data shown below explains the difference in the areas recorded; in Ireland afforestation of agricultural land occurs annually, hence the area in private ownership has increased since 2005. There has been a slight decline in the area in public ownership as forest land is sold.

FRA 2010 Categories	Forest area (1000 hectares)	
	2005	2012
Public ownership	400	389
Private ownership	295	342
...of which owned by individuals	n.a.	n.a.
...of which owned by private business entities and institutions	n.a.	n.a.
...of which owned by local communities	n.a.	n.a.
...of which owned by indigenous/ tribal communities	0	0
TOTAL	**695**	**731**

4.2. Unclear or disputed forest ownership

There are no situations where ownership is unclear or disputed.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

There are no legal restrictions on buying or selling forest, however if the forest is currently attracting a premium payment and if the new owner wishes to receive this premium, he/she must undertake to continue to manage the forest for the rest of the forest premium period. Premiums are paid for 20 years if the owner is a farmer, non-farmers receive premium payments for 15 years.

Felling is controlled under the 1946 Forestry Act (currently being revised). A general felling licence is required to carry out thinning operations and lasts for a period of five years. A limited felling licence is required to clearfell a forest and replanting of the cleared area is a condition of the limited felling licence. Hence once a piece of land is afforested and becomes a forest it must remain a forest.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no specific inheritance rules that apply to forests.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

There has been a major change in ownership over the past three decades. In 1980, 15% of the estate was in private ownership (Forest and Wildlife Service, 1980). As a result of the afforestation programme referred to elsewhere in this report, private afforestation has increased since 1980 so that in 2012 47% of the forest estate is now privately owned (Forest Service, 2013).

4.4.2. Changes within public ownership categories

Up until 1988 the Forest Service was responsible for the management of the State forests as well as acting as the regulatory

authority for forestry in Ireland. With the passing of the 1988 Forestry Act Coillte Teoranta – The Irish Forestry Board Limited- was established to take over the ownership and management of state forests with the aim of managing these on a commercial basis. Coillte is a semi-state company with two shareholders – the Minister for Forestry and the Minister for Finance.

4.4.3. Changes within private forest ownership

As highlighted elsewhere a significant proportion of the private estate has been established in the past 30 years (212,202 ha), hence the owners of this area are all "new owners" and are predominantly farmers (82%). It is not known who owns the remainder of the private forest land (i.e. private other) but in the authors' experience it is likely that they are made up of forestry companies and investment companies as well as relatively large land owners on whose land there has been trees for a long period of time. It could be said that the latter group represent traditional forest owners; they are, however, very few in number.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes have been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

In Ireland there are only two key trends in ownership. As outlined previously through the formation of Coillte Teo in 1988, public forest management essentially became privatised in 1988; however it is likely no further changes will be experienced in this regard. In 2011 the government indicated that it was considering the possibility of selling off the harvesting rights to some of the State forests to private people/bodies; however, in 2013 it was decided that this would not happen in the foreseeable future.

The other key trend is the emergence of new forest ownership arising from the afforestation of agricultural land. This has been very significant in Ireland resulting in 261,290 ha being afforested or approximately 3% of the land area since 1980. The Government is still committed to an afforestation programme and the latest government policy document (DAFM, 2014) reiterated the commitment to an afforestation programme of 10,000 ha per annum to the year 2015 and 15,000 per annum thereafter to the year 2045. Hence this trend in ownership is likely to continue for the foreseeable future.

Trends in forest ownership: New forest ownership through…	**Significance***
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	*3*
• New private forest owners who have bought forests	0
• New forest ownership through afforestation of formerly agricultural or waste lands	*3*
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	*0*
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: NEW FOREST OWNERSHIP THROUGH AFFORESTATION
John Murphy is a livestock farmer based in North-west Cork. He and his wife own the 40 hectare farm. The farm enterprise is mainly dry stock cattle. In 1990 John and his wife made the decision to afforest a 8 hectare section of their farm. The quality of the land in this section of this farm was poor and too wet to allow cattle on. The attractive premiums that were available at the time meant that this piece of ground which had not been generating agricultural income could now be put to financial use. John contacted a forest management company based in the area. The professional forester working for the company indicated that he would apply for grant-aid and the premium and undertake the establishment work. In return the company would receive the grant. The forester recommended that Sitka spruce be planted. Since the crop was established John received an annual premium until 20 years after establishment. He has never visited his forest and has no idea what state it is in. The professional forester has also had nothing to do with the forest for 16 years. Now that he is no longer in receipt of income from the forest the farmer is wondering what to do. He is aware that in a forest owned by his neighbour a machine is removing some of the trees which are then being sold to a local sawmill. He plans to investigate the option of harvesting his stand further.

CASE STUDY 2: NEW FOREST OWNERSHIP THROUGH AFFORESTATION
In 1989 James O'Sullivan encouraged his father to plant 10.5 ha of marginal agricultural land away from the farm. His father was unsure due to the permanency of the land use change but felt on balance that that land was "of no other use". James would freely admit that they were looking no further than the grant at the beginning when they planted the Sitka spruce crop. A further 1.5 ha of Sitka spruce and ash were planted in 1994. Following advice from the forestry company and Teagasc, it was decided that the 1989 crop was fit for thinning in 2010. The crop was sold standing and approximately 350 tonnes were harvested from the site. The successful and profitable thinning of this crop prompted James to consider further planting. James felt that planting broadleaves "was better for the environment in the long run and better for my pocket in the short term". James also felt that planting broadleaves close to the house would leave the farm in a better condition for the next generation, so he planted 5.6 ha and 4.5 ha of oak, ash and birch in 2011 and 2012 respectively. His only regret is that he did not plant more twenty years ago!!

4.5. Gender issues in relation to forest ownership

A survey of a small number of forest owners estimated that 83% of forest owners are male (Greene, 2006). Experts from the Forest Service indicate that it may be possible to access data on ownership by gender for the portion of the private estate that has been grant-aided (since 1980).

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts	X		
• NGO with environmental or social objectives	X		
• Self-organised local community groups			
• Co-operatives/forest owner associations		X	
• Social enterprises			X
• Recognized charitable status for land owners			X
• Other forms of charitable ownerships, namely:			X

Foundations / Trust

There are some private forestry trusts/foundations in existence. Some of them are family situations, to manage/hold inheritances. Another example is The Paul O'Dwyer Forestry Fund which planted approx 40 ha of grant-aided forest to help finance the Cheshire Retirement Home in Bohola, Co Mayo. The Irish Forestry Unit Trust (IforUt) was established in 1994 to facilitate investment in forestry by institutional investors. It currently manages 14,000 ha, some of which was purchased from private forest owners, some of which it has leased from Coillte.

NGO

The area owned or managed by NGOs is very limited. Balrath wood, Co. Meath, is managed by the Tree Council of Ireland as an outdoor classroom.

Co-operatives

Forest owner associations and co-operatives exist in Ireland but they don't own the land. Ownership of the forest land remains with the members of Forest Owner Groups (these are dealt with in section 5.2).

CASE STUDY 3: BALRATH WOOD – EXAMPLE OF NGO MANAGED WOOD

Balrath Wood is owned by Coillte but has been restored by an NGO "The Tree Council of Ireland" as part of their "outdoor classroom" project aimed at Irish school children and their teachers. The Tree Council, Coillte, Balrath Wood Preservation Group and Meath County Council all collaborate in the project which is part-funded by the Forest Service. There is a nature wood, developed as an outdoor classroom for teachers.

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

There are no forest common property regimes in Ireland. As outlined elsewhere in this report historically there has been limited private forest ownership in Ireland and it is only in the past three decades that private land has been afforested. Commonage refers to grazing lands in Ireland that are jointly owned as well as to other lands (not necessarily jointly owned) over which two or more farmers have grazing rights. Hence for such common land to be afforested, where owned, would require the agreement of all the owners. This has yet to happen and is unlikely to happen.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners

have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Ireland

The Forest Service, Department of Agriculture, Food and the Marine is tasked with regulating forest management, overseeing and distributing financial supports and promoting forestry in Ireland. The Forestry Development Department of Teagasc, the Agriculture and Food Development Authority, undertakes extension and research services.

Commercial state forests are managed by Coillte, the Irish Forestry Board, and are certified by FSC and are currently in the process of being certified by PEFC. Coillte has also entered partnership schemes with some small land owners, primarily farmers, where the establishment and management of the forest is undertaken by Coillte on land owned by the farmer and timber profits are shared. This partnership lasts the full rotation (typically c.40 years). Management in the partnership scheme is according to management plans drawn up by Coillte. Public forests also include National Parks and conservation forests which are managed by the National Parks and Wildlife Service for primarily amenity and conservation purposes. A number of local authorities (e.g. City and County Councils) also manage some amenity forests and these are also classed as public forests.

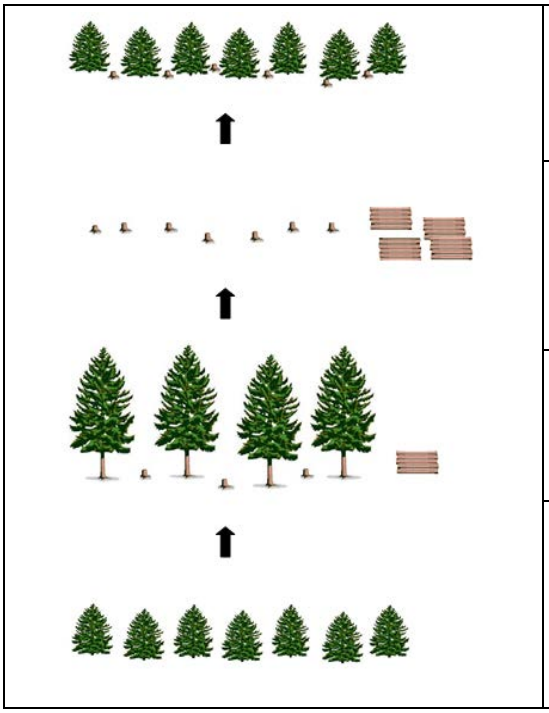
Private forests can be divided along a number of lines. The largest group of private owners are farmers who have planted some of their land holding. These forests were established under the supervision of professionally trained foresters, which is a requirement of attaining grant-aid. A further requirement of receipt of grant-aid is that a management plan should be drawn up by a professional forester but this currently only applies to those owning plantations which are 10 hectares or greater or those owning broadleaf plantations which are greater than 5 hectares. This plan only covers the 20 year period following the establishment of the plantation (i.e. the period for which the forest owners receive subsidies). Despite this requirement, significant uncertainty surrounds the issue of management of these new forests. Private owners have displayed high levels of interest in undertaking harvesting and timber sales themselves and this is reflected in large turn-outs at field days and contacts with extension services. Yet this interest does not always translate into action it is estimated that only approximately 6,000 hectares, of the 20,000 hectares that should be, are currently being thinned annually (Casey and Ryan, 2012).

A typical rotation and associated management is outlined in Figure 3. Very few private forest owners have had their forest and management certified. A significant minority of the private estate is owned and/or managed by trusts on behalf of individual or institutional investors. Management of these private investment forests is undertaken by forest management companies on a long term contract. Although some of this area is SFM certified the primary goal is one of profit maximisation, and rotations and harvesting reflect that. Some other small, individual investors own forests in Ireland but this area is unknown but it is common for such individuals to employ forest management companies for specific management interventions.

Currently a new Forestry Act is being considered by the Irish Government. One of the elements of this new Act is the requirement for all forest owners to submit a management plan to the Forest Service. This Act has yet to be approved by Parliament but reflects the emphasis the Irish government is placing on the management of private forests.

The Irish Farmers' Association (IFA) represents the interests of farmers, including private forest owners, throughout the country and currently has over 88,000 members and 946 branches. It has a dedicated forestry section, IFA Farm Forestry, for the past twenty years which represents farmers with forests in Ireland. It currently has approximately 5,000 active members. In addition, the Irish Timber Growers Association (ITGA) represents the interests of

private forest owners in general. The ITGA was formed in 1977 to support the development and expansion of private sector forestry in Ireland and to represent and inform woodland owners. It is now the recognised national representative body of private woodland owners in Ireland. The Association is particularly concerned that private plantations achieve their maximum potential by the implementation of good forest management practices throughout their rotation. Both of these associations primarily act as lobby groups; they are not directly involved in the production of forestry plans; nor are they directly involved in organising harvesting and sales as is the case with forest owner associations in other countries.



	Year 20-45 Forest management company or consultant employed to manage thinning or clearfell harvesting. Timber sold standing and operations undertaken by contractor.
	Year 4-20 Some management interventions may be undertaken by land owner such as pruning or cutting inspection paths.
	Year 1-20 Annual premium paid for 20 years for farmers or 15 years for non-farmers
	Year 1-4 Four year contract with forestry company for establishment of forest. Grant linked to establishment of plantation in year 4 (25% of grant withheld up to this point). Shaping of broadleaves is mandatory but grant-aided.

Figure 3: Typical management cycle for single rotation in Ireland (by authors)

5.2. New or innovative forest management approaches relevant for new forest owner types

The most significant development in the last decade has been the formation of forest co-operatives and producer groups, where groups of private forest owners, farmers in particular, meet on a regular basis to discuss forest management and organise forest management operations on a communal basis. The first of these producer groups was established in 2005 and at present, there are 26 such groups in operation around Ireland (Figure 4) with over 1,900 members. The focus of the producer groups is on encouraging forest owners to actively manage their stands with a particular emphasis on working together to thin them. This is achieved by encouraging forest owners who have forest stands that are due to be thinned at the same time and that are close to each other to “cluster” the forests together. This would make the thinning operation more attractive to harvesting contractors and all would benefit from economies of scale. The legal structure varies in the producer groups. Some are co-operatives, e.g. the Donegal Woodland Owners Society Ltd (DWOSL), and members of this co-operative must own forest land in Co. Donegal. Each member owns one share in the Society, irrespective of the size of their woodland. The DWOSL has been in operation since 2008. It aims to maximise returns to forest owners through good forest management services and to add value locally to its members’ timber, thus creating sustainable employment from their members’ forests (Teagasc, 2012). DWOSL provides a range of services for its members, including

forest maintenance and administration work, timber marketing and firewood sales, field days, study trips, newsletters and farm machinery hire. DSOWL has entered the Energy Supply Contract (ESCo) market and has targeted private nursing homes and other large building owners to supply heat through the installation of wood gasification boilers (DWOSL, 2012).

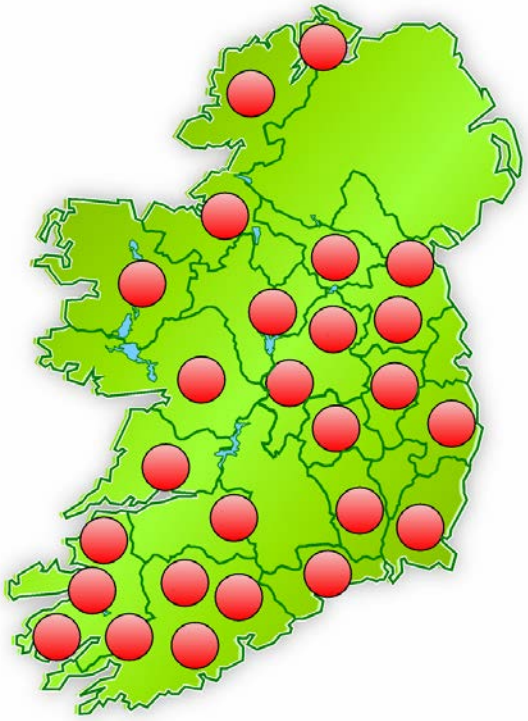


Figure 4: Location of producers groups (Teagasc, 2013)

The isolation of farm forest owners speaks to the lack of a strong forest management culture in Ireland, where farmers see afforestation as a scheme rather than an investment (Malone, 2008). This is borne out by Ní Dhubháin et al. (2010) who found that only 11% of farm forest owners they surveyed viewed their forest as an investment. The same survey also found that while 72% of respondents planned to thin their forest, only half of these forests were suitable for thinning. This shows the clear need for farm forest owners to cooperate in terms of knowledge dissemination, up-skilling and cost-sharing so the best economic return from the asset is realised at maturity. In this context, a significant challenge facing new forest owners is developing knowledge and skills to manage and understand what is, for many, a new land use.

Forest harvesting operations present challenges to forest owners in Ireland due to the lack of traditional forestry knowledge. Participants at a forest thinning demonstration in 2009 were surveyed as to a) their level of knowledge of thinning before attending; b) after attending and c) whether they intended to carry out forest management operations having attended. Analysis of a retrospective pre-test questionnaire showed that participants significantly increased their level of knowledge on thinning. Many participants also stated their intentions to carry out management operations. Two years later, a phone survey was conducted to ascertain whether they had carried out these operations. Only 8% had thinned their forests. Of those who hadn't thinned, 58% of the forests were not ready, 21% of owners were in the process of thinning and 16% were unsure/didn't know. Even though participants confirmed that they found the demonstration "useful" and "informative", 58% of those who had not thinned felt they needed further advice on thinning and many revealed that they had forgotten much of what they had learnt at the demonstration. It is concluded that one-off events, may not be sufficient to ensure technology/practice adoption and that subsequent targeted follow up may be needed to encourage practice change amongst Irish forest owners (Ryan et al., 2012).

Although the clearfell system is by far the most commonly practised form of silviculture in Ireland there is increasing interest in continuous cover systems. This is reflected in large attendance at open days organised by Pro Silva Ireland directed at farmers.

5.3. Main opportunities for innovative forest management

Knowledge transfer will continue to be a significant driver of innovation amongst new forest owners. The expanding biomass industry has also led to the organisation of forest owners through producer groups. The increasing emphasis on forest ecosystem services has the potential to lead to the development of payments for ecosystem services schemes (PES) and the diversification of management objectives. Previous schemes have been developed to

enhance the recreational or environmental benefits of forests (e.g. Forest Recreation Scheme, The Forest Environmental Protection Scheme, Native Woodland Scheme, Neighbourwood Scheme).

5.4. Obstacles for innovative forest management approaches

New forest owners lack experience of forest management, which may limit their willingness to adopt new approaches. Although new owners may exhibit interest in managing their forests, as reflected in attendance at knowledge transfer events, a lack of knowledge and experience may inhibit their ability to engage in management themselves. Ryan et al. (2012) interviewed forest owners during a thinning knowledge transfer event and two years afterwards. They found that owners described the event as useful and had indicated an expectation to thin their forest only 8% had actually done so two years later. However, 58% had cut their inspection paths which would suggest that the development of effective knowledge transfer may be a slow but successful process.

The regulatory and financial support systems are designed around specific management techniques and lack flexibility to support the adoption of new silvicultural systems. Environmental designations are impacting on afforestation and harvesting in specific areas but do not act as an obstacle to innovation per se. These designations may act as drivers of change if acceptable management strategies could be designed that satisfy conservation and land owner goals.

CASE STUDY 4: THE CLARE WOOD ENERGY PROJECT

County Clare, in the west of Ireland is one of the most highly afforested counties. A report was published in 2004 which outlined the potential markets for wood in the County (PTR, 2004). The report highlighted the amount of early thinning that would be conducted in the coming years and that the low value of pulp wood from forestry thinnings meant that only local markets for timber could be reached profitably. The report identified the potential for local energy needs to be met by using forestry thinnings to feed bioenergy plants, thus addressing both the supply of low value wood and the growing demand for biomass for energy. In 2005 the Forest Service funded the establishment of the County Clare Wood Energy Project which is co-managed by Clare Leader and Teagasc. The project led to the successful installation of a total wood chip boiler capacity of 2.5 MW in a range of local buildings (a hotel, county council offices, nursing home, factory and swimming pool). Chip was sourced from local, private forests and processed by a heat entrepreneur, who was also assisted by the project. Demand for chip was estimated at 2,000 tonnes per year which requires the first thinnings of 175 ha per year. In recent years Teagasc has assisted with the clustering of owners based on management needs to build economies of scale in both the management of forests and the harvesting of timber. The project has successfully brought together new forest owners to manage their forests actively and in collaboration. In addition to the formation of new local industries, this has resulted in the development of significant knowledge levels amongst new forest owners.

CASE STUDY 5: JOHN KENNY, FAIRYMOUNT FARM, TIPPERARY

John Kenny is a sheep and horse farmer who owns approximately 150 hectares of land in the mid-west of Ireland. Over the last two decades John has established a number of conifer and broadleaf stands on his land and manages them for multiple objectives. The farm also has three self-catering cottages and one of the goals of establishing the forest has been to enhance the amenity value of his land. Such multi-purpose management is unusual in Ireland and highlights the potential for new forest owners to diversify their forest management goals. John has built paths and facilities in his forests and charges an entrance fee to users. This has created an additional source of income from his forest, which will not produce timber for a number of years. Private forest owners are not legally obliged to allow public access to their forest (i.e. there is no everyman's right in Ireland) and access to private forests can be a contentious issue in Ireland. This farm, forest and tourism enterprise is an example of innovative forest management that has been initiated by the land owner and could be used as a template for other new forest owners in Ireland.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

Coillte was established under the Forestry Act 1988. It is a private limited company registered under and subject to the Companies Acts 1963-86. All of the shares in the company are held by the Minister for Agriculture, Fisheries and Food and the Minister for Finance on behalf of the Irish State. The Board of Directors is appointed by the Minister for Agriculture and Food. When established, it acquired ownership of the State's forests and its purpose is to commercially manage these forest assets (www.coillte.ie).

Irish forest policy is outlined in "Growing for the Future – A Strategic Plan for forestry" which was published in 1996 (DAFF, 1996). The key aim of the policy was to expand forest cover from 8% (in 1996) to 17% by 2030; by supporting the afforestation of 25,000 ha annually from 1996-2000; thereafter the target was 20,000 ha per annum until 2030. The rationale was that 17% forest cover would generate a critical mass of timber (i.e. 10 million m^3 per annum) that would sustain a competitive timber industry. This increase in forest cover was to be achieved in accordance with the principles of sustainable forest management. The key instrument through which this policy aim of increased afforestation was to achieved was the provision of incentives to land owners to convert land to forestry in the form of an establishment grant (covering 100% of the costs of establishing the plantation) and tax-free premiums. EU co-funded grants had been available since 1980; premiums since 1990. The afforestation grant which covers the cost of establishment is paid in two instalments; one on successful completion of the initial site operations and accounts for 75% of the costs; the second, 4 years after the plantation has been established (25%). In addition those afforesting land receive a forest premium paid annually for 20 years to "bridge" the gap between the initial investment in converting land to forestry to the time when the first income is received from forests, typically year 20 when the forest is thinned for the first time. The first premium payment is made in year 1. This policy to provide support for afforestation has had a major bearing on the development of forest ownership as it has led to the emergence of a new form of owners, "the farmer". Since 1980, almost 20,000 land owners (the majority of whom are farmers) have afforested land. For almost all it was the first time for them to do so, hence they are all "new" forest owners. The forests established under this afforestation programme are all in the form of plantations. The Irish Government also provides grant-aid for the establishment of native woodlands under the Native Woodland Scheme. This scheme is biodiversity oriented and has been availed of by a very small number of land owners.

There are no specific policy instruments that stimulate the privatisation, decentralisation, or nationalisation of forests (e.g. pre-emption rights). Similarly there are no regulations related to inheritance rights with an effect on creating smaller parcels or hindering such a development. Further there are no policies creating new legal forms of ownership. A small part of the Coillte forest (no more than 14,000 ha of forest) has been leased to The Irish Forestry Unit Trust (IforUt) which manages the forest on behalf of institutional investors.

Part of the reason for the lack of such policy instruments is that private forest ownership is a new concept in Ireland, emerging only in the last thirty years. Another "change in ownership" came about with the quasi privatisation of state forestry when Coillte Teo was established described above. In 2011 there was a Government plan to sell off the harvesting rights to some of Coillte's forests; however there was significant public opposition and the sale did not occur.

6.2. Influences of policies in forest management

The Irish Government is committed to ensuring that all forestry development complies with the principles of sustainable forest management. There is a number of means by which the Forest Service ensures that this is the case. First it is important to note that effectively all private forests in Ireland established since 1980 attracted financial support from the Forest Service; this fact gives the Forest Service control over how

the forests are established and how they are managed until the point when the premium is no longer payable. Those receiving grant-aid under the afforestation scheme must establish plantations and must adhere to the guidelines/rules relating to sustainable forest management outlined in the documents described below:

a) The Irish National Forest Standard (Forest Service, 2000a) – in which the criteria and indicators relating to the national implementation of SFM in Ireland are outlined. In it qualitative and quantitative measures are described which progress towards the practice of SFM is monitored in Ireland. While the national standard is not a certification standard, it does identify appropriate practices and provides a basis for certification;
b) The Code of Best Forest Practice (Forest Service, 2000b) – outlines the appropriate manner in which all forest operations should be carried out to ensure the implementation of SFM;
c) A suite of six mandatory environmental guidelines relating to water quality, landscape, archaeology, biodiversity, harvesting and forest protection.

Payment of grant-aid will only be made when the entire plantation is up to the required standard and complies with the guidelines above. The Forest Service carries out random forest inspections and if plantations are not managed in accordance with the rules of the schemes, premiums may be withheld or reduced and penalties may be applied.

All grant beneficiaries must submit a Forest Management Plan covering the period from Year 5 following plantation establishment to Year 10 for:

a) plantations which are 10 hectares or greater;
b) broadleaf plantations which are 5 hectares or greater.

When plantations are 10 years old, and before payment of the 11th and subsequent premiums, a Forest Management Plan for Year 11 to Year 20 must be submitted to the Forest Service detailing proposed management from year 11 to year 20. Due to limited staff resources it is not possible for the Forest Service to check whether the operations outlined in the management plan have actually being undertaken.

The application for grant-aid and the associated management plans must be completed and “signed off” by a registered forester. A registered forester is a professional forester who is on the list of registered/approved foresters that is retained by the Forest Service. These individuals are professionally qualified foresters, who hold professional indemnity insurance and have completed a declaration committing themselves to adherence to the various grant scheme rules and environmental requirements, and to best forest practice.

Once the stand reaches 20 years of age (i.e. once the owner has ceased to receive payments) there is no requirement to manage it in any particular way. However harvesting is governed by law and under the 1946 Forestry Act those involved in tree felling/harvesting must apply for a limited or general felling licence. Conditions will be attached to the issuing of this licence including complying with all Forest Service guidelines on harvesting etc as well as a replanting requirement.

As part of new legislation currently being drafted a requirement that all forest owners have management plans prepared is being considered. As this legislation is currently being debated in Parliament it is not yet known whether this will be enacted.

In summary there is control exerted on the early management of private plantations with forest owners required to follow guidelines etc and submit management plans. There is an underlying assumption that forest owners will have timber production as an objective, indeed it is a requirement of receipt of grant-aid that the land being afforested must be capable of producing a commercial crop of timber. However owners are not required to harvest timber.

If sites are in environmentally sensitive areas such as those designated under Natura 2000 there may be restrictions placed on the activities that can take place including harvesting. However there is no compensation paid to these owners with respect to these restrictions.

6.3. Policy instruments specifically addressing different ownership categories

As outlined elsewhere in this report the 18,000 or so private forest owners in Ireland are all "new" forest owners. In the 1980s the Forest Service still had an extension role and would have advised new forest owners as to what species to plant and what early management to undertake in their forests. As the numbers afforesting expanded, the need to provide training for the new forest owners was acknowledged (DAFF, 1996) and hence training courses are available to forest owners. These are funded by the Government and are generally provided by Teagasc (The Agricultural and Food Advisory Service) and recently focus on aspects on preparing owners to thin their stands and market their timber. There are also courses to help forest owners to manage broadleaf stands. These courses are advertised on the Teagasc website, popular press and forestry related newsletters. Those farmers that are listed on the Teagasc database (i.e. client list) are also notified of these courses. Attendance by owners is voluntary and studies have shown that the uptake is poor (Ní Dhubháin and Greene, 2009; Ní Dhubháin et al., 2010). It had been suggested (e.g. DAFF, 1996) that attendance at training courses may be a prerequisite to the receipt of the forest premiums but this suggestion has never been implemented.

Teagasc receives support from government to promote afforestation. It does this by providing advice to those interested in afforesting and advice and training to new forest owners. It has been to the forefront of encouraging and facilitating the establishment of producer groups. Teagasc initiated a project in 2008 to encourage the establishment of producer groups; there are currently 26 in operation. These consist of groups of 20 or so forest owners working together to thin their plantations (Casey, 2010). The producer groups do not receive any specific direct support from the Government, however, Teagasc provides advice and support to new forest owner groups, particularly at the early stages of group formation. In the past the Government has provided some financial support to organisations such as the Irish Timber Growers Association, however there are no specific policy instruments in place to stimulate associations of small forest owners.

6.4. Factors affecting innovation in policies

Since gaining independence in 1922, forest policy in Ireland essentially consisted of a series of afforestation targets, initially for strategic reasons to ensure an adequate domestic supply of home grown material. It was not until 1996 that the first forest policy document was published, i.e. Growing for the Future. In it more ambitious targets for afforestation were set; the objective being to reach a critical mass of timber production (i.e. 10 million m^3 per annum) that would sustain a competitive timber industry. A further driver to the production of this policy was the international commitment to adopting the principles of sustainable forest management.

Forest policy in Ireland has recently been revised and a new policy document published. The driver for the revision of State forestry policy was the need to "take account of the critical role of forestry in relation to climate change and its importance to construction, bioenergy, biodiversity and its potential to deliver long-term employment in other downstream industries e.g. eco-tourism, furniture, crafts etc.

The process of developing this policy involved stakeholders from all forestry sectors including: Irish Timber Growers Association (ITGA), Coillte (The Irish Forestry Board), forest companies, the National Council for Forest Research and Development (COFORD), the Irish Forestry and Forest Products Association (IFFPA), the Society of Irish Foresters (SIF), Teagasc, the Irish Farmers Association (IFA) and Crann, from the environment sector: Environmental Pillar of Social Partnership/An Taisce, and from government departments and bodies: the Department of Environment, Heritage and Local Government (DEHLG), the Department of Finance, DAFM, the Sustainable Energy Authority of Ireland (SEAI).

The main outcome of this review was to reiterate the need to continue with the afforestation programme and a target of

10,000 ha per annum to the year 2015 and 15,000 per annum thereafter to the year 2045 was set. Hence this trend in ownership is likely to continue for the foreseeable future. Similar policy instruments to those used previously will be used to help achieve this target; grants and premium payments continue to be available for those wishing to afforest their land. From 2015 onwards changes will be made to the payment structure; premium payments will be for 15 years rather than 20, however the total value of the payments will remain the same in an effort to further incentivise land owners to afforest. In addition, to ensure the sustainable management of the forest resource a new scheme for the preparation and collation of management plans was recommended in the review; reflecting this, the new Forestry Act includes provision for forest management planning.

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LATVIA

Lelde Vilkriste, Zinta Zālīte

1. Introduction

1.1. Forests, forest ownership and forest management in Latvia

According to the State Forest Service (SFS) data forests cover 51% of the country's land area.Today about 52% of forest area belong to the state, 11% are managed by legal persons or companies, 5% are owned by municipalities and other owners, and 32% by about 138000 private forest owners (PFO). The privatization going hand in hand with the restitution of property rights of the former owners or their successors to the landed properties, including forestlands, owned before the Soviet occupation have resulted in a high number of small and fragmented forest holdings. However, in the recent years the consolidation of landeded properties, including forests, is increasing as the biggest owners and forestry companies are interested in enlarging their properties. Still, small and fragmented holdings are typical for the private forest sector. In Latvia, the average size of a forest holding does not exceed 8 ha.

Since the restoration of Latvia's independence in the early 1990s the forest sector has become one of the key branches of national economy. Both state and privately owned forests are equally important sources of raw material for the wood processing industry. In the last decade the total average annual volume of fellings has been about 12 million m^3. As to the state-owned forests, a fixed annual allowable cut is established by law for a definite period of time, while in private forests the felling volume fluctuates a lot with the minimum of 3 million m^3 in 2009 and the maximum of 7.5 million m^3 in 2003 (figure 1).

The state-owned forests are managed in line with sustainability criteria and the Forest Stewardship Council (FSC) certificate approves that. Traditions of forest management were lost in a half of century break of private ownership. The SFS data showed that up to 2010 timber harvesting was done in about 40% of private forest holdings (Jansons, 2010). Other forest management activities (forest regeneration, tending of young stands, thinning etc.) were done considerably less. Part of private forests is still without management and it is to be pointed out that the principles of sustainability were not always taken into consideration in the management of small forest properties.

Access to firewood from one's own forest and a possibility to leave heritage to the successors are among the major motives for owning a forest in Latvia (Vilkriste, 2008). About 73% of PFO live in the area where their forest property is situated. The average age of PFO is 54 years, and about 1/3 of them are over 60 years old. There are no big differences in the gender structure among the PFO, but according to the surveys male owners are more active than female ones (Vilkriste, 2008).

Forest sector is one of the dominating sectors in the state economy. Sustainable management of private forests is not only conception of Latvian Forest Policy (FP), but also foundation-stone of long term supply of quality timber resources. One of the objectives of FP is to ensure the knowledge and skills needed to improve the FP, legislation and practice and to ensure sustainable forest management by promoting the development of forest education, forest research and exchange of information within the forest sector. It is important to design proper FP implementation tools to encourage PFO to manage their forests in proper way and change their forest management behaviour and decision making towards the goals of FP.

1.2. Overview of the country report

The country report of Latvia consists of

introduction and five interrelated parts. Introduction provides a short view on forest resources and their importance in economy, ownership structure and forest management tendencies. The chapter on methodology describes methods used for data collection. Surveys of PFO from 1996 provide information on characteristics of PFO and their viewpoints. Data of the data bases of the SFS and the State Land Service (SLS) are used to analyse changes in ownership structure. The statistics and data base of the SFS supply information on forest management tendencies in private forest sector. Reports of the different state institutions on various issues are collected from the Internet. Publications on new ownership types and their management tendencies are limited and experts of several organizations are interviewed to get their opinions on the topic.

Literature review on forest ownership changes are based on ten most important publications. Eight of them are reports on research projects; one is dissertation and one – publication in proceedings of IUFRO conference of small-scale forestry. Each report is based on self-dependent research; however methodology for some projects is similar. It gives possibility not only to obtain current data, but also provides information on changes in a certain period of time. All reports are in Latvian; therefore publications in English based on results of these studies are mentioned in the appendix in the summary tables of literature (chapter 8.1). Summary of literature review provides information on management of private forest sector in general and ownership structure, viewpoints and information of PFO, but it is limited information on policy and legislation aspects. Information obtained from the research projects have to be analysed together with the statistic data on forest management, changes in legislation and tools of policy implementation to obtain complete information on private forest sector.

Information on forest ownership includes statistic information on ownership structure and gives overview on legislative system related ownership in Latvia. Since the restoration of Latvia's independence in 1990, there have been processes of land privatization and restoration of property rights, and these have led to changes in the different types of forest ownership. Changes related ownership in the forests owned by the state are insignificant in the last decades. The situation in private forest sector is right opposite. In the last decade number of individuals and their forest area decreases. The SLS data base shows there are 137888 PFO with 7.8 ha average forest property in the 2012 (in 2003 – 166790 PFO). The last research provides information that consolidation is ongoing and percentage of small properties (under 5 ha) decreases (Zarins, 2012).

Forest management approaches, principles and harvesting activities are described for the state and private forests. Management tendencies of private forests are described in details based on survey results. There are no direct innovations in forest management approaches, but it can be considered that most of them are innovative because environmental demands, nature friendly management methods, biodiversity and other issues have to be incorporated to follow sustainability criteria. In the last decades PFO become more and more interested in non-clear cutting forest management and this case is explained in details in chapter 5.2. Main opportunities for innovative forest management are increase in effectiveness and income from harvesting (biofuel), development of technology and use of IT tools. Economic factors are the main obstacle for innovative forest management, but not the only ones.

FP and legislation, as well as different forest implementation tools are presented together with the statistic data on forest management activities in the country report. It demonstrates the impact of restrictions, tax reduction and financial support to regeneration and tending activities in private forest sector. Subsidies for nature protection can be one of tools to create and support new ownership group. Afforestation is a topical issue for land owners, forest and agriculture sector and described in details to show potential to increase forest area and new ownership (chapter 6.1.2). Forest extension and advisory system is one of important tools to implement FP and its correspondence to needs and wishes of PFO is featured. The report also demonstrates use of different extension tools and their adequacy to requirements of different groups of PFO.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The Central Statistical Bureau provides information about forest resources, timber prices and costs of different forest related services. Data of the National forest inventory (NFI) provide information on forest resources from 2008. Two data bases are mainly used to analyse changes in forest ownership structure and trends in forest management in private forest sector:

- data base of the SLS – provides information about all owners (gender, age, residence place) and their properties;
- data base of the SFS – provides information about forest properties under inventory and implemented forest management activities.

Detailed statistics about forest resources and forest management activities by different ownership groups (state, municipal government, private) are published yearly in the CD format by the SFS and available in the website[19] from 2001. Annual public reports of the SFS provide information about forest statistics and activities carried out by the owners and the SFS and demonstrate ongoing trends in forest management in state and private forest sector. Publications about forest sector in Latvia are published almost yearly by or with the support of the Ministry of Agriculture of Latvia (MAL).

Likumi.lv[20] is a legislation website ensuring free access to systematized (consolidated) legislation of the Republic of Latvia and is used to analyse changes in legislation referring to private forest management. The Rural Support Service (RSS) is responsible for the implementation of a unified state and the European Union (EU) support policy in the sector of forestry and provide proper information about these issues – planned, ongoing and already finished activities.

Information on forest owners' characteristics, socioeconomic situation, motivation, attitude to forest management, knowledge and understanding of forest management and related issues, as well as plans, problems and wishes concerning forest management and extension system were obtained from several research projects. Quantitative and qualitative data are used form the most important studies to describe situation and changes in private forest sector:

- surveys (personal interviews) organized during 1996-2008 (group of average PFO was selected from the SLS data base and interviewed in their properties) (Vilkriste 1996; 2001; 2003; 2008), but active PFO were interviewed in time of their visits to the extension specialists of the SFS (Vilkriste 2001; 2003));
- surveys (CATI method) of active PFO targeted to owners' forest management activities and decision making on harvesting (Domkins 2009; Jansons 2010; Zariņš 2012) and to forest owners' attitude towards cooperation and forest associations (SKDS, 2008).

[19] www.vmd.gov.lv/valsts-meza-dienests/statiskas-lapas/publikacijas-un-statistika/meza-statistikas-cd?nid=1049#jump

[20] www.likumi.lv

Author's expert knowledge[21] was used to describe results of surveys of forest owners and changes in ownership structure, as well as in extension and advisory system. Information is collected from the web pages of different state organizations, mostly reports. Publications and printed information related to the topic of the research and new owners are limited, therefore several professionals were contacted to get information, expert viewpoints and comments on different issues:

- the MAL – forest statistics and legislation;
- Pasaules dabas fonds (PDF; previous WWF Latvia) - selective cutting and opinion on changes in ownership and new owners;
- the RSS – use of the EU funds.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Research activities related to the private forest sector started in the Forest Faculty of the University of Agriculture of Latvia (UAL) about 20 years ago, but nowadays the largest part of the research related private forest sector is done by specialists of Latvian state forest research institute (LSFRI) "Silava". Surveys from 2000 to 2003 were financed by the SFS (in frames of co-project with Swedish Forest Agency), the rest was implemented with the support of the Forest Development Fund (FDF) (holder – MAL).

3.1.1. Surveys of PFO

The first study on situation in private forest sector in Latvia was done in 1996 as a part of master thesis (Vilkriste, 1996) and was a base for methodology of monitoring changes in private forest sector (Vilkriste, 2002). First opinion polls to obtain information on average PFO based on special methodology were organised in 2001 and 2003. Respondents were selected from the data base of the SLS and interviewed in their residence place. Urban forest owners living in big cities were excluded from interviews for several reasons (the data base did not hold their full address (number of apartment is missing); a lot of doors were with an entrance code; no phone numbers to agree on meeting were available etc.). A few pieces of information on urban

[21] Dr.silv. Lelde Vilkriste designed methodology of surveys of PFO, organized surveys during 1996 – 2008, analysed changes in the ownership structure during 2004 – 2007, and worked in the SFS (1997- 2005) with implementation of extension system of PFO.

owners were obtained anyway to point it out as a specific group. Surveys of active PFO were organised in the SFS in 2000 and 2003 and visitors were interviewed to study difference between average and active PFO (Vilkriste, 2001; 2002; 2003).

Surveys in 2007 and 2008 were also targeted to obtain general information about PFO, their motivation, actual and planned forest management, use and evaluation of forest extension services and different information tools, level of knowledge and comprehension on different forest management issues, regional differences and other topical questions (Vilkriste 2007; 2008). In 2007 PFO were interviewed also on the phone, but results showed that it was not possible to get true information on general situation in private forest sector without proper selection of respondents.

Opinion polls of PFO from 2008 were more oriented to active PFO to obtain information about the supply of timber resources and forest management plans (Domkins, 2008; Jansons, 2010; Zariņš, 2012) and owners' attitude to cooperation (SKDS, 2008). Information was obtained based on telephone interviews (CATI method) and respondents were selected from owners whose contacts were available from the forest extension organisations.

3.1.2. Analyses of the data bases

Several research projects were focused on data analyses of the data bases of private owners and their properties. Characteristics of owners by gender and age, information about different owner groups based on number of owners per property and number of properties per owner, as well as owners residence place and properties distribution by size classes firstly was done in 2004 (Vilkriste, 2004). Three years later similar study was carried out to establish changes in ownership structure based on the information of the SLS data (Vilkriste, 2007).

The latest research is focused on general changes in private forest sector and forest management activities (Jansons, 2010; Zariņš, 2012). Changes in ownership structure were analysed based on the data of the SLS (all properties), but forest management activities and availability of forest resources were analysed based on the data of the SFS (properties under forest inventory). This research is continuing and new results will be available in 2015.

3.1.3. New forest ownership types

The opinion that most of forest owners are "new" or non-traditional in Latvia can be true because of the break in private ownership structure for about 50 years until 1990. Totally there were about 167 thousand owners in 2003 and it is possible to maintain that the largest part of them was without or with minimal knowledge and comprehension on forest management. There are no specific studies on different ownership groups, but it is possible to deal out different owner groups based on statistics, management trends and information available from different research projects.

About 6% of forest properties are without forest inventory (Zariņš, 2012). About 40% of PFO did not carry out forest harvesting in their properties (Jansons, 2010). In 2008 about 60% of PFO reported that they did not have any experience in forestry and sufficient knowledge (Vilkriste, 2008). It gives evidence that notable amount of PFO are **non-active owners** and **owners without knowledge**. In most cases these are also owners of small scale forest properties (less than 5-6 ha) (Vilkriste, 2008; Zariņš, 2012).

Surveys of PFO give evidence that **habitual** or traditional management in small properties is **firewood collection** and "some cleaning". About 80% of PFO did firewood collection, but largest part of them does not consider it as forest management activity (Vilkriste, 2003; 2008).

The consolidation process of private properties is ongoing. Total number of owners is reducing and percentage of bigger forest properties is increasing (Jansons, 2010; Zariņš, 2012). It is possible to forecast that group of owners who consider **forest as investment** is growing. Aging of owners will change forest ownership in the nearest future and can increase proportion of group of younger owners, possibly investors. Analyses of the SLS data gives evidence that there were also about 10% newcomers between 2004 and 2007 (Vilkriste, 2007).

The results of surveys give evidence that

topics of interest of PFO are changing and coming wider year by year (Domkins, 2009; Jansons, 2010; SKDS, 2008; Vilkriste, 2008; Zariņš, 2012). Changes in the forest normative acts, market (also new market for bioenergy), and availability of financial support mechanisms (the EU funds) change a management decision system of PFO and owners become more active and interested in the forest management. Statistics, publications in mass media and other sources also give evidence that group of **active owners with multiple interests in forest management** is increasing.

About 25% are **urban owners** (Jansons, 2012; Vilkriste, 2007). In 2001 about 64% of respondents mentioned agriculture and livestock-farming as one of their income sources, in 2003 percentage of **farmers** decreased to 46% (Vilkriste, 2003). There are no actual information on occupation of PFO and use of their farms. **Regional differences** are mostly caused by uneven forest coverage in regions (from 27% to 54%), average size of forest property (3.7 to 16.4 ha) and economical situation (Vilkriste, 2002).

The research demonstrates that difference between the active and average PFO and their management tendencies is significant and mainly determined by size of the forest holding; gender and age of PFO and their residence place (Vilkriste, 2002). It means that each group of PFO (by gender; age class; forest property size class; residence place etc.) is different and has specific priorities, demands and wishes in forest management, as well as preferred management strategies and information sources. Surveys provide data and characteristics of different groups of PFO based on their knowledge, use of different information sources. For example, PFO who are interested in bioenergy market have in average 21 ha of forest and are a little bit younger than an average owner; PFO who are interested in attending seminars have in average 10 ha of forest (Vilkriste, 2008). This knowledge was used to develop the forest extension system.

3.2. Forest management approaches

Studies conducted so far were not focused on the new ownership types, therefore the only information about general activities of all owners are available. Usually most of the private owners choose clear cut as dominating harvesting activity. More than half of owners organise harvesting by themselves; use of paid services in their management activities are not priority (Vilkriste, 2008). It is supposed that situation can change in nearest future with the change of generations of PFO and increasing supply of forest management services.

Use of bioenergy in Latvia is increasing, while surveys show that only about 25% of PFO consider bioenergy market profitable in future. Qualitative analyses of survey data demonstrated that only 20% of PFO have at least minimal knowledge about forest biofuel collection and market. Also knowledge about availability on the EU funds is relatively small – less than 1/3 of PFO agreed that they have enough information on available support. The same amount of PFO does not know about tax reduction on forest related issues. About 10% of owners had heard and have some idea about management with selective cuttings. It is also relatively small level of respondents who were able to answer the questions on environmental and nature protection demands in forest management, as well as comment last changes in forest legislation (Vilkriste, 2008; 2009). Results of surveys establish view that sharp changes in forest management approaches in private forest sectors are not expected in the nearest future.

3.3. Policy change / policy instruments

There is no research directly related to change of policy or policy instruments in private forest sector. Surveys provide information about PFO attitude to changes in forest legislation and extension system, evaluate different aspects of extension system and provide information about owners' knowledge on different FP implementation tools (Domkins, 2009; Vilkriste 2003; 2008). Attitude of active PFO towards cooperation, land transformation and bureaucracy were also studied (SKDS, 2008).

Two years after changes in the extension system in 2006 about 9% of PFO positively

evaluated it and 8% of PFO had an opposite viewpoint, but the rest did not have any idea. About 28% of PFO were sure that information about the EU support was sufficient, but qualitative analyses of answers gives evidence that only about 3% of PFO had proper knowledge about available possibilities (Vilkriste, 2008). Reports assert that largest part of active PFO were interested to get financial support for the activities they are interested in; considerably large part wanted to have support for tending young stands (SKDS, 2008; Vilkriste 2008).

In 2008 about half of PFO do not know about tax reductions in forest management. Also in 2003 situation was similar. Considerably large proportion of PFO who mentioned tax rates too high considered much higher rates as desirables in future (Vilkriste, 2003; 2008). In 2008 about 6% of PFO were satisfied with forest legislation, 9% had a viewpoint that there are still a lot of restrictions for owners, 10% had some suggestions for improvement, but the rest were “no position” owners. PFO were not satisfied with requirements of normative acts and law also in early surveys, but at the same time could not give adequate answers to question what had to be changed and improved (Vilkriste, 2003).

Surveys provide information about problems of PFO and their viewpoints on different topics. This information not always can be used as evaluation of different policy implementation tools, but provides important information to decision makers and politicians as well as for extension organisations.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments (FRA) by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Forest area in 2010 reached 3354 thousand ha by the NFI data. Table 1 presents distribution of forest area among FRA 2010 categories for 2005 and 2012. Categories and definitions of forest owners are not stated in the normative acts and united definitions are not worked out in Latvia. Categories are named variously in statistics of different organizations, reports and papers. There is a difference also in figures among the data of different organizations based on methodology and principles used for the data collection.

Table 1: Forest area by FRA 2010 ownership categories in 2005 and 2012

FRA 2010 Categories	2005*	2012
Public ownership	1781	1640
Private ownership	1513	1711
...of which owned by individuals	1365	1174
...of which owned by private business entities, institutions	147	537
Other types of ownership	3	3
Public ownership	1781	1640
TOTAL	**3297**	**3354**

** www.fao.org/docrep/013/al548E/al548E.pdf*

Forest ownership by status in 2013 by the SLS is following: state owned forests – 49%; privately owned forests – 35%; forests owned by legal entities – 14%; local government owned forests – 2%; mixed status joint ownership – 0.1% and the reserve fund of land – 0.1% (Forest sector in facts and figures, 2014). Public ownership (by FRA 2010) consists of two subcategories: state owned forests and forests owned by local government (municipalities).

Private ownership is forests owned by individuals, families, business entities, private, religious and educational institutions and other private or non-governmental institutions and organizations. Mostly three subcategories of private ownership are displayed:

- privately owned forests (physical or natural persons; by FRA 2010 - individuals) - forests owned by individuals and families;
- forests owned by legal entities (by FRA 2010 - private business entities and institutions) - forests owned by farms, private companies and other business entities, NGOs, religious and educational institutions, etc.
- other types of ownership - other kind of ownership arrangements are not covered by the categories above. Also includes areas where ownership is still unclear or disputed.

There is no information about forests owned by foundations or trusts, NGO with environmental or social objectives, self-organized local community groups, co-operatives or forest owner associations and social enterprises, as well as forests under common pool resources regimes in Latvia.

4.1.2. Critical comparison with national data in FRA reporting

Detailed description for data differences between national data set and FRA by FAO is given in country report *Global forest resources assessment (FAO, 2010).* There are two main reasons for the gap – system of data collection and difference in the definitions used. Definition used in national level in Latvia differs from FRA 2010 definition – minimal area for land use category in Latvia is 0.1 ha not 0.5 ha as used by FRA.

Two main sources of information for statistics were used before 2008: the SLS register (maintains information on land use) and the SFS register (contains information only on forestland). Since 2008 information about the area of forest has been acquired from the NFI data collected in a five-year period of time. Data of the NFI are more precise compared to the data used up to then. The difference in total forest area does not characterize only the changes in forest area. The difference is also due to the use of more precise methods. One of the reasons of increase in forest area is natural growth of forest in abandoned agricultural lands.

4.2. Unclear or disputed forest ownership

Forest ownership in Latvia is clear almost in the whole territory. The exception is 0.1% of forest land named as the Reserve land fund. It is land for which the municipality council decision and the Cabinet directive had not been adopted and submitted to the SLS concerning land ownership until December 30, 2009. This was related to the competence or usage with regard to the completion of land reform under the Law on Land Property Rights of the State and Municipalities and Securing the Titles in the Land Book[22]as well as land that the municipality has enrolled in the reserve land fund under part 21 of paragraph 25 of the Law for the Completion of State and Municipality Property Privatization and Utilization of Privatization Certificates[23].

According to the Law on the Completion of Land Reform in Rural Areas[24]and the Law on Completion of Land Reform in Cities[25] till November 30 of 2014 should be notices of the land reform completion in villages and cities.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

The Law on Land Privatization in Rural Areas[26] determines restrictions of buying forest in Latvia. Section 28 of the law says that land may be acquired in ownership in accordance with the Civil Law[27] and other laws by:

[22] http://likumi.lv/doc.php?id=34595#saist_5
[23] http://likumi.lv/doc.php?id=111962
[24] http://likumi.lv/doc.php?id=45729 (available in English)
[25] http://likumi.lv/doc.php?id=50579 (available in English)
[26] http://likumi.lv/doc.php?id=74241
[27] http://likumi.lv/doc.php?id=225418

1) persons who are citizens of the Republic of Latvia;
2) state and local governments, state and local government undertakings (incorporated companies);
3) an incorporated company registered in the Register of Enterprises of the Republic of Latvia (RERL) if these companies correspond to the conditions stated by the Law;
4) religious organizations registered in Latvia, the term of activity of which, counting from the moment of registration in the Republic of Latvia, is at least three years;
5) farms and individual undertakings registered in the RERL if they belong to the citizens of the Republic of Latvia;
6) state and local government institutions of higher education, the constitutions of which have been approved according to the procedures specified by the Law.

The citizens of the EU Member States (MS) and legal persons registered in the EU MS starting with May 1, 2011 may acquire land in ownership under the same provisions as the subjects referred to in the Paragraph 1 of this Section. If there is sufficient evidence that after the end of the transition period (seven years after joining the EU) there shall be serious difficulties or there is a possibility of occurrence of such difficulties in the market of the agricultural land of Latvia, such term may be postponed for a period of time not longer than three years in accordance with the procedures that have been specified in the Treaty of Accession to the EU.

During the transition period from May 1, 2004 until May 1, 2011, land may be acquired in ownership in accordance with the Civil Law and other laws by:

1) the citizens of other EU MS if they want to engage in entrepreneurship in Latvia as self-employed farmers and reside in Latvia for at least three consecutive years, as well as have been engaged in agriculture in Latvia for at least three consecutive years; and
2) other citizens of the EU MS and legal persons registered in the EU MS, except for agricultural and forest land.

There are some other laws that indirectly affect market of forest properties and determine conditions when taxes should be payed. The Law on Value Added-Tax[28] determines conditions when owner of forest and other lands should pay value added-tax. According to the Law on Immovable Property Tax[29] if the property is gifted the change of the owner may be registered in the Land Register after the principal debt of the tax, fines and late fees have been paid, as well as the tax payment has been paid for the taxation year. If person inherited property, this person should pay personal income tax according to the Law on Personal Income Tax[30]. The amount of personal income tax is set according to special formula and some tax reductions for special cases are stated.

The Law on Land Privatisation in Rural Areas[31], the Law about Privatisation Vouchers[32], and the Rules of Using Privatisation Vouchers[33]determine how person can privatize property using privatization vouchers, the value of one voucher and period when vouchers should be used. Section 12 of the Law on Land Privatisation in Rural Areas determines that the former owners of land or the heirs thereof have the rights to receive a compensation for the land that has been in the ownership or a part thereof if they wish it and unless they have received land on site or land of an equivalent value in another place. The rights to delete the land ownership compensation certificates, receiving a payment of 39.84 EUR for a certificate, according to the procedures determined by the Cabinet have:

1) the former owners of land, who until December 31, 1992 have requested a compensation or land and have not been able to receive such land due to the restrictions specified in the Law;
2) the heirs of the first class of the former owners of land, who until June 20, 1991 have requested land and have not been able to receive it due to the restrictions specified in the Law (have been entered into the register of unsatisfied requesters for land);

[28] http://likumi.lv/doc.php?id=253451
[29] http://likumi.lv/doc.php?id=43913 (available in English)
[30] http://likumi.lv/doc.php?id=56880
[31] http://likumi.lv/doc.php?id=74241 (available in English)
[32] http://likumi.lv/doc.php?id=34503#pn7&pd=1
[33] http://likumi.lv/doc.php?id=165215

3) the surviving spouses of the politically repressed and the heirs of the first class of politically repressed of the former owners of land if they have requested a compensation or land until December 31,1992 and have not been able to receive such land due to the restrictions specified in the Law.

4.3.2. Specific inheritance (or marriage) rules applied to forests

Inheritance or marriage rules for any kind of property, also forests, are set in the Civil Law. If estate-owner wants to leave forest to their children, they can do it. The estate-leaver may express his or her intention in a will or an inheritance contract. Children will inherit property in any case, if exceptions are not set in a will or an inheritance contract. All children can inherit property; the property will be divided in fair shares. The surviving spouse shall inherit from the deceased regardless of the form of property relationship that was in effect between the spouses during their marriage.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

At the end of the soviet era mostly all forests belonged to the state or agricultural enterprises (collective farms). In 1988 about 63% of forest area belonged to the state, 33% to agricultural enterprises and 4% to other owners. The structure of forest ownership underwent major changes following the restoration of independent statehood in 1990, when during the land reform the restitution of the properties to former landowners or their successors took place. This has led to changes in the different types of forest ownership. Table 2 demonstrates changes in the ownership structure in the first decade after restoration of independence and shows situation before it.

Table 2: Forest area (thousand ha) by ownership during 1988 – 2001 (the SFS data)

Owner	1988	1994	1996	1997	1999	2001
State	1744.9	1606.3	1626.2	1493.0	1430.4	1432.3
Private		440.3	649.8	1275.5	1197.0	1295.2
Agricultural enterprise	916.4	215.2	42.9	18.0		
Municipality						115.4
Other	96.2	557.8	562.3	97.5	216.6	25.3
Total	**2757.5**	**2819.6**	**2881.2**	**2884.0**	**2844.0**	**2868.2**

Since the 90s forest area in Latvia has increased due to the afforestation of land not used for agriculture, mostly in the private sector. Statistics of the SFS reports 3038 thousand ha of forest in 2014. It will be an increase in the forest area, mostly in the private sector, in coming years due to the last changes in the Forest Law[34] effective from January 1, 2015. The land above 0.5 ha will be considered as forest if the number of trees and their size corresponds to the certain criteria. In this case land will be listed as a forest based on an observation in nature without an application of the owner. Experts consider that already about 130 thousand ha of land fit to requirements of being forest and in nearest future this number could double[35].

The structure of forest ownership has not changed very much from 2001. Today state owns 1496 thousand ha (49% of total forest), 1498 thousand ha (49%) is under private property and the rest 43 thousand ha (2%) is the property of municipalities (Latvian Forest Sector in Facts and Figures, 2014).

4.4.2. Changes within public ownership categories

There are no significant changes related to public ownership after 1997. Since 2000 the largest part of public forests are managed by

[34] http://likumi.lv/doc.php?id=2825

[35] http://www.zm.gov.lv/presei/aktuali-lauku-iedzivotajiem-par-izmainam-meza-likuma-no-2015-gada-1-ja?id=3981

JSC "Latvijas valsts meži" (LVM; Latvia's state forests). Today JSC LVM manages totally 1.65 million hectares of land, including 1.47 million hectare of forest land (1.4 million forests) and implementing the state's function of the forest owner.

According to the statistics of the SFS local government (municipalities) owns 71586 ha of forest in 2007. In 5 year period forest area owned by local government had decreased nearly for a half and it was about 43236 ha in 2014. Information about new owners of those properties is not available.

4.4.3. Changes within private forest ownership

Table 3: Number of individuals and forest area 2001-2012 (the SLS data)

Indicator	2001	2004	2007	2010	2012
Number of owners and users (natural persons)	154382	148925	145505	144069	137888
Forest area, thousand ha	1327	1224	1192	1124	1075
Average forest property (per owner), ha	8.6	8.2	8.2	7.8	7.8

There were 155280 forest owners and users[36] in the SLS data base in 1999 (Vilkriste, 2001). Data show that private forest ownership structure in the last decade has changed. Number of physical persons (individuals) from 2001 to 2012 decreased for 11%, but their forest area for 19% (table 3). It is important to point out that it was an exception for a short period of time between 2002 and 2003 when number of PFO had increased noticeably.

Number of forest owners and users reached peak in March 2003 with about 167 thousand records in the SLS data base. This sudden increase was an exception and partly it was caused by owners' wish to harvest more without regeneration of previous cutting areas and escape the requirements of the Forest Law of that time. A number of cases to parcel out clear-cut areas from the property as particular property was fixed. One part of owners reregistered newly established properties to family members, but other part sold them in the market and it was indirect evidence that new group of owners (investors) had started to develop. New harvesting activities in a property were prohibited if the previous cutting areas were not reforestated in a proper time, amount and quality. There were no restrictions for the owners to set apart their felling area from the rest of the property as a separate property for a certain period of time. Changes in the Forest Law to prevent gap in legislation according to the restrictions related to harvesting were done in March 2003. If owner parcelled out the part of a property restrictions for harvesting had kept force in all parts of previous estate for seven years. Soon after these changes number of PFO started to decrease. The latest studies provide evidence that consolidation process of private properties is still ongoing and number of PFO decreasing (Jansons, 2010; Zariņš, 2012).

A number of properties was 3% higher than number of individuals in 2004, but in 2007 this indicator increased to 10%. Also analyses of the SFS data gave evidence that group of owners who have several properties increases, but group of owners with single property decreased (Vilkriste, 2007). Average size of forest property per owner was 8.2 ha, but average size of forest property was 7.1 ha in 2007.

About 21564 forest properties were owned by 3868 juridical persons in 2007. Number of business entities reached 3300 and the total area of their 14239 forest properties was about 164871 ha. Number of juridical persons in a five year period increased for about 5% and their forest area for 23% (table 4).

[36] Persons who are in the process to register their property in the Land Book

Table 4: Number of juridical persons and forest area 2004-2012 (the SLS data)

Indicator	2007	2010	2012
Number of owners	3868	3994	4057
Forest area, ha	259623	246727	319799

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

According to the Law on Land Privatization in Rural Areas in the beginning of restitution process persons could claim back properties owned before July 22, 1940. Land ownership rights were restored on the basis of a personal request of the former owners of land in the ownership of whom the land in the Republic of Latvia was on July 21,1940 or to their heirs thereof in accordance with the Civil Law of the Republic of Latvia of 1937. According to the law, the definition of land which can be privatized is: land, which on July 21, 1940 was in the ownership of natural persons, the state, local governments and in the ownership of other legal persons, shall be a subject to privatization in rural areas if such land until November, 1996 has been allocated for permanent use to a natural person, has been reserved on the basis of a term request or has been allocated for permanent use as land of an equivalent value in the place of the former land property.

To encourage rational use of land and undo the injustices that were allowed with the confiscation of private land, the Supreme Council of the Republic of Latvia made a decision in May 15, 1991 on Rights to Receive Compensation for Rural Land Confiscated in July 22, 1940[37]. The ownership rights to the land shall be restored to the former owners of land or to their heirs by returning in actual fact the former land property thereof or a part thereof or by transferring into ownership land of an equivalent value within the borders of the relevant parish or district or in other parishes of the Republic with the decision of a parish land commission from the non-requested land or the state or local government land. The former owners of land or they heirs have the right to receive a compensation for the former land property. The ownership rights to the land to the former owners of land or the heirs shall be renewed if the request of the land has been submitted until June 20, 1991, except the case when in the first round of the land reform such land has been allocated for permanent use to other natural persons for the maintenance of farms, household farms, individual orchards, residential houses and summer cottages, for the completion of the construction objects commenced until November 21,1990, for the maintenance of buildings belonging to the State and local governments, structures and sharing objects of a non-producing character.

The establishment of the State Stock Company[38] LVM was determined by an order of the Cabinet of the Republic of Latvia issued in September 1999[39]. The JSC LVM and the stock of this company may not be privatized or alienated. It means that any major changes in public forest sector cannot occur.

The research shows that forest management behaviour of PFO is affected also by the way how owners acquired their property. In the first ten years after regaining independence persons became owners mostly by inheritance or purchasing forests using

[37] http://likumi.lv/doc.php?id=74241
[38] later renamed to JSC
[39] http://likumi.lv/doc.php?id=17919

privatization certificates. Surveys show that about 36% of owners obtained forest with a help of certificates and 6% bought it in the market from other persons. The proportion of inherited properties was about 60% (Vilkriste, 2001; 2003; 2008).

In 2001 less than 5% of owners considered selling of forest property, in 2 years this proportion was close to double. There were about 9% of owners who wanted to increase forest area. The opinion poll among active owners in 2003 showed that about 40% of PFO wanted to enlarge their forest estates (Vilkriste, 2003). There is no published information about the market of forest properties, but it is possible to maintain that the demand for forest estates is still bigger than the supply.

The average price for forest estates rose by 21% in 2004, as compared to 2003. In 2004 the amount of forest land sold has decreased. Approximately 13000 ha were sold by the end of November 2004 in comparison with the 17000 hectares sold in 2003 (Forest sector in Latvia, 2004).There are no more publications related to deals with forest properties among individuals. Changes in the ownership structure are the only evidence for ongoing estate market. It is noticed that between 2004 and 2007 there were about 10% changes in the records of owners' of the SLS and their properties yearly (Vilkriste, 2007). The reasons for changes in the data base of the SLS were not only newcomers and leavers, but also owners who increased or reduced their forest area. It is possible to assume that the largest part of changes is caused by the deals of forest properties and there are significant factors for creating new forest ownership.

The second more important reason to speak about new ownership is related to changes in the motivation of forest owners and their attitude to forest management. These changes can be caused by owners themselves (changing life style and occupation; aging) or indirectly with changes in the legislation, support mechanisms, situation in the market etc. When owners were asked to mention three main reasons for being an owner, about 64% could not give an answer for it in 2004. The largest part of these owners was heirs. In discussions about 1/3 of PFO accepted that they had also economical motivations (Vilkriste, 2004). In 2008 close to 90% of owners mentioned the way of acquiring property as first reason for being an owner. Only 10% mentioned economical reasons (Vilkriste, 2008). Also other results of surveys and later studies (Jansons, 2010) gave evidence that still about a half of owners is not active in forest management. It is possible to expect changes in formation of new ownership groups if the owners finally became interested in managing their properties, they would be sold or managed by heirs and "motivated" and more economically oriented ownership groups start to act.

About 25% of forest owners used to live outside their properties in towns (Vilkriste, 2001; Jansons, 2010). Information about this group is limited to compare with studies on owners living in rural areas. The research allows declaring that urban owners differ from owners living close to property by their characteristics (age, education), socio economical situation and attitude to the forest and its management. It is possible to forecast that there will be an increase in proportion of urban owners and owners who do not manage a farm based on "ancestral customs" (forest as residence place for own needsmanaged by manpower for self consumption and needs).

Even if information about potential areas for afforestation differs among specialists, there is a great potential to increase the forest area by afforestation of abandoned agricultural lands. Calculations made by experts show that totally naturally afforestated farmlands in Latvia reached about 298 thousand ha (Lazdiņš, 2011).The forest statistic inventory data[40] of 2014 shows that about 195 thousand ha of land in the private sector is undergrown, inter alia 120 thousand ha of agricultural land. Last research on effective use of land points out that there are about 108 thousand bushland and about 368 thousand ha unused agricultural land is already undertaken by bushes and trees (Pilvere, 2014).

The surveys give information that there is a great interest of PFO on afforestation. About 5% of owners reported afforestation in the

[40] www.silava.lv/22/section.aspx/View/13

survey of 2001, but two years later this number doubled. About 40% of owners reported that they had in average 6 ha of not used land for afforestation and largest part of them (69%) had an idea for planting forest (Vilkriste, 2003). Statistics of the SFS shows that total afforestated area from 1999 to 2013 is 20.2 thousand ha, inter alia 39% are plantations. By the opinion of experts it can be higher, because not all of PFO reported it. Obviously afforestation will increase forest area of current owners, not establish a notable group of new owners. Afforestation issues are described in details in chapter 6.1.2.

Changes in legislation, availability of different support mechanisms (mostly the EU funds), new markets (e.g. bionergy; recreation), development of technologies and IT tools for forest management, as well as different cooperation forms change also situation in private forest sector. Even if it is not physical changes in ownership structure, changes in a motivation and attitude will originate also changes in behaviour of forest owners and create new owner groups.

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	1
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	2
• New forest ownership through afforestation of formerly agricultural or waste lands	2
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2
• Urbanisation	2

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

4.5. Gender issues in relation to forest ownership

Information about gender issues was obtained from the SLS data base (Vilkriste, 2004; 2007) and opinion polls during 2001 – 2008 where data and information on male and female forest owners were compared to find similarities or differences between gender groups. First information obtained from the survey of 2001 is following:

- average age of owners is 51 year (for male - 49; female – 55);
- proportion of female owners is 32%, but among active forest owners – only 20%;
- female forest owners have smaller forest properties in average than male forest owners.

Data base of the SLS provided information about structure of owners in 2004:

- 56% were male and 44% were female forest owners;
- 62% of private forest land belonged to male and 38% to female forest owners;
- average age of owners was 54 years (female – 57 and male 52 years);
- average forest area for male owners was 9.3 ha and for female – 7.6 ha.

Three years later data base of the SLS testified that due to the ownership changes owners have become “younger” and the proportion of female forest owners has increased per 1%.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation,

business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Latvia

5.1.1. Management of the state forests

The largest part of the state-owned forests is managed by the JSC LVM established in 1999. The shareholder of the LVM is the Latvian State in the person of the MAL. The main focus of the LVM's activities is to ensure sustainable forest management, increase ecological values, as well as the biological diversity of forest. The LVM is also maintaining tree nurseries, producing seeds and plants and dealing with hunting, fishing, recreation and tourism; building roads, supporting education, research, information of society and other projects. All of the forests that are managed by the LVM are certified on the basis of the FSC system. The LVM pays the state a duty for using its capital, taxes to the state and municipality budgets.

In accordance with accepted strategy nature protection is the main target in 21% of total area; 5% of total land area is managed for recreation and nature education, and 74% of the total area is planned for timber production (LVM, 2011). The allowable cut for 5 year period for the LVM was approved by the Cabinet. For the period between 2001 and 2005 allowable cut was 15.6 million m^3 and for 2006 – 2010 it was stated for 20.5 million m^3. During the economic crisis in 2008, the sales from private forests decreased (Figure 1). As the forest sector has an important role in Latvian economy, for stabilizing the national economy and to support the national woodworking industries and rural employment during the economic crisis period, allowable cut was extended by the Cabinet to 24.5 million m^3. After the crisis the volume of felling decreased and sales volume of roundwood in 2010 was 5.9 million m^3. Selling of roundwood in auctions started in 2003 and in 2010 reached 69% from total sales (LVM 2011). Still part of timber was sold under the provisions of long term logging contracts. All activities are based on the open tenders of roundwood deliveries, harvesting and transport services.

Nature Conservation Agency under the Ministry of Environmental Protection and Rural Development is responsible for forest management in the national parks, reservations or other places where the primary target is nature protection. Scientific research forests shall be utilised for the establishment and maintenance of long-term scientific research sites. From 2014 these forests are managed by UAL and LSFRI "Silava" based on the Regulations on forest management and supervision of scientific forests[41]. Other state organisations and municipalities are responsible for management of their forest property. Ltd "Rīgas meži[42]" (LLC "Riga Forests") is a commercial enterprise owned by the Riga City municipality and manages 4.6 thousand ha of forests.

[41] http://likumi.lv/doc.php?id=260782
[42] http://www.rigasmezi.lv

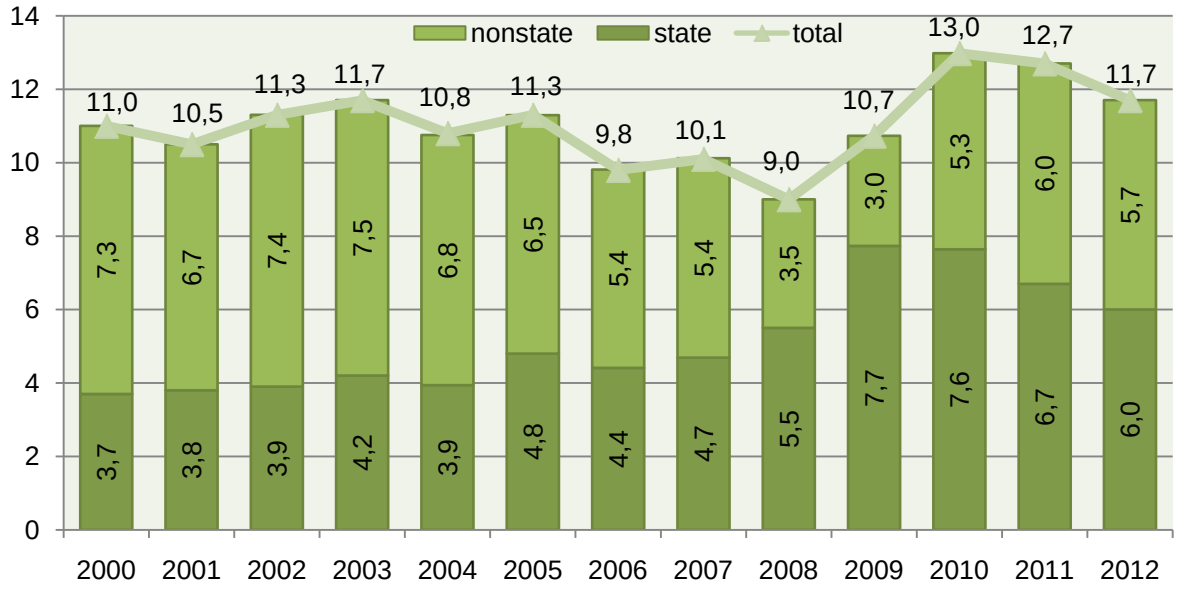

Figure 1: Felling amount (million m^3) in the state and non-state forests 2000-2103 (the SFS data)

5.1.2. Management of private forests

Management of private forests owned by legal persons was not studied in detail. In most cases forest professionals are involved in planning and organisation of forest management activities. Interesting case is management of Lutheran church's forest by special Forest fund[43]. It was established in 2011 to increase effectiveness of management of 2517 ha of forests which belong to 145 parishes all over Latvia.

First cooperative society of PFO was established in 2011[44] and now manages about 2000 ha of forest. Today there are six co-op companies of forest service providers and four of them conform to the Requirements of conformity assessment of cooperative societies of agriculture and forestry services[45]. These societies provide forest management services for their members as well as for other owners. There are about 15-20 small local associations or organisations of PFO who provide services for members and other owners. Development of cooperation of PFO is ongoing, but today relatively small part of PFO use services provided by cooperative organisations.

Surveys of PFO give evidence that most forest properties under 100 ha are managed by owners themselves, only in a few cases by lawful possessors. About 86% of owners make decisions by themselves and 10% together with family members. Only about 15% of owners reported use of forest management services. Fuel-wood collection is one of the dominating activities in private forest sector and about 80% of owners did it, mostly for self use. In 2008 more than a half of owners did not plan any forest management activities for nearest five years. Average forest area for this group was 6.1 ha. (Vilkriste, 2008).

Detailed analyses of timber harvesting activities was done for properties in different forest size classes. Potential amount of timber from stands in harvesting age is about 21 million m^3, and 5.7 million m^3 are located in properties of size class from 5 to 20 ha (Jansons, 2010). According to the latest research about 46% of owners had carried out some forest management activities in their properties during 2005-2012. Harvesting activities took place in 90% of forest properties above 50 ha in the last decade, while there are a lot of properties under 5 ha without any forest management and no interest to do it (Zariņš, 2012).

[43] www.lelb.lv/lv/?ct=noteikumi_instrukcijas
[44] www.mezsaimnieks.lv
[45] http://likumi.lv/doc.php?id=254754

5.1.3. Forest management plan (FMP)

In Latvia regulations on FMP[46] is in force from January 1, 2015. According to this document a FMP shall be developed on the basis of the forest inventory data and it will be mandatory for forest area more than 10 thousand ha. The Law on forests says it shall be a duty of a forest owner or a lawful possessor to perform, in the forests of his ownership or lawful possession, a forest inventory at least once in 20[47] years, and to submit these materials to the SFS. Forest inventory and forest management planning shall be performed by persons who have specified professional qualifications.

Forest inventory data are missing for about 6% of private forest area, mostly for properties under 5 ha (Zariņš, 2012). Today in most cases forest inventory data go by the name of a FMP. Forest owners not always consider a FMP as an important information source and tool that helps to manage their properties even if it is information on some permitted or requisite activities within inventory data. Only 7% of owners consider a FMP as a very important tool for forest management planning (Vilkriste, 2008).

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. Non-clear cutting forest management

Management with selective cuttings has been known for long period of time and there were a lot of regulations already from the Soviet times. Today conception of non-clear cutting forest management is based not only on economic calculations, but takes in account environmental considerations, increases biological diversity and follows principles of nature friendly management.

The amendments in the Law on forests and the Regulations on tree felling in the forest in 2012 removed some restrictions and made non-clear cutting forest management more liberalised. Two decades ago only a dozen owners were interested in selective cuttings, today situation is under changes. The SFS statistics shows that in 2013 about 6% of total amount of timber from private sector (physical persons) came from selective cuttings.

The research on different cutting methods is still ongoing, and consensus among researchers and forest specialists about the most suitable methods in non-clear cutting forest management does not exist. Therefore it is difficult to work out detailed guidelines or handbook for PFO on selective cuttings. Owners who want to manage their forests without clear cuts by themselves have to have knowledge and comprehension about forest and its growing principles to understand recommendations or have an advice from specialists.

Surveys show that PFO give the highest rate to forest as bequest (4.6 points form 5). The second most important forest function is firewood collection and third – investment and economic safety. The lowest rate is for forest as income source (2.4 points), but nature protection is rated with 3.6 points. Current management tendencies and attitude of PFO to different forest functions give evidence that group of owners who prefer non-clear cutting management may increase. Management with selective cuttings is topical for different owners groups with small, average and large properties. There are a lot of owners who used to live in their forest properties and do not want to see a clear cut area. Large part of PFO does not depend only on income from forestry. In this case selective cuttings provide small, but regular income and can increase also the value of forest. Owners who want to do everything by themselves can perform selective cuttings due to less amount of work needed.

[46] http://likumi.lv/doc.php?id=264224
[47] before 2012 it was at least once in 10 years

CASE STUDY 1: NON-CLEAR CUTTING FOREST MANAGEMENT

To support the development of responsible forest management of privately-owned forests, PDF established forest management demonstration territories. Today five properties in different regions in Latvia are open to visitors.* The purpose of these territories is to show practical examples of environmentally friendly and economically viable forest management. Every year new sample objects are created in the demonstration territories. Currently demonstration sites have an educational and experience exchange platform for PFO, forest specialists and consultants, students and pupils.

During 2010-2013 the PDF organised about 20-30 seminars per year, in average 30 people in a group. There were also individual visitors and groups and a number of visitors exceed 600. Currently there are limited funds for the project implementation and number of visitors in the demonstration areas decrease to 150-200 per year. Questionnaires of visitors were done and results showed that there were only about 5-10% of owners without or with minimal knowledge in forest management.

Director of the PDF holds a view that demonstration sites are visited mostly by PFO who already have tried to manage without clear cuts and need more knowledge and ideas. It is very important for them to meet like-minded owners and have discussions with specialists. During a decade owners of demonstration plots have become as local authorities and can advise other owners independently. Today probably 50 to 100 owners in whole Latvia have enough knowledge and practical experience to become relevant local leaders for neighbouring owners as well as important discussion partners for forest specialists.

Director of the PDF considers that main obstacles to carrying out selective felling are lack of experiences and understanding; lack of support from extension and educational system and lack of cooperation of PFO, especially when it comes to preparing small volumes in timber. Also traditions, industry lobbing and previous forestry practice (clear-cuts) hinder wider use of selective cuttings. At the moment also the EU programs support traditional management activities and no funds are available for implementation of non-clear cutting forest management.

Contact person for further information: Janis Rozitis, PDF (www.pdf.lv)

*www.pdf.lv/lv_LV/ko-mes-daram/alias

5.3. Main opportunities for innovative forest management

5.3.1. Increase of effectiveness and income from harvesting

There is q great potential of energy wood in Latvia and also a need to increase the use of it to reach goals of the energy policy. The 2010 Sustainable Development Strategy of Latvia[48] for a period till 2030 states that the share of renewable resources (RES) in energy production should reach 42% by 2020 and 60–65% by 2030. In this respect wood as the RES has the highest potential, but today only part one of potential energy resources from private forests is used.

Logging residues can potentially be collected on about 66% of the total forest area. The LSFRI "Silava" experts have calculated that from each 100 m^3 of timber it is possible to gain about 25 m^3 loose of energy wood. Moreover, the above volume of wastewood for energy uses will not affect sustainable forest management since the residues are collected only from fertile sites in commercial forests, excluding high value or protected areas. Experts of the Latvian Biomass Association "LATbio" have estimated that at the current annual harvest the potential amount of energy wood to be recovered is 6 to 9 million m^3 per year, and about 0.5 to 2 million m^3 from non-used agricultural lands and roadsides. Together with the waste from wood processing it is possible to produce about 30 TWh of energy, which is nearly twice as high as the actual consumption of thermal and electric energy in Latvia (Energy wood, 2012).

The research on most effective methods is still continuing, and forest researchers, specialists and consultants take active part in this process. Informative and educational materials for owners are prepared in frames of different international research and cooperation projects. There are also local service providers who are interested to find solutions for more effective technologies in small scale forestry. Development of forest biofuel market and involvement of PFO in it will increase not only utilisation of forest harvesting residues, but encourage also level of thinnings, reconstructive cuttings, as well as afforestation of abandoned agricultural lands.

In common with non-clear cutting management, use of harvesting residues for energy is not novelty in forest management,

[48] www.varam.gov.lv/lat/pol/ppd/?doc=13857 (in English)

but it is necessary to take in consideration that today both activities are related with new knowledge, requirements and approach in forest management. As the large part of private forest area originated from previous overgrown agricultural lands, the quality of timber is not so high as in managed lands. Possibility to get income also from harvesting residues can help to influence a non-active owner group to start management.

Increasing demand for recreation and tourism activities is great opportunity to diversify income also from small forest properties. The best option in this strategy is management with selective cuttings. About 63% of forest owners harvest also different non-wood forest products, mostly for own needs (Vilkriste, 2008).

5.3.2. Development of technologies and use of IT

Large part of PFO, especially with small size forest areas, in most cases is not capable to pay for services provided by big harvesting companies. However the demand for different forest management services for reasonable price exists and this facilitates development of a new service provider group, mostly farmers who already run small business or provide forest management services for locals. It is a challenge to work up farm or other technique to be profitable in small and fragmented properties with undeveloped infrastructure and considerably high proportion of wet lands.

The project on use of light technique in private forests to promote nature friendly management and use of all-terrain vehicles (ATV) with specially designed equipment in forest management was supported by the FDF in 2009. Last publications show that support chains for harvesters for work in swampy lands are designed. Examples on improvements of technique can be found also in different seminars during discussions with service providers, but in general Information about such kind of activities is very scope and limited.

It is a rapid development of different IT tools and software programs for forest planning and management. There are several programs for forest planning and decision making worked out in the Forest faculty of UAL in the research group of precise forestry[49].Today it is possible not only to calculate harvesting amounts, timber value, but also calculate ecological value, evaluate risks and work out nature protection plan by using different programs. Ltd Silvita is dealing with software development not only for forest management, but also for providers of different forest services.

Interviews with leaders of both groups point that IT products are different – from simple ones clear for small scale forest owners to complicated ones used by advisory and management companies. Today number of PFO who independently use IT tools is quite small. Mostly IT products are used by large scale owners, juridical persons or in few cases by local forest owner organisations. Portal www.mezabirza.lv is available for everybody who wants to sell or buy roundwood, cutting area or property in an auction.

[49] http://it-mezs.itf.llu.lv/?pid=61

CASE STUDY 2: FOREST EXCHANGE – www.mezabirza.lv

The Internet site for selling cutting areas in the Internet auction was created in 2010 by forest and IT specialists (Ltd SilvITa) in cooperation with local forest owner association "Barbale". After one year of operation close to 100 cutting sites were sold. Fee for registration of the site for auction and bids in auction were set, but there were no additional payments. Registration of sellers and buyers were done to secure safety.

Director of the site has a view that auctions are used by clever owners those who want to get a good price and to be sure that harvesting will be done by responsible companies. There are no special requirements for information required for auctions as only the one set by legislation. Due to the need to place information on the website owners in most cases use services of local owner organisations or other specialists. Even if the number of users of auction is not high to compare with all deals in private forest sector, information about auctions (starting price, general characteristic of stand and end price) is available for everybody and it is important source for other owners not to be cheated and calculate correct price for their deals.

Demand of users changes during time and today previous website was improved and available as stock exchange – www.mezabirza.lv where owners can sell not only harvesting site, but also roundwood or forest estate. There are also some other improvements and possibilities, for example, program for calculation of roundwood after measuring trees with electronical tree caliper.

Information for contacts: Janeks Kamerovskis, Ltd Meža birža

5.4. Obstacles for innovative forest management approaches

Statistic data on forest management tendencies in private sector, results of surveys of PFO and discussions with experts lead to conclusion that it is hard to point out single barriers for non-use of effective and innovative forest management. In practise it is a mixture of several reasons and causal relationship of factors.

From viewpoint of PFO the biggest hindering factor is economic factor. Income of forest management activities in small properties does not always cover direct and indirect costs. PFO have to have some financial resources to start harvesting activities or investments for longer time period if activities are not related to timber production. Still a lot of PFO are without, with minimal or not sufficient knowledge to make decisions by themselves, plan and implement requisite activities. There is a need to have a consultant or an expert, but free of charge advice is not available for consultations in owner's property.

Viewpoints of forest professionals differ from PFO' ones. It is indisputable, that economic factors exist and they are considerable. However, there are a lot of possibilities to reduce costs – the EU funds, tax reductions, and cooperation in use of forest services or timber sales. Two main reasons are mentioned to explain non-use of available possibilities – lack of knowledge and attitude of PFO. In respect to knowledge it is necessary to point out that extension and advisory system is available for PFO, there are a lot of informative materials in the Internet and also free of charge seminars with relatively low attendance level. It is possible to conclude that the biggest obstacle to implement proper management in private forest sector is attitude and lack of understanding of notable part of PFO.

Mentality and experience of the Soviet times make cooperation process quite difficult. It is also noticed that notable part of PFO does not trust forest specialists and dealers of timber, as well as to service providers. The results of surveys also provide proof for this statement. In 2003, about 10% of PFO involved in timber marketing considered they were cheated, but there was no reason for this opinion (just position – it could be higher price; no evidence, but I am sure for it, etc.) (Vilkriste, 2003). In several cases for the same reason PFO do not trust advisors, too. Elder owners (quite large part of PFO) have had bad experience from collectivisation in the Soviet times and this can be the main reason for negative attitude to any cooperation. Surveys show that one of important factors to have forest property is to "be owner" (Vilkriste, 2003; 2008). It is the problem of the state to change attitude of owners and make them interested in forest management to provide timber resources for industry and sustainable forest management.

There are also a lot of active PFO interested in management of their properties and part of them also in providing forest management services. One of the most important problems mentioned by this group is lack of support to small scale business activities. Opinion poll of

leaders of local organisations of PFO shows that organisations would be interested to provide also advisory service to owners' in case it will be financing it (Trojanovska, A., Vilkriste, L., 2012). Requirements of support available for educational and other activities are not feasible for small organisations and businesses. The research shows that peer–to–peer learning has a growing role in information and education of PFO, but there are no support mechanisms to facilitate it (Vilkriste, 2008; 2011).

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

6.1.1. Forest Policy and legislation

FP was approved by the Cabinet in 1998. The main aim of FP is to ensure sustainable management of forest and forest lands. The strengthening of property rights provides owners with long-term and secure economic independence in their forests. Ownership is regulated by the laws of the Republic of Latvia, which guarantee all owners equal rights and prescribe equal responsibilities, the inviolability of property rights and the independence of economic activity. After restitution of independence all properties were given back to their previous owners and their legatees. There are no specific laws or regulations which support development of ownership of any specific ownership group. FP defines that further fragmentation of forest properties is not permissible, including in cases of inheritance of private forests.

Forest management is regulated by the Law on Forests[50] which took effect on March 16, 2000 (last amendments in on 2013). The purpose of this Law is to regulate sustainable management of all the forests of Latvia, by guaranteeing equal rights, immunity of ownership rights and independence of economic activity, and determining equal obligations to all forest owners or lawful possessors. The law applies to the forest and forested land, and it applies to the owners or legal holders of forested land, as well as to other individuals who make use of the products. There are several regulations under the law mandatory for all owners, also in case when management of forest is voluntary.

A lot of changes in forest legislation were done after regaining independence and joining the EU. Requirements for forest management became more democratic, nature oriented, well-founded on latest research results and adapted to situation. Legislation defines not only requirements, but includes also special norms to change owners' behaviour and improve management of forest in general.

The most important principles of FP related to forest land are prevention of reduction of forest covered by setting limits on the transformation of forest lands and facilitation of afforestation of marginal agricultural and other lands, through the use of existing state mechanisms. If forest land is transformed, it is an obligation of the proposer of the transformation to compensate the State for the losses caused by destruction of the natural forest environment. Until January 2013 Regulations for transforming forest land defined rules for the way in which applications for transformation are submitted, reviewed and approved, and the procedure for calculating and compensating the losses that are caused to the state as a result of the transformation. Now it is regulated by Regulations for deforestation[51]. Decrease of attraction of CO_2 can be compensated also by planting or sowing new forest (but not

[50] http://likumi.lv/doc.php?id=2825
[51] http://likumi.lv/doc.php?id=253624

plantation) in the same amount as deforestated area, but at least 0.1 ha.

There is no need for special permission for forest land transformation in case of deforestation from 2013. Local government can allocate rights to owner to make building or establish agricultural lands and ask the SFS to calculate compensation for it. In case of use of mineral deposits responsible institution for permission is the State Environmental Service of the Republic of Latvia. Deforestation takes place also in case of building different infrastructure objects. By information of the SFS specialists deforestation has a tendency to decrease. About 385 ha were deforestated yearly and 100 ha of forest were planted to compensate it in 2013[52].

6.1.2. Afforestation

Afforestation is regulated not only by the Law on forests and its requirements. Afforestation of non-used agricultural lands is important issue for the forest and agriculture sector and today both sectors try to stand up for their interests and use different policy implementation tools for it. Uncertainty exists about availability of land for afforestation and effective use of land between experts of both sectors and also within specialists of each sector. In last 5 years there were changes in legislation which affect also process of afforestation.

Before 2009 there was a requirement for transformation permission from agricultural land to forest land and it had to correspond with targets of territorial planning. Today the Regulation on classification and change of target on use of immobile property[53] is associated with the Immovable Property State Cadastre Law[54]. Experts of agriculture sector worried for decrease of land available for agriculture production - there are about 2 million ha of agricultural land, but about 18% from land available for agriculture production[55]. Recommendations for amendments on Law on Agriculture and Rural development[56] to support use of agriculture land for agriculture purposes are in process.

Land that can be used for afforestation is about 200-368 thousand ha and a part of it is already undergrown. About 5% of PFO reported afforestation in survey of 2001, but two years later this number doubled. Survey shows that 40% of PFO have in average 6 ha of not used land for afforestation and the largest part of them (69%) had idea for afforestation (Vilkriste, 2003). Statistics of the SFS shows that total afforestated area from 1999 to 2013 is 20.2 thousand ha, inter alia 39% are plantations. Starting from 2004 state and the EU support afforestation and graph 2 shows that availability of financial support considerably increases level of afforestation.

In compliance of Regulations on forest regeneration, afforestation and plantation forests[57] owners can afforestate land if it is not in conflict with requirements of planning of territory development and is accepted by local government. Also Law on melioration[58] has restrictions for land use and establishment of forest or plantations in land with drainage systems. Presented information shows that afforestation is associated not only with investments of finance and work, but also with notable bureaucracy. It can be reason why one part of owners does not want to register existing forest or forest plantations.

[52] www.lvportals.lv/print.php?id=263906
[53] http://likumi.lv/doc.php?id=139503
[54] http://likumi.lv/doc.php?id=124247
[55] www.lvportals.lv/likumi-prakse/261704-latvijas-lauksaimniecibas-zeme-tikai-lauksaimniecibas-attistibai/
[56] http://likumi.lv/doc.php?id=87480 (in English)
[57] http://likumi.lv/doc.php?id=247349
[58] http://likumi.lv/doc.php?id=203996

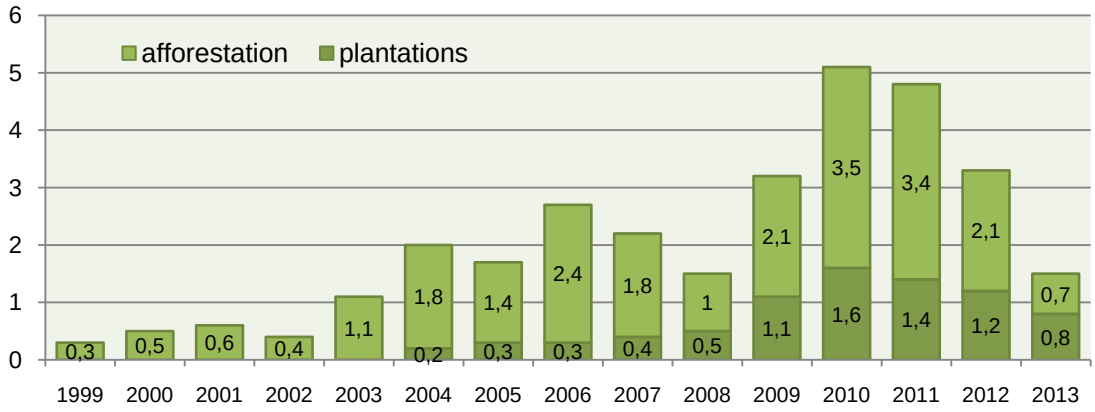

Figure 2: Forest establishment (thousand ha) in Latvia 1999-2013 (the SFS data)

If an owner registers afforestated area as a forest, further this area is under the regulations of the Law on Forests. In case the area is approved as a forest plantation, currently there are no rules for the management and harvesting and payment of compensation for deforestation is not in force. It is also difference related tax payment on a property. Tax reductions exist for forest land, while owners of plantations have to pay tax for agriculture land higher than for forest land. The Law on Immovable Property tax[59] assesses tax rate for agriculture land 1.5% of cadastral value of the land. An additional immovable property tax in the amount of 1.5% shall be applied to agricultural land which is not being farmed.

Now PFO have rights to decide how to register afforested area. According to legislation all stands which correspond to certain criteria will be automatically recorded as forest by the employees of the SFS from January 2015. In case a land owner wants to change it back to agriculture land compensation has to be payed[60].

6.2. Influences of policies in forest management

6.2.1. Promotion of forest regeneration and tending

A lot of efforts are done to encourage regeneration and tending in private forest sector. Improvements are achieved with the help of legislation and financial support. Statistic data on management tendencies is an evidence for effectiveness of policy implementation tools.

Prohibition to main felling if previous clear cut areas were not regenerated according to the requirements of forest legislation in time was one of the first steps in improving management in private forest sector in 2000. Each constraint provokes changes in behaviour of PFO. On the one hand situation with regeneration improved, but on the other hand there was also a negative impact due to the gap in legislation. Separation of clear cut areas as independent property started, but this process was stopped by changes in the law in 2003, when restrictions on main felling applied to all properties designed of first one. Restrictions are not the best driving force, and tax reductions for forest land were introduced in February 2003[61]. There has been no tax for immovable property for stands of coniferous and hard wood for 40 years, soft wood for 20 years and alder for 10 years in case the clear cut areas are regenerated or forest established in accordance with the requirements. Also Law on Personal Income Tax[62] has norms that support regeneration of forests. Reforestation costs in the amount of 25% if an agreement regarding reforestation has been entered into with the forest owner or the legal possessor accordingly are not object for tax. Even if there were about 11 thousand ha of area in private sector not regenerated in time at the

[59] http://likumi.lv/doc.php?id=43913 (in English)
[60] www.auseklis.lv/?cat=557&expand_article_id=8915
[61] http://likumi.lv/doc.php?id=71296
[62] http://likumi.lv/doc.php?id=56880

end of 2013, forest specialists consider that situation with regeneration is improving all time.

Before 2004 tending of young stands in private sector did not exceed 10-15% from the amount of total tending (figure 3). In 2009 the amount of tending in private forest sector doubled to compare with 2008 and reached 13 thousand ha. Last information shows that tending was done in 45 thousand ha in 2013. This growing trend is the result of the EU subsidies available from 2009. Total amount of subsidies for improvement of forest value (tending is one of supported activities) is close to 13 million EUR. Data of the RSS show that there were already 6821 applications for more than 11.5 million EUR on July 2014. The demand for funds exceeds provided resources. In the beginning of January of 2014, 941 applications were without required financing, totally 1.2 million EUR.

It is important to note that applications for the EU funds were evaluated by specific criteria and arranged in a line according to the points they got in the evaluation. Additional points were for properties where regeneration was done artificially, owner is member of forest owners' organisation and forest is certified. Such kind of conditions supports not only one specific activity, but management of private forest sector in general, as well as cooperation.

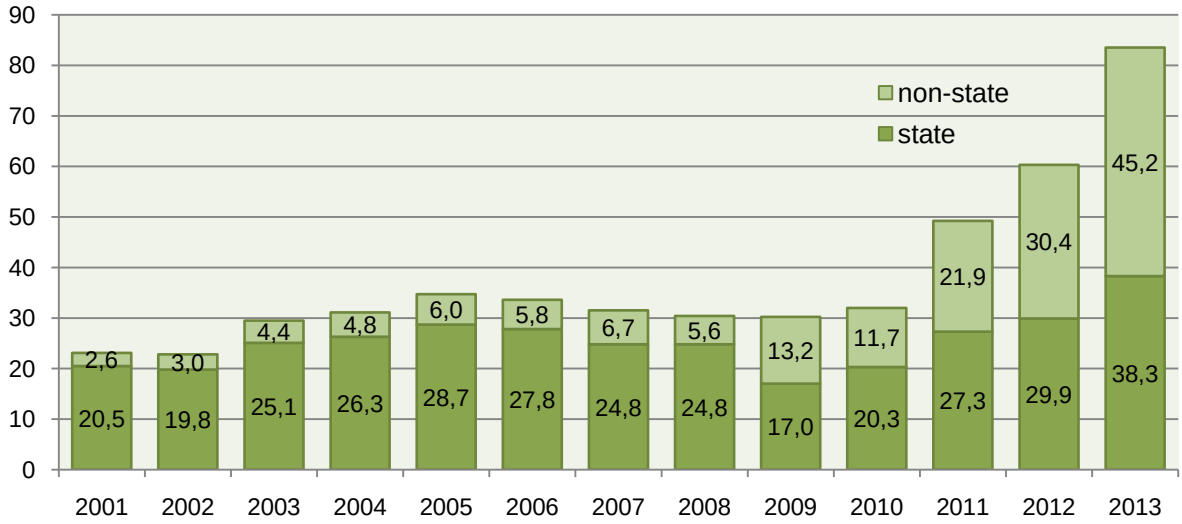

Figure 3: Tending of young stands 2000-2013, thousand ha (the SFS data)

6.2.2. Support for nature protection

Requirements for environmental issues in forest management activities are settled in the Law on Forests and are under regulations. There are also some other laws and regulations related to nature protection actual to PFO. It is written in the FP that in order to carry out ecological and social functions, an owner may require additional management restrictions in their forest. If the carrying-out of state-prescribed ecological and social functions results in additional restrictions on economic activities and creates significant economic losses, then the owners have the right to receive compensation.

Before 2013 PFO could apply for once-for all payment for restrictions. There were 313 owners compensated for restrictions in forest management activities[63]. For a certain period of time also fixed compensation (60 EUR/ha) was used. The Law on Compensation for Restrictions on Economic Activities in Protected Territories[64] is effective from June 2013. An annual support payment for restrictions on economic activities in protected nature territories of European significance (Natura 2000) and micro reserves are payed from the resources of the relevant EU funds. Compensation for restrictions on economic activities in protected territories of national and local

[63] http://www.daba.gov.lv/upload/File/DOC/Kompensacijas_20130220.pdf

[64] http://likumi.lv/doc.php?id=256138 (in English)

significance shall be allocated from the State or local government budget. Compensation amount[65] is determined by the Cabinet. Current amount of compensation in forest land is from 43 to 157 EUR per ha in a year (43 EUR if tree harvesting is forbidden in clear cut; 128 – tree harvesting is forbidden in main felling; 157 – any activity is forbidden).

Forest experts have a viewpoint that compensations are notable and can support PFO in protection of nature values. The SFS data show that economic activities are forbidden in 7333 ha of private forests, final felling in 9360 ha and clear cut in 100057 ha in 2014. Totally about 8% of private forest area has restrictions for pointed economic activities.

However not all restrictions for PFO are compensated. LFOA reported that 14% of the private forests belong to some type of restricted areas and 138 thousand ha are a part of NATURA 2000 areas[66]. It is a view that PFO have to be compensated for all restrictions without reference to classification of territories. Principle has to be simple – equal compensations for equal restrictions. Only such approach can facilitate PFO to participate in protection of nature values. In Latvia national legislation currently implies more provisions than certification requirements in other countries.

6.3. Policy instruments specifically addressing different ownership categories

6.3.1. Forest extension and advisory system

One of objectives of FP is to ensure the knowledge and skills needed to improve the FP, legislation and practice and to ensure sustainable forest management by promoting the development of forest education, forest research and exchange of information within the forest sector. FP goals in forestry education are related to the state support to private forestry with extension and consultations in connection with the ensuring of the long-term functions of forestry. The state's task is to create an institutional system that ensures the carrying out of these state functions in the forest sector.

The SFS Law[67] effective from January 2000 obligated the function to provide information and consultancy to PFO on the forestry issues. In the beginning the PFO could get professional advice at each of 197 local forest district offices, employing at that time totally 831 forest rangers and 400 different forestry specialists (Vilkriste, 2012). Demand for consultations was growing and the SFS employess provided close to 95 thousand consultations in 2005 (Vilkriste, 2012). Largest demand was for consultations in owners' properties (Figure 4).

Development of extension and advisory system of the SFS started already before its implementation. Two years during Latvian – Swedish project "Training of forestry extension agents" about 40 employees got requisite knowledge and worked out proposals for extension system. Surveys of PFO were organized already after the first year of operating. Results of opinion polls were studied to improve performance of the SFS, designed various tools for extension activities for different groups of PFO based on their needs and characteristics, as well as training programs for forest specialists involved in advisory were worked out. Generally PFO were satisfied with free of charge advisory services, but they demanded also practical services (Vilkriste, 2000; 2003; 2005). Part of PFO was not satisfied with the system of that time when they were served only in local forestry office where property was situated. It was quite embarrassing for owners living in cities or outside the region of property.

[65] http://likumi.lv/doc.php?id=260422

[66] www.cepf-eu.org/vedl/Baltic%20Forestry_Latvia_26062013.pdf

[67] http://likumi.lv/doc.php?id=14594

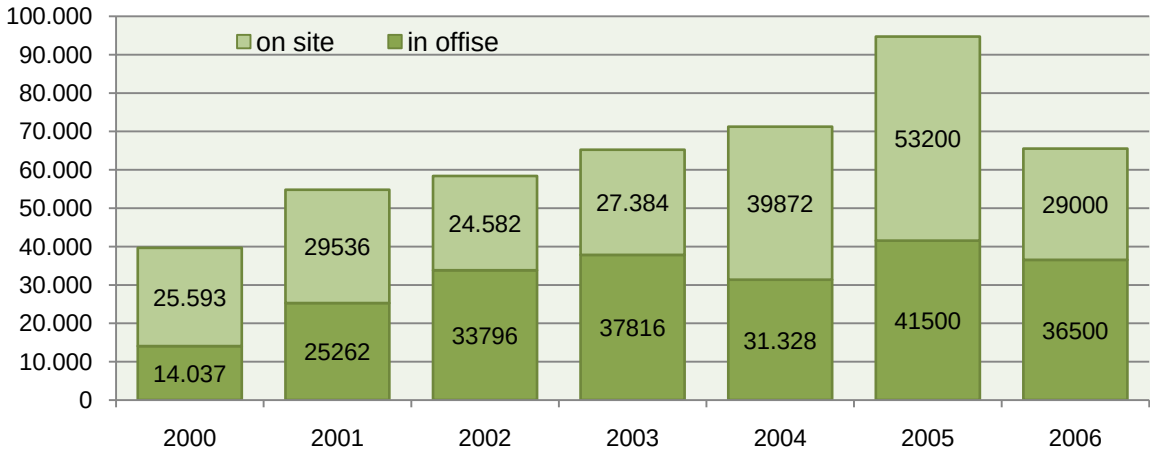

Figure 4: Number of consultations given by the SFS (2000 – 2006)

Optimization of the SFS took place in 2006. It led down to 23 regional forest offices with 118 local forest offices and 8 service points. The Consultancy Service Centre (CSC) as structural subdivision of the SFS was established in July 2006 to advise the forest owners not only on routine forestry matters, but also helped them get financial support from the national and the EU funds for promoting forestry and offer high quality services in forest management and utilization. In the second year of operation the CSC came up with 245 pay consultations, in 2008 this number reached 494 cases. Different services in the forest management were provided to 2000 PFO in 2007, a year later this number reduced to 1506 ones. In the first year demand for preparing cutting sites and documentation was dominating, later services and consultations regarding EU funds overran (Vilkriste, 2010).

In 2008, each head forestry area has established a separate forestry, which operates on one-stop-shop principle and serve PFO whose property is located in the forest district area. Customer Service Division which serves all owners without reference to their living place was established in the Head Office of the SFS in Riga. Due to oncoming territorial reform in Latvia new optimization of the SFS was done. Annual report of the SFS of 2010 demonstrates that today the SFS consists of 10 head forestry offices and 29 local forestry offices with totally 680 employees. Today education of PFO is not the topical priority of the SFS.

As a result of changes in the organizational set-up and downsizing the SFS the function of forest extension was separated from the SFS and given over to the Forest Advisory Services Centre (FASC) in 2010. In The FASC continues functions of the previous CSC as an affiliate of the Latvian Rural Advisory and Training Centre. Outside the Central Administration there are 19 regional offices and training centre “Pakalnieši” with about 40 employees who offer advisory and services to PFO. Price List for the paid services for the FASC as well as the SFS is regulated by the Cabinet.

Number of forest specialists involved in consultancy and also service providing in last decade decreases considerably. According to the surveys the PFO knowledge and awareness of forestry-related matters have substantially increased with the demand for extension and advisory services decreasing in recent years (Vilkriste, 2012). Today forest experts and specialists have diverse and inconsistent viewpoints on changes done in the extension system. Viewpoints differ not only among organisations, but also among specialists within one organisation (Vilkriste, 2011; 2012). New research is necessary to obtain information on changes in different owner categories to improve extension and advisory system.

6.3.2. Forest extension tools

Outside consultancy and advisory plenty of extension tools were designed in the first years of operating of the SFS. Taking into account that most of PFO were without or with minimal knowledge in forestry and when the extension system was introduced first

time special attention was devoted to cooperation with **mass media**. Number of published informative and educative articles on the forest related issues in the regional and local mass media had increased from 430 publications in 2000 to more than 600 in 2003. Top level was reached in 2004 when more than a thousand different articles were published. Special training courses for local journalists were organized to reduce imperfections in materials produced by them. These experiences create current trends in use of mass media and trained forest specialists to prepare articles and information for different owners groups – simple information for small ones and detailed for group of active ones. Quarterly newspaper "Ciekurs" is published by the FASC and available also in the Internet. Special magazine "Saimnieks" is published for average and large scale farmers and required specific information for their audience.

Regional foresters were active also in cooperation with **TV and radio.** In 2001 and 2002 more than 100 broadcasts with participation of specialists of the SFS were fixed. Today number of such kind activities decreases considerably, but there are some special films or broadcasts supported by the state. Surveys of PFO demonstrated that TV and radio were not topical information source and it was one of reasons why this information channel was not developed.

Notable amount of various leaflets, infopages, factsheets and brochures were published or printed in the first years of operating of the extension system. More than 70 different informative materials for PFO were produced in 2002. Today amount of **printed material** decreases considerably for several reasons. The FASC still continues to update and publish factsheets for topical issues. In the last decade a lot of informative materials (brochures, guidelines, books) are prepared by different organizations outside the SFS and the FASC or are output of different forest related projects. Most of materials are available in **the Internet**, also mostly all printed ones. Even if printing is expensive, there is a need to do it. Surveys provide information that printed literature is topical for elder PFO and they are a large and important part of all owners.

First **educational forest trails** were designed in 2002 and a year after there were 46 trails with total length up to 200 km. Trails are an important support in organizing seminars. **Seminars** of PFO were very popular in the first years of extension work. The annual public report of the SFS in 2000 reported 545 seminars with 7607 participants. Already after 2 years the number of seminars increased for 30%, but the number of participants for 37 %. It was small growth in the quantity of seminars in further two years, but the quantity of participants was decreasing. In average there were only 10 forest owners per seminar in 2004 (Figure 5). Later the number of seminars organized by forest specialists decreased considerably. In 2007 the SFS reported about 47 seminars and the CSC about 43 seminars. Activity level in both organizations increased in 2008, when accordingly 120 and 123 seminars were organized. Number of participants of the CSC seminars had exceeded 4 000. Most of these seminars were organized in the classrooms with regard to the EU funds. Today the training courses and seminars are organised on a limited basis only, and the attendance shows that in this respect there is no need to increase the offer.

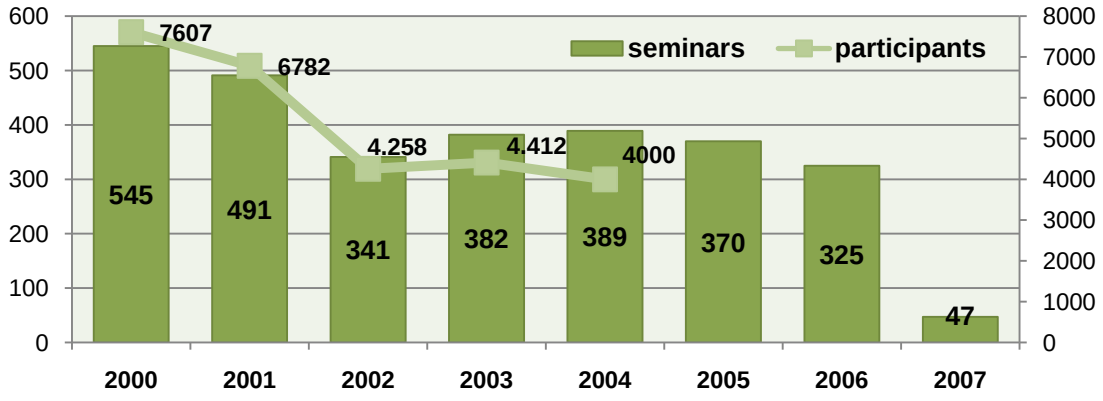

Figure 5: Seminars organized by the State Forest Service (2000 – 2007)

To promote the best forest management practices special competition for PFO was firstly arranged in 2001. In 2002 and 2003 there were more than 500 forest owners who reported correspondence to the criteria settled out by the jury. Starting with 2004 interest of owners to participate in this activity had decreased. Also attempt to organize demonstration areas for education purposes in properties of PFO had a failure.

Attitude of PFO to different extension and education tools were studied from 2001 based on the results of surveys. A lot of findings were taken in account in operating the extension system under the SFS and are topical also today. However some of lessons learned are without use. For example, active PFO demand seminars after office hours or on weekends, but such kind of activities is offered very rarely.

Largest part of extension activities including consultations were covered from the state budget during 2000-2006. Changes in the state advisory system are covered from special funds, but currently there is no special state budget for education activities of PFO. Informal learning of PFO depends on the wish of different organizations to raise funds (Vilkriste, 2008). The FASC as well as a few organizations of private forest owners are active users of this possibility. Currently several seminars and trainings are organized also by specialists of different organizations (LSFRI “Silava”, PDF, business companies) or within the frames of different projects.

6.3.3. Development of cooperation

There were several attempts to support cooperation of PFO from 1994 in Latvia (top to bottom approach was used). The third attempt to facilitate cooperation of PFO was done in 2004-2006 with the support of the EU. According to the requirements for establishing organisations of PFO (PFOO) set by the Cabinet[68] minimum number of members was 15 and available support was 10000 LVL[69] (required co-financing 10%). All costs initially had to be covered by the organisation. According to the Latvian Information Technology Company Lursoft database, before 2004 there were already eight PFOOs. As of July 2012, totally 59 PFOO were on the list of the Lursoft. The RSS data show that in 2004-2006 the EU financial support to the PFOO reached LVL 527878[70], but only 60% of available amount was used. Later reseach demonstrates that during 2004-2009 not all organisations had used resources in effective way and most of them were not operating a few years after establishment (Trojanovska & Vilkriste, 2012).

Surveys of PFO gave evidence that only a small part of owners is interested in cooperation. More than a half of PFO did not know anything about cooperation, about 7% expressed negative viewpoint. However 16% of PFO have positive attitude to cooperation, only a few owners are interested to be involved in it (Vilkriste, 2008). Focus group interviews and survey of active PFO were organised to study attitude to cooperation more in detail; 10% of this respondent group were already members of PFOO (SKDS, 2008).

Latvian Forest Owners Association[71] (LFOA) informs that today there are about 10 active organisations, providing also some extension and advisory services to the local PFO. It is to be noted, that the local PFOO are relatively small with the number of members from 10 to 50. Usually they are active in the local municipality within the radius of some 30-40 km. In most cases the PFOA have good cooperation with the local service providers of forest management and the PFOA leaders act as locally authorized agents for decision making in forestry matters (Vilkriste, 2011). There is no detailed reseach on PFOO in the last decade.

First cooperative of forest owners was established in 2012 and today there are 6 cooperatives of forest management service providers. Available reduction of the income tax is important support to the development of forest cooperatives. Today cooperative societies and local assotiations are important forest service providers. The reseach shows that their role on informal edutation of PFO and peer-to-peer learning increase, even if it

[68] http://likumi.lv/doc.php?id=141195
[69] 1 LVL=0,7028 EUR
[70] LVL 1 = EUR 0.7098 (Bank of Latvia)
[71] www.mezaipasnieki.lv

is not judged by specialists of forest sector (Trojanovska & Vilkriste, 2012; Vilkriste, 2011).

6.4. Factors affecting innovation in policies

6.4.1. Lack of information on private forest sector

However research on structure of PFO and their management tendencies is ongoing, the studies are based on collection of statistics and its change. Information about number of owners in different forest size classes is available, but there is no available information on gender, age or residence place of PFO from 2008. Changes are established, but information about "newcomers" or "leavers" is not analysed. Information on management activities in each group of size class is available, but characteristics of owners who do or do not do certain management activity is missing.

The latest research includes surveys only of active PFO group selected from limited data base, mostly from the owners who had used the services of the SFS in the last years and left their contact information in the office. It is hard to plan effective policy implementation instruments in the situation when target group is not known. Probably at the moment there is no need for innovations in policy, and most important task to the state is to stimulate effective use of the EU funds.

Although methodology for monitoring changes in private forest sector exists, it will be difficult to use it in future. Not only lack of financial resources limit these research projects. Due to Personal Data Protection Law[72] information about owners personal data from the different data bases are restricted. Constantly larger part of landowners today is not accessible because norms of Forest Law and Civil Law allow prohibiting entrance in owner's property and number of notes of warning "Private" increases.

6.4.2. Conflicting views

A considerable part of PFO was elderly people living in the rural areas. They had objections against making longer distances to meet the forest officers and limited opportunities of specialist visits to their holdings. It is also hard for them to accept that the habitual and comfortable extension system had changed. The opinion poll of 2007 showed that PFO did not know and care much of the organizational changes in the extension system and were in favour of the previous system and easy availability of services. Frustration was in the situations where the pay services were offered by the same person who earlier offered gratis consultations. It could be claimed that the reorganized system of forest extension was more convenient for non-resident and absent PFO living in urban centres rather than those living in the countryside next to their holdings. It is necessary to note that free of charge and easily accessible extension system did not result in activities of all owners and it was not cost and result effective to continue it. After changes in the state extension system a lot of private companies and organizations are ready to supply advisory and services if they were demanded. There was no cause for concern that professional advisory would be out of reach of PFO.

The opinion poll of 2012 revealed the forestry expert views and evaluation of the current situation in forest extension differ. It is to be noted that the respondents of each organisation worked with different PFO' target groups and, hence, their views on the needs and wishes of PFO differ. It should also be pointed out that the respondent opinions on the activities and capacities of other organisations were to some extent biased and not always fair. Viewpoints on different issues differ not only within organizations, but also among the top managers or decision makers and the field personnel contacting the PFO in their daily work (Vilkriste, 2011; 2012).

[72] http://likumi.lv/doc.php?id=4042

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8. Annexes

8.1. Forest ownership structure and management of private forests

8.1.1. Consolidation in private forest sector

Table 5: Percentage distribution of number of PFO and forest area by forest property size classes (the SLS data)

Size class	Number of owners, %			Forest area, %		
	2004	2010	2012	2004	2010	2012
< 10 ha	76,8	78,4	78,5	35,5	26,6	24,7
10-20 ha	14,9	12,7	12,6	27,8	19,3	17,9
20-50 ha	7,5	7	7,1	29,3	22,7	21,5
> 50 ha	0,8	1,8	1,8	7,4	31,4	35,9

8.1.2. Forest management activities

Table 6: Number of PFO and percentage of PFO implemented forest management activities (2005-2012) in different size classes (the SFS data)

Size class, ha	Number of PFO	Main felling	Tending	Windfall	Harvesting, total
< 5	58979	14	13	9	28
5-10	23384	33	26	24	56
10-20	16639	46	34	35	69
20-50	9242	64	45	50	82
50-100	1525	81	64	66	92
100-200	351	88	77	72	93
200-500	121	94	87	88	97
500-1000	23	100	100	91	100
> 1000	9	100	100	100	100

LITHUANIA

Diana Mizaraite, Stasys Mizaras

1. Introduction

1.1. Forests, forest ownership and forest management in Lithuania

Forestry plays an important role in the Lithuanian economy and environment. According to data from the *Lithuanian Statistical Yearbook of Forestry* (2013), the total forest land area is 2,174 thousand ha and covers 33.3% of the country's territory (Table 1). The total growing stock volume is 510.2 million m^3, while the gross annual increment is 17.8 million m^3.

Table 1: General Characteristics of Lithuanian Forests

Characteristics	01-01-2003	01-01-2013
Forest land area according to Forest assessment, 1,000 ha	2,045	2,174
Total growing stock volume, mill. m^3	453.4	510.2
Mean growing stock volume, m^3/ha	226	244
Total growing stock volume of mature stands, million m^3	109.9	134.7
Gross annual increment, million m^3	16.0	17.8
Gross annual increment, m^3/ha	8.0	8.5
Accumulation, m^3/ha	-	2.8
Forest coverage, %	31.3	33.3
Forest area per capita, ha	0.59	0.73
Growing stock volume per capita, m^3	131	172

Source: Lithuanian Statistical Yearbook of Forestry, 2013.

Coniferous stands prevail in Lithuania, occupying 1,152,900 ha and covering 56.1% of the forest area (Figure 1). The total area of deciduous softwood and hardwood is 791 thousand ha.

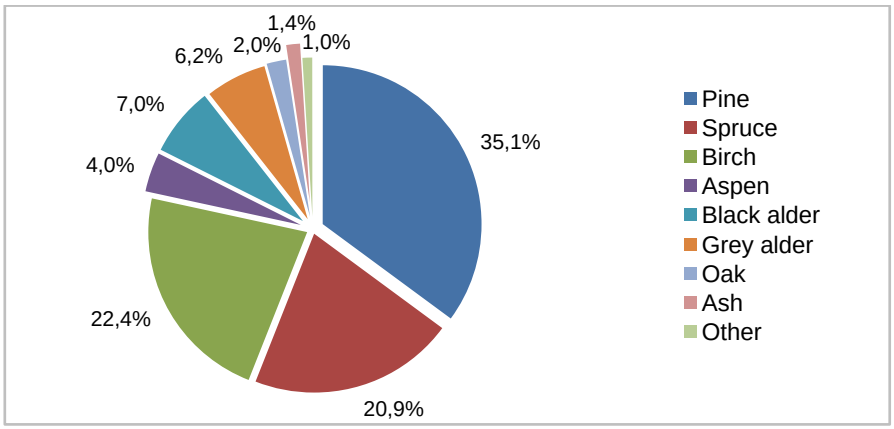

Figure 1: Forest stands area by dominant tree species (01-01-2013).
Source: Lithuanian Statistical Yearbook of Forestry, 2013

Lithuanian forests are grouped into four functional groups: (I) forest reserves, (II) special-purpose forests (ecosystem protection and recreational forests), (III) protective forests and (IV) exploitable (commercial) forests. The forest are covered by each of these functional groups is 1.2%, 12.3%, 15.2% and 71.3%, respectively. Any forest management in the first group is prohibited, while in the second and third

forest groups, it is strictly controlled by policies such as having a higher stand harvesting age, and limiting clear cuttings.

During the Soviet period, the state ownership of forestland and centralized planned management have been characteristic of forestry as well as the entire economy. The emergence of private forest ownership, the free market for wood, adapted foreign technologies, EU support, and the expanding social and environmental functions of forest have been the major socio-economic changes that have occurred in the Lithuanian forest sector after Independence in 1990. All private forest owners can be assigned to the 'new forest owners' group, which represents 'individuals or organizations that previously have not owned forest land, and transformed public ownership categories through restitution'. The forestry practices of new forest owners differ according to holding size and their management objectives.

After the restoration of Independence in Lithuania, forest property rights were restored. The structure of forest ownership has changed due to an ongoing land reform process. The process of political, social and economic transformation has profoundly affected the forestry sector. All forestland was first transferred to the countrywide network of 43 state forest enterprises (SFEs) under the Ministry of Forestry. Currently, the private forest sector constitutes 246.6 thousand private forest owners on a total of 852.6 thousand ha (*Lithuanian Statistical, 2013*), which is 39.2% of the total forest area. Small-sized private forest properties are common in Lithuania. The average size of a forest estate remains unchanged from 2001 and is 3.3–3.4 ha. Private forest owners differ in their forest management objectives.

After the restoration of Independence in Lithuania, wood markets also changed considerably. Due to the emergence of the free wood market, the exports of timber expanded. Previously, 1–2 million m^3 of wood was imported from Russia; now, a considerable amount wood is exported. Demand, supply and other market factors began to drive roundwood prices. There has been a tendency towards an increase in wood offtake from national forests. Felling increased from 4 million m^3 in 1990 to 7 million m^3 in 2012.

According to Forest Law (1994), clear-cut areas should be reforested within 3 years of cutting. Annually, state forest enterprises reforest 9–10 thousand ha of clear-cuts, and private owners reforest 4–7 thousand ha (depending on the area of clear-cuts). During the past 10 years natural forests have expanded rapidly, by about 65 thousand ha of new forests. This has been due to both natural growth and planting on abandoned agricultural land. Every year, forests have expanded naturally over 2–6 thousand ha of abandoned agricultural land. Furthermore, since Lithuania joined the EU, afforestation of agricultural land has been introduced using support from EU rural development funds and national funds. Since 2007, over 23,000 ha of forests were planted on agricultural land. Every year, private land owners afforest about 2–3 thousand ha.

The main areas of innovation in Lithuanian forestry are: wood logging for bio-energy, wood logging mechanization, forest certification, an independent wood measurement system, the cooperation of private forest owners, the computerization of information processing, the connection of remote systems, incorporating novel tree breeding technologies the modernization of nurseries, new methods of soil preparation, and the development of forest roads for people with disabilities. The majority of these innovations are directly related to globalization and are adapted from practices used by other countries.

1.2. Overview of the country report

In the chapter 'Literature review on changes in forest ownership' the scientific literature regarding ownership changes in Lithuania is reviewed. These articles analyse forest ownership changes in Lithuania, private forest owners' objectives and problems, cooperation opportunities and obstacles. The chapter on 'Forest ownership' describes the structure of Lithuanian forest ownership and its changes, as well as the legal regulation of forest ownership and private forest owners. The forest-management peculiarities of state and private forests in Lithuania, new forest management approaches and opportunities, as well as obstacles for innovative forest

management, are described in 'Forest management approaches for new forest owner. The policies influencing the development of forest ownership and forest management are analysed in the chapter 'Policies influencing ownership development/policy instruments for new forest owners'.

2. Methods

2.1. General approach

According to the aims of the country report, which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The country report uses statistical data from national forest inventories of the general characteristics of Lithuanian forests, and national and regional studies on forest ownership, which answer quantitative questions on new forest ownership, and private forest owner typology, cooperation and association processes. Survey results from scientific reports on forest ownership and private forest owners are also used in the country report. Moreover, methods include the literature review and expert interviews in order to provide qualitative data, general conclusions, and case studies.

3. Literature review on forest ownership in change

3.1. Research framework and research approaches

In Lithuania, the Forest Research Institute has undertaken a number of sociological studies of forest owners, including their typologies, goals and needs, and the question of cooperation (e.g., Mizaraite, 2000; 2001; Mizaraite and Mizaras, 2005). Most of this literature is written in the national language and published in national journals, proceedings and reports. Researchers in Lithuania have also published papers in English-language international scientific journals, such as *Small-scale Forestry* (e.g., Pivoriūnas and Lazdinis, 2004) or *Baltic Forestry* (Mizaraite and Mizaras, 2005; Mizaraite *et al,* 2010)**,** or in the framework of international research or development projects. The main themes covered by these studies include forest ownership changes, private forest owner typology, private forest owner forest management objectives and problems, and private forest owner cooperation.

3.2. New forest ownership types

3.2.1. Forest ownership changes

The forest restitution process and private forest formation peculiarities are described by Mizaraite (2000). The author described the forest restitution process and stated an increase in the area of private forests during recent years. Some 18.5% of forests (367.2 thousand ha) belonged to private owners, and this percentage presumed to increase to 40–50% in the future. There has been a corresponding increase in the number of private forest owners to more than 117.5 thousand registered private owners. More than 80% (96.4 thousand) of forest owners have less than five ha of forest holdings. The main formation peculiarities of private forests in Lithuania, and categorization of private forest owners and their holdings, grouped according to various indicators, are presented in this paper. The database of the State Enterprise Centre of Registers is used for data analysis and grouping. The data on

private forest owners and their forest holding distributions are grouped according to various indicators: 1) distribution by place of residence, age and sex; 2) distribution of private forest holdings by size; 3) distribution of private forest owners and area of private forests by counties and districts.

The actual situation, development tendencies and problems of Lithuanian private forestry are described in the article 'Lithuanian private forestry: the actual situation, tendencies and problems' (Mizaraitė *et al*, 2010). The paper describes the tendency towards the expansion of private forests, the existing problem regarding private forest owners' lack of education and training, and possible solutions for solving this problem. In that article, the authors state that the level of importance of various forest estate management problems has changed. The problem of strict regulation on private forest management has decreased in importance during the last 10 years. The most important problem for private forest owners is that the forest estates are inefficient for farming due to their small size. The number of private forest owners willing to sell their forest estate has decreased. The majority of private forest owners intend to retain their forest estate and to give the property rights to their inheritors in the future. Approximately 16% of respondents intended to apply for financial support from EU funds that have become available over recent years as forest owners are becoming more aware of these resources.

3.2.2. Private forest owners types

Private forest owners differ according to age, sex, education, social status, area of private property and other characteristics. All these characteristics influence the goals and problems of private forest owners. Even though there is a great variety, it is possible to group forest owners according to their attitudes towards the management of their forest property. Based on a survey among Lithuanian private forest owners, four types of owner were identified by Mizaraite and Mizaras (2005). Using cluster analysis, four clusters are formed: (1) businessmen, (2) multi-objective owners, (3) consumers, and (4) ecologists. The main characteristics of each cluster are analysed. The business people cluster comprises forest owners to whom the income from selling wood and non-wood products is the main objective of forest. The multi-objective owners cluster represents owners to whom many forest management objectives are important. Forest owners from these first two clusters possess the biggest forest properties. Owners to whom the main objective of ownership is extraction of wood and non-wood products for personal use represent the consumers cluster. Wood for fuel is a very important objective for forest consumers. This group of owners has the smallest forest holdings and the closest residence proximity to a holding. Forest owners in this cluster are the most passive compared with other clusters; however, along with the multi-objective owners they have the highest level of forestry knowledge. The ecologists cluster includes owners to whom the main ownership objective is nature preservation. This is the smallest cluster. Owners representing this cluster are moderately active compared with other clusters, even though the level of their knowledge in the field of forestry is the lowest.

Analysis of the cluster characteristics identified the dominating characteristics of one or several owner groups. Seven factors, with reliable distribution among clusters, were identified: sex of owner, education, place of residence, level of forestry knowledge, forestry-related activity, distance from the residence to the forest holding, and the manner of acquiring the forest holding. In this article, cluster characteristics are presented.

The grouping of forest owners analysed in the article may be used for formation and implementation of private forest policy in the future. The results of this study suggest that strong emphasis should be placed on the creation of an education, training and advisory system for private forest owners, and that existing forest policy should be focused on different private forest owner groups.

3.3. Forest management approaches

Specific forest management approaches that currently exist in Lithuania are long-term forest management agreements between private forest owners and business

companies providing forest management services for private forest owners (Weiss *et al*, 2012).

3.3.1. Long-term forest management agreements

Businesses can provide all necessary forest management services for private forest owners, for example, reforestation, forest felling, forest stand maintenance, and forest protection. Many private forest owners are not able to care for their forest holdings and manage them in a sustainable way. Private forest owners and businesses can sign forest management contracts for varying periods. Long-term forest management agreements enable businesses to create sustainable forest management strategies for holding management so that forest holdings can be managed in multifunctional, economic and efficient ways.

3.3.2. Private forest owners objectives, problems and needs

The analysis of private forest owner objectives, problems and needs is by Mizaraite (2001).The main aim of this survey was to determine forest management objectives, problems and needs, as well as private forest owner priorities. For data collection, a questionnaire survey was used. Stratified random sampling was used for respondent selection. Statistical analysis of the survey data identified the following:

- The main forest management objective for private forest owners is the supply of wood for their own household needs (77.5% of respondents).
- The main problem for private forest owners is the size of the forest property. The forest property is too small to achieve efficiency (73.8% of respondents).
- The main need for private forest owners is centralized protection (a nationally organized and financed system) for forests against fire, insects, diseases, etc. (69.7% of respondents).

The author concluded that the survey results are highly relevant for private forest owners' control and advisory services, as well as for state institutions involved in decision making.

3.4. Policy change / policy instruments

3.4.1. Specific policy instruments

Specific policy instruments in relation to forest ownership are identified as follows:

1) Creation and change of the legal basis for private forest management. Effects include liberalization of forest management rules and regulation for private forest owners in Lithuania (Mizaraite *et al* 2010).
2) Tax changes. From the year 2014, individual private forest owners and businesses should pay an additional 5% compulsory withholding tax on proceeds from the sale of wood in the roundwood and stumpage forest for the benefit of the state budget (*State Tax*, 2013).

3.4.2. Private forest owners cooperation

Private forest owner cooperation tendencies and problems in Lithuania are described by Lazdinis *et al* (2004 and 2005). The current state of cooperation in private forestry in Lithuania is examined, with a focus on the analysis of objectives, organizational structure and the ways that forest owner cooperatives operate. A postal survey was used as the main research instrument, with a questionnaire consisting of a series of multiple-choice closed-ended questions. This paper provides insights into the state forest enterprises and private companies operating in the private forestry sector, and places forest owner cooperatives in the broader context of the private forestry sector. A typical forest owner's cooperative in Lithuania has up to 10 members and about 20 clients to whom services are provided. The leaders of cooperatives indicate that the optimal number of clients using their services should not exceed 40. The main stated objectives of cooperatives are the provision of services to their members under the most attractive conditions, uniting members, and earning a profit for the members. The activities of

cooperatives revolve around timber harvesting and trade. It is concluded that the process of cooperation between private forest owners in Lithuania is rather slow, although positive development can be observed.

In the second paper, the study describes how forest owners may be reluctant to participate in the forest owners' cooperatives (FOCs) in Lithuanian forestry as they are similar to soviet systems.. Despite shedding some light on the private forest sector of this country, many questions have also been introduced. The results presented here may provoke an interest in the relations between FOCs and their members, posing questions such as why there are so few members in FOCs and whether the declared objectives of FOCs may be undermined by hidden agendas. It would also be important to explore the role of the state in the development of the private forest sector since regaining independence. All these questions deserve special attention, and it is expected that they will be addressed in future studies.

4. Forest ownership

4.1. Forest ownership structure

4.1.1. National data set

After the restoration of Independence, forest property rights have been restored. The structure of forest ownership has changed due to an ongoing land reform process. Two forms of forest ownership are legitimized in Lithuania: state forest ownership and private forest ownership.

Around half (49.6%) of all forest land in Lithuania is state-owned (Table 2). The state forests are managed by 42 state forest enterprises (SFEs) and 1 national park, under the Ministry of Environment. The total area of state forests is 1,078 thousand ha (as of 1 January 2013). State forest enterprises are divided into 352 forest districts, whose average size is 3,000 ha (*Lithuanian Statistical,* 2013).

Table 2: Forest ownership structure in Lithuania

Forest ownership form	Owner	Forests area, ha	Numbers of owners or managers
State forests (public)	State (public) Management of forest land delegated to State Forest Enterprises and National Parks	1,077,700(49.6%)	42 state forests enterprises; 1 national park
Private forests	Individuals, legal entities	852,600(39.2%)	247,000
Forest reserved for restitution	Protection of forest land delegated to State Forest Enterprises	243,300(11.2%)	

Source: Lithuanian Statistical Yearbook of Forestry, 2013.

Today, the private forestry sector comprises 246.9 thousand private forest owners and covers an area of 852.6 thousand ha (*Lithuanian Statistical*, 2013). This is 39.2% of the total forest area. The average size of a private forest estate is 3.3 ha (*Lithuanian Statistical,* 2013). Changes in the average holding size of private forest holdings during the restitution process were not significant. Small-sized private forest properties are common in Lithuania. Forest owners owning less than 5 ha of forest holdings constitute 84.7% of all private forest owners, but they manage only 37.2% of the total area of private forests (Figure 2).

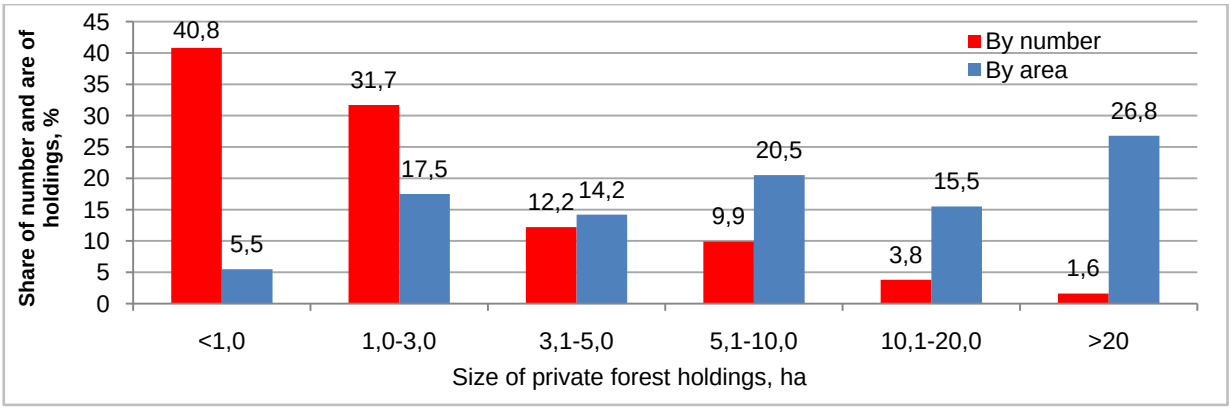

Figure 2: Number and size of private forest holdings (01-01-2014). Source: State Forest Service, 2014.

The biggest private forest holding is 5,833.21 ha. Forest holdings managed by co-owners comprise 26.2% of total private forest holdings. Private forest holdings are owned by individuals and businesses (cooperatives, joint stock companies, etc.). There are no official data about the number of businesses and forest areas owned by them.

4.1.2. Critical comparison with national data in *Global Forest Resources Assessment* (*FRA*) reporting

Private forest restitution decreased state forest area and increased private forest area in Lithuania. The statistical data reported in the *FRA* report (2010) are not representative of the current situation in Lithuania (Table 3).For example, the FRA report provides statistics which reflect the situation in 2005 which differs from the national statistic data of 2013.

Table 3: Statistical data of the Global Forest Resources Assessment 2010 and national sources

FRA 2010 Categories	Forest area* (1000 hectares)	Forest area** (1000 hectares)*
	2005	2013
Public ownership	1404	1078
Private ownership	717	853
...of which owned by individuals	714	853
...of which owned by private business entities and institutions	3	Data are not available
...of which owned by local communities	0	0
...of which owned by indigenous/ tribal communities	0	0
Other types of ownership	0	243***
TOTAL	**2121**	**2174**

* Data source: Global Forest Resources Assessment 2010. ** Data source: Lithuanian Statistical Yearbook of Forestry, 2013.
*** Forests reserved for restitution.

4.2. Unclear or disputed forest ownership

By 1 January 2013, 11.2% of all forest land in Lithuania was reserved for restitution of forest land property rights. It constitutes 243.3 thousand hectares of forest land. The restoration of ownership rights in these forest areas is complicated and raises two complex challenges: 1) some former private forest owners do not intend to claim their property rights; 2) the absence of archival documents that prove the former owners' right to ownership of the forest land make it impossible to determine the real forest owner or inheritor. The government should make a decision regarding further disposition of these forest areas. Several solutions for these forest areas have been discussed: 1) to transfer the management of these forest areas to state forest enterprises; 2) to sell these forest areas through auctions to natural persons or legal entities; 3) a combined solution – transfer some of these forest areas

to state forest enterprises, and sell others to natural persons or legal entities at auction.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

From the beginning of the land reform and forest land restitution process, forest land was restituted and could be bought only by individuals who were Lithuanian citizens. Since the accession of Lithuania to the EU in 2004, legal entities (businesses) have also acquired the right to buy forest land. This provision is regulated by the Law on Forests of the Republic of Lithuania (2001). The process of forest land buying and selling is regulated by the Law on Forest (2001), the Law on Land (1994) and the Civil Code of the Republic of Lithuania (2000). According to the Law on Forest, the forest holding will not be split into parts if it equals or is less than 5 ha. From 1 May 2014, the Law on Forest has been supplemented with additional restrictions for private forest land buying or selling; for example, the priority right to buy a forest holding for a neighbouring forest owner, restriction buy more than 500 ha.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are a few specific inheritance and marriage rules applied to forest land property in Lithuania: 1) Forest property does not become common (family) property when the land is received as a gift. The forest holding legally belongs to the person who received it as a gift. 2) After marriage, forest property does not legally become common (family) property. Legally, the owner of the forest property is the person who owned it before marriage. 3) The forest property inheritors will inherit forest land as equal shares if the former owner dies intestate.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

In Lithuania, private forest ownership dominated until land reform was implemented in 1920, when private forest owners accounted for about 65% of total forest area. Between 1919 and 1937, 600.2 thousand ha of private forest were transferred to state forests. Since 1938, private forests constituted only 173 thousand ha (about 16% of total forest land area). In 1940, some private forests were nationalized by Soviet governance. From 1950, private forest ownership was avoided in Lithuania (Figure 3).

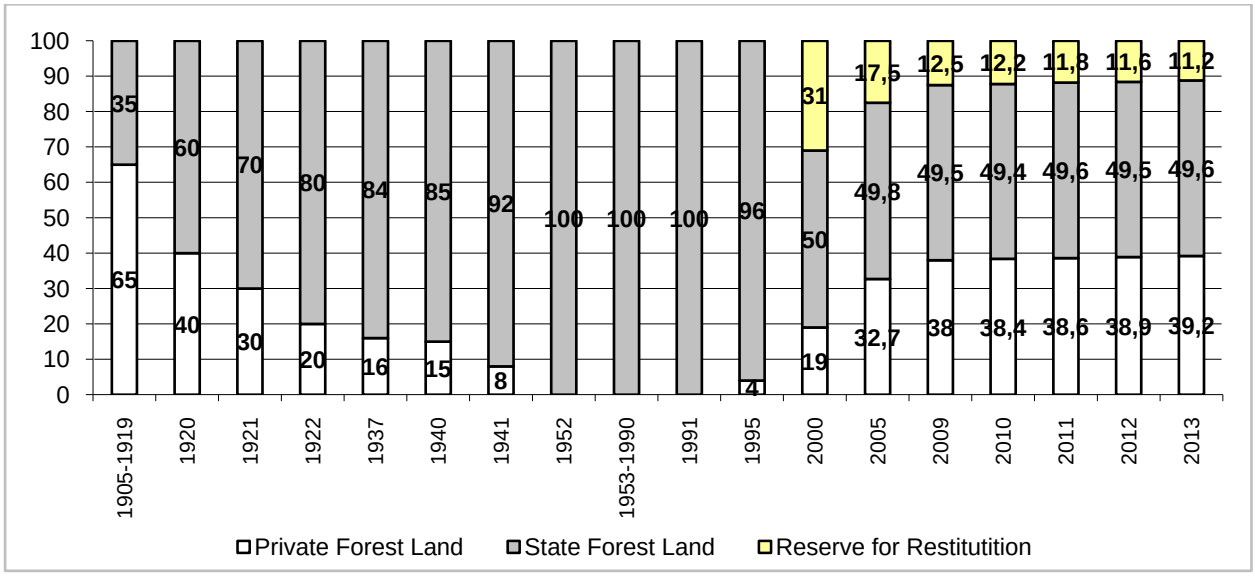

Figure 3: Forest ownership in Lithuania for period 1905-2013.
Source: Lithuanian Statistical Yearbook of Forestry, 2000, 2005, 2009, 2010, 2011, 2012, 2013

After the restoration of Independence, forest property rights have been restored. The restoration of private forestry started in 1991. The structure of forest ownership has changed due to an ongoing land reform process.

Around half (49.6%) of all forest land in Lithuania is state-owned (Figure 4). During the restitution process, there have been changes to the state forest area, but no changes in the state ownership structure.

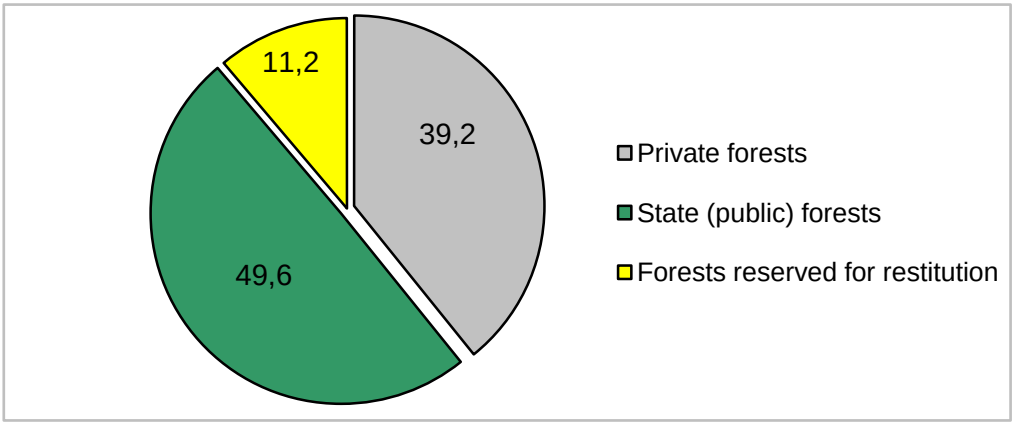

Figure 4: The forest land by forest ownership (01-01-2013).
Source: Lithuanian Statistical Yearbook of Forestry, 2013.

4.4.2. Changes within public ownership categories

Before the restoration of Independence (up to 1990), forests were managed by 24 state forest enterprises, 1 national park and agricultural enterprises. The enterprises and the national park managed 1,945 thousand ha of forest land. In 1988, agricultural enterprises managed 29.2% of total forest area (Table 4).

Table 4: Changes within public ownership categories in Lithuania, %

Public ownership categories	1961	1988	1993	2004	2014
State forests	70.6	66.9	98.7	49.8	49.6
Agricultural enterprises forests	26.0	29.2	-	-	-
Other forests*	4.1	3.9	0.3	19.2	11.2

** till 1993 "other forests" – forest areas assigned to other authorities (for example the Ministry of Transports and Communication etc.); from 1994 "other forests" – forests areas reserved for restitution.*

Source: Lithuanian Statistical Yearbook of Forestry, 2001, 2004, 2014.

The state forest enterprises underwent reform in 1988–1992. After the structural reforms, 43 state forest enterprises and 4 national parks were formed. In 1992, the protection and limited management of agricultural enterprise forests were delegated to the newly reformed state forest enterprises.

In 2004, the number of state forest enterprises decreased from 43 to 42, and the management of forest areas in 3 national parks was delegated to state forest enterprises.

4.4.3. Changes within private forest ownership

Private forest ownership theoretically could be divided into several categories according to owner type or type of ownership: 1) private forest holdings owned by one individual person (private forest owner); 2) private forest holdings owned by several individual co-owners (one forest holding owned by two or more private forest owners); 3) private forest holdings owned by legal entities (cooperatives, joint stock companies, etc.). During recent years, the number of forest holdings owned by co-owners slightly increased from 28.4% to 30.7% (Figure 5).

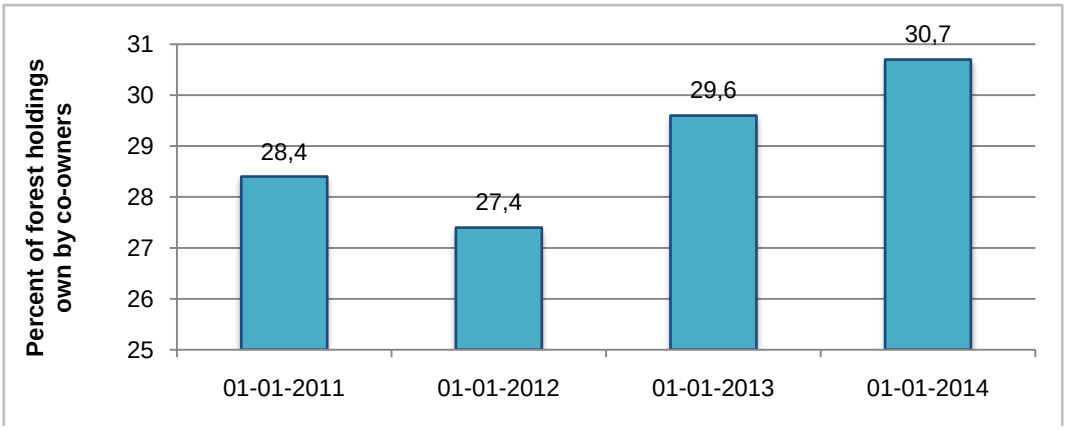

Figure 5: Percent of private forest holdings own by co-owners in Lithuania.
Source: State Forest Service, 2011, 2012, 2013, 2014.

In recent years, there has been an increase in the number of private forest owners who own large forest holdings, and in the forest area owned by them (Figure 6). In 2011, 3,875 private forest owners owned forest holdings larger than 20 ha, and the area owned was 186,0 thousand ha. In 2014, there were 3,927 owners who owned 221,4 thousand ha.

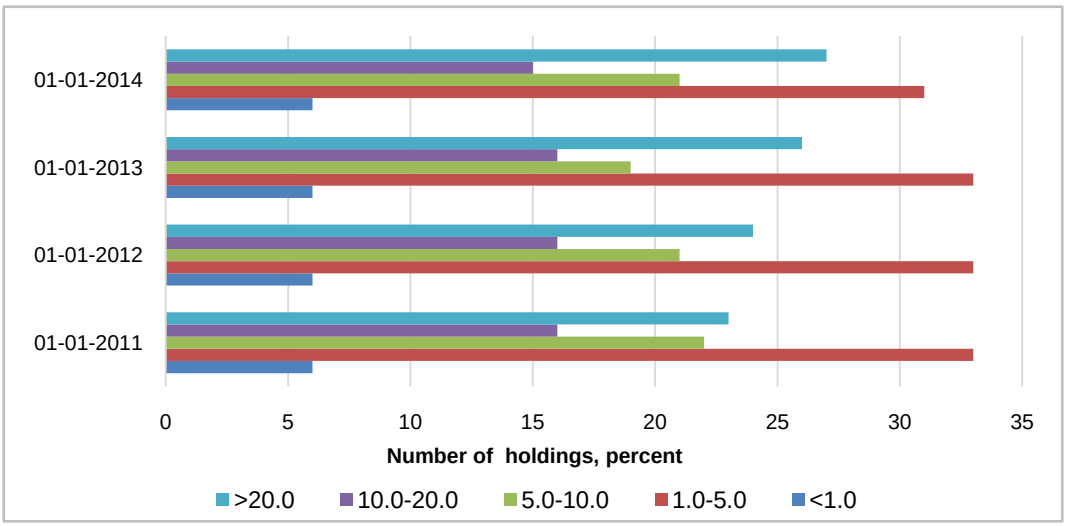

Figure 6: Private forest holdings area by holdings size.
Source: State Forest Service, 2014.

There are no official data about the number of legal entities (businesses) and forest area owned by them.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes have been identified by COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies).
- Privatization of public forest management (introduction of private forms of management, e.g., state-owned companies).
- New private forest owners who have bought forests.
- New forest ownership through afforestation of formerly agricultural or wasteland.
- Changing lifestyles, motivations and attitudes of forest owners (e.g., when farms are given up or heirs are no longer farmers).

The restitution of forest holdings to former owners had a significant influence on the emergence of new ownership types of forest owners in Lithuania. During recent decades, almost 247 thousand new private forest owners restituted their forest holdings. Part of owners restituted forest holdings are sold to new owners, or given to children or other relatives.

New private forest owners have varying motivations, attitudes or lifestyles. In 2007–2014, private forest owners, forest companies and state forest enterprises afforested about 23,000 ha of agricultural land. This process also has an influence on the private forest sector formation. Trends of forest ownership in Lithuania presented in Table 5.

Table 5: Trends in forest ownership

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	3
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	1
• New private forest owners who have bought forests	0
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2
• Other trend, namely:	0

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important).*

4.5. Gender issues in relation to forest ownership

Forests and forest-related activities play an important role in Lithuania's economy and social life. Women participate as owners, entrepreneurs and officers in all forest-related activities. The first data regarding gender aspects in the forestry sectors of Baltic countries were presented in 1998 at a Nordic Baltic workshop on women and forestry in Balsjö, Sweden. K. Viilma (Estonia), L. Vilkriste (Latvia) and V. Augutaviciene (Lithuania) provided overviews of gender issues in forestry. V. Augutaviciene provided some data regarding women as foresters and forestry students. An overview and data about women as private forest owners were provided by Mizaraite (1999).

The first data in literature about the number of female private forest owners were presented by Mizaraite (2000). The results of private forest owners and their holdings grouped by various indicators were presented in the paper. The database of the State Enterprise Centre of Registers was used for data analysis and grouping. The distribution of private forest owners by gender was presented in the paper (Table 6).

Table 6: Forest owners by sex

Year	Male		Female	
	number	percentage	number	percentage
01-01-1997	25,461	49.4	26,111	50.6
01-01-1998	30,612	49.0	31,805	51.0
01-01-1999	41,421	48.4	44,093	51.6
01-01-2000	56,649	50.6	55,283	49.4

Source: Mizaraitė (2000).

The analysis of private forest owners' objectives analysed by various factors is shown in Figure 7. The gender factor influenced two forest management objectives: 1) cutting of wood for selling, and seeking a stable level of income; 2) protection of nature and biodiversity.

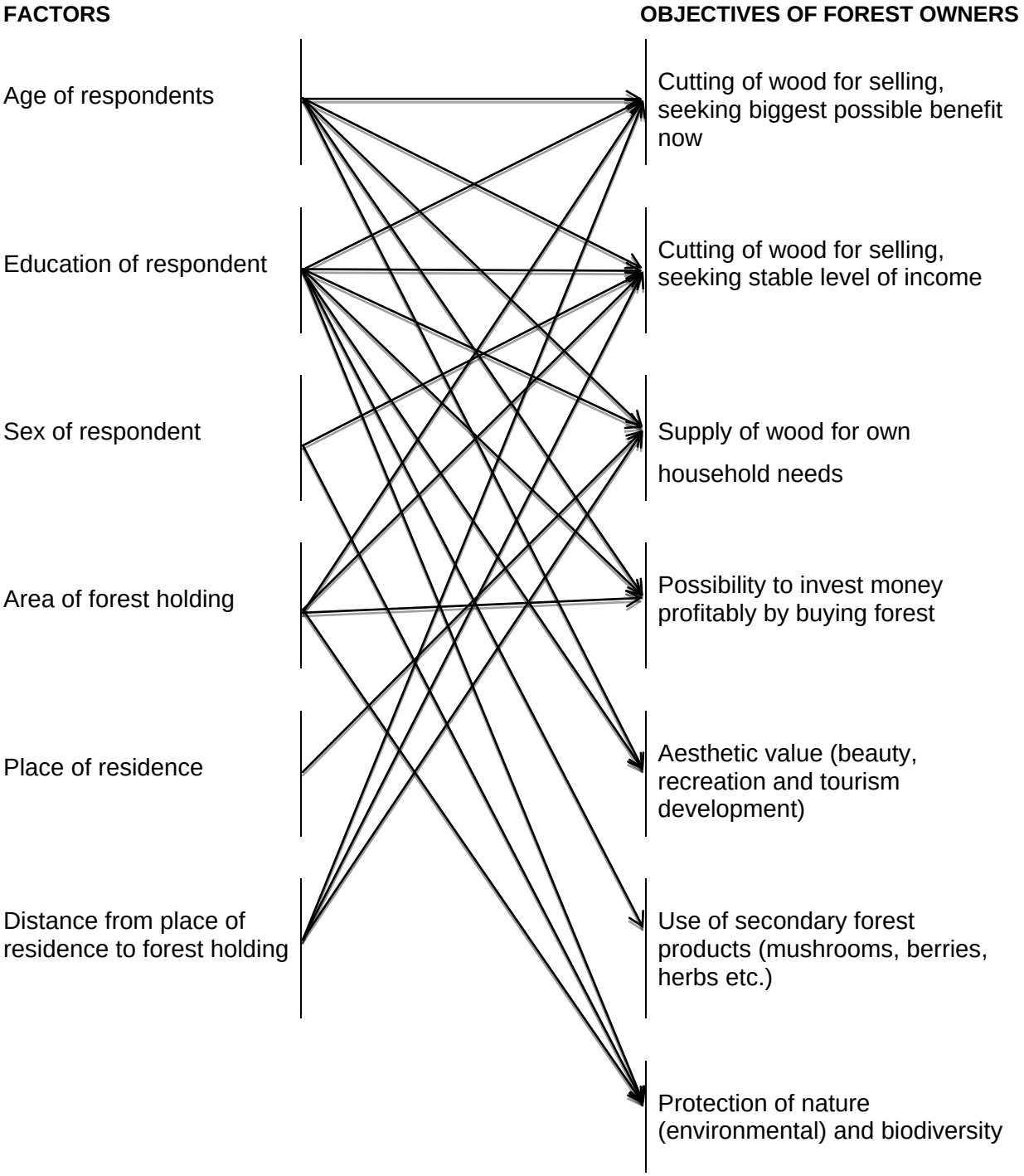

Figure 7: Dependence of forest owner's objectives upon various factors
Source: Mizaraitė (2000).

In 2005, a survey of private forest owners, including gender aspects, was carried out by the Institute of Forestry, Lithuanian Research Centre for Agriculture and Forestry(LRCAFIF) (formerly the Lithuanian Forest Research Institute). The survey was financed by the Swedish Cooperative (SCC). For data collection, a questionnaire was used for the survey. In total, 687 forest owners were interviewed. The final data included 600 acceptable responses, which gives a response rate of 97%. The collected data were analysed against different aspects. The forest estates were classified, according to size, into six groups (Table 7). Respondents who own forest properties 1–10 ha in size constituted the largest group.

Table 7: Distribution of forest estates of the respondents according size

Forest area of the estate, ha	Women		Men		Total	
	n	%	n	%	n	%
Under 1.1 ha	30	10.6	15	4.7	45	7.5
1.1-3.0	78	27.5	65	20.6	143	23.8
3.1-5.0	68	23.9	85	26.9	153	25.5
5.1-10.0	64	22.5	81	25.6	145	24.2
10.1-20.0	28	9.9	41	13.0	69	11.5
Over 20	16	5.6	29	9.2	45	7.5
Total	30	10.6	15	4.7	45	7.5
Mean size of forest are	8.1		10.7		9.5	

Source: Mizaraite (2005)

The data in Table 8 show how respondents obtained their forest properties: 46.5% of respondents received their estates through the restitution of forest land; 36.3% of respondent women's forest estates were inherited or were given to them by previous owners (mostly parents or grandparents); 27.2% of respondent men's forest estates were bought from the open market, relatives or neighbours.

Table 8: Acquisition of forest estates

Type of acquisition of forest estate	Women		Men		Total	
	n	%*	n	%*	n	%*
By buying	39	13.7	87	27.5	126	21.0
By restitution	130	45.8	149	47.2	279	46.5
Through inheritance or given	103	36.3	89	28.2	192	32.0
Given as compensation instead other property (for instance instead agriculture land)	27	9.5	32	10.1	59	9.8

Source: Mizaraite (2005)

** The sum of total percentage exceeds 100 because forest owners could acquire estates in more than one way.*

The survey data shows differences between gender groups in how forest estates have been obtained.

Objectives for forest ownership are usually an important factor in explaining the past, and in estimating future, forestry-related behaviour. The ownership objectives were identified in this study by asking the respondents to rate the importance of 8 given objectives using a Likert-scale of 1–5. The questions covered economic, ecological and social objectives. The most important objectives for forest ownership were to provide enough firewood and roundwood for their own purposes; and income generation from wood and non-wood product sales. Objectives concerning nature protection and non-wood products (mushrooms and wild berries) for home consumption were also a main priority for private forest owners (Table 9.).

Table 9: Objectives for forest ownership among respondent forest owners

Objec-tive*	Not at all important → Very important **										Mean		Total	
	1		2		3		4		5					
	% of respondents (women=W; men=M)													
	W	M	W	M	W	M	W	M	W	M	W	M	W	M
1	30.4	17.2	7.4	7.42	11.2	14.1	7.5	7.81	43.5	53.5	3.26	3.73	214	256
2	26.3	20.3	4.69	9.56	14.6	12	8.9	13.9	45.5	44.2	3.43	3.52	213	251
3	20.9	17.4	5.9	6.44	7.6	13.3	10.0	11.0	55.6	51.9	3.74	3.73	239	264
4	67.0	67.0	6.8	8.8	8.4	8.9	3.7	3.7	14.1	11.6	1.91	1.84	191	215
5	80.0	70.7	5.8	5.1	5.2	11.2	3.2	3.2	5.8	9.77	1.49	1.76	190	215
6	29.5	36.5	9.2	9.5	14.3	14.9	13.4	9.6	33.6	29.5	3.12	2.86	217	241
7	23.9	28.3	9.2	11.2	11.2	15.5	15.6	9.0	40.0	36.0	3.39	3.13	205	233
8	-	-	-	-	-	-	-	-	-	-	-	-	10	17

** Objectives: 1. Income generation from wood and non-wood products sales. 2. Round wood production for home consumption. 3. Firewood production for home consumption. 4. Recreational use. 5. Forest holding use for hunting purposes. 6. Non-wood products use for home consumption. 7. Protection of wild life habitat. 8. Other objectives.*

*** 1= not at all important, 2= not very important, 3= moderately important, 4= important, 5= very important.*

Source: Mizaraite (2005).

Ownership objectives, such as providing enough timber (firewood and round-wood) for home consumption; income generation from wood and non-wood product sales were less important for respondent women than for respondent men. However, ownership objectives dealing with nature protection and non-wood products (mushrooms and wild berries) for home consumption were more important for respondent women than for respondent men. The survey results showed differences between the women and men who owned private forests regarding forest-related activities and decision-making. About 68% of respondent forest owners carried out forest-related activities in their forest estates. More active forestry-related activities were carried out in forest estates owned by men (Tables 10 and 11).

Table 10: Intensity of forest-related activities in forest estates of respondent forest owners

	Women		Men		Total	
	n	%	n	%	n	%
Forest-related activities were carried out in the forest estate	168	59.1	238	75.3	406	67.7
Forest-related activities did not carried out in the forest estate	107	37.7	73	23.1	180	30.0
Not mentioned	9	3.2	5	1.6	14	2.3
Total	**168**	**100.0**	**238**	**100.0**	**406**	**100.0**

Source: Mizaraite (2005).

Respondent forest owners mostly carried out sanitary and clear-cut, pre-commercial felling. Male forest owners managed their forest estates more intensively than female forest owners.

Table 11: Forest-related activity

Forest-related activity	Women		Men		Total	
	n	%	n	%	n	%
Clear cut	53	6	102	12	155	19
Pre-commercial felling	67	8	98	12	165	20
Thinning	9	1	39	5	48	6
Sanitary felling	115	14	153	18	268	32
Reforestation	31	4	75	9	106	13
Tending of forest plantation	20	2	58	7	78	9
Other activity	1	0	13	2	14	2

Source: Mizaraite (2005).

All 406 respondents who carried out forest-related activities in their forest estates noted their main ways of decision-making: 46.6% of respondent male forest owners make decisions alone, while 46.5% of respondent female forest owners seek opinions from family members and then make decisions about forest-related activity in their forest estates (Table 12).

Table 12: Manner of decision-making

Manner of decision-making	Women (n=168)		Men (n=238)		Total	
	n	%	n	%	n	%
I make decision my self	14	7,1	111	46,6	125	28,7
I ask opinion of my family members	92	46,5	53	22,3	145	33,3
I ask opinion of other co-owners	27	13,6	39	16,4	66	15,1
I consult with foresters	59	29,8	67	28,2	126	28,9
Other	5	2,5	1	0,4	6	1,4

Source: Mizaraite (2005).

Gender aspects were analysed by Mizaraite and Mizaras in 'The formation of small-scale forestry in countries with economies in transition: observations from Lithuania' (2005). The authors presented the private forest owner typology. Based on a survey among Lithuanian private forest owners, four types of owner were identified: (1) businessmen, (2) multi-objective owners, (3) consumers, (4) ecologists. Seven factors, with reliable distribution among clusters, were found to distinguish the clusters: gender of

owner, education, place of residence, level of forestry knowledge, forestry-related activity, distance from the residence to the forest holding, and the manner of acquiring the forest holding. The results of cluster characteristic analysis showed that the majority (55%) of the owners in the businessmen and multi-objective owners' clusters are men. On the other hand, the consumers and ecologists clusters hold the largest share of women (more than 50%).

4.6. Charitable, NGO or not-for-profit ownership of the forests

There are now 21 private forest owners' cooperatives officially registered on Lithuania's Register of Legal Entities. The cooperatives provide a broad range of services: (1) information, consultancies, teaching and education (free of charge); (2) timber trade; (3) forest management plans; (4) afforestation; (5) forest cutting; (6) improvement of recreational areas; (7) marketing of forest production and evaluation of timber volume; (8) sawn timber production; (9) organization of hunting; (10) agro-tourism (*Case study* 1.). Private forest owners in Lithuania can participate in cooperatives in various ways, which range from being full members to signing agreements to obtain access to a service for a specific period. Although FOCs do own forest land, there are no official statistical data regarding the area owned by them. Types of not-for-profit ownership of the forest is presented in Table 13.

Table 13: Types of not-for-profit ownership of the forest

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives		X	
• Self-organised local community groups		X	
• Co-operatives/forest owner associations	X		
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

CASE STUDY 1: PRIVATE FOREST OWNERS' COOPERATIVE 'AUKŠTAITIJOS ŠILAS'

FOC 'Aukštaitijos šilas' was established in 1998 and is located in Molėtai District, Utena County. It is a typical example of a Lithuanian FOC. 'Aukštaitijos šilas' has five members (physical persons), owning 700 ha of forestland. The number of members has not changed since it was established.

The main objectives of FOC 'Aukštaitijos šilas' are to: 1) benefit its members through sustainable forest management activities; 2) increase management efficiency on private forest holdings; 3) defend private forest owners' economic interests; and 4) represent forest owners in dealings with business partners. Over the years, the FOC has developed its infrastructure and provision of services. The main services provided are: 1) information, consultancies, teaching and education; 2) timber trade; 3) forest management plans; 4) afforestation; 5) forest cutting; 6) improvement of recreational areas; 7) marketing of forest production and evaluation of timber volume; 8) sawn timber production; 9) organization of hunting; 10) agro-tourism

By joining the cooperative, forest owners obtain access to professional help in managing their forests. Six highly skilled professional foresters provide forest-related services for the FOC's members. Specialists working at the cooperative are well acquainted with the problems that forest owners face and can suggest the best solutions to these problems. 'Aukštaitijos šilas' provides forest-related services for approximately 9,981 individuals whose average holding is 2.13 ha and who own 21,263 ha of private forests in Molėtai District. The presence of large numbers of private forest owners in the district provides excellent opportunities for the cooperative to develop its activities. Private forest owners who are not members can sign contracts with FOC 'Aukštaitijos šilas' for a year or more in order to obtain forest management services.

The Executive Director, who is a member of the FOC, makes all commercial decisions, but the Board has the right to cancel or change these decisions, if necessary.

FOC 'Aukštaitijos šilas' is a member of FOAL, through which it can influence and take part in forest policy formulation. The FOC's Executive Director is a member of the FOAL Board. Cooperative membership of FOAL enables the FOC to submit proposals to governing institutions responsible for the private forest sector.

4.7. Common pool resources regimes

There are no forest areas owned as common land in Lithuania.

5. Forest management approaches for new forest owner types

COST Action is interested in any new forest management approaches that specifically aid new forest owners types. We are conscious that there is not much awareness surrounding this area and consequently, there is not much literature available. However, we are convinced that this is an issue; if owners have different goals for their forests, there must be improved approaches to management, and if they do not have the skills themselves, then there must be new services that are tailored to their needs. Presumably, there are improvements in silviculture, technology, work organization, business models, and other forest management practices that can be implemented. Such new approaches may be discussed under the framework of new ownership types but often they are not.

5.1. Forest management in Lithuania

5.1.1. Management of state forests

Forty-two state forest enterprises and one national park are trusted with the management of state forests. Forest enterprises are highly integrated, state-operated firms. Today, they manage 1,078 thousand ha of forest land. Forest enterprises are divided into 352 forest districts with an average size of 3,000 ha. Forty-two SFEs employ a total of 4,106 individuals (data from 2012). SFE is a state profit-oriented company, which manages forests in accordance with its forest management plan. Standwise forest inventories and management planning for state forest enterprise can be performed by the State Forest Management Institute or by a private company, which has a license and the competence necessary for forest management planning. In each SFE, forest inventories are implemented and the new forest management plans are prepared every 10 years.

The amount of roundwood prepared in state forests totalled 3.8 million m³ in 2012. SFEs sold 3.55 million m³ of roundwood during 2012. Stumpage sales in state forests amounted to 239,000 m³. Contractors harvest 80–90% of timber produced in SFEs. The new Selling Rules on Timber (that is produced in state forests) were adopted by order of the Minister of Environment in 2011 (No. D1-984, 16-12-2011). Since 2012, the trading of timber is carried out via the roundwood electronic trading system (available online: http://www.ameps.lt/). All potential customers – even those from abroad – can participate in these auctions and buy timber produced in state forests. Among other functions, SFEs provide consulting services for private forest owners and commercial forest-related services (afforestation, reforestation, harvesting, forwarding, young stand maintenance, etc. SFEs also provide recreational services for the public.

5.1.2. Management of private forests

The most common activity in private forest holdings is felling. The felling rate in private forests was 3.2 million m³ in 2012. Private forest owners received cutting permits for 2.3 million m³ in 2012.

According to the Law on Forests, Article 14, (2001), internal forest management projects for private forest holdings should be prepared. Internal forest management plans are obligatory for forest holdings if the private forest owner intends to do commercial cutting. The internal forest management project is a forest management activity plan, with a set of specific management measures. This project is valid for 10 years. Internal forest management projects for forest holdings of less than 10 ha may be prepared for twenty years. The obligatory parts of an internal forest management project include: 10 years of permitted cuts, reforestation and environmental requirements. During the 10 years, if the private forest owner does not cut all permitted wood the validity of the project can be extended for a further 5 years.

The preparation of internal forest management projects are not obligatory for: 1) final felling of grey alder, aspen and other low value stands; 2) private forest holdings of less than 3 ha.

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. Private forest owners cooperatives

The Forest Owners' Association of Lithuania (FOAL) initiated the establishment of the first FOCs for private forest owners in Lithuania. According to the Law on Cooperatives of the Republic of Lithuania, 'A cooperative society (cooperative) is an economic entity established on the basis of law on a voluntary basis by a group of natural and (or) legal persons for the purpose of satisfying business, economic and social needs of its members and functioning on their initiative and at their risk' (Republic of Lithuania, 1993). Cooperatives should have 5 or more members. The first cooperative for private forest owners was founded in 1998, and several others were created soon after. The main reason for their establishment was to address rapid increases in the industrial demand for roundwood and in forest owners' demand for forestry services. There are now 21 private forest owners' cooperatives officially registered on Lithuania's Register of Legal Entities. The cooperatives provide a broad range of services: (1) information, consultancies, teaching and education (free of charge); (2) timber trade; (3) forest management plans; (4) afforestation; (5) forest cutting; (6) improvement of recreational areas; (7) marketing of forest production and evaluation of timber volume; (8) sawn timber production; (9) organization of hunting; (10) agrotourism, etc. Private forest owners in Lithuania can participate in cooperatives in various ways, ranging from being full members to signing agreements to obtain access to a service for a specific period.

Private forest owners' cooperatives have not increased the number of members. The establishment of a cooperative among private forest owners is a long process. The FOCs established 10 or 15 years ago still have up to 10 members. This fact highlights two potential problems for private forest owners' cooperatives in Lithuania: 1) cooperative managers and members are not interested in increasing the number of members; 2) private forest owners are not interested in becoming cooperative members.

5.2.2. Long-term forests management agreements

Long-term agreements between private forest owners and business companies are a new forest management tool relevant for new private forest owners. Business companies can provide all necessary forest management services for private forest owners: reforestation, forest felling, forest stand maintenance, forest protection. Many private forest owners are not able to manage or care for their forest holdings in a sustainable way, therefore Long-term forest management agreements are one of the solutions how to ensure sustainable forest management in private forest holdings. Private forest owners and businesses companies can sign forest management contracts for varying periods. Long-term forest management agreements enable businesses to create a sustainable forest management strategy to manage forest holdings in a multifunctional, economic and efficient way. This type of agreement shifts responsibility from the forest owner to the business in that forest management activity should not breach existing forest management requirements, norms and provisions.

5.3. Main opportunities for innovative forest management

5.3.1. Development of private forest owners cooperation

Cooperation in private forestry is in its early stages in Lithuania, but progress can already be observed. One of the strongest factors in this progress is FOAL's creation of a network of cooperatives and other enterprises. In future, higher production costs and strong market competition for wood products will encourage private forest owners to join and establish more FOCs with large membership numbers and a strong position on wood product markets.

The cooperative has developed an excellent system for providing services to private forest owners. Several factors behind FOC success

can be identified: 1) free advice for and consultation with private forest owners, which creates trust; 2) a broad range of forest-related services with flexible service provision, which enables private forest owners to participate in the cooperation network in different ways; 3) the authority of the professionals it employs to help private forest owners to solve their forest management problems; 4) training and special educational courses for private forest owners; 5) the presence of a large number of owners, which creates a market for FOC forest services.

5.3.2. EU structural funds for forest management

Since Lithuania joined the European Union, new possibilities have opened up for the forestry sector. Private forest owners can use financial support from the EU Structural Funds. Financial support for forestry is allocated in accordance with the Lithuanian Rural Development Programme for 2007–2013. The programme consists of 10 measures for forestry: 1) professional training and information actions; 2) use of advisory services; 3) improving the economic value of forests; 4) improvement of forest infrastructure; 5) the first afforestation of agricultural land; 6) the first afforestation of non-agricultural and abandoned land; 7) restoring forestry potential and introducing actions that avoid environmental degradation; 8) non-productive investment in forests; 9) forest environment payments; 10) Natura 2000 payments (support for Natura 2000 areas in forestry; *Case Study 2 and 3*). In the beginning of the financing period, 220,9 million EUR have been allocated for forestry. Approximately 23 thousand ha of agricultural and abandoned land has already been afforested, new roads have been built, thinning has been carried out, and new technologies introduced The EU structural support significantly contributes to the Lithuanian forestry sector's development. The majority of measures allocated for forestry are prioritized in order to support private forest owners.

5.4. Obstacles for innovative forest management approaches

5.4.1. The weak consulting and training system for private forest owners

The restitution of private forests to their former owners resulted in the emergence of problems that require special effort, skills and resources Lazdinis *et al* 2005. The creation of a network of local cooperatives and other enterprises would provide private forest owners with a source of the services they need. Moreover, many private forest owners live in cities or even abroad. They are not able to manage their forest holdings properly and try to find ways of doing so. According to the Law on Forests (2001), since 1 January 2012, the Territorial Units of the State Forest Service provide the main advisory services for private forest owners in the whole of Lithuania (comprising about 90 specialists). The main problem is that these units fulfil the control function of forest management in private forest holdings; therefore forest owners are not comfortable approaching them. Mostly, foresters from the Territorial Units of the State Forest Service provide consultations for private forest owners when they come to the regional offices to get permits for commercial cutting. Private forest owners mostly obtain consultations on the legal aspects of forest management.

Insufficient attention is paid by the state to the private forest owner consulting and training system. Today, the weak consulting and training system for private forest owners is an important factor for effective and innovative management of forest holdings.

The Forest Owners' Association of Lithuania also advises and consults private forest owners; FOAL was founded in 1993 to represent the interests of forest owners and to develop the institutional framework for family forestry. FOAL plays a very important role in representing private forest owners' interests at national and international levels. FOAL has 29 regional units, 13 district FOAs and 16 members among FOCs and forest

companies providing services for private forest owners. It has two types of member: more than 5,000 private forest owners (physical persons), and 16 FOCs/forest companies (legal persons) that provide services to private forest owners.

The Ministry of Environment periodically provides TV and radio broadcasts to promote sustainable forest management, and there are posters and flyers about sustainable forest management. These mean instruments can reach new private forest owners in Lithuania (*National Report*, 2013). SFEs have a number of disabled access tracks that also have sensory features which is one example of sustainable management and show the strong social functions fulfilled by forestry sector.

5.4.2. Barriers for private forest owners cooperation

The absence of direct public support is the main problem that currently prevents increased cooperation among private forest owners. Furthermore, there are no legal or tax advantages for private forest owners' cooperatives. Financial support is crucial, particularly during the initial establishment of cooperatives. Cooperatives need to invest in the set-up and maintenance of their operations, and will have to prove that they can generate economic benefits for their members (Hansen 2013). The state does not focus on forest owners' cooperation and association, nor does it encourage the development of forest owners' cooperatives in Lithuania. Moreover, the forest sector missed an opportunity to use EU Structural Funds for the creation and development of forest owners' associations and cooperatives. Another problem is that cooperation depends on psychological factors and thus needs time to develop. Private forest owners are not always psychologically ready to join associations or cooperatives. The timber market does not play a big role in associations or cooperatives.

CASE STUDY 2: EU STRUCTURAL FUNDS FOR MODERNIZATION OF FOREST OPERATIONS

Private forest owners can use financial support from the EU Structural Funds. Financial support for forestry is allocated in accordance with the Lithuanian Rural Development Programme for 2007–2013. The programme consists of 10 measures for forestry. The 'Improvement of the economic value of forests' measure is designed to reinforce the economic value of forests, create employment within the sector and promote innovation in forestry. This is within the framework of implementing the goal and objectives of the 2007–2013 Rural Development Programme. Considerable emphasis is put on the modernization of forest harvesting, roundwood logging and bioenergy-producing technologies through promotion of the application of advanced forest machinery, equipment and technology, with a particular focus on the safety of forest operations (Rural 2006; Table 14).

Table 14: Funds allocated and paid to forest owners for the improvement in the economic value of forests, their infrastructure, and promoting innovation

Purpose of support	Paid support, 1000 LTL*					
	2007	2008	2009	2010	2011	2012
Restructuring (reconstruction) of forest stands of low economic value and thinning of young stands	-	-	-	16.0	-	106.0
Modernization of forest harvesting, round wood logging and bio-energy (wood fuel) producing technologies	3,326.9	2,504.6	2,260.0	2,622.0	7,512.0	1,4901.0
Restructuring (reconstruction) of forest stands of low economic value and thinning of young stands (simplified procedure)	-	-	-	59.0	193.0	94.0
Modernization of forest harvesting, round wood logging and bio-energy (wood fuel) producing technologies (simplified procedure)	-	-	-	596.0	2,630.0	3,323.0
Investments in forest infrastructure	452.8	980.4	75,259.0	-	478.0	226.0
Establishment and renovation of recreational facilities	62.6	467.8		-	-	-
Other means	40.3	5.0		27,454.0	61,912.0	51,170.0

** 1LTL=0.34528EUR* *Source: Lithuanian Statistical Yearbook of Forestry, 2008, 2009, 2010, 2011, 2012, 2013.*

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that respond to ownership changes, including instruments addressed to supporting new types of owner, e.g., through advisory services, cooperatives or joint forest management.

6.1. Influences of policies on the development of forest ownership

6.1.1. Process of restitution of private forests land

After the restoration of Independence in Lithuania, forest property rights have been restored. The structure of forest ownership has changed due to an ongoing land reform process. A restitution model with compensation elements was selected. Two acts constitute the legal basis for land restitution and privatization: the Law on Land Reform, adopted 25 July 1991; and the Law on the Procedure and Conditions of the Restoration of the Rights of Ownership to the Existing Real Property, adopted 18 July 1991. In 1991, the policy was to restrict the size of private forest estates to a maximum of 10 ha per individual owner. Private forest property was to be granted only in commercial forests, meaning that all protected forest areas would have remained under state management. This solution would have left, overall, about 95% of forests in Lithuania under the management of the State Forest Administration. In the period of one year, the maximum size of forest estates per individual owner was raised from a maximum of 10 to a maximum of 25 ha. In the southeast of the country, there were, however, no limits provided as to size of individual private forest estates. The government is considering the possibility of raising the private forest estate size maximum to 50 ha per individual. Confusion in the restitution process is created by changing maximum size limits for individual private forest estates, and also through regulations enabling individuals who are entitled to receive agricultural land through the restitution process to claim forest land instead. Furthermore, individuals, with the right to claim forest land are able to choose monetary compensation instead. Since 1 May 2005, companies are allowed to own forest land.

The forest privatization process in Lithuania has been very limited. In 1995, professional foresters had the possibility to buy up to 5 ha of forest land. For forest land purchase, professional foresters used vouchers. In total, the privatized forest land area was about 8 thousand ha.

6.1.2. EU Structural Funds support for agriculture land afforestation

The Rural Development Programme (RDP) is one of the most important programmes of EU financial support to Lithuania's rural areas. Measures for the afforestation of agricultural land areas in RDP are for the periods 2004–2006 and 2007–2013. This measure is also included in RDP for the period 2014–2020.

In the beginning of the financing period 2007–2014, almost 221 million EUR has been allocated for forestry. The largest share of these payments was allocated for afforestation measures. So far, about 23 thousand ha of agricultural and abandoned land has been afforested (Figure 8). The EU structural support significantly contributes to the Lithuanian forestry sector's development. The majority of measures allocated for forestry are prioritized for private forest owner support.

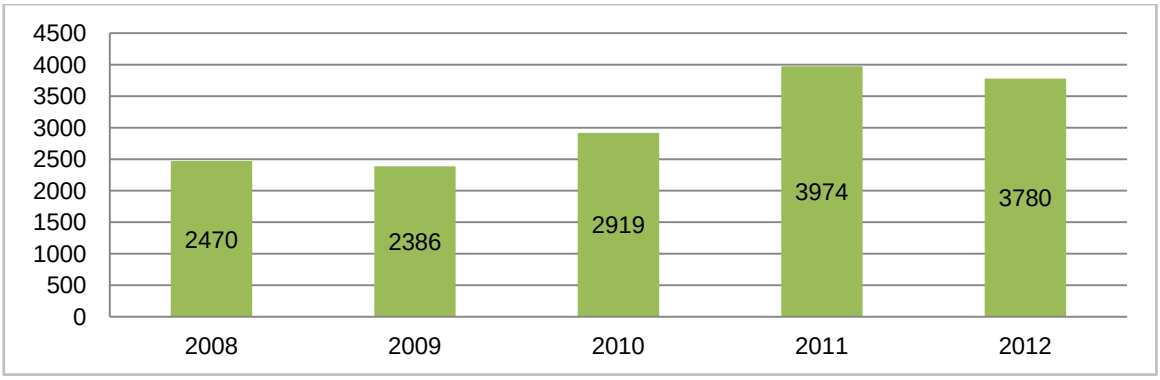

Figure 8: Afforested area according issued certificates for private persons, 2008-2012
Source: Lithuanian Statistical Yearbook of Forestry, 2013.

6.2. Influences of policies in forest management

Several aspects of the influence of policies in forest management can be identified:

- Obligation to have a forest management plan for a private forest holding, if a private forest owner intends to carry out commercial felling.
- Compensation for income losses for private forest owners when the new protected forest areas are being set up.
- Natura 2000 payments for private forest owners.
- Financial support allocated for forestry measures such as: afforestation of agricultural land, modernization of forest harvesting and other technologies, and young stand maintenance.

6.2.1. Legal documents regulating state and private forests management

The main trends of Lithuanian forest policy are defined by Parliament and determined by law. The main principle of state regulation in forestry is described in the Law on Forest (2001), which regulates reforestation, protection and use, and lays the legal foundation for the management of all forests, based on the equal principles of sustainable and balanced management. Under the Law on Forest, state forest managers and private forest owners are obliged to reforest, manage and use their forests following active legal acts. The Law limits the fragmentation of private forest holdings. State forest managers and private forest owners are obliged to manage and use their forests according to the Forest Law, Regulations on the management and use of private forests, as well as other legal acts related to forest management (for example, Regulations for Forest Regeneration and Establishment (2008), Rules for Forest Sanitary Protection (2007), Rules for Forest Felling (2010), Rules for Forest Improvement Cuttings (2002) (Table 15; Table 16).

Table 15: Forestry legislation in Lithuania.

Title of the Document	Year
The Law on Forest	1994
The Law the Amendment of the Forest Law	2001
Regulations on Management and Use of Private Forests	1997
Regulations on Forest Genetic Reserves	2000
Regulations of Forest Management Planning	2003
Regulations of Forest Regeneration and Establishment	2008
Rules of Forest Fire Prevention	1995
Rules of Forest Felling	2010
Rules of Forest Sanitary Protection	2007
Rules of Forest Improvement Cuttings	2002
Rules for Trading in Timber (for state forests only)	2005
Order on issuing forest felling permissions	2000
Order on transportation of round wood produced in private forests	2001

Table 16: Forestry related legislation in Lithuania.

Title of the Document	Year
Law on Land	1994
The Law on Environment Protection	1992
Law on Protected Areas	1993
Law on Wildlife	1997
Law on Wild Flora	1999
Law on Protected (endangered) Species of Plants, Animals, Funguses and their Communities	1997
Law on Environmental Monitoring	1997
Law on Tax for Environmental Pollution	1999
Law on Environmental Impact Assessment of the Planned Management Activities	1996
Law on Territorial Planning	1995

According to the Forest Law, forest managers and owners are obliged to follow the mandatory parts of a forest management plan (the amount of wood allowed to be cut over the 10 years, reforestation and environmental protection requirements).

The state forest enterprises manage, use and legally dispose of state forests under trust rights. The activities of SFEs are regulated by Regulation of the Forestry Enterprise. State Forest Enterprise is a state profit-oriented company. This institution must implement forest policy at the lowest level and strive to produce profit by managing state forests.

The Regulations on Management and Use of Private Forests (1997) is the main legal act approved by the Lithuanian Government, which regulates the management, use, reforestation, and protection of private forests, and the preparation of forest management plans for private holdings. The rights and obligations of private forest owners related to forest management are listed in the Regulations. The document defines the main environmental restrictions related to forest cutting in different forest groups, describes the cases when a private owner is allowed to cut timber in the absence of a forest management plan, and provides rules for the allocation of 10-year felling limit A list of the forest cutting types that can be carried out by the owners without cutting permission is also defined in the Regulations.

Forest management, reforestation and use are regulated in more detail in legal acts approved by the Minister of Environment. Reforestation and afforestation, tending and protection of forest plantations, planting operations, and the main quality requirements for reforestation areas are described in the Regulations of Reforestation and Afforestation (2008). Some of the Regulations are compulsory for private forest owners, while others are recommendations. The Sanitary Forest Protection (2007) rules define the requirements for forest sanitary protection against different biotic, abiotic and anthropogenic factors. The Rules are compulsory for private forest owners. Compulsory forest management measures related to fire protection are described in the Rules of Forest Fire Protection (1995). The main biological, ecological and technological requirements for forest cuttings are regulated by the Forest Cutting Rules (2010), which are compulsory for all forest owners, administrators and users. In addition to the legal acts mentioned above, private forest owners are obliged to follow other legal acts related to forest land use, afforestation and reforestation, forest management and use, timber transportation and selling (Private, 2012).

6.2.2. European Union Structural Funds support to the state and private forest sectors

The majority of the measures introduced by the RDP (2007-2013; see Section 5.3.2) are oriented for the financial support of private forest management or the afforestation of agricultural land. The objectives behind these measures are to achieve an increase in the competitiveness of the forestry sector by strengthening human capacities, and implementing advanced technologies and innovations. The measures also seek to improve the level of modernization, technology innovation and marketing, and to provide proper conditions for infrastructure development, which should contribute to the

competitiveness of forestry and ensure a well-balanced development of the sector. Furthermore, the financial support is oriented to promoting the afforestation of land used for agricultural and non-agricultural production as an alternative form of land use. In the Rural Development Programme, a few measures are allocated to ensure the restoration of forests damaged by fire and natural disaster, and prevention of such disasters. There are also measures to help achieve environmental objectives by improving the quality of the environment, biodiversity and landscape, and enhancing the public amenity value of forests by developing recreational facilities in forests.

Considerable attention is paid to offering financial incentives to private forest owners to engage in forestry activity that is more acceptable from an environmental point of view: to preserve key woodland habitats, to raise environmental awareness of forest owners, to maintain high quality biodiversity in forest habitats, and to guarantee successful implementation of Directives 79/409/EEC and 92/43/EEC through specific support to private forest owners to help address specific problems resulting from their implementation.

6.3. Policy instruments specifically addressing different ownership categories

6.3.1. National forest programme

Forest sector development targets are guided through the National Forestry Sector Development Programme for 2012–2020, which was approved by the government in 2012. The document describes development trends and targets for the forestry sector. The major ones are:

- to preserve Lithuanian forests and increase their area and resources;
- to preserve the efficiency and the sustainability of forest ecosystems, taking account of their ecological and social role and the impact from climate change;

The tasks addressing different ownership categories are:

- to complete land (forest) reform and intensify forest management activities in forests reserved for restitution;
- to offer financial incentives for afforestation of private and state-owned land;
- to include deductions from income earned from the sale of timber from private forestry to finance general forestry needs.

6.3.2. Private forests owners consulting and training

According to the Law on Forests of the Republic of Lithuania (2001), the consultation and training of private forest owners is financed from the Programme of State Budget for Financing of General Forestry Needs. The Forest Department in the Ministry of the Environment coordinates the training of private forest owners. Training private forest owners is carried out by the forest enterprises, forest owners' associations, College of Forestry and Environmental Engineering, and non-governmental organizations. Every year, around 1,000–2,000 private forest owners have been trained on 5-day training courses that are run by the institutions and organizations mentioned above.

In addition, the Ministry of Environment organizes advisory services for forest owners through the media (press, radio and internet). According to the Law on Forests (2001), since 1 January 2012, the Territorial Units of the State Forest Service provide the main advisory services for private forest owners in the whole of Lithuania (comprising about 90 persons). Furthermore, the units (forest districts) of SFEs (comprising about 300 persons) provide consulting services for private forest owners.

There are vocational training and dedicated media programmes for private forest owners supported from the Lithuanian Rural Development Programme 2007–2013. The support is allocated for organizing seminars, forest (field) days, and training courses. In addition, environmental awareness is raised with forest owners and carried out using economic tools such as forest environment payments according to the Lithuanian Rural Development Programme 2007–2013.

The Ministry of Environment periodically provides TV and radio broadcasts to promote sustainable forest management. These programmes mean that instruments can reach new private forest owners and non-traditional forest owners in Lithuania (National Report, 2013).

6.4. Factors affecting innovation in policies

Positive factors affecting innovations include:

1. Forest policy instruments – one of the tasks of the National Forestry Sector Development Programme for 2014–2020 is 'to promote investments, especially in innovation in the forests and forestry'.
2. Forest research – surveys of Lithuanian forest research institutions create preconditions for innovation in the forestry sector.
3. Advanced expertise from foreign countries also enables the adaptation of innovation in the forestry sector.
4. Development of forest businesses creates demand for innovation in the forestry sector.

Negative factors affecting innovations in policies include:

1. Completing the forest restitution process. Forest restitution in Lithuania started in 1991. Today, 11.2% of forest area is still reserved for restitution. The unfinished forest restitution impedes other necessary changes in the private forest sector.
2. The 'penalties' policy should be changed to a 'promotion' policy, which would help forest owners to manage forest holdings in a sustainable way.
3. The weak private forest owners' organizational structures, which are necessary for sustainable development of the private forest sector.
4. Lack of financial support for private forest owners' organization development. Forest owners' associations are weak at regional levels, and unable to associate with a large number of private forest owners. The Forest Owners' Association of Lithuania was founded in April 1993 to represent the interests of forest owners and to develop the institutional framework for family forestry. FOAL has a very important role in representing private forest owners' interests at the national and international levels (Review, 2012). But this organization unites only 5,000 private forest owners and the activities at regional level are weak.
5. Lack of efficient advisory system for private forest owners. The State Forest Service carries out state control of forest conditions, use, reforestation, afforestation and protection as well as issuing cutting permits to forest owners. At the same time, this institution is responsible for advising private forest owners. Joining control and advisory functions does not necessarily give the expected results. Mostly, private forest owners come to the State Forest Service when it is necessary to obtain permission to carry out forestry activities. If private forest owners need advice regarding forest management activities, they contact forest-related businesses providing services, or foresters working in state forest enterprises.

CASE STUDY 3: INFLUENCE OF ENVIRONMENT PROTECTION POLICY TO PRIVATE FORESTS MANAGEMENT

Some private forests are located in significant areas in terms of habitat and bird protection (Natura 2000 areas). Following management limitations, private forest owners in these areas can apply for financial support from the EU Structural Funds. Besides the protected areas mentioned above, in Lithuania there are 26.9 thousand ha of forests inventoried as key woodland habitats. These fragmented areas are important for protecting biodiversity, and rare and extinct ecosystems. In private forests and those reserved for restitution, about 5 thousand ha of such areas have been selected. There is compensation available for economic losses due to restrictions relating to key woodland through the Rural Development Programme 2007–2013 measure, 'Forest environment payments'. This allows private forest owners to be awarded compensation (Table 17).

Table 17: Forest environment payments and NATURA 2000 payments

Measure	Paid support, 1000 LTL					
	2007	2008	2009	2010	2011	2012
Forest environment payments	-	4.7	-	221	553	714
NATURA 2000 payments (support for NATURA 200 areas in forests)	-	-	563	689	3122	686

Source: Lithuanian Statistical Yearbook of Forestry, 2009, 2010, 2011, 2012, 2013.

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fYR MACEDONIA

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1. Introduction

In the former Yugoslav Republic of Macedonia (herein Macedonia) private forests are significant resource for development of market economy and private ownership. At the moment, the share of private forests is about 10%, but there is unofficial estimation that it will increase to 12% when the restitution and denationalization (privatization) process are going to be finished. The private forest owners are represented in the national forest policy through the association of private forest owners.

Macedonia's private forestry consists of large number of private owners who own predominantly small-scaled forest properties, 65000 households own about 240000 parcels. The most of the owners are males on an average age from 50-70 years living in urban areas (1/2 of them). More than 50% of them are pensioners and farmers, while the rest are unemployed or employed in other sectors. Related to the educational level more than 80% have finish elementary and high school. The majority of private forest owners have inherited their forests form their parents and they plan to leave them to their children.

The most of the forests are broadleaf (60%)[73] and the coppice forests are dominant (70%). The private forests are mainly used for fuel wood and tourism, while nature conservation and hunting are of minor importance (Stojanovska, M. 2012, CNVP 2013).The environmental services from the forests are considered as very significant, but in practice they haven`t done anything to get some benefit from them. Consequently, for about one-half of the private forest owners the forest is a gain, as reflected in its contribution to the household income (Glück, P. et al., 2013).

During the migration period after the Second World War many of the private forest owners have moved into cities completely leaving their forest and abandoning the management. Other private forest owners who live in rural areas are using the forest for their needs (mainly as fuel wood) or in some cases the non-timber forest products (NTFPs) that they sell on the market (CEPF, 2008).

After the Macedonian independence from SFR Yugoslavia in 1991, the private forestry issues were not properly supported or developed. In that time there were no insights in the private forestry sector specifically, data were lacking about the situation of private forests, the profile of private forest owners, their needs and interest. As a part of the forestry sector, private forestry was considered as not important element firstly as a result of the small share comparing with the state forests, and secondly as it was mentioned before, a lot of private forest owners have abandoned their property and did not show any interest for their management. About ten years later private forest owners and private forestry in Macedonia started to be issue in the national forest policy and consequently in research topics. The first holistic approach related to the ultimate planning document, named as Strategy for Sustainable Development of the Forestry in Macedonia (2006), was carried out with the broader main objective then traditional wood oriented forestry. The focus was "to increase the contribution of the forestry sector to the national economy and rural development, through sustainable forest management, ensuring renewable resources and protection of local and global environment, and providing products and services for improving the quality of life of all citizens" (CNVP 2013). In addition, this Strategy for the first time involved private forestry as a part of the forestry sector and it was not neglected as previous times.

When talking about the extension service to the private forest owners, it is important to stress that the sector for Forestry and hunting

[73] www.stat.gov.mk/Default.aspx

at Ministry of Agriculture, Forestry and Water Economy is obliged to provide these kinds of services. Most forest owners miss advice in harvesting, maintenance and silviculture techniques or complain that they do not get the service they need. At the moment private forests owners see the National Association of Private Forest Owners (NAPFO) as *extension service,* as an entity, which will provide services for improving their forest management. They usually maintain and utilize their forest by themselves or by the family members, using equipment and tools they possess such as axe, chain saw, tractors. In meanwhile the private licensed entities took the role of the Public Enterprise (PE) Macedonian Forests for offering services to private forest owners (PFOs). The PFOs which received services from the licensed entities are now satisfied with this recently established opportunity mentioning that the cost for service is lower, accuracy is also emphasized and timing for the service is now very short (Stojanovska, M., 2013)

2. Methods

2.1. General approach

The country report aims to give a comprehensive overview of forest ownership issues in the country, based on a mix of methods. These include a review of literature and secondary data and the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review describes the state-of-knowledge in the constituent countries of the UK and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. The data and case study analyses provided in the country reports will be analysed in subsequent stages of the COST Action.

2.2. Methods used

Mix of methods was used for the writing the Macedonian Country Report. The parts with quantitative data (data on the share of private forests, forest area, etc.) were derived from the reports of the Statistical Office of the Republic of Macedonia (statistical data e.g. from national forest inventories). While for the other information data from previous studies as well as expert consultation were used. Data from national or regional studies on forest ownership, as far as they exist, were used mainly forgetting quantitative data on new forest ownership as well as an expert interviews/consultation for answering qualitative questions, giving overview assessments, and provide case examples. Beside these own expert knowledge was used for preparing this country report.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). The 7 detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research

approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

Summary of literature review

Private forests are represented in Macedonia with 10% of total forest area. Due to the negative influence from previous political regime the importance of private forests is still neglected and undervalued. The economic value is not recognized in the multifunctional benefits not only for the private forest owners but for the whole community also. According to statistical data, in Macedonia there are more than 55.000 forest owners, owning in total 100.000 ha, and area with more than 220.000 parcels with average size of 0.4 ha (SNV 2009).

During the migration period after Second World War many of the private forest owners have moved into the cities completely leaving management of their forests; the other private forest owners which live in rural areas are using the forest for their needs (mainly for heating) or in some cases the NTFPs products they sell on the market. (CEPF, 2008)

After the Macedonian independence from Yugoslavia, the private forests were not properly supported, developed or even properly researched. In that time there was no insight in the private forestry sector specifically, lacking data about the situation of private forests, the profile of private forest owners and their needs and interests? As a part of the forestry sector, private forests were not properly explored in order to find the opportunities for future development of private forests and to fulfil owner's interests. Ten years ago private forest owners and private forestry in Macedonia start to be issue in research objectives. In 2006, the Strategy for Sustainable Development of the Forestry was developed, with main objective to increase the contribution of the forestry sector to the national economy and rural development through sustainable forest management, ensuring renewable resources and protection of local and global environment and providing products and services for improving the quality of life of all citizens (CNVP 2013).

Since 2009 the Netherland Development Organization – (SNV) start to support private and decentralized forestry, in that manner a sub-sector analysis for private forestry in Macedonia 2009 was create. The analysis served to guide SNV's inputs in the forestry sector as well strengthen the stakeholders in the sector and give increase understanding the situation of private forests in Macedonia (SNV 2009).

3.1. Research framework and research approaches

Most of the studies in Macedonia about private forestry were about:

- Trendafilov A. et al (2008): Analysis of private forestry in Macedonia
- and its role in the National Forest Strategy process, report CEPF
- Sub-Sector Analysis of Private Forestry in Macedonia, report (SNV, 2009)
- Glück, P. et al (2010): The Preconditions for the Formation of Private Forest Owners' Interest Associations in the Western Balkan Region, Forest Policy and Economics
- Glück, P. et al (2010): Organization of Private Forest Owners'
- Associations in the Western Balkan Region (PRIFORT), EFI report
- Sub-sector Analysis of private forestry in Macedonia (2013), unpublished report, author Stojanovska, M., CNVP.

3.1.1. Types of organizations (incl. which organisations are active for which of the themes)

National Association of Private Forest Owners (NAPFOs) as NGO is representing the needs and interests of private forest owners in Macedonia. The Netherland`s Connecting Natural Values and People (CNVP) was the main donor and logistic support of NAPFO, helping them to become important actor in the forest sector in Macedonia. The CNVP and NAPFO made the

first sub-sector analysis of the private forest owners in 2009. The analysis took in consideration many aspects of private forest owners (socio-demographic, institutional, management and silviculture and economic) and together with the previous project PRIFORT, the results were followed up from it (book and paper) made a significant base for creating the profile of the private forest owner in Macedonia, it`s needs, expectations and understanding of sustainable forest management.

The professors from Forest Faculty in Skopje also have researched about private forestry issues, by taking part in analysis of the sub-sector analysis of private forest owners, through the reports and papers about private forest owners (status quo analysis, social, economic and institutional aspects).

3.1.2. Types of funding (incl. which funding type is used for which of the themes)

At the begging, of 2000 when the issue of forestry became more prominent, the international donors such as SIDA, GTZ, SNV, FAO, GEF provided funds for supporting forestry. The funds were mainly used to support research that covered all segments of forest ownership (social, economic, institutional, management) and to support private forest owners (organization, association etc). There are also some domestic funds from the Ministry of Agriculture, Forestry and Water Economy (MAFWE) sector Forestry and hunting used mainly for research on institutional and silvicultural aspects.

3.1.3. Theoretical and methodical approaches, and regional scope of the studies

As main methodological approach, the questionnaire surveys were used. The questionnaires were developed for collection of quantitative and qualitative data. The social, economic, institutional, organizational aspects as theoretical approaches were used in these studies.

3.2. New forest ownership types

Two sub-sector analysis of private forestry had identified the scatter parcels and many owners of small parcels as main problems that private forestry is facing nowadays. In the middle of last century, having more than 3 children was a common tradition. All children had the same right for inheriting the forest property by the parents. This trend is still practiced in Macedonia although the number of the children decreased in same way the private forest area owned by one person also decreased. Nowadays we have 3 or 4 persons possessing 1 ha or less forest area, and as individuals they cannot do proper management but as group they would have better option (CNVP 2013).

This new trend of joining the parcels by having family management of private forests is very important but unfortunately is still not recognized by the forest authorities.

3.3. Forest management approaches

The Law on Forest (2009) recognize only two types of ownership: state and private. In the Law on Forest it is prescribed that state forests are managed by the PE Macedonian forests, while the management of the private forest, recently (Changes on the Law on Forest, 2011) was passed to the licensed entities. Licensed entities have the right to mark the trees in the private forest and the owner for the first time get the opportunity to be involved in the marking tree process in his own property. However, owner's opinion surely cannot be the final, because the Law recognize the forest as a public good and the owners are not allowed to do what they want, but it has to be done according to the sustainable forest management rules.

3.4. Policy change / policy instruments

After the independence, the process of denationalization of the forest land had started in Macedonia. Although some land is returned to the owners there is lack of data about the denationalized forest area (according to expert estimation 1,2%). The process is still ongoing but the estimations are that the private forest land will not exceed more than 12%.

The studies done by SNV (2009) and CNVP (2013) show that many of the private forest owners are complaining about the small and fragmented parcels, as results of the Inheritance Law (1996). According to the private forest owners, the small parcels did not allow many possibilities for effective forest management and probably that is one of the most important issue why private forestry is not considered as an important one in Macedonia.

3.4.1. Policy influencing the private forestry

The private forest owners were used to the situation of having powerful public forest administration who implements the forest regulations on private forest owners in concurrence with the state forest company (e.g. levies for timber harvests, permission for harvesting, tree marking by forest authority before felling, license for timber transport, etc.) (Glück, P. et al., 2009; Nonić, D., 2004). However, due to the changes in the Law on Forests (2011) this situation has been dramatically changed. The services provided by the Public Enterprise Macedonian Forests (PEMF) were moved to the legal licensed entities and this is a completely new situation. Legal licensed entity is a private company where the owner must have at least 2 years of experience in forestry. Private forest owners are obliged to mark the borders of their forests and to enter them into the Cadastre or to get property list. That issue initiate additional financial sources, because they have more than one parcel, and they point out that as a problem (mainly financial). Secondly, the great number of private forest owners in combination with the small average size of their forest land, often fragmented into a number of dislocated cadastral plots, makes the owners believe that their property is not worth much. Thirdly, forest ownership often cannot be allocated to individual persons but rather to the family (common property). Fourthly, such small parcels of fragmented forest land are difficult to manage efficiently for the production of valuable timber assortments (Glück, P. et al. 2009). Thus, it is not surprising that the share of fuel wood in the annual removals dominates in private forest management. The preference for fuel wood production corresponds with the dominance of coppice forests in private forests with relatively modest growing stock per hectare and annual increment per hectare compared to state forests. Finally, demographic characteristics of the private forest owners as well as political culture, interests and values of forest policy decision-makers are further reasons for the existing situation of private forestry in the Western Balkan region and Republic of Macedonia as a part of it.

Private forests in Macedonia were not properly supported, developed or even properly researched so far. The situation has started to move forward and the issue related to private forestry has risen when the first association of private forest owners was established in 1997. In the beginning of its existence, no radical changes have been made. Association had small number of members and the powerful public forestry was neglecting their needs. The first sign for improving this situation was made in 2006 when the Strategy for Sustainable Development of the Forestry in Macedonia was made. The main goal of this document was to increase the contribution of the forestry sector to the national economy and rural development through sustainable forest management, ensuring renewable resources and protection of local and global environment and providing products and services for improving the quality of life of all citizens.

In the content of the Strategy, as a holistic document made on participatory approach basis, there are clear chapters related to forest ownership and private forest management. In the chapter of forest ownership it is stated that the Constitution ensures the ownership of the state and private forests are equal under the Law. Due to the fact that in the old Cadaster there were no clear borders between the state and private parcels, the first goal in the Strategy was upgrading the Cadaster of the forests and making clear distinction of state and private owned parcels. Also, related to fragmentation of the private parcels, which is above mentioned as a problem, the goal stated in the Strategy was introducing consolidation of the state and private forestlands.

3.4.2. Subsidies

The subsidies are the issue that is on the top of the agenda of the National Association of Private Forest Owners. The results from two studies done by SNV (2009) and CNVP (2013), have also shown that private forest owners consider that the environmental aspects of their forests are neglected. The private forest owners are obliged to pay 3% of the wood price for extended reproduction. From this amount the MAFWE provide fund for afforestation and silviculture measures for private forest owners. The private forest owners prepare plan for afforestation or silviculture measure and submitted to the MAFWE. Private forest owners have stressed that they get subsides for seedlings for afforestation, which is not enough. Thus, they consider that the policy regulation related to subsidies should be developed in that way to secure financial and informational instruments such as training, protection measures etc.

3.5. Major results and insights

3.5.1. Appearance of private forestry issues in Macedonia

As it was stressed before, during the socialistic period in Macedonia private forestry was not a relevant issue. That was a time when the most of rural agriculture and forest land was abounded as a result of a migration process from the village to the city. Nobody considered as an important to enlarge its private forest area or to make an estimation how much the gain from its management can be.

The beginnings of setting up this issue about private forestry were during 90s in the last century when the association of private forest owners was established. In the beginning, stakeholders in the forestry sector have tried to communicate with governmental bodies and forest enterprises. These were the first steps toward private forestry creation in Macedonia. After that an international financial help through Netherland`s SNV was introduced and continuously there are more and more changes in this sector. During 2008/2009 first research activities related to private forestry were done and that was a state of art or the basis for the further research.

3.5.2. Analyzing the profile of Macedonian Forest owner

According to the data gathered from 2009 - 2013, there are no significant changes in the results. Private forests in Macedonia are fragmented and their approximately size is 0,4 ha (according to the Statistical Office). The number of private parcels is 220.000 or 65.000 households who own the forest land in our country. More than 95% are male owners with average age from 50-70 years. About 1/3 of them are pensioners and the other third are farmers, high school-level employees or unemployed. The majority of private forest owners have inherited the forests and want that their children inherit the forest.

According to the subsector analysis conducted on 1000 private forest owners: Most private forest owners hold forest properties smaller than 1 ha, the smallest is 0,01 ha and the biggest one 10 ha, and the average size is 4,17 ha (Stojanovska, M., 2013; CNVP 2013).

In addition, these properties are often fragmented in average 4 parcels. Broadleaved and coppice forests are dominating the stands. Private forests are mainly used for domestic fuel wood and tourism, nature conservation and hunting are of minor importance, although they have stressed that the environmental services from their forests are very significant but they are not used. Consequently, for about one-half of the private forest owners the forest is a source of income, which is represented through its contribution to the household income.

3.5.3. Critical assessment, gaps and future research needs from your view.

Conducted research so far should be considered when creating new policy documents, future strategies and plans, as they provide insights on how the forest sector should be developed. In Macedonia, the main actors in forestry sector are: Ministry of Agriculture, Forestry and Water Economy (MAPFE), Sector for Forestry and Hunting; Public Enterprise “Macedonian Forests”; Forest Faculty in Skopje and National Association of Private Forest Owners

(NAPFO). The authors and contributors to the listed studies are coming only from the Forest Faculty in Skopje and NAPFO. The funds for the studies are coming mainly from international donors. The logical question that can be posed is: are the international donors more concerned about forest sector in Macedonia than the relevant governmental / state bodies.

As a summary, the main problems related to forest ownership are the unclear borders between state to private forests and private to private forests. Very often the misunderstanding between P.E. Macedonian Forests and private forest owners is about this issue. The law oblige private forest owners to do cadastre for their forests if they want to utilize their forests while this is not a case for state forests. The costs for creating cadastre are high for private forest owners. The SNV (2009) and CNVP (2013) research find out that some of the private forest owners are not aware about their (forest) property. Although 65 000 households appears as forest owners not all of them are members of NAPFO. The NAPFO newsletter is the only source of information about policy changes for private forest owners. The ministry should develop and create efficient informational instrument in order to improve the information of the novelties and changes in the regulations.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format, which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Law on Forest (Official Gazette of RM 64/09) in article 2 define that the forest ownership can be public and private.

Private forest owners: forest owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.

Although the definition of private forest owners have broad understanding the data from Statistical office indicate that only individuals, families or the church is appearing as private forest owners. The Law on Forest does not provide definition about individuals, families or church private forest owners.

The state forest are mainly managed by PE Macedonian Forest (90%) and the rest of the state forest belongs to National Parks (10%).

90.14% of the total forest area is state owned, while their part of the total wood mass is **92.2%.** Private owned forests are **9.86%** (94,146 ha) of the total forest area, and their portion of the total wood mass is **7.8%**. (Strategy for sustainable development of forestry in RM, 2006)

FRA 2010 Categories	Forest area (1000ha)	MAFWE (2010)
	2005	
Public ownership	881	881
Private ownership	94	94
...of which owned by individuals	94	94
...of which owned by private business entities and institutions	0	0
...of which owned by local communities	0	0
...of which owned by indigenous/ tribal communities	0	0
Other types of ownership	0	0
TOTAL	**975**	**975**

The FRA report is the last version of official data about the forest inventory data. For that reason, the data are the same (www.fao.org/docrep/013/al642E/al642E.pdf)

4.1.2. Critical comparison with national data in FRA reporting

The FRA report is latest published data about the forest area in Macedonia. The members which participating in writing the FRA report were also contacted and contribute in writing as in this country report. This means that at the moment making critical comparison with national data in FRA reporting is not possible.

4.2. Unclear or disputed forest ownership

The only example where the ownership is unclear is the areas where the process of denationalization is not finish. The process of denationalization starts in 1998 when the Law for denationalization was carrying out. The process is ongoing very slowly. Unfortunately, there are no data about forests under denationalization process.

4.3. Legal provisions on buying or inheriting forests

There are no restrictions for buying or selling private forest. Selling state forests is impossible according to the Law on Forests (2009). According to Law on Forests (2009), article 17 regulates possibilities of exchanging forests between state and private. Basic rule in forestry and agriculture is when if the PFOs decide to sell the forest, s/he must first contact-offer the forest to neighbours (private or state). If they do not have the interest then others can buy the forest. At the moment does not exist any legal restriction that limited private forest owners in buying or selling forest. There is no regulation that regulate the price of the forests per ha.

4.4. Specific inheritance (or marriage) rules applied to forests

There are no specific inheritance rules, which can be applied to forests. Every child inherits the same amount of the forest only if the owner did not prescribe in testimonial differently.

4.5. Changes of the forest ownership structure in last three decades

4.5.1. Changes between public and private ownership

The main changes in the ownership structure come as result of the process of denationalization from public to private.

4.5.2. Changes within public ownership categories

There are also small changes within the public ownership, where some of the forest area managed by P.E. Macedonian Forests was transfer in protected areas managed by other entity. In 2008 part of P.E. Macedonian Forest in the Forest Management Unit Prespa Drvo was proclaimed as protected forests and was embedding to the National Park Pelister.

4.5.3. Changes within private forest ownership

There is no data about changes within private forest ownership.

4.5.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when

farms are given up or heirs are not farmers any more).

Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies): Macedonia was one of the six republics of Yugoslavia and after the Macedonia become independent in 1991 the political regime was changed. At that time the beginnings of the process of restitution or giving back the forest land, which was taken by the state, has been started. The expectations of the restitution were very big but the restitution did not change to greater extent the ownership structure in Macedonia. Although the restitution is not finish yet, expectations are that the private forest owners will participate with max 15% stake in ownership structure in Macedonia.

Privatization of public forest management (introduction of private forms of management, e.g. state owned company): Fifteen years ago the P.E. Macedonian Forest, which is responsible for management of the 90% of the state forests, privatized the harvesting operation (cutting, hauling transport and transport). 80% of the activities were privatized while 20% are still done by P.E. Macedonian Forest for security reasons.

New private forest owners who have bought forests: Relevant to some extent for Macedonia. There is no data that new private forest owners have bought forests. There are some examples of buying forest but the trading is between private forest owners (pensioners – younger owners or owners migrating to city with no interest to manage forest sell the forest to some local forest owners (mainly forests neighbours)

New forest ownership through afforestation of formerly agricultural or waste lands: Although many debates in Macedonia stressed that big area of agricultural land became forest, as the results of migration of the people to cities and land abandonment, no statistical data exist about of the areas which was transferred from agricultural or land abandonment into forest. Until now there are rare cases where the owners ask for change of the land use (agricultural land into forest land).

Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more): For this case there are no data, no research, so even the experts do not have their opinion.

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	2
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	2
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	0
• Other trend, namely:	

**0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

4.6. Gender issues in relation to forest ownership

Survey done in 2009 by SNV shows that from the total number of 479 interviewed people, 92% are male and 8% are female.

The results on this questionnaire were confirmed in PRIFOR Study (2009) when 96% were male population and in the results of Sub-sector analyses conducted by SNV (2009/10) when 92% were male population.

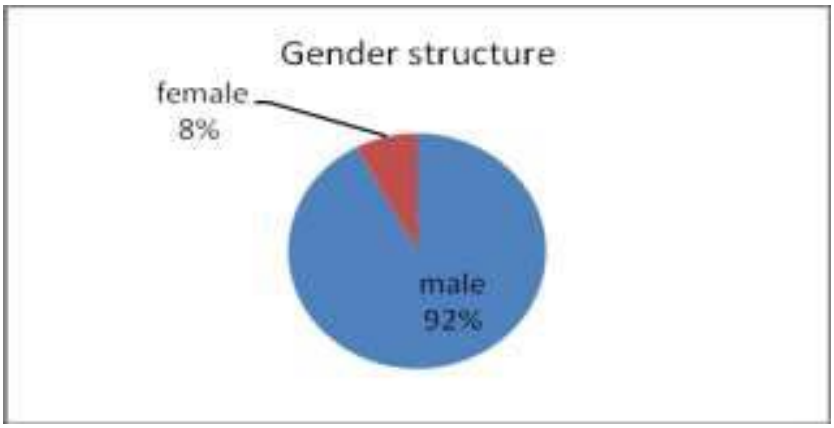

Figure 1: Gender structure of private forest owners (2009).
(Source: Connecting Natural Values & People Foundation – Netherlands: Subsector analysis of Private Forestry in Macedonia (2009-2010))

Again, in 2013, the results have shown that the most of the private forest owners in Macedonia are male (96%) and only 4% are female.

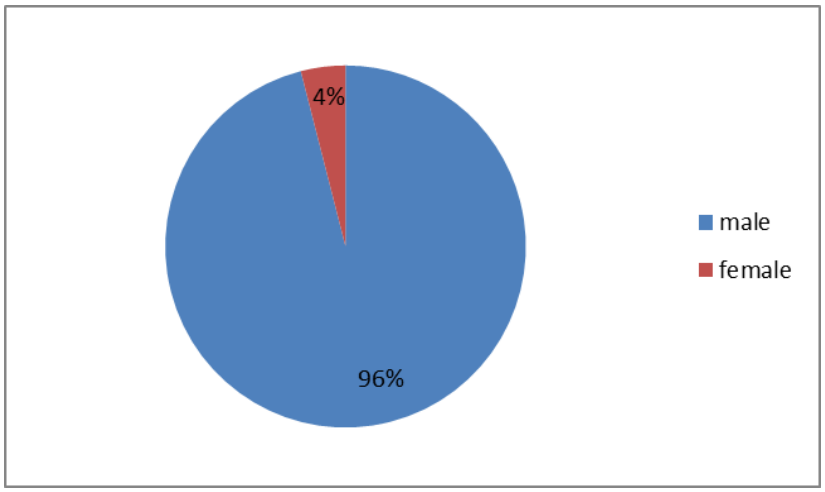

Figure 2: Gender structure of private forest owners (2013).
(Source: Connecting Natural Values & People Foundation – Netherlands: Subsector analysis of Private Forestry in Macedonia (2013))

4.7. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives		X	
• Self-organised local community groups		X	
• Co-operatives/forest owner associations		X	
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

4.8. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania, Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus, proper rules on management (harvesting, decision-making and conflict resolution mechanism, cost/benefit sharing, sanctioning, etc.) are key for sustainable use of CPR regimes.

According to the definition for CPR regimes mention above, CPR do not exist in Macedonia.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this issue and that there is not much literature available. However, we are convinced that this is an issue: if owners have different goals for their forests there must be new kind of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Macedonia

5.1.1. Who typically manages forests in your country?

In Macedonia, 90% of the forests are state forest while 10% are private forests. PE Macedonian Forest manages 90% of the state forests, while the rest belong to national parks. The government of Macedonia establish Public Institutions for managing National Parks. The National Parks have integrated management plans according to which they manage the park area.

The state administrative body competent for forestry matters, approved by the Government and the Parliament, should prepare the General Forest Management Plan. The law also stipulates that "based on the general forest management plan, the users of forests shall adopt special forest management plans for each forest management unit" (Law on Forests, 2009). According to the data gathered from the forest management plans, about 8% of the total area of forests is not covered by management plans. These areas are mainly degraded forests, shrub lands and forest bear land, and some smaller part under crops and

cultivated plantations, which are not covered by any forest management unit. In order to facilitate the planning and management of the managed (planned) forests, they are divided to 187 Forest Management Units (FMUs). The PE Macedonian Forest is responsible for managing most of them (175 FMUs).

According to the Article 28 of the Law on Forest (2009), the following planning documents are defined:

- Forest Management Plan elaborates the general conditions defined in the General Forest Management Plan of RM, which analyze the management measures to be introduced, determine the management plans according to type and scope of work, the time and manner of implementation, and determine the value of the forests. In addition, besides the state forests, the private forests of more than 100 ha must have a management plan as well.
- Forest Management Programme covers seedling plantations, windbreak belts on an area of more than two acres, silviculture and plantations on an area of more than two acres that are not part of a forest management unit, as well as private forests that cover an area of less than 100 ha, and
- Annual Forest Management Plans are prepared in accordance with the special forest management plans.

According to the Law on Forest, private forest owners with more than 100 ha should prepare their own management plan, while the private forest owners with small forest area are included in the Management plans within the state forest. The management plans are prepared and implemented by the PE Macedonian Forest" without consultation with private forest owners about their needs and interests. The time-period of the management plans is 10 years. Until 4 years ago some of the forest utilization activities (marking, licence for cutting, transport) in the private forests were done by employees in PE Macedonian Forest, now private licensed bodies are obliged to do these activities. The owners of private licensed bodies (entities) need to have at least 2 years working experience in forestry. They get the licence from Ministry for Agriculture, Forestry and Water Economy, sector Forestry and Hunting. All planning activities and some of the harvesting activities in private forests are done by these private licences entities. They do tree marking, and giving transport documents for the harvested wood. The rest of the activities woodcutting, hauling transport and transport the private forest owners organize by itself.

5.2. New or innovative forest management approaches relevant for new forest owner types

Subsidies for thinning and planting in private forests

In 2009, the Ministry of Agriculture, Forestry and Water Economy (MAFWE) provided opportunity to private forest owners to submit proposals in to annual program for support to SFM. The activities that are subsides are thinning and planting. Usually the cases are forest where pre commercial thinning was planned to be implemented. These forests are in age below 30 years where silviculture activities usually results with more cost then benefit from forest operation. That is why pre commercial thinning is subject of support from Ministry fund. PFOs need to go on the field to collect field data about forest stand condition as age, number of trees, height, width, health condition, natural regeneration etc. Based on the data collected from a field, program proposals were prepared and submitted with all other necessary documents to MAFWE for approval. Than the PFO received an approval, later is contracted by Ministry, and the thinning can start. The whole process finished when forestry inspection confirmed that all requirements according to contract with MAFWE were respected and PFOs are able to receive the subsidy. The amount of subsidy is, enough to cover the costs of pre commercial thinning.

5.3. Main opportunities for innovative forest management

Common pool resources regime

There are more than 65 000 private forest owners in Macedonia. More than 50% of

them possess small parcels, which are scattered. The common pool resources regime is one of the main opportunities for innovative forest management for private forest owners. Based on our expert knowledge and data the private forest owners are complaining about small and scattered forests, leading to limited possibilities for forest management. In this regards CPR regime can be great possibility for private forest owners to become more concrete and to have bigger possibilities for forest management.

5.4. Obstacles for innovative forest management approaches

Obstacles in developing new or innovative forest management approaches are following:

- Lack of willingness for usage of innovative techniques – most of the private forest owners are old people, which are not willing to change the techniques that they are using.
- Lack of knowledge and skills – the private forest owners does not have adequate knowledge and skills to develop new forest management approaches. Investments in harvesting are too expensive and the owners cannot afford investments.
- Lack of training – for the owners who wants to improve knowledge regarding the innovative forest management approaches or harvesting techniques.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

The process of denationalization starts in 1998 when the Law for denationalization was carrying out. It is a process of returning the forest to the owners as results of changing the system. The process is ongoing very slowly and there are no data about forests under denationalization process. As it was mentioned before, besides the on-going process of denationalization there is no other policy instrument that influence the forest ownership in Macedonia. However, this process will not change ownership structure significantly, because according to some unofficial information the private forest land is expected rise up to around 15% after finalizing this process (at the moment this share is about 10-11%). The main problem of the private forests is that they are small and fragmented. The fragmentation is because of inheritance rights not regulated by regulative framework.

In addition, there are no policy instruments fostering afforestation of agricultural lands.

6.2. Influences of policies in forest management

Forest management plans for the private forest owners is obligatory only for the ownership bigger than 100 ha. Because the private forests are small and scattered (fragmented) the most of the private forest owners are not obliged to make a forest management plan, but it does not mean that there is no plans for their areas. The PE together with the management plan for the state forests makes the Forest Management Plans for private forests. The branch of the PE Macedonian Forest is making forest management plans for the whole area which is under their jurisdiction, which means together state and private forests areas (smaller than 100 ha). Private forest owners possessing forest area >100 ha are responsible for creating a own management plan, the private forest <100 ha are included in the management plan of the state forests. The monitoring of the management plan is done by the state. Another problem here is that the process of marking clear borders is

on-going. It means that there is no clear border between state and private ownership and in many cases both sides are making "mistakes" in harvesting. This is also a kind of basis for illegal activities because both sides complain each other. The new Law on Forest (2009) obliged the PFOs to made cadastre measurement of the border. The National Association of Private Forest Owners (NAPFO) complains in MAFWE about having not equal status, because this obligation is relevant only for private forest owners. According to NAPFO many of PFOs as results of this obligation have no willingness to manage their forest as results of high cost for cadastre measurement compared to incomes gain from forest management.

6.3. Policy instruments specifically addressing different ownership categories

6.3.1. Financial instruments from Biological reproduction

Since 2009 the Ministry of Agriculture, Forestry and Water Economy provided opportunity for private forest owners to submit proposals for annual program for support to SFM (thinning and planting). The amount that PFOs receives as subsidise is enough for covering the management costs. All PFOs can apply for subsidies. The operation (thinning or planting) should be done on an area bigger than 0,5 ha.

According to the data from NAPFO until 50-60 PFO had applied for subsides with territory of 90-100 ha.

6.4. Factors affecting innovation in policies

After establishing the first Forest Owner Association (NAPFO) in 1997 there are some changes, but still there is a lot work to do in future. Due to the organizational reasons as well as anonymity of the association they did not took any serious role in the policy processes. After 2000, they became more recognized and important in forest arena in Macedonia. Nowadays NAPFO is participating in the policy processes, having consultation with people from the Ministry about some policies that are affecting private forest owners (ex. cadastre measurement). At the moment NAPFO is very well established and provide information's and services to the private forest owners such as trainings (for harvesting operation, basic forest measurement activities etc.), seminars, information's(application for subsidies etc.). The PFOs are satisfied with the quality of information's gain from NAPFPO. The studies from SNV 2009 and CNVP 2013 show that PFOs in the past before 2000 all relevant questions, and problems were address to the PE Macedonian Forest. The outcome was not satisfactory; the PFOs were receiving limited information.

CASE STUDY 1: ROLE OF NATIONAL ASSOCIATION OF PRIVATE FOREST OWNERS IN PROVIDING FINANCIAL INSTRUMENTS FOR PRIVATE FOREST OWNERS FROM MINISTRY OF AGRICULTURE, FORESTRY AND WATER ECONOMY. CASE: THINNING

NAPFO have contacted internal members and selected two PFO to be part of effort to obtain subsidy for SFM in private forest. One of forest owners was coming from Berovo branch and the other from Probistip. In both cases, the forest selected for subsidy was coniferous stand where pre commercial thinning was planned to be implemented. In this kind of forests, that are in age below 30 years, silviculture activities usually results with more cost then benefit from forest operation. That is why pre commercial thinning is subject of support from Ministry fund. NAPFO with support of SNV advisors went on the field to collect field data about forest stand condition as age, number of trees, height, width, health condition, natural regeneration etc. Based on the data collected from a field, program proposals were prepared and submitted with all other necessary documents to Ministry for approval. Beside of program, NAPFO was supporting a program submitted with letter of support to their members. When programs were approved and FO contracted by Ministry, implementation was possible to start. After careful selection of trees to be felled, FO has implemented a thinning operation. The process finished when forestry inspection confirmed that all requirements according to contract with Ministry were respected and FO were able to receive the subsidy. The amount of subsidy was 200 euro/ha, enough to cover the costs of pre commercial thinning. In both cases FO were very satisfied from the whole process and NAPFO itself because for the first time private forestry was supported from the Ministry. That was possibility for NAPFO to start promoting new policy and opportunity for their members. This positive experience was internally presented at the association. It resulted with higher interest among FO for 2010 year.

The Ministry annual program for 2010 has provided space to support FO in afforestation of 50 ha of bare lands exposed to risk from erosion and for pre commercial thinning on 50 ha. The amount of support for afforestation was 1.000 euro/ha and 200 euro/ha for pre commercial thinning. Usually annual program is announced at official gazette and very limited number of PFO was informed about the program. NAPFO took the responsibility for spreading out the information about the subsidy. Beside their regular contacts with the network of branch organizations, NAPFO have announced this opportunity on their web page and in their newspaper and many PFO from Macedonia started to ask for support. NAPFO was offering to PFO assistance in field data collection, completion of papers required by Ministry, preparation and submission of program, supplying with seedling. In this regard NAPFO have contacted seedling producers and provided good offer to PFO for buying seedlings for afforestation. NAPFO succeed to negotiate with seedling producers guarantee about payment to be executed when subsidy will come from Ministry. In the same time, delivering the services NAPFO was working on improvement of their financial sustainability. For any subsidy program support to PFO NAPFO was earning fee 10% from received amount of subsidies or in practise this is 10€ per 0,1 ha. PFO is paying to NAPFO when s/he received the subsidy. In addition, they succeed to negotiate to receive fee from seedling producers for mediation with PFO in supply of seedlings. In 2010 FO have implemented 18 programs supported by subsidy and have received total amount of 12.060 euro.

The whole chain of service delivered from NAPFO was working perfect, in interest of all parties. Ministry has finally found a partner to cooperate on issues related to private forest management. NAPFO was fulfilling their mission to become service-oriented organization to their members. FO had opportunity to get support for implementation of SFM measures improving the quality of forest stands and planting forest on lands that were not productive and used for agriculture.

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NORWAY

Gro Follo, Erlend Nybakk, Johan Barstad, Bruce Talbot

1. Introduction

Author of chapter 1: Gro Follo

1.1. Forests, forest ownership and forest management in Norway

Information on the Norwegian forest and forestry is mostly based on Tomter and Dalen's (2014) report "Bærekraftig skogbruk i Norge" (that is "Sustainably forestry in Norway"), which was prepared by the Norwegian Forest and Landscape Institute as an assignment from the Norwegian Government. The report is based on a compilation of different data sources for example from the Norwegian Forest and Landscape Institute, Norwegian Agriculture Agency and Statistics Norway. The report has several chapters written by different authors. However, in our presentation here we will only present the relevant pages.

The forest

Norway has approximately 14 million hectares forests or other wooded land, which is 43% of the Norwegian land area. The forests in Norway are managed as small-scale forestry. This is partly due to varying topography, different production conditions and the ownership structure (*op.cit* page 23).

Of the total forest area 58% is conifer dominated, the remaining 42% is deciduous dominated. The proportion of coniferous forest is somewhat higher for the productive forest areas (65%). There are considerably more coniferous forests than deciduous forests in Southern and Eastern Norway and Trøndelag, while the deciduous forests are prevalent in Northern Norway. In Western Norway, coniferous and deciduous forests are evenly divided (*op.cit* page 44). The predominant tree species are spruce (*Picea abies*), pine (*Pinus sylvestris*) and downy birch (*Betula pubescens*), comprising over 90% of the standing volume (*op.cit* page 116).

In 2010, the standing volume was measured to 907 million m^3 (under bark) and this is the highest volume measured since registrations started almost 100 years ago (*op.cit* page 48-49). Spruce makes up the largest volume, then pine and next hardwood. This was the situation almost 100 years ago, and it remains the same now (*op.cit* page 50). The annual net growth for all forests in Norway during the period 2008-2012 was 24 million cubic meters. At the same time, the average harvesting rate was 11.1 million m^3 per year. Since 1950, harvesting has been substantially lower than the yearly increment. This has resulted in a continuous increase in standing volume, and now the increase per year is 12.9 million m^3 (*op.cit* page 70). The increment peaked in 2001-2005, since then there has been a slight decline (*op.cit* page 71). The forest in Norway is becoming steadily older and the proportion of trees with a diameter over 30 centimetres has almost quadrupled since the 1920s (*op.cit* page 52). Approximately 16% of the productive forest area is over 120 years old, and about 24% is 81 to 120 years (*op.cit* page 53).

The total amount of dead wood in productive forests in Norway was estimated at just over 90 million m^3 in 2010, that represents approximately 12 m^3 per hectare. Annually, there is an increase in the amount of dead wood by about 3%. The conclusion is that the amount of dead wood has been increasing over the last 90 years, and the assumption is that the increase will continue in the future (*op.cit* page 86).

In Norway, there are three schemes of area protection relating to forest. The strictest form is nature reserves, national parks have a weaker form of area protection, and landscape conservation areas have the least strict protection system. Of the total forest area in Norway, 6.1% is within one of the three schemes. For nature reserves and

national parks only, the percentage is 4.1. Regarding productive forests, the percentages are respectively 4.3 for all three categories and 2.8 for the two strictest ones (*op.cit* page 101). Since 2003, Norway has had a voluntary forest protection scheme. Under this scheme forest owners and their organizations find areas that meet the criteria for protection, and the forest owners offer the state to protect their own forest lands provided a satisfactory economic compensation. Since 2003, almost all of the new processes for forest conservation on private land are carried out as voluntary protection (*op.cit* page 102). Please be aware that we in Norway also use the term "protection forests" (Norwegian term: "Vernskog"), and that this is something else than protected forests. A protection forest serves to protect other forests or is a protection against natural disasters. A protection forest is also the forest line towards the mountain and near the coast, where the forest is fragile and can be damaged by wrong forest management. This kind of forests must therefore be managed in a special way, which is regulated under the Forestry Act. There is no broad, updated overview of the protection forest area in the country, but an older overview indicates that it constitutes approximately one third of the total forest area (*op.cit* page 104).

With regard to emissions and uptake of greenhouse gases in the forest, in 2011 there was a net uptake in forests of 32.4 million tons of CO_2 equivalents, while in the same year the total greenhouse gas emissions in Norway was 53.4 million tons. Net uptake in forests is thus equal to 60% of the total greenhouse gas emissions in Norway (*op.cit* page 58).

Forestry

A major reason for the increase in standing volume mentioned above, is the afforestation that took place from the middle of the 1900s. In Norway afforestation is referred to as those areas along the coast that is planted with tree species that normally give a higher production at the site than originally, or as planting where there has not been forest before. Afforestation activity started in the 1950s and reached its peak in the 1960s and 1970s, with over 14 000 hectares of planted area annually. Up to the 2000s the afforestation decreased considerably and currently comes to only a few hundred hectares per year. However, in recent years there has been a slight increase in afforestation activities (*op.cit* page 120). The accumulated afforested area represents nearly 390 000 hectares or 4.5% of the productive forest area. Around 60% of the afforested area is located in afforestation areas in Western Norway, while the remaining 40% is in Northern Norway (*op.cit* page 121). It is estimated that approximately 80 000 hectares are planted with introduced (non-native) species. Of these, Sitka spruce (*Picea sitchensis*) constitutes approximately 50 000 hectares (*op.cit* page 122). The introduced species represent a volume of approximately 10 million cubic meters, that is equivalent to about 1% of total timber volume (*op.cit* page 125). The planting of introduced species is now regulated by a directive authorized in the Nature Diversity Act: "Regulation on planting of non-native tree species for forestry purposes".

Forest management planning in Norway aims to survey the forest areas where active forestry (production for commercial use) is going to take place. In total during the period from 2001 to 2012, forest management plans was completed for 3.7 million hectares of productive forest area for a total of 61 000 properties. Forest management plans for additional 1.5 million hectares are in the making. The product the forest owners buy is a forest management plan with tables and maps that provide an overview of forest resources and environmental values. The forest management planning is supported by state subsidies for forest owners (*op.cit* page 155). Forest management planning is a large-scale process and often involves larger regional areas and many actors (both public and private). A forest management plan project takes 2-4 years to complete, from planning and start-up until the final plan is delivered to the forest owners (*op.cit* page 156).

Logging and regeneration are subject to constraints and guidelines, for example those given in the "Regulations on sustainable forestry" under the Forestry Act (*op.cit* page 90). In addition, there is a special requirement in the Norwegian PEFC forest standard regarding the use of retention harvest

(Norwegian term: “Lukket hogst”) (*op.cit* page 91). In 2012, clear-cutting represented 65.5% and seed tree stand felling 21.7% of the total harvesting and regeneration area. In the same year retention harvest, i.e. shelterwood felling, small-scale clear-cutting, edge cutting, selection harvest, mountain selection system, comprised 12.2% of the total harvesting and regeneration area. (The mentioned English terms include the Norwegian terms: Skjermstillingshogst, småflatehogst, kanthogst, bledning, selektiv hogst og fjellskoghogst.) The choice of harvesting methods has been stable during the entire period from 1994 to 2011 (*op.cit* page 92). As required by the “Regulations on sustainable forestry”, after harvesting the forest owner must ensure that regeneration occurs, and make sure that harvesting method and method of regeneration are in accordance with each other. Depending on local conditions, this could involve natural regeneration (via forest seed dispersal). In 2003, state subsidies for planting was removed, and after this less was planted than recommended. Even though subsidies for planting have been reintroduced in parts of the country, this has had a limited effect (*op.cit* page 63). According to the “Regulations on forest management plans with environmental inventories” and “Regulations on sustainable forestry”, harvesting can normally only occur in areas where environmental inventories is done in advance. If not, the precautionary measures embodied in the Norwegian PEFC forest standard are the basis (*op.cit* page 92-93).

The proportion of harvesting and regeneration area covered by environmental inventories has increased in recent years. In 2012, this was 85.5%, while precautionary measures were the basis for 9.0% of the area. Areas that lack environmental inventories and where precautionary measures used in connection with harvesting were not added, was 2.1%. The situation is reported to be unknown for 3.5% of the harvesting and regeneration areas (*op.cit* page 93). Environmental Inventories in Forests (Norwegian: “Miljøregistering i skog”/“MiS”) began in 2001 and since then about 100 000 environmental features have been mapped over the entire country (*op.cit* page 154).

There are two certification schemes for forests in Norway: The Norwegian PEFC forest standard (Programme for the Endorsement of Forest Certification) and the FSC (Forest Stewardship Council). Practically all of the forest properties with harvesting for sale after the year 2000 are covered by PEFC certification. Until now, this encompasses about 45 000 forest properties with total 6.5 million hectares of productive forest area. Approximately 200 forest properties are certified through both PEFC and FSC, and this forest area represents about 3% of the total certified forest area in Norway (*op.cit* page 149). The Norwegian PEFC forest standard includes 25 requirement sections. Certification by PEFC is essentially a type of group certification. Group certification means that the forest owners who sell timber are obliged, either through their own agreement or through timber contracts, to follow the forest standard. This obligation is bound to the management of the entire forest property and not the single harvest only (*op.cit* page 150). All major purchasers of timber in Norway require certification today. Certification means continuous improvement. Through internal audits and external audits conducted by an independent third party (a certification company), any deviations are to be identified and closed (*op.cit* page 152).

During the period of 2003-2012 tending of young stands (mechanical supplementary work, spraying, juvenile spacing / precommercial thinning) was done on a little bit less than 0.27 million hectares. In seven of these ten years, this area was between 27 000 and 31 000 hectares. Most young forest tending takes place in the traditional forestry counties in Eastern Norway and Trøndelag. In total, a little above 2% of the tended young tree area is sprayed (*op.cit* page 67).

There were barely 5 500 people employed in forestry in Norway in 2011, of which 17% were women. Slightly more than half of them were employees, while the rest were self-employed. In 1952, there were over 30 000 persons who had their daily work in forestry. Afterward, the number decreased rapidly and then stabilized at the start of the 1970s. After a slight decrease until the bottom was reached in 2003, the number of persons employed in forestry increased again (*op.cit* page 193).

Later in the country report we will give information on forest properties, forest owners and types of forest owners. Then we will mention the huge differences between the various Norwegian counties when it comes to forest and forestry. Here we want to add that these differences are manifested both in timber prices and forest owners organized in forest owners' organizations. For instance, in October 2014 the mean price for each m^3 saw timber spruce was 497NOK in Hedmark county, while the price in Troms county was 290NOK (Norsk Skogbruk, 2014). All the other counties' prices laid in between with the coastal counties (with the afforested area) at the lower end.

When it comes to forest owners' organizations, there are two options for the forest owners: To organize in Norskog or The Norwegian Forest Owners' Federation. Norskog is known as the organization for mainly huge forest owners, and had in 2010 230 members who owned about 700 000 hectares productive forest area (regjeringen.no, 2010). In average that is approximately 3 040 hectares productive forest area each estate – a far cry from other Norwegian averages. When all forest owner categories are included, and with figures from 2010, the average was 5.7 hectares productive forest area each forest estate. When only the estates owned by personal forest owners are included, the average size in 2010 was a little bit less than 4.5 hectares (Rognstad and Steinset, 2012). The Norwegian Forest Owners' Federation publishes each year figures for forest owners organized, and in 2013 the number was 35 770 (Norwegian Forest Owners' Federation, 2014a). The last years there has been a slight decrease in owners organized in the Federation, in 2009 they had 38 792 owners organized (Norwegian Forest Owners' Federation, 2011). It is possible to calculate the organization percent among the personal forest owners. In 2009 maximum 54% of all Norwegian personal forest owners with 10 hectares or more productive forest joined forest owners' organizations. The figures for counties along the coast were much lower. Except for Finnmark county which is very special in terms of ownership (see later on in the report), Troms county had the smallest maximum percentage (4%). Other afforested counties more south had higher maximum percentages: For instance Møre and Romsdal county had maximum 28% organized, Sogn and Fjordane county had maximum 31% organized (Follo, 2011a). When calculating this Follo took precautions, and the real figures are probably smaller.

1.2. Overview of the country report

The country report starts with a presentation of the Norwegian forest and forestry mostly based on Tomter and Dalen's (2014) publication on sustainable forestry in Norway. Their publication is 241 pages long and notifies on more or less all forest/ry dimensions and aspects. Due to the scope of Tomter and Dalen (2014) it has been a challenge to choose what to include in the country report's chapter 1, Introduction. Its author, Gro Follo, has tried to select the information presumed to be of highest interest for the readers of the country report. Chapter 2 and chapter 3 are rather short. While Follo in chapter 2 mentions the methods applied in data collection for the Norwegian country report, she in chapter 3 summarizes some results from the literature review and its most relevant publications presented in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The detailed description is written by Follo, Erlend Nybakk and Johan Barstad. The longest chapter in the country report is chapter 4 on forest ownership, mainly written by Follo. The readers may find the information given at a very detailed level, but Follo has meant it necessary. For instance, there is no short, accurate way to describe the legal restrictions for buying and selling forests, and it takes its time to tell how Norway ends up with huge outfields without clearly defined owners. Chapter 5 on forest management approaches for new forest owner types, is written by Nybakk and Bruce Talbot. Barstad is the author of the sixth chapter, and he presents his viewpoint on polices influencing ownership development and policy instruments for new forest owners. The seventh and last chapter is termed "Literature". It includes all the references applied in the country report's text, but also additional literature from the literature review on forest ownership in change (see chapt. 3).

2. Methods

Author of chapter 2: Gro Follo

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

In the data collection for the Norwegian country report we have applied:

1. Literature reviews to answer qualitative data and give overview assessments
2. Statistical data
3. Data from previous national or regional studies
4. Our own expert knowledge.

The literature, statistical data and data from previous national or regional studies applied is data/information/publications already known to us. Norway is a small country with very few researches doing research on the country's forest, forestry and forest owners. Further, Norway has several web pages and email-based information networks relevant for forest, forestry and forest owners, which in effect means that it is rather difficult to miss any scientific publication. Due to limited time resources, we have not done any expert interviews or consultation. We have not applied grey literature.

3. Literature review on forest ownership in change

Author of chapter 3: Gro Follo.

The 8 detailed descriptions of publications can be found in the Annex of the full single country report and are written by Gro Follo, Erlend Nybakk and Johan Barstad (http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). The 8 detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Even if the Norwegian research on Norwegian forestry and forest owners is modest compared for instance with the amount of such research going on in Sweden and Finland, both research framework and research approaches are rather diverse. This is reflected in the Annex' of the full single country report presentation of the eight publications. If "research framework" is understood as theoretical approaches including disciplines, the following approaches are covered: Anthropology, sociology, gender perspective, economics, communicative planning, political science, innovation management and entrepreneurship. If "research approaches" is understood as methods applied, the tables in the Annex of the full single country report reveal even more heterogeneity. From the eight mentioned publications we recognize a broad range of social science methods: Fieldwork, qualitative interviews, focus group interviews, questionnaire survey (mail survey), document analysis, trailing research (formative dialogue research), statistics and panel data. We also see that it is rather common for Norwegian researchers on forestry and forest owners to mix methods.

3.2. New forest ownership types

There is not much literature in Norway (on Norway) telling the differences between the "new" and "old" forest owners, that is what the differences between them are. Further, there is not much literature presenting results from forest owners all over the country.

3.3. Forest management approaches

A large part of the work in personal owned forests in Norway is now done via forest contractor companies often organised via forest owner associations. Short term contracts are normally used, but some of the timber brokers have started up buying standing trees. Then the forest owner know the price before harvesting and does not need to be involved in the harvesting process. Because new forest owners often have less forestry competence, this can be additional advantageous for them. What's more, the technical/technological developments available in Norway offer the forest owners several options for "remote management". This includes web-based solution for procuring services, online marketing, sales and settling contracts, and also remote viewing of operations.

3.4. Policy change / policy instruments

In Norway there is not much ownership changes, and there is at the moment, broadly speaking, no policies aiming to influence ownership changes. Furthermore, there exist no policy instrument answering to the growing share of new forest owner types.

4. Forest ownership

Author of chapter 4: Gro Follo except one part. 4.4 "Changes of the forest ownership structure in last three decades" was a joint work with other authors.

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

In Norway the statistical way to approach the ownership question is to start with the area, not the owners. Further, Statistics Norway counts normally one owner for each estate (called "reference owner") even if there may

be several owners to the estate. In addition Statistics Norway normally includes only estates with 2.5 hectares productive forest area or more. If a forest owner owns more than one forest estate in the same municipality, Statistics Norway counts this as one estate. Norway has per 2014 in total 428 municipalities in 19 counties, and almost 4/5 of personal forest owners' forest is located in the same county as the owner lives (Steinset in Tomter and Dalen, 2014: 208). In the last couple of years Statistics Norway has also published figures for joint owners (with the exception of joint ownership between spouses). These ways of establishing the figures give that there is no one-to-one relationship between the statistic's number of estates and number of owners, nor between owners in the statistics and owners in national property register.

In the last decennium there has been changes in the way Statistics Norway establishes their figures. Including 2010, the statistics comprised all properties in the Farm Register of the Norwegian Agricultural Authority with at least 2.5 hectares of productive forest area. In the period before 2010 it was also an improvement in the Farm Register regarding the information put into it. From 2011 the number of forest properties and productive forest area are based on new cartographic data analyses and data on owners and properties from the cadastre in combination with data from the Farm Register (Statistics Norway, 2013a). These changes have effected that the number of estates has fluctuated down and up since around the year 2000, and at the moment the numbers of estates are increasing (Tomter and Lågbu in Tomter and Dalen, 2014: 203). Given this changes it is important to pay much attention to the year the statistics are from.

Norwegian forest and forest owners statistics are regarded as correct and highly reliable. The statistics, registration and the considerations underpinning the data are public and transparent. We have no reason to raise critical concerns on the statistics or the registrations it is based upon. Another matter is that we may want more figures published, but we also know from personal communications over years with persons responsible for the relevant statistics in Statistics Norway that this depends on economic resources and prioritising from important institutions and organizations in the forest(ry) sector.

Table 1: Number of forest estates in 2011 with 2.5 hectares productive forest area or more, after forest owner categories, in total and in three counties of particular interest (after Steinset in Tomter and Dalen, 2014: 209)

Area	In total	Personal forest owners(reference owner)		Un-personal forest owners	Un-identified or dead
		Male	Female		
Norway	131 785	86 845	29 157	1 951	13 832
Hedmark	11 132	7 349	2 676	175	932
Hordaland	10 606	6 977	2 177	102	1 350
North-Trøndelag	6 746	4 816	1 338	118	474

There are rather huge differences among the Norwegian 19 counties when it comes to forest and forestry. In table 1 this is illustrated by three counties. Hedmark county is the main county for forestry in Norway, and in the last 10-year period 63% of the county's properties had cut timber for sale (Statistics Norway, 2013b). Hordaland county is part of the area afforested after the Second World War with the implications that will have for forestry culture and tradition, forestry knowledge etc. However, the county have almost as many forest estates as Hedmark. North-Trøndelag county, as Hedmark county, is a traditional forestry area but with a lesser number of forest estates. The two counties have rather different natural conditions for forest and forestry activities since North-Trøndelag is localized further north and near the ocean. At the moment (2014) North-Trøndelag county is in a regional timber market (saw mill and pulp) demanding more local timber, while Hedmark is in a timber market region with surplus exporting sawtimber and pulpwood.

As recognized in table 1 Statistics Norway makes an important distinction between "personal forest owners" and "un-personal

forest owners". "A personal forest owner" owns the forest area as a living human being, in flesh and blood, and is in official international reporting from Norway termed "owned by individuals". This is physical persons. "Un-personal forest owners" are the state, municipalities, limited companies, foundations, etc., that is units that are not humans in flesh and blood – and which do not have gender/sex or are able to be dead. This is juridical persons. In the statistics in table 1, the category of un-personal forest owners (juridical persons) does not include estates of deceased persons. These estates are included in the third category applied in table 1, "Un-identified or dead". The dead ones come from the category "personal forest owners". When the estates of deceased persons are bought (by personal or an un-personal buyer, on the open market or not), the estates are again included in the correct category. The third category also includes the phrase "un-identified". There may be several reasons for this un-identified situation, and it may not be related to a situation where the ownership to a forest estate is undeclared or disputed. Rather, the difficulties with identifying the forest/forest owner may be caused by incomplete estate identification in the national property register (Norwegian: Matrikkelen). Another problem is forest owners without person identification (Tomter and Lågbu in Tomter and Dalen, 2014: 206). The distribution of respectively "dead" and "un-identified" in the category "Un-identified or dead" is, to our knowledge, most recently given in Rognstad and Steinset (2010: 137) with figures for 2008. At that time there was 119 614 forest estates in total, out of which 2 962 estates was in the category "dead" and 1 886 in the category "un-identified". This distribution, with more estates in the "dead" category than in the "un-identified" category, was also the situation in 2007 (Statistics Norway, 2008). There will always be some estates being owned by what is called "dødsbo" in Norwegian, but for forestry activities it may be a problem if the estates stay in this in-between situation (see for instance Follo, 2011b). There is done very little research in Norway on estates owned by deceased persons, but we have two hypotheses: 1) The relative numbers (relative to forest estates in total in the county) of estates owned by deceased persons will be higher in counties without an active forestry industry than in counties with active forestry industry. We assume this is reflected in the relatively high number of "un-identified or dead" in table 1 for Hordaland county. 2) The numbers of estates owned by deceased persons will increase in the future.

In table 1 we presented the figures as Statistics Norway usually presents them – with focus on forest estates with 2.5 hectares productive forest area or more. It is not common to include information on the un-productive forest area and/or the total forest area. In table 2, however, both un-productive area and total forest area are added, and the forest estates in question are 0.5 hectare forest area or more.

Table 2: Productive, un-productive and total forest area in 1 000 hectares for forest estates with 0.5 hectare forest area or more, after forest owner categories in 2012 (after Tomter and Lågbu in Tomter and Dalen, 2014: 201)

Forest owner category, in Norway	Forest owner category, in FRA2015	Productive forest area	Un-productive forest area	Forest area in total
Personal forest owner	Individual forest owner	5 668	2 284	7 952
Other private owners	Private business entities and institutions	267	96	363
Parish common ("Bygdeallmenning")	Local, tribal and indigenous communities	181	40	221
The Finnmark Estate ("Finnmarkseiendommen")		59	1 047	1 106
Municipality and County Council	State at the sub-national scale	218	56	274
The state	The state at national scale	633	580	1 214
Not specified/other	Unknown ownership	28	29	56
In total	**Total**	**7 055**	**4 132**	**11 186**

In the table we have changed the original figures given in decare to hectare and then to 1 000 hectares. This effects that summarizing vertically and horizontally do not necessary give the figures "In total" or "Forest area in total".

The "translation" from categories in Norway to forest owner categories in FRA2015 is done based on personal communication with Tomter 9 September 2014. Tomter is one of the three persons in Norway who prepared the FRA2015 information.
In Tomter and Dalen (2014) The Finnmark Estate is categorized as a separate forest owner category. The Finnmark Act from 2005 transferred about 95% of the total area of Finnmark county to the county's residents. In FRA2015 The Finnmark Estate is regarded as owned by local, tribal and indigenous communities.
"The state" includes here the State commons (Tomter, personal communication 9 September 2014). We do not know how much the State commons constitute of the total area that is included in the state as owner.

Figures on forest owners are another matter than figures for forest estates. In 2011 there were 10358 forest estates owned in joint ownership by 33403 personal forest owners (see table 3). The figures in table 3 and table 1 are both from 2011, and we may explicate the difference between a statistic based on estates-with-one-reference-owner and a statistic presenting number of owners. All the 10358 forest estates in Norway with joint ownership (table 3) are included once in table 1's estates with a male reference owner (86 845 estates) and a female reference owner (29157) – in total 116002 estates/reference owners. When counting forest owners we will, however, end up with 23 045 owners more (33 403 minus 10 358), in total 139 047 personal forest owners.

Table 3: Forest estates owned by personal forest owners in joint ownership, number of owners and average number of owners each estate, for Norway and some counties, 2011 (after Steinset in Tomter and Dalen, 2014: 208-209)

Area	Forest estates in joint ownership	Numbers of forest owners	Average number of owners each estate
Norway	10 358	33 403	3.2
Hedmark	877	2 379	2.7
Hordaland	749	2 429	3.2
North-Trøndelag	350	1 070	3.1

The forest estates included are forest estates with 2.5 hectares productive forest area or more.
Joint ownership among spouses is not included as joint ownership in the table.

Across the different counties in Norway the average numbers of joint owners per estate vary. None of the three counties included in table 3 have higher number of owners than the country average, but others have. For instance the urbanized counties of Oslo (where the capitol is located) and Akershus, have 3.8 forest owners per joint owned forest estate.

If we compare some of the figures from table 3 and table 1, we will recognize that the counties differ when it comes to the part of the county's total amount of forest estates owned by personal forest owner that is owned in joint ownership. Out of Hedmark's estates owned by personal forest owners (7349 + 2 676) 877 estates are jointly owned, that is 8.7%. For Hordaland county 8.2% is, but for the county of North-Trøndelag the part is down to 5.7%. (For Norway in total 8.9% of the personal owned forest estates are owned jointly.)

To our knowledge there is not done research on the regional variations manifested by the counties' different average number of owners on each jointly owned forest estates or the different per cent of total personal owned forest estate owned jointly.

4.1.2. Critical comparison with national data in FRA reporting

The figures in table 2 for forest area in total is possible to recognize in the national data (table 4) already sent to the Global Forest Resources Assessment (FRA).

Table 4: Norwegian figures to FRA2010 from 2005 (FAO, 2010) and FRA2015 from 2012, forest area, after FRA's ownership categories

FRA 2010 Categories	Forest area(1 000 ha) 2005	Forest area(1000 ha) 2012
Public ownership	1 362	1 488
Private ownership	8 321	9 642
…of which owned by individuals	7 436	7 952
…of which owned by private business entities and institutions	646	363
…of which owned by local communities	239	1 327
…of which owned by indigenous/tribal communities	0	
Other types of ownership	0	
(2015: Unknown ownership)		972
TOTAL	**9 683**	**12 102**

Figures for FRA2015: Tomter, personal communication 9 September 2014.

When comparing the figures from table 2 and table 4's figures for FRA2015, we see that the figure for "Public ownership" for FRA2015 is exactly the same as the figures in table 2 when we sum up the total forest area owned by "The state" and "Municipality and County Council" (1 488). In table 4 the category "Private ownership of which owned by local communities" and the category "Private ownership of which owned by indigenous / tribal communities" are merged, and ends up with 1 327 000 hectares. This is exactly the same figure as in table 2 when merging the category "Parish common" and "The Finnmark Estate".

What is not identical in table 2 and table 4 is the figures for "Not specified/other" and "Unknown ownership", and the nation's total forest area. As said in connection with table 1, an un-identified/unknown ownership situation may not be related to a situation where the ownership to a forest estate is undeclared or disputed. In addition to our earlier elaboration on this issue, we will point out that there also may be discrepancy between the forest area assed by the National Forest Inventory (done by Norwegian Forest and Landscape Institute) and the public registers that Statistics Norway bases much of their information on. Supplement this with the possibility that "un-identified/unknown ownership" may be a kind of rest category that has to submit to other numbers in the overall context (the table, the tables in a report, the context the report is a part of, etc.) (Tomter, personal communication 9 September 2014), the figures presented may differ.

As we have shown, there is a clear link between the national data presented in table 2 and the data collected for the FRA2015 (in table 4). In our understanding the FRA figures adequately present the situation in Norway, and there is no special difficulties or ambiguities worth mentioning here regarding the translation from the national data to the scheme used in the FRA2015.

4.2. Unclear or disputed forest ownership

In Norway there are huge outfield estates without clearly defined owners (Lågbu et al., 2012; Forsberg Mathiesen et al., 2013). The Norwegian outfields consist of much bare land, bogs, unproductive forest area, water and glaciers. In counties with much outfield areas information on both estate borders and ownership is often of poorer quality than in areas with much agricultural land and productive forest area. Historically the reason for this is that the mappings have taken place mainly in what they at that time understood as economically valuable agricultural and forest area and in highly populated areas (Forsberg Mathiesen et al., 2013: 2). In 2009 Statistics Norway in cooperation with Norwegian Forest and Landscape Institute started a work to strengthen the general knowledge about Norwegian properties with predominantly uncultivated land. The work was requested by the Ministry of Agriculture and Food (Forsberg Mathiesen et al., 2013: ii).

In their work Statistics Norway and Norwegian Forest and Landscape Institute had to combine information from maps and different kinds of registers. This implies that the term "without clearly defined owners" also has to be understood as a register based and statistically established term. In effect this

means for instance that an estate's border and ownership may be well known in real life, but the information is not available in easy accessed registers or perhaps is fallen outside the categories applied in registers/statistics (see Lågbu et al., 2012: 4-6).

In both Lågbu et al. (2012) and Forsberg Mathiesen et al. (2013) Statistics Norway and Norwegian Forest and Landscape Institute established an analysis dataset where each unite either belongs to the category "Estates with clearly defined owner" (Norwegian: "Eiendommer med klart definert eier") or the category "other strips of field" (Norwegian: "Enkeltteiger forøvrig") founded on codes for ownership in the Norwegian Cadaster (Norwegian: Matrikkelen). The category "Estates with clearly defined owner" includes estates with one Cadaster unit or many Cadaster unites with the same owner. The category "Other strips of field" includes all the other estates in the analysis dataset (Lågbu et al., 2012: iii). When the estates included was estates with at least 0.5 hectare total area, the area falling into the category "Other strips of field" contained 7 183 650 hectares total area out of which 792 930 hectares was productive forest area (Lågbu et al., 2012: 15, table 6a). When the estates included was properties exceeding 100 hectares total area which have no affiliation with the national Farm Register, 4 581 820 hectares of total area was falling into the category "Other strips of field" out of which 167 210 hectares was productive forest area (Forsberg Mathiesen et al., 2013: 18, table 7a).

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

There are legal restrictions for selling/buying forest in Norway. Together provisions in the Concession Act (Norwegian: Konsesjonsloven), the Allodial Act (Norwegian: Odelsloven) and the Land Act (Norwegian: Jordloven) give important framework for what the specific owner is allowed to do with the property.

The purpose of the Consession Act:

> is to regulate and control the sale of real property in order to achieve an effective protection of agricultural production areas and such conditions of ownership and utilization as are most beneficial to society […]. (Government.no, no date: 2)

With the exceptions ensuing from the Concession Act, real property may not be acquired without the permission of the King, that is concession. The act's §2 on instruments, reads that "[t]he authority of the King may be delegated to the municipalities". As Flemsæter and Setten (2009) elaborates:

> For agricultural properties, the Concession Act states that all owners of farms over a certain size have to acquire concession, that is, prices of these properties are controlled and regulated in order to avoid speculation, and owners are obliged to live on the property and to farm the cultivated land. (Flemsæter and Setten, 2009: 2268)

Exceptions from concession may be based on the character of the property. For instance, concessions is not necessary for the acquisition of some undeveloped sites/areas or for built-on properties not exceeding 10 hectares, where not more than 2.5 hectares of the area are fully cultivated. Further, exceptions from concession may be based on the character of the status of the acquirer. Concession is, for instance, not necessary when the acquirer is the state. The state may both buy and sell estates on a free market, and in the period 2011-2017 Statskog SF, the Norwegian state-owned land and forest enterprise, is selling scattered forest estates. The basic idea is to sell to the highest bidder, but Statskog reserves itself the right to accept or dismiss any bid (Statskog, 2014). Another exception from concession is in a situation where the acquirer has an allodial entitlement to the property (on the Allodial Act, see below). The exception for allodial entitlement is given with some qualifications. If the agricultural estate has an all-year residence, more than 2.5 hectares cultivated land or more than 50 hectares productive forest area, the dispensation from the concession is conditional upon the acquirer taking up residence on the property within one year and live there him-/herself for a minimum of five years (in Norwegian this obligation is termed "boplikt").

The Concession Act reads certain circumstances of relevance for whether a concession shall be granted, and there is

given five circumstances for agricultural properties. For instance, special emphasis in favour of the applicant shall be placed on whether the agreed price provides for a socially justifiable price development (in Norwegian termed "priskontrollen"), and whether the acquirer's purposes will take into account the interests of settlements in the area.

The Allodial Act defines what kind of agricultural estates that is legally understood as allodial estates. The cultivated land has to be larger than 2.5 hectares or the productive forest area more than 50 hectares, and the owner has had full ownership for 20 years. In addition to the acquirer of the allodial rights (Norwegian: "Odleren") his/her children receive the rights if some of the parents has owned the whole estate with allodial rights or some of the grandparents is the last owner of the whole estate with allodial rights. The allodial rights is a kin right, juridical persons are not able to acquire allodial rights. Further, the rights is strictly personal, and the rights can neither be formally transferred to others nor really be exploited by others (Lilleholt, 2009). The Allodial Act privileges "blood ties over other relations" (Flemsæter and Setten, 2009: 2268), and blood ties is with the amendment to the law in 2013 (Ministry of Agriculture and Food, 2013a) restricted to the children/grandchildren and their line of successors. The eldest of the siblings with her/his line has the strongest right to buy the estate and goes before the younger siblings and their lines. The eldest one has first right to refusal, as Forbord and Johnsen (2004: 4) formulates the situation. The one of the siblings buying the estates has, according to the "Åsete" right included in the Allodial Act, right to acquire the land at a low price. The act states that the price shall be reasonable in the prevailing situation, and that the price shall emphasize the buyer's ability to own the estate in the future. (The "Åsete" right is a qualified right of inheritance of agricultural land.) When all the persons with allodial rights to the estates have refused to acquire the estate, the estate may be sold to others. In that case the estate is no longer an allodial estate until the new owner has owned it for 20 years.

An owner of an estate is not free to establish new properties by dividing the estate – for instance with the intention to sell the new property. Several laws out of which the Land Act is one regulate this (Lilleholt, 2009: 216). The Land Act's §12 states: "Property that is used or may be used for agriculture or forestry may not be divided without the consent of the Ministry." The Ministry may give its consent if, for instance, the division facilitates an expedient and varied use structure in agriculture.

In autumn 2014 there is a rather heated political and public debate in Norway on issues related to the Concession Act be it for agricultural land or forest area. The right wing government, the Solberg Government, came to power October 2013, and the Minister of Agriculture and Food, Listhaug from the Progress Party, started rather immediately to suggest changes to the agricultural sector (including forestry), a sector under her Ministry's responsibilities. In June 2014 the Government recommended the Storting (the Norwegian Parliament) to remove the rules on price control in the Concession Act (Ministry of Agriculture and Food, 2014a). Before the recommendation was settled in the Norwegian Parliament, The Ministry of Agriculture and Food in October 2014 proposed to remove the entire Concession Act and the Allodial Act's rules regulating residence on the property. One argument given for this is that the Concession Act hinders an effective market for agricultural properties because the price control may reduce the prices and limit the seller's willingness to put the estate for sale on an open market (Ministry of Agriculture and Food, 2014b). The hearing's deadline is set to 15 January 2015.

The recommendation to remove the price control and the proposed removal of the entire Concession Act occurs at the same time as SKOG22 (i.e. FOREST22) works. SKOG22 is a group of forest industry actors (including forestry) and other relevant actors, a group first mentioned by the Stoltenberg Government, and then appointed by the new government in November 2013 (Ministry of Agriculture and Food, 2013b). The group's goal is until December 2014 to work out a broad and unifying strategy for research, development, innovation and knowledge dissemination in the forest based value chains (Innovation Norway, 2013). SKOG22

has four working groups, and the group termed "forest" is the one most relevant for the COST action FACESMAP. In autumn 2014 the working group's report drafts for hearing were published free for everyone to respond (Innovation Norway, no date). One of the recommended measures the working group understands as important, is to stimulate to a more dynamic property market (SKOG22, 2014). The need for this is contextualized in the report draft as an issue related to the Norwegian property structure: Is it problematic that Norway has so many and so small forest properties? The main idea seem to be that more forest properties for sale, the huger each property will end in the long run, and this will effect more forestry activities at the properties, more forestry engaged personal forest owners and reduced costs/increased income both for the forest owner and forest industry.

SKOG22 (2014) suggests several actions to obtain a more dynamic property market. Among them is to remove the price control when buying forest and to end the profit taxation when selling forest. In our understanding it seems reasonably that the Concession Act hampers a development towards an increased amount of forest estates at the property market. To our knowledge, however, there is no research substantiating the understanding. When it come to the profit taxation, this is a tax activated when selling a family owned estate out of the family. For comments see Norskog (2014) and Norwegian Forest Owners' Federation (2014b), the two organizations organizing Norwegian forest owners. In a study on agriculture and taxation in Norway, Andersen (2008) sums up in this tax matter:

> Up to 2004 customary farms and forestry's was sold with no taxation under the condition that the business had been owned for more than ten years. This was altered in 2005 so that people selling farms to others than family became liable to pay capital gain tax. This may lead to that elderly owners become less eager to sell their farm if no other family member wishes to buy it. (Andersen, 2008: 8)

The changes to the Tax Act suggested by the Ministry of Finance in 2004 said that the ten years rule should end for all agricultural and forest estates, but after the political debate the ten years rule was kept in the Tax Act for owners selling to family members (Standing Committee on Finance, 2004-2005). Andersen point to elderly owners, we want to add that a consequence of the tax rule may be that it gives forest owners economic incentive to keep the estate in the family in the next generation too – whether it is an allodial estate or not.

4.3.2. Specific inheritance (or marriage) rules applied to forests

For agricultural estates that is not allodial estates there is no special rules for inheritance. They follow the general Norwegian rules for inheritance.

For allodial estates, be it pure agriculture land, pure forest area, pure outfield areas or akind of combination, the implications of the Allodial Act regulate the transaction. The Allodial Act is presented above. This act has a history dating back to at least the year 1000 (NOU, 2003:26). According to the act of 1821, the first-born son in the family had first priority for taking over the family farm and its forests. The daughters' rights came after all sons' rights. In 1974, an amendment to the act took place, and with that revision the first-born child, regardless of sex, was allowed first priority to allodial possessions. The change did not give full juridical gender equality in this allodial matter due to a very spacious transitional rule: The 1974-amendment did not apply for men born before 1965. Men born before that time had priority before their sisters. The transitional rule was understood as legally necessary due to rules on rights to properties in the European Convention on Human Rights, and also due to the rule in the Norwegian Constitution saying that no act is allowed to work retrospectively. In 2009 a new amendment took place, and with that the Allodial Act says that the first-born child, regardless of sex and time of birth, is allowed first priority to the allodial possessions. The priority is the oldest one (and her/his line), then the second oldest (and her/his line), the third oldest (and her/his line), etc.

According to Statistics Norway there exist no figures for number of allodial agricultural estates (Snellingen Bye, personal communication 13 January 2015). In a highly tentative estimate from 2003, it was said that

at that time it might have been about 180000 agricultural estates in total (including forest estates) and in the order of 130 000 – 140 000 of them were allodial estates (NOU, 2003: 26: 37).

In Norway there is no special marriage rules applied to forests/agricultural land.

4.4. Changes of the forest ownership structure in last three decades

In a European perspective there has in Norway scarcely been any changes in forest ownership structure the last 30 years. Among other things this is due to the working of the Concession Act, the Allodial Act and the Land Act.

4.4.1. Changes between public and private ownership

No changes worth mentioning.

4.4.2. Changes within public ownership categories

No changes worth mentioning.

4.4.3. Changes within private forest ownership

No changes worth mentioning.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

What is going on in Norway is scarcely "trends" for new forest ownership. In the Norwegian context we see some small changes, and in table 5 we have given them significance relatively to each other. Privatization of forest land is manifested in Statskog SF's selling of scattered forest estates to the degree that the buyers are private forest owners. We assume that the buyers mostly are personal forest owners, but we do not know for sure because informationon the buyers is not public. The significance given to privatization of public forest management is due to Statskog SF's outsourcing of practical forestry work to private firms after a competitive tender. However, the practical forest management is strongly regulated through the tender documents. The significance 2 for new forest ownership through afforestation is related to the afforestation process mentioned earlier in this report (see 1.1. on forestry). The forest in this afforested areas are now in their early economic mature period, and harvesting for sale has now started some places. The owners of these forests have owned a growing forest, and have not taken much part in for instance harvesting. The areas with afforested forests are low on infrastructure, culture for forestry, etc. We have given significance 3 to "Changing life style". There is a rather huge decline in forest estates that also have active agricultural production (food, etc.) While 62% of the forest owners (all categories) cultivated land in 1979, only 30% did so in 2010 (Rognstad and Steinset, 2012). Further, the relative importance of income for personal forest owners from forestry has decreased a lot. For personal forest owners with positive business income from forestry in 2010, that income was in average 7% of their total gross earnings that year, 1% if also the husband's/wife's/cohabitant's income was included (Rognstad and Steinset, 2012).

Table 5: Trends in forest ownership in Norway

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	1
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	2
• New private forest owners who have bought forests	0
• New forest ownership through afforestation of formerly agricultural or waste lands	2
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3
• Other trend, namely: Nature based tourism related to forest land	1

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

4.5. Gender issues in relation to forest ownership

As table 1 shows, in 2011 there were 86 845 forest estates with a male reference owner, and 29 157 forest estates with a female reference owner. This implies that 25% of the 116 002 personal owned forest estates has a female reference owner.

For the year 2012 Statistics Norway (2013c) published figures for owners (and not estates) and also for joint ownership and the personal owners' gender. That year there were 157 837 personal forest owners (including persons owning alone, owning with their husband/wife in formal joint ownership, or together with others in formal joint ownership). 30% of these personal forest owners were female.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organizations such as conservation and heritage NGOs, self-organized community-based institutions and other philanthropic ("characterized or motivated by philanthropy; benevolent; humane" OED) organizations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives		X	
• Self-organized local community groups		X	
• Co-operatives/forest owner associations		X	
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

As reflected above to our knowledge there is not this kind of ownership in Norway, and we know the Norwegian forestry sector rather well. We assume that issues regarding charity etc. has limited relevance in social welfare regimes (at least in Norway).

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-

management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organization and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

In Norway there are four types of commons: State commons, Parish commons (or "Bygd commons", Norwegian: "Bygdeallmenning"), Private commons and what may be termed Farm commons. Berge et al. (2011) describe them such:

> The Norwegian term (word) for commons is 'allmenning' […] There are three types of 'allmenning'. They are classified according to the ownership of the ground (the abstract land surface) into State Commons, Bygd Commons, and Private Commons. The ground of the State Commons is owned by the state company Statskog. The ground of the Bygd Commons is owned by a majority (usually 100%) of the commoners themselves. The ground of the Private Commons is owned by private citizens or companies. But only two such commons are known for a fact that they exist today. […]
>
> There is, however, a fourth type that in Norwegian terms is called 'realsameige'. It will here be called Farm Commons. While the rights of common (not the ground) of the three commons named above are held jointly, the rights of the stakeholders of the Farm Commons are held in common (both the ground and the specific rights of exploitation). The stakeholders are in this case farm units, not any kind of person. The term 'realsameige' may literally be translated as 'co-ownership among real properties'. Farm Commons is in fact the most frequently encountered type of commons in the Norwegian out-fields. (Berge et al., 2011: iii-iv)

Let us in the forthcoming spend time only at State commons, Parish commons (Bygd commons) and Farm commons.

According to Sevatdal and Grimstad (2003: 96) the Norwegian "commons have no history of their own; the history of the commons is part of the general rural history". And, they continue, to understand the origin, development and the present status of them it is necessary to understand the geographic and climatic context of the country, the settlement patterns, farming systems and livelihood strategies farmers developed during different historical periods. It is also important "to understand the basic trends in economic and political history, of which the development of the commons is deeply embedded" (Sevatdal and Grimstad, 2003: 96). Their presentation shows that commons in Norway have a several hundred years' history.

"To compare commons it is necessary to be able to consult the legal rules that define their governance", Berge et al. (2011: iii) claims. For State commons the Mountain Act and the Act on Forestry etc. in the State Commons define the rights and duties of stake holders, including commoners. For Parish commons (Bygd commons) the Act on Bygd Commons does. The situation for the Farm commons are, however, different:

> [The Farm commons] are not regulated by particular legislation like State commons and Bygd commons. They are, of course, subject to all relevant acts. There is one default act that comes into force in case of disagreements among co-owners. This is the act on co-ownership and applies to everything that has more than one owner. But by the nature of their resources and their long time existence one may also say that Farm commons, more than most things owned in common, are governed by customs and contracts among the co-owners. (Berge et al., 2011: v)

Even if there are national juridical regulations in Norway there may be necessary to study each individual common "separately to get a true and precise understanding of its legal situation" (Sevatdal and Grimstad, 2003: 103). Sevatdal and Grimstad substantiate this by focusing on one legal aspect:

> First of all, one basic principle in the legislation concerning the *relationship between various stakeholders* in the area of property right, tenure and the parties in the commons can be summarised as follows: *The legal relationships between the parties in the property rights regime have 'always' been, and still is, based on the principle of freedom of contract.*
>
> This means that many aspects of the laws apply only *if the parties involved do not decide otherwise* by agreement and contract, orally or written, explicit or implicit. So even if the law says that the relationship should be so and so, this does not necessarily mean that the parties cannot enter into a binding contract deviating from the law. It might simply mean that if they do not decide otherwise, *then* the statutes in the law should be applied, if necessary by court rulings and subsequently enforced by the proper authorities on behalf of the 'winning' party. It also means that if they do not all agree, then the law will have to be applied, in many cases even if only one out of many disagree.
>
> It is easy to see that this principle is paving the way for a wide variety of local solutions, and also to realise what an important role customs and traditions play in this field. One might say that the institutional framework is partly created locally. It is largely this principle, and the interplay it creates between local and central 'legislation' that gives the regime of common property such viability in Norway – the parties themselves are free – and responsible – to find a proper solution, but the central legislation guarantee that some sort of solution will eventually be found. (Sevatdal and Grimstad 2003: 99, italics in original)

The commons is no big issue in the Norwegian society today, neither in the public debate nor in political processes. This is reflected for instance in the fact that the State commons' area in public figures is included in the state owned area, as is the case in table 2. Further, this lack of focus is manifested in the two latest White Papers on forest and forestry. In the White Paper no. 17 (1998-99) commons are mentioned when the White Paper discusses the rules for the Parish commons and the State commons and women's chance to be elected to the common's board (page 105). Except for that commons are more or less left out. This is the situation in the White Paper no. 9 (2011-2012) also, but this time it is only the State commons that is referred to – and only in a presentation of the management of the State commons (page 293).

There is not much figures for the commons in Norway, but at least some for the State commons and the Parish commons (Bygd commons). According to Sevatdal and Grimstad (2003: 132) there was at that time 195 State commons with approximately 20000 shareholding farms and 51 Parish commons with approximately 17000 shareholding farms. Out of the State common's land (26622 km^2) 7% was productive forest, while 31% of the Parish commons' land (5500 km^2) was productive forest.

For Farm commons no such figures are available, but to Sevatdal and Grimstad's (2003: 112) understanding "both area and number of shareholders would certainly be larger then the other types combined". The lack of figures for the Farm commons is due to, among several reasons, that:

> Farm commons do not constitute cadastral entities as State and Parish commons do. The cadastral unit is a *property* unit,*including* the share in a farm commons, and our statistics are based on this 'combined' unit, not the different elements that make up such a unit. Hence the farm commons are not registered as such, they are not (at present) visible in the land records, and their number and area are not captured in the land records and statistics. (Sevatdal and Grimstad, 2003: 110, italics in original)

To our knowledge there is no new commons in the making.

5. Forest management approaches for new forest owner types

Authors of chapter 5: Erlend Nybakk and Bruce Talbot

The Action is interested in whether there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. While we are aware that not much attention has been given to this, and that there is therefore not much literature available, we are convinced that this is an issue: if owners have different goals for their forests, then this must require new forms of management, if they no longer have the necessary skills to carry out the work, then new types of services need to be offered, etc. There are assumingly implications for silviculture, technology, work organization and business models. Such new approaches may be discussed under the keyword of new ownership types but are commonly not addressed.

5.1. Forest management in Norway

The forest is generally managed by the forest owners themselves. Active private forest owners are often members of one of the two forest owner's organisations mentioned earlier in the report, Norskog or The Norwegian Forest Owners' Federation. While Norskog is countrywide, the Forest Owners' Federation is organized into eight regional co-operatives. And while Norskog and Nortømmer, the timber purchasing firm owned by Norskog, are two separate businesses, the individual regional co-operative and its timber brokering department is one firm. Both Norskog and The Norwegian Forest Owners' Federation and its regional co-operatives, have a high degree of influence on the Norwegian forest policy, but no research has been done on this in recent years. According to the Forest Owners' Federation themselves, 68% of the country's total harvesting for sale in 2013 was traded through their regional associations (Norwegian Forest Owners' Federation, 2014a). The regional associations trade timber both for members and non-members and for all types of forest owners. Harvesting and in some cases thinning and other forest management, is also organized via the associations. So in summary, the forest is managed by the owner by law, however in practice, a large part of the work in personal owned forests is done by forest contractor companies, often organised via forest owner associations. Short term contracts are normally used. Before 1997 the articles of association for the Forest Owners' Federation said that the members had to deliver their timber for sale through the Federation. In that year the EFTA Surveillance Authority forbade this delivery duty rule (Johnstad, 1998). The disappearance of the rule had a significant impact on the Norwegian forest management and the forest owners' timber market activities because the owners organized in the Federation after that could turn to whichever timber broker they preferred. The last three decades have shown that forest owners are less dependent of the income from the forest land and that they are doing less forest management work themselves.

5.2. New or innovative forest management approaches relevant for new forest owner types

Some of the timber brokers (first-hand buyers) have started buying standing trees, i.e. at stump. This is normally done with a time-limited contract. The forest owner will then know the price before harvesting, and does not need to be involved in the harvesting process. The opportunity to harvest the timber according to market demand and with a more effective logistics is seen as an advantage for the timber brokers. With new forest owners this can be additionally advantageous, as they will often have less knowledge related to general forestry, market conditions, and the benefits of economies of scale.

In Norway we have seen a high economic growth and increased labour costs over recent decades. Timber prices have dropped relative to other goods, and income from the forest land is therefore of less importance today than it has been. At the same time we have seen a significant technical development in the forest sector. Most of the harvesting today(>95%) is harvested with advanced forest machines partly operated with digital bucking to length systems. Another example is remote sensing using light detection and ranging technology (LiDAR) in airborne laser scanning, which has become an effective and frequently used tool

in forest enumeration. These new technologies, combined with a less profitable forest sector, have reduced the need and interest for involvement of forest owners. From a forest owner perspective, most of the work and administration can be done digitally and the physical harvesting and logistics will be managed externally by associations and entrepreneurs. The challenges we see today, with forest owners living far from their forest land ("urban forest owners"), are of lower concern due to possibilities of 'remote management' that technical developments are offering. New forest owner (typically forest owners that have inherited properties) can therefore easier outsource the forest management and get income from their forest land without investing time and are therefore less dependent on knowledge about forest management. Yet, changes in social aspect with norms and attitudes towards the forest land still have an effect on forest management.

5.3. Main opportunities for innovative forest management

The main opportunities are web-based solutions for procuring services, marketing online (e.g. www.norexeco.com) and sales, as well as settling contracts, and further, remote viewing of operations.

5.4. Obstacles for innovative forest management approaches

Obstacles for innovative forest management approaches are:

- Lack of cooperation within the forest value chain. It leads to efficiency loss, reduced profitability and makes it hard for forest owners to benefit from new and improved forest management.
- Lack of incentive to improve forest management. For example, investment in forest roads makes it possible to harvest in the wet season, when it is hard to keep up the harvesting. However, the forest owner is not paid enough to compensate for the investment.
- Improved forest management to improve timber quality according to the market needs is not compensated in increased timber prices, therefore undervaluing the investment.
- The property market for forest land is heavily regulated and very few properties are sold out of the family. This makes it hard for forest owners to grow and to gain economies of scale related to new forest management. This makes it also hard for new and more active forest owners to get access to more forest land.
- High labour cost makes single tree harvesting unprofitable. The forest is relatively homogeneous, and the value of one single tree is low.
- Everyman's right to enter forest land makes it hard to get profitable investments in forest management with the aim of developing tourism activities (except for hunting).

CASE STUDY 1: EXCAVATOR-ASSISTED GROUND BASED CTL SYSTEMS

As earlier described, the large scale afforestation programme in the coastal areas after WWII has resulted in many new forest owners with considerable resources becoming mature for harvesting – potentially contributing to local wood industries. The regions are characterized by very steep terrain in the fjords, and this gives rise to special challenges needing specific harvesting systems – and investments in infrastructure where there previously has been no history of forestry or forest management and cooperation. This case reports on the use of excavator-assisted ground based CTL systems, as against tower yarders, in steep terrain. The practice of using an excavator to assist a conventional harvester in gaining access to steep terrain – by excavating a series of temporary strip roads – is expanding rapidly and is now commonly found along the entire coastal region of Norway.

Applying this method, the excavator alternates with the harvester after all trees within crane reach have been harvested, and opens up another 6-8 metres of road at an acceptable slope, then once again yields to the harvester. Studies of the technical and economic performance of this system showed the harvesting cost to be roughly 50% of the cost of using cable-based systems in similar terrain (Lileng, 2007). The method negates the need to construct forest roads which transect the properties of many forest owners, and therefore simplifies management considerably. However, concern has been expressed as to the sustainability of this practice, as it is commonly performed on steep slopes in high rainfall areas and it includes little or no planning, no drainage, and no stabilization. The method is economically attractive and therefore difficult to substitute – the socio-economic importance of activating a local wood based industry has to be weighed up against potential negative environmental issues.

6. Policies influencing ownership development / Policy instruments for new forest owners

Author of chapter 6: Johan Barstad

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

94% of Norwegian forest owners are private persons or families. In general the forest property is part of some type of agricultural unit. Thus the term farm-forestry might be used as a synonym for Norwegian forestry. From the forest statistics we find there are relatively fewer large properties in 2013 than in 2005 (9.9 % versus 10.4 % of the properties have more than 200 ha of productive forest). On a yearly basis, some 8-9 000 agricultural properties change owner, out of which almost 2/3 handovers intend to continue the agricultural activities. About the same percentage include forest area of 2.5 hectares or more. In 2013, 61% of the handovers were done within the family (e.g. from one generation to the next). All data cited in this paragraph are extracted from www.ssb/statistikkbanken.no. The viewpoints presented are based in the author's personal competence in Norwegian rural policies and rural development.

6.1. Influences of policies on the development of forest ownership

For all general purposes, there are no new, specific instruments, apart from the already existing Allodial Act, with the intention to regulate inheritance and hand-over of farm- and forestland. The lasting effect of the Allodial Act has been to conserve the existing ownership and property structure. The Allodial Act regulates change of ownership with regards to agricultural properties (inheritance rules), and it has had a significant effect towards the hindrance of dividing existing properties into smaller parcels. There is no minimum-size limit for parcels, but the Act serves to contain the parcel undivided. Thus, even if the majority of parcels are small, they do not get any smaller.

In 2004, the direct state support to reforestation was discontinued. The result was a sharp decline in afforestation / reforestation. Local and regional based support have since been introduced, but the general levels of both the support and planted hectares per years still are significantly lower. The form of support may vary from region to region and over time, as this is dependent on the means available at local level.

As we have seen, the traditional forms (privately owned farm-forests and forest estates) are still absolutely dominant. From the societal and demographic changes in the population may arise new, collaborative operations, as we can observe embryonic in parts of western Norway already, where small-scale, absentee and non-competent owners will try to establish various types of cooperative solutions. This is mostly a result from pressure from below – or from the sector itself. At national level, regional attempts to new policies, like Coastal Forestry, to promote activity in the maturing coastal forests of western and northern Norway (www.kystskogbruket.no) are supported.

As said, ownership is largely an element that serves to keep the small-scale, fragmented forest property structure. On a national basis, sale or hand-over from within the larger family to outside is still at a relatively insignificant level. Whether this situation will last, is more up for discussion, as societal and demographic changes has an increasing amount of owners being also physically disentangled from their forest through population centralization tendencies.

6.2. Influences of policies in forest management

Forest management planning (FMP) at property level is voluntary – but is connected to the supportive structures (access to what exist of direct subsidies to carry out FMP), resulting in a de-facto need for FMP if owner aims to engage in active, commercial forestry.

FMP at property level is not carried out or directly helped by the state. This is the domain of private companies (still they may cooperate closely with public sector personnel, so it is an example of the collaborative state). The public still supports strongly through more general/area-based planning that is a basis for planning on estate/property level to build upon. Important: the forest owner is not obliged to follow recommendations from the public system.

In general, the policy instruments are rooted in our general rural development policies (creating possibilities for viable and sustainable economic activities across the whole country of Norway). Since forests normally are an element of farm-units, and for active farm-units most often is the least significant element, both agricultural and rural development policies have generally been focussing on farming.

In the later decades, sustainability and environmental based policies have come to terms, e.g. regarding certification processes, size of clear-cuts, species management etc. Direct policies aimed for increased (or decreased for that part) logging largely have not been in effect. The Forest Fund though is an example of such a policy instrument, as this to a degree opens up for future tax reduction as a result of engaging in commercial logging: A percentage of the sales value is placed in the fund – if that money later is spent on certain specified activities, the owner will not need to pay due tax on that sum of money.

Further, a mixed system including both public and the sectors own support systems are available for owners as consultants at all stages through forest management and commercial activities regarding forestry. Private-public collaboration has been a trademark of Norwegian society for a long period (especially since World War II). It may be hard to distinguish and to categorise what is what and who is who, as this often is more in the form of practical and adaptable partnerships.

If forest-owners are affected by regulating policies, aimed at restricting harvesting, the question of compensation for their (potential) loss can be answered with a clear 'Yes and no!'. Compensation is linked to the degree of negative effect the restriction imposes. On a general scale, compensation is 'felt to be' low, still if compared to actual loss of income, it might not be too bad, given the fact that forestry often is of little importance to the farmers/owners total income. Perhaps more important is the feeling of being restricted in doing what one might want to do.

In several counties there has been positive experience from engaging with forest owners to establish voluntary based protection areas, based upon a method of 'dialogue based management'. Previously, restrictions generally were imposed (from the outside, from the government, from the environmental focus) while the dialogue-based aims, through discursive methods, to establish broad agreement between the stakeholders as to what, where and how. There still are practical and formal obstacles connected to such voluntary processes.

6.3. Policy instruments specifically addressing different ownership categories

It is not easy to find policy instruments addressing the different ownership categories. Perhaps due to the fact that ownership categories seldom have been problematized? In the 1990's there was a special policy aiming towards female forest owners. This instrument is no longer explicitly active. Further, the forest management support system aims to help small-scale owners, but not to a degree where larger owners are excluded. The same rules are in effect, but often the large-scale owners already have the knowledge, the skills and the means to perform as a result of their already existing operations. As to scale, there are no fixed rules for what is large and what is small in this respect. This is partly due to highly diverse natural conditions, where a smaller parcel in the southeast might be more economic viable than a large parcel in the north. From the economic viability side, 'small' and 'large' are more connected to the properties abilities to generate yearly or semi-yearly employment/logging. Again, it may be fruitful to bring to mind that policies towards forestry largely were rooted in/from rural policy in general and farm policy in particular.

In the coastal areas (see reports from Follo and Vennesland, these are areas entering into the harvesting and final stages resulting from a national afforestation effort), a special focus has been in place to alleviate the inherent difficulties in relation to establishing commercial forest activity in areas with no or low forestry tradition. One result is the need to establish collaborative or cooperative solutions where small-scale owners, often with somewhat fragmented properties, cooperate to establish effective logging solutions.

6.4. Factors affecting innovation in policies

As stated above, policies are generally, at best, aimed at forestry sector, more often towards farming or rural development in general. If this view is left out, it may be difficult to give a correct account of past, present and future forest policy.

This being said, there is a broad understanding and high acceptance for the need to have more specific policies in order to reach results. Only, one might ask if there is general agreement to what are the forest challenges and what might be the desired results. Looking at Norwegian politics and policy-formulation, forestry is low on the agenda. Looking at economic, demographic or occupational aspects, this still holds – except from a special few locations. Thus, forestry can be said to 'have been left to itself', developing policy needs and generating examples and scientific evidence – without getting focus on the main scene.

This being said, the fact remains that Norway has a multitude of forest owners, generally small to very small scale and generally with low or no active forest competence. When the owners also, increasingly, become absentee owners and work in other industries and services, while retaining decisive power to any management or logging activities, this is easily – and correctively – described as a non-desirable situation.

So, yes, there are several barriers. What is more uncertain (or perhaps improbable) is to what degree solutions will come from forest policies alone, and if so if forestry aspects are strong enough to penetrate into activation in more general policies.

7. References

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POLAND

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1. Introduction

1.1. Forests, forest ownership and forest management in Poland

The total area of forests in Poland is 9.16 million hectares (Central Statistical Office, figure as of 31 December 2012), placing forest cover at 29.3%. But according to the international assessment standard, which takes into account land related to forest management, the forest area in Poland as of 31 December 2012 was 9.37 million hectares.

Forests in Poland are mainly publicly owned, accounting for 81.2% of the total. The National Forest Holding manages 77.3% of the total forest area. The remaining area is administered by National Parks - 2.0%, the state Agricultural Real Estate Agency - 0.4%, and municipal and urban authorities - 0.7%.

The ownership structure of forests in the post-war period has not changed very much. Small changes in forest ownership during that time were due to afforestation.

The Forest Act of 1991 governs all forms of forest ownership. In accordance with this Act, the minister of the environment supervises the management of State Treasury owned forests and the district governor supervises forests not owned by the State Treasury.

The National Forest Policy was adopted in 1997, specifying the tasks of multifunctional forest management, as well as the organizational, economic and legal conditions for carrying out sustainable forest management.

1.2. Overview of the country report

Public forests, comprising over 80% of the total, dominate the Polish landscape, which is relatively unusual in this part of Europe. With the change of the political system in 1989 came attempts to privatize public forests, but such initiatives were not accepted by society.

Private forests, at slightly above 18% of the total, are highly fragmented – the average private forest area is just over one hectare – and not a significant factor in the Polish forest sector. Hence, not much research is available on private forests. The studies conducted focused on agricultural farms that had forests and used data from the National Agricultural Census. There is a lack of knowledge about private forest owners, of whom approx. 30% live in cities. Preparation of the present report was based on a few available scientific papers and largely on available statistical data and expert opinions.

Changes in forest ownership in Poland were mainly due to afforestation, which increased the area of private forests. But no studies have been conducted on new or non-traditional forest owners. Some forest owners have an unconventional approach to their property, but there is no research in this area – for example, forest commons are open to tourism, but data on this, with some exceptions, are not available.

The existing legal system in Poland does not have built-in solutions to support the management of private forests. Existing regulations, such as the Act on the Management of Land Commons of 1963, require substantial amendment.

Regulations on inheritance or marriage in Poland are generally applied to land, but there are no specific rules concerning forests. The lack of regulations in the law on inheritance was the cause of forest fragmentation in the past, mainly due to the partition of a farm between the owner's children. Today, due to the migration of people from rural to urban areas, the risk of forest fragmentation seems to have decreased.

There are no available data to analyse changes in the structure of private forest ownership. However, on the basis of our knowledge, such changes are rather insignificant.

Commons in Poland are a traditional and archaic form of collective land ownership and management, a relic of feudal relationships. There are over 5,000 commons in the country, which include agricultural land (mainly pastures), forests and water bodies. Over 700 are forest commons, with an area of 67,000 ha.

Until now, only 14 associations of private forest owners, local or regional, have been established. This number is still small because of some existing barriers: there is a historically conditioned reluctance (the negative experiences of collective agricultural farms) and attitudinal aspects (strong individualism), as well as the extreme fragmentation of forest ownership and the ageing of the rural population. Some hopes for improvement of the current situation may be found in the recently established (2011) Polish Union of Forest Associations.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

Data were collected using the following methods:

1) Literature reviews (focused on scientific papers about private forests in Poland);
2) Analysis of statistical data from national forest inventories and those available from the Central Statistical Office;
3) Analysis of data from previous national or regional studies on forest ownership, to the extent that they exist, to answer quantitative questions on new forest ownership;
4) Interviews/consultation with experts to provide qualitative data, overview assessments, and case examples;
5) Own expert knowledge.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management

approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

There are few studies on private forests in Poland. During the last 30 years, only two such studies were conducted, both by the Forest Research Institute (IBL): Gołos P. (2008) and Gołos P. (2011).

Research conducted by IBL allowed us, for the first time, to determine a number of issues: the ways timber harvesting is managed, the expenditure and income related to forest management of the farms surveyed, the area of land registered in the geodetic register as agricultural farms (abandoned and waste land) overgrown with forests originating from natural regeneration.

In both studies, the questionnaire method was applied. In the first stage, the questionnaire was tested in one province and later at the national level. This was an interviewer supported questionnaire survey of randomly selected forest owners.

The collected data show that, due to their small area, forests in agricultural holdings are basically used by farmers as a timber warehouse for household needs. In the case of larger holdings, private forests are a source of a small amount of income, due to their high fragmentation. Farmers generate very low income from forests, do not invest in machines and equipment for timber production, and they usually perform forest operations by themselves.

The studies were focused on agricultural farms with forests and used data from the National Agricultural Census. There is lack of knowledge about the forest owners who live in cities – approx. 30 % of all private owners.

The research projects were financed by the Polish Ministry of Science and Higher Education.

3.2. New forest ownership types

The main changes in forest ownership in Poland occurred because of afforestation (increasing the area of private forests). No studies were conducted on new or non-traditional forest owners. There is information that some forest owners have an unconventional approach to their property, but there is no research in this area. For example, forest commons are open for tourism, but data on this, with some exceptions, are not available.

3.3. Forest management approaches

No studies have been conducted in this area.

3.4. Policy change / policy instruments

No studies have been conducted in this area.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. Definitions

According to the Forest Act, a forest owner is defined as any natural person or legal entity who is the owner or perpetual user of a forest and an autonomous holder, user or tenant of the forest.

Public forests

Public forests include: forests owned by the

State Treasury (State Forests, national parks, stock of Treasury Agriculture Property and others) and municipal forests.

State Treasury forests:

- *State Forests* – forests that are managed by State Forests National Holding, controlled by the Ministry of the Environment.
- *National park forests* – as part of national parks, controlled by the Ministry of the Environment.
- *Stock of Treasury Agriculture Property forests* – controlled by the Ministry of Agriculture and Rural Development; relic of state agricultural farms.
- *Other forests* – controlled by other ministries (e.g. Ministry of Defence).

Municipal forests – owned by municipalities (gminas) with various forms of management.

Private forests

Private forests are those owned by individuals, communities, cooperatives and others.

- *Individual forests* – owned by natural persons or families.
- *Community forests* – belonging to property owned by many co-owners that cannot be divided, because forests are supposed to be managed as a whole.
- *Cooperative forests* – owned by cooperatives, companies, etc.
- *Other forests* – owned by churches, religious associations and unions, social organisation, private companies, etc.

4.1.2. National data set

The total area of forests in Poland is 9.16 million hectares (Central Statistical Office, figure as of 31 December 2012), placing forest cover at 29.3% (Fig. 1), but according to the international assessment standard, which takes into account the land associated with forest management, the forest area in Poland as of 31 December 2012 was 9.37 million hectares (Table 1 in Annex).

According to national statistical data, forest cover is 29.3%, but as measured by the international assessment standard (no inland waters), it amounts to 30.6%. The amount of forest *per capita* is 0.24 ha. A National Programme for the Augmentation of Forest Cover was adopted in 1995. The main aim of the Programme is to increase forest cover to 30% by 2020 and to 33% by 2050.

Figure 1: Forest cover [%] in Poland by province(source: *Forests in Poland 2013*)

Forests in Poland are mainly publicly owned, accounting for 81.2% of the total, of which 77.3% is administered by State Forests, 2.0% is in national parks, 1.0% is in other state-owned forests, and 0.9 is owned by municipalities (Fig 2).

The remaining forest area of 18.8% is privately-owned, of which 17.7% is individually owned and 1.1% is found in other private ownership arrangements.

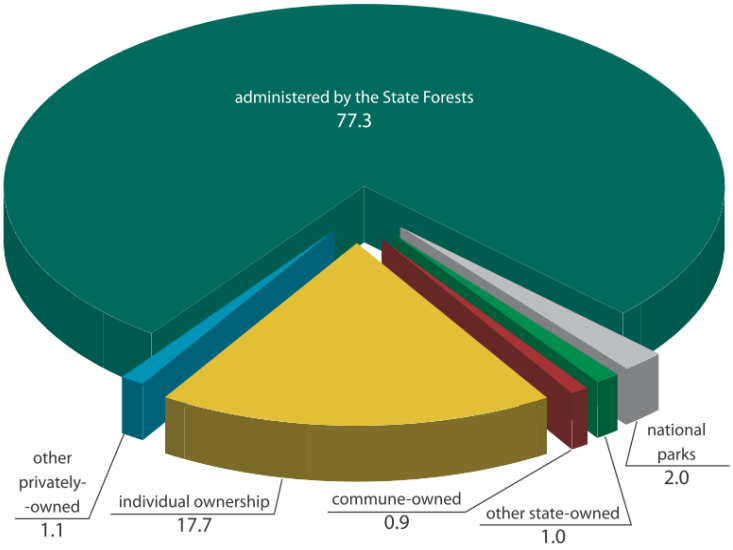

Figure 2: Ownership structure of forests in Poland(source: *Forests in Poland 2013*)

The ownership structure has not changed significantly since the end of the last war. After the war, 15% of forests were left in private hands, in contrast to other countries of the region. In the period of 1995-2012, the share of privately-owned forests has increased from 17.1% to 18.8%, mainly as the result of the afforestation of agricultural land (Table 2 in Annex). In the same period, the share of publicly-owned forests decreased from 82.9% to 81.2%.

The share of privately-owned forests in Poland varies among the provinces – the highest is in the central, eastern and south-eastern parts of the country and the lowest, in the west – Fig. 3, Table 3 in Annex. This reflects the change of Poland's borders that occurred after World War II.

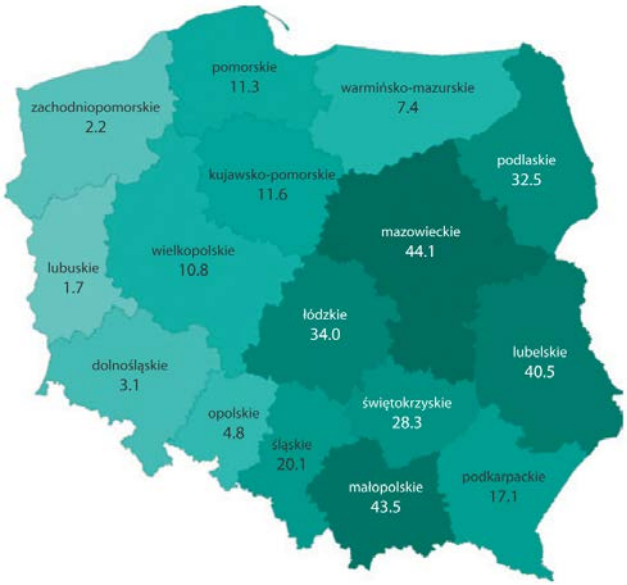

Figure 3: Share of private forests in the total forest area by province (Source: *Forests in Poland 2013*)

4.1.3. Critical comparison with national data in FRA reporting

FRA 2010 Categories	Forest area (1000 hectares)	Forest area according to Central Statistical Office (1000 hectares)
	2005	2005
Public ownership	7610	7410
Private ownership	1590	1590
...of which owned by individuals	1492	1492
...of which owned by private business entities and institutions	30	7
...of which owned by local communities	68	68
...of which owned by indigenous/ tribal communities	0	0
Other types of ownership	0	0
TOTAL	**9200**	**9000**

The country report within this COST Action was based on the data available from the Central Statistical Office. Data from the Central Statistical Office were also the primary source of information for FRA. Thus, there are practically only small discrepancies between the two columns.

The main difference is in the case of public forests. Data from FRA is higher by 200,000 hectares. This is due to the addition of land reacted to forest management.

4.2. Unclear or disputed forest ownership

The problem of unclear or disputed ownership is irrelevant in Poland. But for small areas, the joint ownership of natural persons with the State Treasury is a specific and problematic form as a remnant of the former state policy.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

Restrictions on buying and selling forests in Poland relate to state forests (Forest Act), with the exception of the need to change the form of land use, arising, for example, from the necessity to build a road. There is an intention to prohibit the privatization of state forests by adding an appropriate clause in the country's Constitution.

There are no restrictions on buying and selling private forest land on the open market. A second possibility is the ability to purchase forest land from the state Agricultural Real Estate Agency. However, due to the low profitability of small forest ownership there is no demand for forest land.

According to the Forest Act, it is possible to sell a private forest to the State Forests or, in special cases, to exchange forest areas with this institution.

4.3.2. Specific inheritance (or marriage) rules applied to forests

Regulations on inheritance or marriage in Poland generally apply to farm and/or agricultural land, but there are no specific rules concerning forests.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

The share of private ownership has slightly increased during the last three decades, due to the afforestation of privately owned lands. In 1981, the share of private forests was 16.9%, whereas in 2012, this share increased to 18.8%.

Over the past few years, the afforestation program was based mainly on private land. However, annual afforestation has decreased in the last few years as the result of lower land supply in both private and state areas.

Moreover, in recent years there was a decrease of afforestation performed by State

forests. It was due to a significant reduction of land provided for afforestation by the state Agricultural Real Estate Agency.

4.4.2. Changes within public ownership categories

There have been no significant changes during last three decades in public ownership. But there was a slight decrease in the share of public ownership.

Trade of forest land is not a significant reason for this decrease. The most important change factor is the afforestation of private agricultural land in the last decade, thanks to EU support for rural development programs.

4.4.3. Changes within private forest ownership

There is no available data for an analysis of changes in the structure of private forest ownership. However, on the basis of our knowledge, such changes are rather insignificant.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	3
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	1
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

In the last several years, afforestation was motivated mainly by economic factors, such as subsidies from the state budget and the European Union. For this reason, owners of farms and urban dwellers decided to buy agricultural land.

Agricultural land can be bought from the state Agricultural Real Estate Agency by tender, where the price is specified by an appraiser and farmers are favored in the right to purchase. It is estimated that 70% of the total afforestation and 100% of the afforested areas of more than 20 hectares was established on agricultural land purchased in recent years from the state Agricultural Real Estate Agency. Land can also be bought from the open market, where prices are regulated by market mechanisms.

This applies to a large supply of agricultural land of small area. However, the current average price of agricultural land in Poland is about 7 times higher than in 2004 (UE accession) and amounts on average 6700 euro for 1 hectar. It caused that afforestation based on existing financial rules became unprofitable. As a result the interest of landowners in afforestation has dropped considerably, regardless of the source of financing.

This is strictly connected with carrying out the National Programme for the Augmentation of Forest Cover. In recent years, interest in afforestation has decreased because the amount of subsidies is lower and there is a significantly lower supply of agricultural land available for afforestation.

4.5. Gender issues in relation to forest ownership

There are no statistics available in Poland enabling an analysis to be made of the gender structure in forest ownership.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts			X
• NGO with environmental or social objectives			X
• Self-organised local community groups	X		
• Co-operatives/forest owner associations	X		
• Social enterprises			X
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

Local community groups owning forests in the archaic form of commons is specific to CEE countries. In Poland, the total number of land communities (commons), mainly forests, pastures and ponds, is over 5000. There are over 700 forest commons with an area of 67,000 ha. The forests of some commons are not in good condition, but many of them are quite well managed.

Since 2002 fourteen forest associations of private forest owners, local or regional, have been established. This number is still small because of some existing barriers: there is a historically conditioned reluctance (the negative experiences of collective agricultural farms) and attitudinal issues (strong individualism), as well as the extreme fragmentation of forest ownership and the ageing of the rural population. Nevertheless, with a help of the Ministry of the Environment, the State Forests and the Department of Forestry at the Warsaw University of Life Sciences, the Polish Union of Forest Associations was established in 2011. The main problem of the Union is lack of funds for current activities (administration), as well as for joining CEPF (fee payments, travel costs). This situation is not comparable to other CEE states, where is a political will to support private owners and their associations as the result of the re-privatization and restitution of forests.

Most Polish politicians and society do not support the re-privatization of any state forests and so far this has not been carried out in Poland. The reason is the good condition of state forest management, the treatment of publicly owned forests as a national treasure, and concerns about the potential negative effects of privatization. A side effect of this situation is low interest in a change to private forestry.

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-

organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

Commons in Poland are a **traditional and archaic form of collective landownership** and management, a relic of feudal relationships. There are **over 5000 commons**, which include agricultural land (mainly pastures), forests and water bodies. Over 700 are forest commons, with an area of 67,000 ha.

The term "common" does not mean an association of people; **Polish law defines it as a joint land property with specific characteristics**. In simple terms, it is a type of use allowing farmers to reap benefits from common land, also forests, because they have a share in it by living in certain villages or towns.

There are several types of commons, depending on their genesis. The first resulted from donations by royalty and bishoprics. The oldest commons date back to the 14th century. However, the vast majority of commons were established in the 19th century, during the partition of Poland, when feudal property was being liquidated.

The current regulations on commons were established by the Act on the Management of Land Commons of 1963 and since then, they have not been changed. This act is not coherent with the political system as changed after 1989, nor with current economic and social realities. This is problematic for owners and local authorities. An amendment to this act is being prepared. Its main purpose is to regulate the legal status of the property, which originates from prevailing property relations of past centuries, as well as the unfavorable political climate for owners after the war.

The Forest Act of 1991 changed regulations on the supervision of private forest management. As part of the decentralization of public administration after 1989, some responsibilities were transferred to local authorities, which include transferring supervision of private forest management to district governors. They have the authority to delegate these tasks to local head foresters of the State Forests.

CASE STUDY 1: THE COMMUNITY OF 8 ENTITLED VILLAGES IN WITÓW

The largest commons in Poland is the Community of 8 Entitled Villages in the Witów district of the Tatra Mountains (Carpathians). The total area of the commons is 3080 ha, but the exceptional feature is that 2230 ha of these forests are situated within the borders of the Tatra National Park.
The Community includes 2900 owners, who are farmers from 8 villages located at the foot of the mountains. The Community was established in 1819, when the Austrian Monarchy sold the forests to Count Jan Pajączkowski, who then decided to sell the land to the highlanders. In this way, they became free men as owners of the forest.

After World War II, the Community prepared its first statute, which included a list of persons entitled to use the property. All shares in the Community used to be equal and each entitled person was allowed to have only one share. This situation was considered unfair because of issues related to inheritance and the family situations of particular heirs. Presently, whole shares have been divided by owners from three villages, while they are still whole in the other five due to difficulties in dividing them.

The Witów Community is an example of good forest management. From the beginning, it was a self-financing entity, independent of state subsidies. And this is in spite of the limitations they must comply with due to environmental protection regulations governing national parks. However, as a result of an agreement with the park, their income from tourism has surpassed that from selling wood.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Poland

State Forests in Poland are managed either by The State Forests National Holding or National Parks authorities. The Forest Act, passed by the Polish Parliament already in 1991, is the legal basis for the management of both publicly and privately owned forests. According to this Act, a district governor (a district is the second level of local government administration in Poland) is responsible for supervising forest management in privately owned forests.

According to Polish legislation, a private owner has the right to forbid access to a private forest; however, this is seldom done because of the common tradition of free access to forests.

Over 70% of district governors signed a contract with the State Forests and accordingly, local head foresters were appointed to supervise the management of private forests in their administration areas. Details concerning this supervision are described in the agreement between district governor and local head forester, published in the journal of laws of the provincial governor. According to the Act on Forests, State Forests are obliged to provide advice and assistance to private forest owners on forest management.

This advice and assistance is provided through:

- advising on forest management,
- offering forest tree seedlings,
- preparing, carrying out and incurring the costs of large scale treatments to protect the forest in case of outbreaks of pest infestations,
- organizing certain business activities (including timber sales) based on an agreement with the private forest owner,
- performing large scale forest inventories (in the case of Poland's NFI, a large proportion of the 28,000 plots is located in privately owned forests).

After EU accession, Polish foresters from the State Forests began providing assistance to private owners with afforestation. Particularly, they assist with the preparation of afforestation plans when private owners want to apply for financial subsidies from the Rural Development Programme. Moreover, foresters initiate the process of accessing financial compensation for private forest owners when windstorms, floods and other disasters occur.

The forest management of privately owned forests is problematic mainly due to their extremely high fragmentation, where an average area of a single forest holding is 1.3 ha. In such cases, private forest owners are not interested in adopting or carrying out innovative (new) forest management and, in most cases, it is difficult to introduce actual forest management regulations.

The Forest Act of 1991 changed the regulations on the supervision of private forest management. As part of the decentralization of public administration after 1989, some of these tasks were transferred to local authorities, such as the supervision of private forests management to district governors. They have the authority to delegate these tasks to local head foresters of the State Forests.

Forest management services are mainly carried out by forest owners. Only in the case of a small number of new forest owners, local forestry contractors are appointed to perform

forest services. However, it is very difficult to provide reliable figures on the scale of the engagement of forest service centres in privately owned forest. It is used by only a small number of forest owners.

5.2. New or innovative forest management approaches relevant for new forest owner types

We do not know of any new forest management approaches in Poland that are especially relevant for new forest ownership types.

5.3. Main opportunities for innovative forest management

The main opportunities for innovative forest management can be seen in the changes taking place in Polish society – primarily in the growing interest of active leisure time. This is seen when an owner of a farm with a forest, for example, organizes horse riding excursions along forest paths or bird watching.

Another opportunity could be the formation of local clusters, including, among others, wood processing plants and forest owners. In this case, there are also opportunities to involve private forest owners in the production of wood as energy fuel. The demand for wood, and the vision of potential profit, may encourage forest owners to change their approach to forest management practices. However, while agro-tourism activities can be conducted individually, activities in a cluster requires the active cooperation of a group of owners or an association, even if just to reduce labour costs and learn from each other.

5.4. Obstacles for innovative forest management approaches

Although the area of private forests presently accounts for 18.8% of the total national forest cover, the performance of private forestry in comparison to the State Forests is less significant. This is mainly due to the extremely high fragmentation of private forests, where the average area of a single forest holding is 1.3 ha. In such a situation, private forest owners are not interested in adopting or carrying out innovative (new) forest management practices. Private forest owners do not have specialized means of production and mainly work in the forest themselves. Forest owners seldom consider their forests as a source of income.

The afforestation programme, financed by EU funds, slightly changed the attitude of owners who previously had not considered their forests as a source of income. Some new forest owners bought agricultural land or abandoned farmland to plant tree stands in order to receive subsidies for the afforestation and silviculture of newly established forests. These “new” forest owners perceive the funds received from subsidies as an important income source.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and, policy instruments are emerging that respond to ownership changes, including instruments supporting new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

Public forests dominate in Poland, with a percentage of over 80%, a relatively unusual situation in this part of Europe. After the change of the political system in 1989, there were attempts to privatize public forests, but they did not meet with social acceptance.

The lack of regulations on inheritance caused forest fragmentation in the past. Forest

fragmentation was mostly the result of the partition of a farm among an owner's children. At the moment, due to the significant migration of people from rural to urban areas, the risk of fragmentation is lower.

The most important policy instrument fostering the afforestation of agricultural land is the National Program for the Augmentation of Forest Cover. In the last decade, 111,800 hectares of agricultural land have been afforested (Table 2). Afforestation of agricultural land during the last decade occurred mostly on private land (72,800 ha), whereas 39,000 hectares of state agricultural land was afforested.

The Act on the Afforestation of Agricultural Land was passed in 2001. It enabled private land owners to receive public financial support for afforestation. After accession to the EU in 2004, rural development programs include support for afforestation measures targeted to private land owners. Separate acts for these measures are being prepared.

There are no policies creating new legal forms of ownership. This was not the purpose of the National Program for the Augmentation of Forest Cover, but in a sense, it contributed to the creation of a new type of owner.

6.2. Influences of policies in forest management

Simplified forest management plans should be prepared every ten years. According to the Forest Act, the district governor is obliged to fund the cost of plans prepared for privately owned forests. However, in Poland, the lack of funds in local government administration, i.e. districts, makes it difficult to prepare these forest management plans. Only about 2/3 of privately owned forests have current forest management plans. Therefore, about 1/3 of privately owned forests are managed on the basis of outdated forest management plans.

However, recent changes may result in an improvement of this situation. A Forest Data Bank was established (in 2013), to which local governments must deliver data on private forests. This has stimulated the preparation of forest management plans. The Forest Data Bank was developed by the Bureau for Forest Management and Geodesy, which fulfilled a contract commissioned by the General Directorate of State Forests, entitled: "Implementation of a concept on the establishment and functioning of a data bank of forest resources and the condition of forests for all forms of ownership". The main purpose of the Forest Data Bank is to provide information about the condition of forests, changes in the forest and forest management over time for all forms of ownership in relationship to the protection of nature and the state of the natural environment. This information plays a crucial role in different levels of the organization and management of forestry, environmental protection, science and statistics distributed for public use and international statistics, as well as spatial planning. Forest Data Bank is available at www.bdl.lasy.gov.pl/portal.

Forest management plans in private forests are prepared under the supervision of the State Forests.

There is no compensation provided to owners for restrictions in forest areas at Natura 2000 sites. Natura 2000 sites represent approximately 20% of the land area of the country. Over 40% of forest area is under Natura 2000 and the vast majority of it (over 90%) is located in State Forests.

6.3. Policy instruments specifically addressing different ownership categories

There are no special policy instruments addressing different ownership categories, however, in the National Forest Policy (1997) there are some general provisions concerning the management of private forests. So far, very few of them are implemented.

6.4. Factors affecting innovation in policies

The main factor affecting innovation in policies in the category of private ownership is the large fragmentation of privately owned forests, as well as the lack of associations and a political lobby. The reluctance of owners to organize themselves in associations is understandable given the experiences of the former political system. The recently established (in 2011) Polish

Union of Forest Associations has just taken its first steps.

It was established with the help of Ministry of Environment, Department of Forestry in Agricultural University in Warsaw and the State Forests. One of the main tasks of the Union is development of regional structures of associations. However, lack of financial funds and legal basis for obtaining them is the barrier for such activity, as well as for the realization of the idea of accession to CEPF.

CASE STUDY 2: THE POLISHUNION OFFORESTASSOCIATIONS (PZZL)]

The first step in establishing the Polish Union of Forest Associations was an understanding signed in October 2010 by representatives of the Ministry of the Environment, Ministry of Agriculture and Rural Development, General Directorate of State Forests, National Council of Agricultural Chambers and associations representing the owners of private forests.

The founding meeting of the Polish Union of Forest Associations took place during a scientific conference, entitled „Managing privately owned forests in Poland", held on November 26, 2011 at the Warsaw University of Life Sciences. The PZZL Founding Committee, State Forests Information Centre and Academic Circle of Forestry Students of the Forestry Faculty at the Warsaw University of Life Sciences organized the conference. Six associations of private forest owners were represented and selected to the Board of PZZL. These were:

- Niebyleckie Association of Private Forest Owners,
- Nadmorskie Association of Private Forest Owners,
- Regional Association of Private Forest Owners of Radom,
- Social Initiative Association of Sidzina,
- Włościańskie Association of Private Forest Owners of Bukowsko,
- Zawojskie Association of Private Forest Owners.

The Polish Union of Forest Associations was registered in the National Court Register on May 25, 2011.

The aims of the Polish Union of Forest Associations are:

1. To build the capacity of the Union to represent the community of private forest owners and users in Poland,
2. To promote activities to increase the forested area of Poland,
3. To promote sustainable forest management in non-state forest holdings,
4. To develop educational activities about the forest,
5. To promote the principles of sustainable development and support the principles of civil society.
6. To assist with the resolution of legal and political issues related to forest management in non-state forest holdings,
7. To act as a bridge, ensuring cooperation between forest associations, public authorities and private entitiesin the country and abroad.

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8. Annexes

8.1. Forest ownership structure – detailed tables

8.1.1. Forest resources of all forms of ownerships in Poland

Table 1: Description of forest resources of all forms of ownerships in Poland and its changes in 1995-2012 (as of 31 XII indicated years) according to Central Statistical Office of Poland

Specification	1995	2000	2005	2008	2009	2010	2011	2012
T O T A L [thous. ha]	**8946**	**9059**	**9200**	**9273**	**9296**	**9329**	**9351**	**9370**
Forests	**8756**	**8865**	**9000**	**9066**	**9089**	**9121**	**9143**	**9164**
Public	7262	7341	7410	7431	7434	7435	7438	7439
owned by State Treasury	7186	7262	7328	7347	7350	7351	7354	7355
of which:								
managed by the State Forests	6868	6953	7042	7064	7068	7072	7077	7079
national parks	162	181	183	184	184	184	184	185
stock of the Treasury Agricultural Property	59	59	44	40	39	36	34	32
commune owned	76	79	82	84	84	84	84	84
Private	1494	1524	1590	1635	1655	1686	1706	1724
of which:								
natural persons	1397	1428	1492	1537	1557	1587	1606	1623
land co-operatives (commons)	68	69	68	68	68	67	67	67
cooperatives ownership	14	9	7	6	6	6	5	5
Land connected with silviculture	**190**	**194**	**200**	**207**	**207**	**208**	**207**	**206**
of which managed by the State Forests	187	189	194	200	200	201	200	200
Structure of forest ownership [%]:								
Public	82.9	82.8	82.3	82.0	81.8	81.5	81.3	81.2
of which in TOTAL:								
managed by the State Forests	78.4	78.4	78.2	77.9	77.8	77.5	77.4	77.3
Private	17.1	17.2	17.7	18.0	18.2	18.5	18.7	18.8
Forest area per capita in ha	**0.227**	**0.232**	**0.236**	**0.238**	**0.238**	**0.237**	**0.237**	**0.238**
Forest cover in %	**28.0**	**28.4**	**28.8**	**29.0**	**29.1**	**29.2**	**29.2**	**29.3**
Share of forest land in land area [%]	**29.4**	**29.8**	**30.0**	**30.3**	**30.4**	**30.5**	**30.5**	**30.6**

8.1.2. Afforestation of land in 1945-2012

Table 2: Afforestation of land in the years 1945-2012 according to Central Statistical Office of Poland

Specification	Total	Forests		Wooded land	
		of the State Treasury	not owned by the State Treasury	annual average	annual maximum
	in thous. hectares				
1945–1949	67.0	58.4	8.6	13.4	.
1950–1955	185.7	93.1	92.6	30.9	46.1
1956–1960	226.5	114.5	112.0	45.3	62.1 [c]
1961–1965	277.6	152.1	125.5	55.5	56.4
1966–1970	176.7	106.0	70.7	35.3	48.6
1971–1975	94.1	55.5	38.6	18.8	21.8
1976–1980	78.5	47.5	31.0	15.7	17.7
1981–1985	31.7	21.2	10.5	6.3	7.2
1986–1990	35.9	21.6	14.3	7.2	8.6
1991–1995	53.4	35.2	18.2	10.7	15.6
1995	15.6	11.8	3.7	x	x
1996	17.5	12.1	5.3	x	x
1997	18.3	9.7	8.6	x	x
1998	16.9	10.8	6.2	x	x
1999	19.6	12.5	7.1	x	x
2000	23.4	13.1	10.3	x	x
2001	23.0	11.5	11.5	x	x
2002	20.3	9.7	10.6	x	x
2003	26.5	9.2	17.3	x	x
2004	12.7	9.7	2.9	x	x
2005	12.9	6.2	6.7	x	x
2006	16.9	4.5	12.5	x	x
2007	13.3	3.0	10.3	x	x
2008	7.9	2.9	5.0	x	x
2009	5.6	1.8	3.8	x	x
2010	5.9	0.7	5.1	x	x
2011	5.3	0.6	4.7	x	x
2012	**4.9**	**0.4**	**4.5**	x	x
1995–2012 [b]	266.4	130.2	136.2	14.8	26.5 [d]
1945–2012	**1478.0**	**823.5**	**654.4**	**21.1**	**62.1** [c]

[a] Agricultural land useless to agricultural production and wasteland. [b] Implementation of "National programme for increasing forest cover" [c] Afforestation conducted in 1960 [d] Afforestation conducted in 2003.

Source: "National programme for increasing forest cover" prepared by the Ministry of Environmental Protection, Natural Resources and Forestry, Warszawa, July 1995, and data of the CSO for the years 1991-2012.

8.1.3. Forest resources in private forests in Poland

Table 3: Forest resources in private forests in Poland (area of private forests by province in 2012, as of 31 xii)according to Central Statistical Office of Poland

Province	Private forest land			In total farm forestry							
	in ha	in % of total	with forest management plans	natural persons		land cooperatives (commons)		cooperatives ownership		Other [b]	
			in % of private	in ha	in % of private	in ha	in % of private	in ha	in % of private	in ha	in % of private
Dolnośląskie	18200	3.0	77.4	16326	89.7	27.0	0.0	358.5	2.0	1488.5	8.2
Kujawsko-pomorskie	48866	11.3	87.2	46425	95.0	633.0	0.1	282.9	0.6	1525.2	3.1
Lubelskie	235172	40.0	64.1	224571	95.5	8999.1	1.5	145.0	0.1	1457.4	0.6
Lubuskie	11370	1.6	75.2	10706	94.2			118.0	1.0	546.0	4.8
Łódzkie	131448	33.4	96.8	124571	94.8	6043.1	1.5	133.3	0.1	701.2	0.5
Małopolskie	189082	43.0	15.5	170169	90.0	14030.7	3.2	244.9	0.1	4636.9	2.5
Mazowieckie	359226	43.4	79.2	345574	96.2	10468.9	1.3	309.2	0.1	2873.8	0.8
Opolskie	11901	4.6	87.8	10691	89.8	453.0	0.2	496.9	4.2	260.7	2.2
Podkarpackie	115472	16.9	79.6	105014	90.9	7084.1	1.0	394.7	0.3	2979.0	2.6
Podlaskie	201038	32.0	59.7	195217	97.1	3897.2	0.6	228.9	0.1	1695.1	0.8
Pomorskie	75198	11.0	92.2	73320	97.5	92.2	0.0	90.9	0.1	1694.8	2.3
Śląskie	78784	19.6	62.3	69911	88.7	7553.7	1.9	351.9	0.4	967.0	1.2
Świętokrzyskie	93226	27.8	67.4	85607	91.8	6838.1	2.0	247.0	0.3	534.1	0.6
Warmińsko-mazurskie	55118	7.2	42.5	52180	94.7	19.0	0.0	108.0	0.2	2810.3	5.1
Wielkopolskie	82996	10.6	84.9	78841	95.0	673.3	0.1	1332.4	1.6	2149.3	2.6
Zachodniopomorskie	17940	2.2	60.6	14313	79.8	2.7	0.0	463.8	2.6	3161.0	17.6
POLAND	**1725036**	**18.8**	**67.6**	**1623435**	**94.1**	**66815**	**0.7**	**5306**	**0.3**	**29480**	**1.7**

[a] *Simplified forest management plans and inventories of state forest.*

[b] *Churches, religious associations and unions, social organizations, private companies, etc.*

PORTUGAL

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1. Introduction

Forest is the dominant land use in continental Portugal, occupying 35.4 % of the territory. This places Portugal within the average of the 28 EU countries. Areas of forest land also include wooded areas and temporary non-wood areas. About 93% of the Portuguese forest is private. In the North and Centre of the country most of the forest holdings have less than 0.5 ha and are occupied by maritime pine and eucalyptus. The area under private ownership is 3,129,000 ha. There are about 400,000 private forest owners in Portugal and 6.5 million of forest holdings. From this, 20,700 forest owners are members of forest intervention zones (ZIFs), this corresponding to an area of 846,137 hectares. In Portugal there is limited cadastre on forest holdings. Only 40% of Portuguese municipalities and 50% of the national territory is covered by cadastral survey. The latter utterly exists in the southern region that is characterised by large scale properties. The northern region, characterised by small scale properties, almost does not have cadastre. This implies that for a significant part of the national territory there is no published/official information about who owns the lands. This situation could change if the government would promote and support the systematic analysis and centralisation of the data collected by forest owners associations during the establishment of forestry intervention zones (ZIFs) in a national database. Despite being a source of several public and private goods and services (e.g. cork, pulp, hunting, dune protection, water protection, pine nuts, biodiversity etc.), the State is sparse in supporting non-industrial private forest owners in Portugal.

2. Methods

2.1. General approach

According to the aims of the country report, which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data analysis, as well as the expert knowledge of the authors.

Information collected include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge and results from qualitative studies). A literature review explains the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The preparation of this report was a team effort led by Diana Feliciano with her acting as lead author of chapters 1, 2, 3, 4, 5 and 6, and as an overall editor. Marta Ribeiro contributed to chapter 4, Americo Carvalho Mendes contributed to chapters 3, 4, 5 and 6, Miguel Sottomayor contributed to chapter 5 and Rosario Alves provided 2 case studies (certification in Baixo Vouga and ZIF in Gois).

The first step was the collection of academic and grey literature known to each member of the team supplemented by a search for literature on topics relevant to FACESMAP. This resulted in a list of over 10 publications ranging from brief to more extensive reports. There is hardly any scientific work undertaken on forest ownership and forest ownership changes in Portugal, i.e. with relevance for the topic of the country report. All analysed studies are presented in the Annex of the full single country report published at the website http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports.

Each section was assigned to the member of the team according to availability to write it and according to his/her knowledge about the topic. The drafts were reviewed by some members of the team. Local practitioners were occasionally consulted for policy updates (e.g. forest owners' association technicians). The information presented was derived from the literature collated and the author's own knowledge. This was supplemented with suggestions from external experts.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. These detailed descriptions of publications can be found in the Annex of the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

There are five distinct sets of studies that are available that were considered relevant to the Portuguese country report:

- academic (peer reviewed) papers;
- Working papers from international projects (e.g. EFFE project); and
- MSc and PhD thesis;
- Books;
- Newspaper articles.

There is one relevant literature review on forestry economics and policy undertaken by Mendes et al. (2004) which served as country report for the international project EFFE (Evaluating Financing of Forestry in Europe). This remains the most complete study on forest economics and policy in Portugal over the last 20 years. Chapter 5 of the report focuses on the distribution of forest ownership and forest management behaviour based on data collected from the ministry of agriculture, the Portuguese forest agency and the Portuguese institute of statistics. The report is dominated by the lead author's insights given his experience as an academic on the topic of forestry and economics and as president of a forest owner association in the North of Portugal. Data covers the period 1928-1995. The majority of the studies published last year are PhD and MSc students and by some individuals working at university departments. The main study undertaken on the typology of Portuguese forest owners is the book by Baptista & Santos (2005), to which followed another study about forest owners' motivations on forest management (Novais & Canadas, 2010). The remaining studies, on a diversity of topics, which with more or less imagination can be linked to forest ownership types and motivations, are a PhD and related articles (Valente, 2013; Valente et al., 2013; Carvalho-Ribeiro et al., 2010) and MSc theses and related articles (Feliciano, 2008; Marques, 2012; Fernandes, 2008). Despite the disparity in the nature of the studies it is possible to discern some common themes as outlined below.

3.1.1. Research themes

By grouping similar studies together it is

possible to discern four main 'themes' which represent the commitment of few individuals in researching forest policy and economics in Portugal. In some cases, their interests are reflected in the topics researched by MSc and PhD students. Each theme, to a great extent, stands alone and there is little cross-over as evidenced by low levels of literature cross-referencing between them. Indeed the only study which bridges between the themes is Mendes et al. (2004) because it compiled what was known in terms of forest production, sociology, economics and policy in Portugal until 2004.

Forest ownership has been hardly researched in Portugal. Pooling the literature arising from these studies facilitates the appreciation of only a few facets of forest ownership relevant to FACESMAP.

Theme 1 – Forest production, sociology, economics and policy

The Portuguese forests report (Mendes et al., 2004) was a follow up on work from a previous report by CESE (Council for Cooperation between Universities and Businesses), undertaken in 1996. This report filled on some data gaps since it put together lots of dispersed and unpublished data about the Portuguese forest sector. The aim of this report was to provide a good service to those interested in the Portuguese forest sector and to help better understanding the reasons behind the forest programmes evaluated in the EFFE project (Investigated forestry-related funding programmes in Europe with special to their relation to CAP measures). Two MSc theses followed up the ideas of this report, namely on forest policy and forest owners associations (Fernandes, 2008 and Feliciano, 2008, respectively).

On the topic of forest policy, Valente (2013) highlighted several barriers to the implementation of sustainable forest management in Portugal.

Theme 2 – Forest owners' motivations for forest management

There have only few studies of motivations of private forest owners. One is a book written by Baptista and Santos (2005), and the other two are scientific articles in *Land Use Policy*. Baptista and Santos (2005) identified five non-industrial private forest (NIPF) owner types, clustered them according to their motivations, forest income, accountability, involvement with forest, investment, management practices, and forest area. The main goal of establishing this typology was to assess Portuguese private forest owners' economic rationality. Baptista & Santos (2005) suggested that the economical typologies they have found with their study should be taken into account in forest policy. These authors consider that the top down, command and control type of policies that have been suggested to solve the problems of small scale forestry, which do not assess or include information about private forest owners' motivations and objectives. Canadas and Novais (2010) aimed at understanding private forest owners' motivations for forest management practices and based their work on Baptista & Santos (2005) typologies. Novais and Canadas (2014) explored the connection between local patterns of non-industrial private owners' management practices and the socioeconomic characteristics of the local context.

Theme 3 – Forest extension services

In spite of the fact that, for many years, there has been a high percentage of forestland under private ownership, which is also very fragmented in a large part of the country, the collective organisation of private forest owners is recent phenomenon (~30 years). This has happened without major involvement of the Forest Services in the promotion of forest owners associations. The state only played an indirect, but rather important, catalysing role. This happened through the several grant driven afforestation programmes and other incentive existing since the accession of Portugal to the European Union. This funding helped to support the set up and operating costs of forest owners' associations and stimulated forest owners to ask for technical advice about the grant schemes and the services these aimed to provide.

To study this topic more in depth, Fernandes (2008) looked at the activities of the Forest Services in Portugal, since their creation, in the beginning of the 19th century until more recently. Feliciano and Mendes (2012) assessed the success of forest owners' organisations in North and Central Portugal in

increasing their membership and the quantity of services provided.

Theme 4 - Forest management approaches

This theme covers several studies on a diversity of recent approaches for forest management in Portugal. Two of them focus on the forest intervention zones (ZIF is the Portuguese acronym) (Marques, 2011; Valente et al., 2013). The ZIF approach is recognised by technical and political stakeholders as a promising approach for the management of small-scale forest holdings.

Marques (2011) explored the topic of forest certification as a promotion tool for sustainable forest management in Portugal. Carvalho-Ribeiro (2010), examines the policy dimensions of multifunctional forest management, and, through an exploratory case study, proposes an approach for cooperative planning and institutional design. Valente (2013) investigates if forest management can be improved by changing the decision-making framework to a participatory approach. The study assumes that stakeholder participation in forestry decision-making is essential in Portugal.

3.1.2. Organisations and funding

As shown in Table 1, the sources of funding for research on the topic of forest ownership are very limited. PhD (Doctor of Philosophy) theses are usually funded by the Portuguese Agency for Science and Technology (FCT is the Portuguese Acronym). The Master of Science theses are not funded, i.e. they are funded by students themselves who undertake the research and write the thesis in order to obtain Master of Science degrees. Remaining studies, undertaken due to the research interests of some individuals (Mendes, Novais & Canadas) are funded by the University budgets, this occasionally matched up with international funding (e.g. Mendes et al. (2004) for the EFFE project).

Table 1: Funding sources by theme

Theme	Public	Private	European
Theme 1 – Forest production, sociology, economics and policy	Council for Cooperation between University and Businesses Portuguese Agency for Science and Technology (FCT)	Not used	Commission of the European Communities, DG Research – Quality of Life and Management of Living Resources Programme
Theme 2 – Forest owner's motivations for forest management	Universities	Not used	Not used
Theme 3 – Forest extension services	Not used	MSc students	Not used
Theme 4 – Forest management approaches	Portuguese Agency for Science and Technology (FCT) Universities	MSc students	Not used

In Portugal, there are some public research institutes dealing with forest economics and policy issues, as for example:

- **Forest Research Centre/ Centro de Estudos Florestais (CEF):** The Forest Research Centre/ Centro de Estudos Florestais (CEF) is a research unit devoted to the integrated investigation of forests and related ecosystems and of forest products and forest-based services, first established in 1976 within the Portuguese National Research Network, and imbedded in the School of Agronomy, under the Technical University of Lisbon.
- **National Institute for Agrarian and Veterinarian Research (INIAV)**: Public research agency created in 2012 to deal with agronomic, veterinary, fishery and aquaculture issues.

In general, forest policy and economics research in Portugal is very much dependent on few individuals working at economic or environmental departments of Portuguese universities. Some examples of university departments that are active on these themes are:

Table 2: Organisations undertaking research studies by theme

Theme	Active university departments
Theme 1 – Forest production, sociology, economics and policy	University of Aveiro, Centre for Environmental and Marine Studies of University of Aveiro Portuguese Catholic University, Faculty of Economics and Management
Theme 2 - Forest owner's motivations for forest management	Technical University of Lisbon – School of Agronomy, Department of Agrarian Economics and Rural Sociology
Theme 3 – Forest extension services	Portuguese Catholic University, Faculty of Economics and Management
Theme 4 – Forest management approaches	University of Aveiro, Centre for Environmental and Marine Studies of University of Aveiro University of Lisbon, Faculty of Sciences

3.1.3. Theoretical and methodological approaches used

Table 3 presents an overview (not an exhaustive list) of theoretical approaches and methods used.

Table 3: Theoretical and methodological approaches used

Theme	Theoretical approaches	Methods used	Regional scope
Theme 1 – Forest production, sociology, economics and policy	Policy evaluation Risk analysis Cost benefit analysis Valuation	Literature research Expert consultation Secondary quantitative data collection	National
Theme 2 - Forest owner's motivations for forest management	Social science	Qualitative data collection: interviews Secondary data collection	National
Theme 3 – Forest extension services	Policy analysis Social science	Literature review Qualitative data collection: Interviews Secondary data collection	Regional
Theme 4 – Forest management approaches	Tool evaluation Scenario analysis	Qualitative data collection and analysis: workshops, surveys, focus groups, expert meeting	Regional

There is, undoubtedly, the need for more research in forest ownership issues in Portugal. The studies here were not chosen because they are the most relevant that exist in Portugal but because they are the only studies that have been conducted, even fewer have been published in international scientific journals, in the last 20 years. Forest ownership types and forest area distribution per type of forest owner need to be updated, as well as most of the chapters included in Mendes et al. (2004). The gaps in research on forest ownership in Portugal are huge. We only list some of them:

- How has policy been influencing forest ownership?
- New forest owners motivations
- New forest management behaviours
- Forest owners perceptions on management
- Barriers and enablers to forest management
- Effectiveness of forest owners associations
- Influence of advice on sustainable forest management
- Effectiveness of Forestry Intervention Zones (ZIF) on sustainable forest management
- Barriers and enablers to membership in ZIF
- Land tenure and its influence on forest policy
- Barriers to forest governance

- Evaluation of forests ecosystem services (eucalyptus, cork oak, pine stands)
- Management of communal forests and contribution to rural development
- Forest owners and adaptation to climate change
- Holistic approach leading to an understanding of the combined effect of grants and advice (and any other incentives)
- Landowner's attitudes to woodland creation
- Forest owners perceptions on forest policy
- Forest ownership and gender
- Biomass demand for energy production and impact on forest management
- Forest owners perceptions on the new afforestation and reforestation law (Decreto-Lei n. 96/2013, 19 July) on woodland creation

3.2. New forest ownership types

About **93% of the Portuguese forest is private.** In the North and Centre of the country most of the forest holdings have less than 0.5 ha and are occupied by maritime pine and eucalyptus (Mendes et al., 2004). The area under private ownership is **3,129,000 ha** (Mendes et al., 2004). It should be noticed that data used to estimate private ownership in Portugal has been **last updated in 1995**. There was no direct reference to "new" forest ownership types in the literature reviewed. According to Torres (2010) there are about **400,000 private forest owners** in Portugal and **6.5 million of forest holdings.**

Baptista and Santos (2005) established a **typology of non-industrial private forest owners in Portugal,** in order to assess their objectives and attitudes towards forests (Table 4).

Table 4: Economic rationalities of forest owners' types in Portugal

Typologies	Description
Forest enterprise	Owners are guided by technical and profitability criteria in deciding harvest timing; they invest in forest and implement silvicultural practices.
Property-reserve	Owners do not invest or implement silvicultural practices and forest is viewed as a reserve, harvest timing is mainly decided by criteria other than profitability.
Investment-reserve	Owners invest and harvest themselves but do not carry out silvicultural practices.
Labour-reserve	Owners carry out silvicultural practices but do not invest in the forest, which is seen as a reserve.
Holding-reserve	Owners invest and carry out silvicultural practices and tend to view forests as a reserve where they can harvest mainly without profitability criteria.

Source: Baptista and Santos (2005)

3.3. Forest management approaches

In north and central regions, forest has **low profitability** and the rural livelihoods are changing (Valente, 2013). Novais and Canadas (2010) found out that **proximity of forest holdings favours family engagement in forest work,** which in turn influence forest management. Novais and Canadas (2010) also found that about 47% of the non-industrial forest owners who are 70 years old or more only undertake few types of silvicultural practices, outsource harvesting practices, and mainly own eucalyptus stands. Novais & Canadas (2010) concluded that the forest management models where internalization of silvicultural practices depends on family labour are at risk since family labour is decreasing in Portugal, and forest owners are old.

Novais & Canadas (2010) argued that current management practices and work organization have usually not been explicitly addressed in previous empirically based typologies. They also argue that in a context of increasing outsourcing and decreasing family work in Portuguese forests, it is important to know which forest practices are undertaken, who carries out the work, and with which labour and equipment. These researchers undertook a cluster analysis, using a representative nationwide sample and an empirically based set of variables, to identify **six work models**

of Portuguese non-industrial private forest. The main differentiation between models represents the combination of internalization (I), externalization (E) or non-execution (N) of two forest practices: bush cleaning and harvesting (Table 5). Novais and Canadas (2014) socioeconomic context is relevant for the understanding of non-industrial forest owners' management patterns.

Table 5: Models for management practices

Typologies	Description
NI	Do not undertake bush cleaning and internalise harvesting
NE	Do not undertake bush cleaning and externalise harvesting
IN	Internalize bush cleaning and do not undertake harvesting
II	Internalise bush-cleaning and harvesting
IE	Internalise bush cleaning and externalizing harvesting
EE	Externalise bush cleaning and harvesting

Source: Novais & Canadas (2010)

Other forest management approaches covered by literature are:

Eucalyptus stands – During the 1950s and the 1960s, the emergence of pulp and paper industry was an important factor to the appearance of new ownership types in Portugal. By then, the demand for pulp from Eucalyptus was high, and the private forest owners were not able to meet the demand for this product. So, the pulp and paper industries had to get involved in planting eucalyptus, both in land rented and in purchased land. The expansion of eucalyptus plantations firstly occurred in the South of Portugal, as a direct response to the crisis in the cereal markets but soon was implemented in the North, with the support of the pulp and paper industries. In the North of Portugal, the eucalyptus started to substitute the maritime pine stands, which have been more and more affected by forest fires (Fernandes, 2008) – This might have forced a change in management and ownership.

Bioenergy - The bioenergy sector in Portugal has been developing fast in the last years with an increase in the production of energy at the national level. Bioenergy can have an impact in the rural development, complementing agricultural activity by taking advantage of abandoned land, job creation, and fixation of population (*Direccao Nacional das Fileiras Florestais*, 2010). There is some evidence (personal communication), that new forest owners have emerged due to bioenergy demand, but this has not been mentioned in the literature reviewed – This might have promoted a change in management and ownership.

Forest certification - Certification has contributed to enhance forest management and environmental practices among private forest owners in Portugal (Marques, 2011). There is some evidence that new forest owners have emerged due to forest certification, but this is not mentioned by literature – This might have promoted a change in management and ownership.

Forest Intervention Zones - The Forest Intervention Zones (ZIF) emerged in 2005 as a proposal for the organisation of the Portuguese non-industrial private forest owners. Today, these zones already have a national distribution and occupy a total of about 8% of the country's mainland. The ZIF's have usually a management entity (*entidadegestora*) that can be a forest owner organisation. The forest owners with forest stands within the perimeter of a ZIF are obliged to follow a forest management plan which has been approved beforehand by the general assembly of the ZIF (Fernandes, 2008; Marques, 2011; Valente, 2013). – This might have promoted a change in management.

3.4. Policy change / policy instruments

The relevant policy documents in the Portuguese constitution states that "the state will promote forestry policies according to ecologic and social circumstances" (Portuguese constitution, 93rd article, point two).

At the national level, the Forestry Policy Act (1996) provides the national strategy for

forests in Portugal and the Plan for the Sustainable Development of the Portuguese Forest. There is also a plan to protect forests against fire (PNDFCI). In addition, there is a funding scheme created with revenues from petrol consumption (*Fundo Florestal Permanente*) which provides financial support for forestry related investments.

At the regional level there are PROFs (regional forest plans), PROTs (regional plans to regulate all land uses), and PEOTs which were exclusively created for regulation of land use allocation in protected areas. All the three regional plans are mandatory only on public land which represents approximately 2% of total forest land in Portugal. The mandatory local level plans for private and communal property are the PMOTs, which include the municipal master plan (PDM), which regulates all land uses, the urbanization plan (PU), and other specific plans (PP). For private property within protected areas, there is the PEOT, which operates throughout the management tiers. At local level, there are landscape plans called Plano Director Municipal (PDM), which incorporate the municipal plan for defence of forests against fire (PMDFCI). In 2005, Portuguese forest policy created the Forest Intervention Zones (ZIF) and the Integrated Territorial Intervention (ITI), which require negotiation and integration of forest management plans of multiple small forest owners as well as communal forests (baldios).

Despite of the success in the participation of forest owners and forest owners' associations in the creation of ZIFs, there are several barriers associated to its effective implementation. Apart from bureaucracy, the State has no money to provide financial incentives to the forest owners so these can properly undertake the actions required by the ZIF forest management plan. These financial incentives were supposed to be provided through the Permanent Forest Fund (*Fundo Florestal Permanente*) and the PRODER (the Portuguese Rural Development Programme), but this funding has not been widely available. Another problem is the fact that a ZIF has no juridical capacity to intervene in the forest holdings and undertake the necessary forest operations.

Practitioners working in the field have suggested that the new legislation for afforestation and reforestation (*Decreto-Lei nº 96/2013 de 19 de Julho*) has been a trigger for the emergence of "new forest owners", interested in planting eucalyptus in non-profitable agricultural land. However, it is not possible yet to prove the influence of this redefinition of the afforestation law on the creation of new forest owners. This should be, therefore, further investigated.

We also hypothesise, that the National Plan of Renewable Energy imposed by the Renewable Energy Directive (2009/28/CE) will be a trigger for the emergence of new forest owners, interested in making a profit from their wood. The plan sets the following mandatory targets: 1) 31% share of renewable energy sources on the final energy consumption in 2020; 2) at least 10% share of renewable energy in final consumption of energy in transport by 2020.

The National Bank of Land ("*Banco de Terras"*) is an instrument created by Law No. 62/2012, of 10 December. The objective is to enable the access to agricultural, forest and agroforestry land through the provision of land, which has not been "used" or managed. We would expect this policy to have the biggest impact in the emergence of new forest owners. It is still not possible to make an inference about the impact this of policy in the emergence of new forest owners.

In general, there is no research looking at the influence of these policies and plans on the emergence of new ownership types. But this should be mainly investigated for the case of the funding scheme created with revenues from petrol consumption (*Fundo Florestal Permanente*), the case of the Forestry Intervention Zones (ZIF), the new legislation for afforestation and reforestation and the National Plan of Renewable Energy and the Bank of Land. Some preliminary and very general observations from grey literature (e.g. Mendes et al., 2004; *Resolução do Conselho de Ministros no 114/2006*) are presented here:

- State incentives to afforestation in private land contributed to the expansion in forest land between the 1950s and 1970s;
- European incentives to afforestation in private land contributed to the expansion of forest land in the 1990s

(Portuguese Forest Project/World Bank);

- Private forest owners were the most relevant players in the expansion of forest land in Portugal.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

There is no limited forest cadastral survey (nor cadastral map) or census for forest owners in Portugal. A cadastre usually includes details about ownership, tenure, precise location of land parcels (including GPS coordinates in some cases). Therefore, it is very difficult to determine and characterise forest owners in Portugal. The only information available about the distribution and size of forest holdings is from agricultural census but Mendes et al. (2004) argue this data is not of very good quality. The most updated information about the characteristics of forest holdings and private forest owners is from Baptista and Santos (2005). The National Forest Inventory, which preliminary data were released in 2010, is a very important source of information regarding land use, tree species occupation and changes in tree species occupation but no information on forest ownership is collected. More recently, data on forest ownership has been systematically collected, mainly by forest owners associations (FOAs) (87% of ZIF management is undertaken by FOAs), because this is mandatory by the State in the process of establishment of Forest Intervention Zones (ZIFs). This data is not yet accessible for analysis and there is no information when this will happen, and if this will happen. A report from the Institute for Forests and Nature Conservation, an entity under the Ministry of Agriculture, Oceans, Environment and Planning[74], published a report in 2012 (ICNF, 2012) described the 161 ZIFs implemented in Portugal according to regional distribution, forest occupation, ZIF planning, public forest ownership, forest fires, management entities, and risk to pine wood nematode (*Bursaphelenchusxylophilus*). Nothing is mentioned in the report regarding the characterisation of private forest owners (types, motivations, age, gender etc.)

4.1.1. National data set

Forest was the dominant land use in continental Portugal in 2010, occupying 35.4 % of the territory (Table 6). With this percentage for forest cover, Portugal is within the average of 27 EU countries (37.6%), according to the State of Europe's Forests 2011 report (FOREST EUROPE, UNECE and FAO, 2011). Areas of forest land also include wooded areas (corresponding to the designated forest stands) and temporary non-wood areas (burnt, cut and regeneration areas), where forest cover is intended to be recovered in the short term. Bushes and grassland (pastures) are second largest forest land use, with bushes covering 1,500,157 ha of the total area. Agricultural areas cover 24% of the total mainland area (IFN, 2010).

[74] Ministerio da Agricultura, do Mar, do Ambiente e do Ordenamento do Territorio.

Table 6: Land uses in mainland Portugal

Land uses	1995	2005	2010
Forest	3305411	3211839	3154800
Agriculture	2407772	2205124	2114278
Bushes and grassland	2539279	2720297	2853228
Inland waters	150586	176867	182568
Urban	315475	398945	425526
Non-productive	190370	195822	178492

Source: IFN (2010)

The main tree species is eucalyptus with the largest forest area of the country (812,000 ha, 26%), cork the second (737,000 ha, 23%), followed by maritime pine (714,000 ha; 23%). The area occupied by coniferous species corresponds to 31% of total forest area and the remaining area (69%) is occupied by hardwoods (IFN, 2010).

Table 7: Total areas per specie

Tree species	1995	2005	2010
Maritime pine	977883	795489	714445
Eucalyptus	717246	785762	811943
Cork oak	746828	731099	736775
Holm oak	336687	334980	331179
Other oaks	91897	66016	67116
Stone pine	120129	172791	175742
Chestnut	32633	38334	41410
Carob tree	12278	12203	11803
Acacia	2701	4726	5351
Other hardwoods	155187	169390	73442
Other softwoods	61340	73442	73127

Source: IFN, 2010

The preliminary summary from the National Forest Inventory (IFN, 2010) points out that:

1) Forest is the main land use in continental Portugal (35.4 % in 2010);
2) The forest area decreased during the period 1995-2010 at a net loss rate of -0.3% per year;
3) The wooded area (forest stands) increased (+ 0.4 % per year) between 1995 and 2010;
4) Eucalyptus (mainly *Eucalyptus globulus* sp.) is the main tree species in continental Portugal covering 812,000 ha of the total forest area, cork oak is the second main tree species (737,000 ha), followed by maritime pine (714,000 ha);
5) Agricultural land decreased 12% between in the period 1995-2010;
6) The area of maritime pine shows a sharp reduction (-13 %) in relation to the wooded area (forest stands) and -27 % in relation to the total forest land (forest stands and temporary non-wooded areas, i.e. harvested areas , burnt and regenerating areas);
7) There is a considerable increase in wooded areas (forest stands) in stone pine (+ 54%) and chestnut (+ 48%);
8) The total area of maritime pine decreased 263,000 ha between 1995 and 2010. The majority of this area changed to “woods and pastures” (165,000 ha), 70,000 ha changed to eucalyptus stands, 13,000 ha changed to urban areas and, 13,700 ha was planted with other tree species;
9) The total area of eucalyptus increased 13% between 1995 and 2010. This correspond the change of 70,000 ha of maritime pine areas, 13,500 ha of woods and pastures and 12,000 agricultural areas to eucalyptus stands. In opposition, about 8,000 ha of eucalyptus stands in 1995 were transformed into urban areas in 2010;
10) Cork oak area has remained similar between 1995 and 2010, with a only a slight decrease;

11) The area of public forest, under the jurisdiction of ICNF (Institute for Forests and Nature Conservation), corresponds to 5.8% of the total forest in continental Portugal;

12) The integrated area of forest in the network of national conservation areas corresponds to 18.7 % of the forest in continental Portugal.

Forest ownership in Portugal is not recorded in the National Forest Inventory and there is no legal requirement to register forest ownership. Land and trees ownership do not always coincide. Part of the Portuguese forest land is rented (mainly to pulp industry companies). In these circumstances, tree ownership belongs to the rent holder, and not to the land owner. Most of community forests are managed by national and regional forest agencies. In these forests, the tree ownership is shared: 60 to 80% of the trees revenue belongs to the communities and 20 to 40% belongs to the forest agencies (FRA 2010/167).

In terms of ownership structure two major categories are identified: private and public ownership. When using the classification "privately owned" this means forest estates owned both by non-industrial (including small scale forest owners) and industrial private forest owners. The second category is "Public forests" forests which are areas owned by the State. Public forest can be owned at the central, regional or council level but there is no disaggregated data about each public ownership type. For accuracy reasons, communal forests are neither considered as public or private forests but as a separate category (Table 8).

Given the latter definitions we can state that most of forest land in Portugal is owned by non-industrial private forest owners (NIPFO). Currently, Portugal is one of the countries where this type of ownership structure is more relevant. According to Mendes et al. (2004), around 93,4% of forest areas and other wooded land are privately managed with most of the remaining communal forests managed by Central Government Forest Services.

Table 8: Distribution of the area of forests and other wooded land by types of ownership (most recent data is from 1995)

Types of owners	1928		1959		1974/82		1995	
	Area	%	Area	%	Area	%	Area	%
Public forest	53662	2,3	58000	2,0	78000	2,6	40000	1,2
Communal forests	55954	2,4	145000	5,0	380000	12,4	180000	5,4
Private owners	222182	95,3	2697000	93,0	2598000	85,0	3129000	93,4
Total	**233140**	**100,0**	**2900000**	**100,0**	**305600**	**100,0**	**3349000**	**100,0**

Source: Mendes et al. (2004)

Portuguese forests can be divided in two contrasting landownership structures (Baptista, 2005): in the northern and central regions small-scale forest holdings are mainly small-scale (below 10 ha), and the main tree species are pine and eucalyptus; in the southern regions of the country, forest holdings are mainly large-scale properties (> 100 ha) and the main tree species are cork oak and there is a complex and unique agroforestry system ("*montado*"). Communal forests are mainly located in the northern and central regions of Portugal.

Table 9: Main characteristics of a sample of forest holdings and forest owners studied by Baptista& Santos (2005)

Area	< 1 ha	< 5 ha	5-20 ha	5 -100 ha	>20 ha
Forest owners(%)	31%	30%	14%	10%	15%
Area (%)	10%	16%	12%	7%	55%
Main tree species	Maritime pine	Maritime pine and chestnut	Eucalyptus		Holm oak and cork oak
Investment	No investment	No investment	With investment		
Management practices	No active management	Management depends on how economy goes	Management depends on how economy goes	Active management	
Income	Property-reserve Irregular income	Property-reserve Irregular income	Property-reserve Irregular income	Forest-enterprise	

Source: National Forest Strategy (page 36)

According to Mendes et al. (2004), the main forest stakeholders in the Portuguese are:

a) Non-industrial private forest owners who own about 80% of pine forests (small properties in the northern and central regions);
b) Non-industrial private forest owners who own almost all cork oak forests (large scale forest holdings in the southern region);
c) Central Government Forest Services that are in charge of public forests along with most of the communal forests (these are often dominated by maritime pine);
d) Paper and pulp industry are in charge of about 28% of the eucalyptus forests (the remaining are managed by non-industrial private forest owners).

The Portuguese forest sector can be described as a fragmented and heterogeneous sector that is the result not only of the landownership structure but also from the fact that there are three strong and different subsectors based on each of the three major species in the country.

4.1.2. Critical comparison with national data in FRA reporting

Since the Ministry of Agriculture has to rely on scarce public records and few research undertaken, there are significant data gaps on forest ownership. The same dataset as that used in Table 8 is transcribed into the FAO categories by the Ministry of Agriculture hedged with cautions regarding its accuracy. There are some difficulties in disaggregating the large ownership categories provided in Table 8 into the specific FRA categories (Table 10). Therefore, the only data published on forest ownership is provided by the FRA report, as described below:

Table 10: Comparison of publically available statistics and FRA 2005 return for Portugal

FRA 2010 categories	Forest area (1000 ha)		
	FRA 1990	FRA 2000	FRA 2005
Public ownership	52.8	54.1	54.4
Private ownership	3274	3366	3382
...of which owned by individuals	2923	3009	3026
...of which owned by private business entities and institutions	172	177	178
...of which owned by local communities	172	176	177
...of which owned by indigenous/ tribal communities	0.00	0.00	0.00
Other types of ownership	0.00	0.00	0.00
Total	**3327**	**3420**	**3437**

Source: FRA 2010/167

4.2. Unclear or disputed forest ownership

In Portugal there is limited cadastre on forest holdings. Only 40% of Portuguese municipalities and 50% of the national territory is covered by cadastral survey. The latter utterly exists in the southern region that is characterised by large scale properties. The northern region, characterised by small scale properties (it is a very fragmented territory), almost does not have cadastre. This situation implies that for a significant part of the national territory there is no published/official information about who owns the lands. This could change in the near future the data collected by forest owners associations during the establishment of forestry intervention zones (ZIFs) was organised and centralised in a database, available to researchers and other stakeholders. The government would need to promote and support this initiative as it is one of the main stakeholders.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

There are no legal restrictions for buying or selling forest land in Portugal. Therefore, this question is not applicable in our case. The land is advertised on the market at a certain price by the owner. The potential buyer might negotiate the price of land and offer a value under the price for which the owner

advertised the land on the market. Neighbours might be the first to be offered the land for selling by the owner or the first to ask about the sale.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no specific inheritance (or marriage) rules applied to forests in Portugal. Therefore, this question is not applicable in our case.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

There are no changes (reported by literature) between public and private ownership. Although this might happen in the future due to the Bank of Land (see section 6.3.1 for definition of this policy).

4.4.2. Changes within public ownership categories

There are no changes (reported by literature) within public ownership. This might happen in the future due to the Bank of Land (see section 6.3.1. Since the percentage of public ownership in Portugal is only about 2%, we anticipate the impact of these changes would be minimal. But this would be important to investigate.

4.4.3. Changes within private forest ownership

The only and major ownership structure change in Portugal is related with communal forests. When the dictatorial regime *Estado Novo* (New State) was established in 1933, communal ownership was associated to "abandonment" regarding use and administration. This triggered the nationalisation of some communal forests (some communal forests became national forest and others became property of parish councils) and government backed individualised privatization of the communal forests. In 1966, when the Civil Code was changed, communal property was officially abolished for a decade. The *Estado Novo* regime was abolished in 1974 and, in 1976, the new government passed a law (Law 39176) approving the restitution of communal forests to the original/local user communities.

In 2013, because of changes in legislation (*Decreto-Lei nº 96/2013*, 19 of July) for afforestation and reforestation, eucalyptus has been considered as any other forest species. Therefore, the previous rules regarding afforestation of eucalyptus (e.g. compulsory minimum distance from rivers and agricultural areas) have been abolished. Over the last year, there has been some evidence that abandoned agricultural areas, orchards and wine yards have been replaced by eucalyptus (Patricia Azeiteiro[75], personal communication, August 13, 2015). This information has not been systematically analysed, and may be not representative of what is happening in the whole country, but may give an indication that land owners, who were only farmers before, inherited or bought some land becoming new forest owners with the objective of producing eucalyptus.

According to the preliminary results from National Forest Inventory (IFN, 2010), total area of eucalyptus has increased 13% between 1995 and 2010. Some of this increase occurred in 13,000 ha of bushes and pastures and in 12,000 of agricultural areas. New cork oak stands were also planted in 18,000 hectares of agricultural area. Possibly, new forest owners have emerged in the process. But instead, this might only mean that "old" forest owners planted eucalyptus in non-forested areas they also own.

According to the same non-official sources of information in Western Portugal (*ZonaOeste*), forest certification has also been triggering the emergence of new forest owners (Patricia Azeiteiro, personal communication, August 13, 2015).

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in

[75] P. Azeiteiro is a forestry engineer working in a forest owners association in the west of Portugal (*zona oeste*).

FACESMAP:

- Privatisation, or restitution of forest land (giving or selling state forest land to private people or bodies);
- Privatisation of public forest management (introduction of private forms of management, e.g. state owned company);
- New private forest owners who have bought forests;
- New forest ownership through afforestation of formerly agricultural or waste lands;
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

The identified trends in ownership in Portugal can be seen through:

- Total area of eucalyptus has increased 13% between 1995 (IFN, 2010);
- Over the last year, it has been observed directly on the ground that abandoned areas, orchards and wine yards have been replaced by eucalyptus (Patricia Azeiteiro, personal communication, August 13, 2015).
- Agricultural land decreased 12% between in the period 1995-2010 (IFN, 2010).

Table 11: Trends in forest ownership

Trends in forest ownership: New forest ownership through:	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	*0*
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	*0*
• New private forest owners who have bought forests	*1*
• New forest ownership through afforestation of formerly agricultural or waste lands	*2*
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	*3*
• Other trend, namely: *Changes in managing entities of community forestlands* (commons) **	*2*

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

*** See Common Land Law – Lei dos Baldios under section 6.1.*

4.5. Gender issues in relation to forest ownership

In Portugal there is lack of information regarding forest ownership and gender. The only information on gender and forest ownership in the literature reviewed is provided by Novais & Canadas (2010), namely:

- There is evidence of existing female forest owners;
- Age, gender, and occupation are some of the forest owner attributes impacting on availability and skills for forestry work;
- Some forest management models (NE and EE, see Table 12 below) are more popular amongst female forest owners than others.

Table 12: Models for management practices

Typologies	Description
NI	Do not carry out bush cleaning butcarry out harvesting themselves
NE	Do not carry out bush cleaning and outsource harvesting
IN	Carry out bush cleaning butdo not carry out harvesting
II	Carry out bush-cleaning and harvesting
IE	Carry out bush cleaning and outsource harvesting
EE	Outsource bush cleaning and harvesting

Source: Novais and Canadas (2010)

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

There are some examples of charitable forests in Portugal. The LPN (Portuguese acronym for a Portuguese Nature Proteccionnon - governmental organisation) owns 6 estates with a total area of 1800 hectares (including forest areas). The main objectives of LPN are to protect the environment and to contribute to nature conservation and biodiversity. There is some evidence (expert knowledge) that confraternities own forest in Portugal, but data is not available. The oldest Portuguese charity, *Santa Casa da Misericórdia* (Holy House of Mercy) founded in Lisbon in 1498 by the Queen Leonor of Portugal, and its associated organisations (*Misericordias*) located in other cities and towns of Portugal own agricultural and forest land. For example, the *Santa Casa da Misericordia de Macedo de Cavaleiros* owns several estates (Macedo de Cavaleiros, Corticos, Peredo, Chacim, Vale Prados, Podence), one of them (Vale Prados) is covered by annual crops and forest. The *Santa Casa da Misericordia de Cantanhede* also owns forest area, according to its website. The forest area own by charities, including the *Misericordias*, is not available in a national database for public consultation. Collection of this data should be undertaken (e.g. by phone or postal enquiry) and made available.

Table 13: Charitable forest owner types in Portugal

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts(e.g. Atlantic forest real state fund, Eugenio de Almeida Foundation, Buçaco Foundation)	x		
• NGO with environmental or social objectives (*Ligaparaa proteccao da natureza* – LPN is a Portuguese NGO for Nature Proteccion)	x		
• Self-organised local community groups (e.g. Commons, confraternities also known as voluntary association of people)	x		
• Co-operatives/forest owner associations		x	
• Social enterprises		x	
• Recognized charitable status for land-owners			x
• Other forms of charitable ownerships, namely: *Santa Casa da Misericordia*, church	x		

It should be mentioned that although forest owners associations (FOA's) do not own forest holdings it is important to make a reference to the role of forest owners' associations in Portugal. FOA's emerged in 1990s and their goal is not to replace forest owners but to represent their interests as well as those of forest managers. Therefore, FOA's do not own forest areas, but represent their interests and provide services (technical information and support about forest management operations, technical information, information and implementation of public incentive schemes for forest investment) to their members (Feliciano, 2008).

Table 14: Number of forest owners' associations by region

Year	Regions					
	North	Centre	Lisbon and Tagus Valley	Alentejo	Algarve	Total
1977	2	10	4	3	o	19
1998	18	27	8	6	6	65
1999	53	35	10	4	6	108
2000	55	43	10	6	6	120
2002	46	56	11	8	6	127
2004	45	61	12	9	6	133
2011	51	92	7	7	9	166

Source: Mendes, 2012

CASE STUDY 1: NEW FOREST OWNERSHIP IN SOUSA VALLEY (*VALE DO SOUSA*)

This is an example of "New forest ownership through afforestation of formerly agricultural or waste land" and "Changing life style, motivations and attitudes of forest owners". Vale do Sousa is a good example of the Portuguese north-western type of forest. The forest holdings are small-scale, scattered on multiple plots, with an irregular topography and privately owned. The changes that have been impacting the Portuguese forest sector, and consequently the Vale do Sousa region, cannot be dissociated from its surrounding socio-economic environment. In this regard we highlight two factors: rural depopulation and increasing degree of urbanization. The rural exodus started in the 60s and is still happening, this having relevant effects on forest management. Rural migration was also caused by a decrease in the demand of inflammable forest sub-products (generated from resin) thus aggravating the risk of forest fires. In addition, the scarcity of workers available to undertake forest operations increases the labour costs to forest owners. This aggravates the risk of forest fires since forest owners are less willing to hire workers to clean their forest holdings. A direct consequence is the abandonment of forest land by the owners due to low forest revenues unable to cover the high maintenance costs. Rural depopulation has happening side by side by a growing urbanization in coastal areas and by the associated changes on people's lifestyles. Urban lifestyles have conducting to the total abandonment of the forest and/or agricultural land (giving place to forest land through non-managed natural regeneration) due to the distance between the forest owners' residence and the respective forest holdings. Associated to this urbanization phenomenon there is also a new perception on the social and economic value of the forest sector that also contributes to its abandonment.

Source: Mendes (2007).

CASE STUDY 2: THE EXAMPLE OF A PUBLIC FOREST - LEIRIA PINE STANDS (PINHAL DE LEIRIA)

This case study area intends to represent the State owned forests (Public forest) in Portugal, from which "Pinhal" (means pine wood stands in Portuguese) is certainly the oldest and internally better known, and also the largest, public forest in Portugal. It is located in Central Western Portugal and it is managed by a single manager appointed by the government (a civil servant forestry engineer). The total forest area under this central management model represents an area of 60,000 hectares, covering not only the Pinhal de Leiria but also other state owned forests and afforested common lands in the same region. Pinhal de Leiria represents an area of approximately 11,000 hectares, from which 8,679.5 are production stands (timber) and the remaining area has a protection role since it is managed to prevent the erosion of the sand dunes and other socio-ecological functions. The forest is divided in 367 homogeneous management units (MU) of even-aged Maritime pine (Pinuspinaster) forest, which is the main specie covering 81% of forest land. As it is located in a flat area next to the sea and characterised by dry and hot summers, and rainy winters (typical Mediterranean ecosystem climate), Pinhal de Leiria is under a high risk of forest fire.

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use

agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

In Portugal, a communal forest ("baldio") is a forest that belongs to a local community constituted by people that live in a certain place and where all its members have ownership rights (e.g. Brouwer, 1995). This type of forest occupies around one million hectares of the national territory and is generally located in the northern and central regions (Lopes, 2008; Brouwer, 1995). Currently we can distinguish two types of management:

a) Direct management by the communities: there is an Assembly of Commoners ("Assembleia de Compartes") where the community members meet and take decisions by majority rule. A Directive Council that is elected by the commoners then implements the decisions approved. According to Lopes (2008), this type of management is used in 38,7% of the communal forests;

b) Co-management with public administration: according to Lopes (2008), this is the most common type of management in Portugal (around 60% of the communal forests are managed this way). When referring to public administration this can be the State, usually represented by Central Government Forest Services, in which case they have the right to keep 40% of the plantations, and 20% of the revenues from the previously existing plantations. Nonetheless, around 68% of communal forests are managed directly by Village Councils.

CASE STUDY 3: COMMONS IN CIDADELHE DE AGUIAR, VILA REAL

This village (Cidadelhe de Aguiar) lies 20 kilometres to the north of the Vila Real district (Tras-os-Montes region). It manages a common of some 700 hectares, and has assumed full responsibility over the area, so that the state is no longer represented on the management council. The common was forested between 1945 and 1965, a heavy blow to the local economy which depended almost totally on sheep and goat farming. Despite former hardships resulting from afforestation, the forests now offer large profits to the villagers. The community, of about 135 inhabitants, receives about US$ 8,000 annually from the sales of resin alone. It earns money from occasional thinning and can expect revenue from the first cuts within a few years. Between 1986 and 1989 the council administered an annual gross revenue of US $ 25,000. This has been invested mainly in infrastructure for the public benefit, such as improving the agricultural irrigation system, construction of footbridges and a community centre. The council has contributed to the construction of a football field, and subsidizes club membership fees for the younger players. The council assumes all the silvicultural tasks that would normally be carried out by the state, including organisation of thinnings, felling, resin collection, and tending. It acts as a modern forest entrepreneur, but has the obligation to maintain the forest cover according to legal requirements. It also pays the forest service 30% of its share in the gross timber revenues, The forest service provides advice.

Extracted from: Jeanrenaud, S. (n.d.) Communities and forest management in western Europe**.** Available at: https://portals.iucn.org/library/efiles/documents/2001-061.pdf

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Portugal

The main stakeholders managing forests and influencing forest management in Portugal are:

Non-industrial private forest owners

In the Northern and Central Portugal, non-industrial private forest owners are mainly small private owners who, in many cases, are small part-time or aged farmers still living near their forests. Larger private owners usually live in the city and lease out their lands to tenants or leave them under-used.

In the past, woodlands were a complement to agriculture because they provided fodder to feed the livestock and brushwood, which after being used as bedding for animals was turned into manure to fertilise the land. Woodlands were also a free source of fuel wood and non-wood products essential for the subsistence of the local communities. Currently, modern farming uses industrial fertilisers and foodstuffs, the rural households no longer use fuel wood or the non-timber products from the forests. Therefore, forest owners do not have local people going around their forests to collect the combustible materials free of charge for the owners. Nowadays, if they want these materials cut and removed, they have to hire workers for that. Often it is very difficult to find workers who can do this job, under appropriate technical supervision and at an acceptable price. These costs are also aggravated by the difficult topography, and the risk of forest fires(Mendes et al., 2004). Forest owner's organisations can provide these services are lower prices for its members.

In the South of Portugal, large-scale forest holdings are predominant and the main land use type is agroforestry (*montado*). This type of system is under strict legislation (Coelho, 2003). In this region, many forest owners own cork oak forests, which provide them annual income from the cork sales. Here, the terrain is less hilly than in the North and Central Portugal and the maintenance costs are lower. The risk of forest fire used to be lower in the *montado* systems than in the small-scale forest holdings of the North and Centre of Portugal.

Forest owners associations (FOAs)

Forest owners' associations do not own forest but they provide advice to forest owners, and influence forest management in this way. The main types of services provided by forest owners' association are the following:

- Information about the public incentive schemes for forest investment;
- Preparation of forest plans to apply for funds from those programs;
- Monitoring of forest plans and afforestation works carried out by private contractors;
- Technical information about forest management operations;
- Training courses for forest owners;
- Being the management entities of Forest Intervention Zones.

Industrial private forest owners

The industrial forests in the country are mainly owned by the pulp industry. These forests where eucalyptus is, by far, the major tree species, are certainly among the most carefully managed in the country, each pulp company having set up its own forest management firm to take care of forest operations. These groups have also invested regularly in the prevention and fight of forest fires as well as in research and development to improve the productivity of the plantations.

In Portugal, about 33% of the eucalyptus area is managed by the industrial pulp and paper companies and the remaining area by non-industrial private forest owners. These companies supply the pulp and paper industries. The type of forest owners is determinant in the productivity of eucalyptus stands. Private forest owners have different objectives and diverse economic logic and these influences the management of the eucalyptus stands.

Commoners

Communal forests are an example of "common property": the resource has physical and social bounds and it is managed according to formal and informal rules by a well-defined group of users who are all the members of the local community which owns the communal forest. To make decisions about the use of the commons ("baldios"), the members meet in assembly, called the Assembly of Commoners ("*Assembleia de Compartes*"). The decisions are taken by majority rule and are implemented by a Directive Council elected by the commoners. The legislation regulating the communal lands

is the Law 68/93 of September 4, 1993, which replaced previous legislation, essentially the Decree 39/76 of January 19, 1976. Two major features of this law are the following:

- The village councils ("*Juntas de Freguesia*") can take up the management of communal forests if this is decided by the Assembly of the Commoners;
- It becomes legally possible to sell communal lands if it is for reasons of public interest, especially those related to urban and industrial development (expansion of urban areas, creation of industrial zones, etc.).

This law facilitates a greater intervention of the local governments in the commons either by taking up the responsibility of forest management on behalf of the Assembly of Commoners, or by alienating these lands for non-forestry uses (Mendes et al., 2004). Forest management operations can be conducted directly by the Directive Council representing the commoners, or by the village council. The alternative regime, which is used much more frequently, is to delegate this responsibility to the Forest Services. In this case, the Forest Services have the right to keep 40 % of the revenues of the plantations they have installed, and 20 % of the revenues of the forests existing when they took up the management (Mendes et al., 2004).

If the Assembly of Commoners manages the forests, they can still appeal to the Forest Services to take charge of afforestation and reforestation projects in which case the Forest Services will keep 20 % of the forest revenues. The rural abandonment, the type of afforestation done by the Forest Services are incompatible with the traditional silvopastoral (agroforestry) systems and the transfer of management responsibilities from the local communities to the village councils and the Forest Services eroded the secular bonds involving the local communities in the active agroforestry use of their communal lands (Mendes et al., 2004).

After a strong posture in the first decades of afforestation of the commons, the capacity of the Forest Services, in terms of financial and human resources declined. This process culminated with the integration of the regional Forest Services in the regional agricultural services, losing the autonomy they had managed to preserve for a long time. With this integration, the regional Forest Services, not only lost a great deal of their autonomy, but also the management of the state and the communal forests which has been their major task for the last five decades. To take over the management of these forests, the Ministry of Agriculture has created a public company specialised in forest management, without some of the constraints of the old Forest Services (less personnel, human resource management rules similar to the ones in the private sector, financing less dependent on transfers from the State Budget, possibilities to appeal to the financial markets and to do outsourcing to forest contractors, etc) Mendes et al. (2004).

State

In Portugal, Forest Laws apply similarly to public and private (also communal) forests, since there is no differentiation between the general objectives for private and public forests. All types of forest ownership should serve the economic, social (recreational, educational, scientific) and ecological functions of forests, combined in a sustainable management way Mendes et al. (2004).

5.2. New or innovative forest management approaches relevant for new forest owner types

The main new or innovative forest management approaches specifically relevant for new ownership types are forest certification, real estate forest investment funds *(fundos de investimento imobiliário na floresta)* and forestry intervention zones (ZIFs).

Regarding forest **certification**, some entrepreneurs found a business opportunity in certified forest, and start buying abandoned agricultural areas and planted trees in order to certify these new planted areas. This is known to be happening in Western Portugal (Patricia Azeiteiro, personal communication, August 13, 2015). The National Forest Strategy recognises the importance of forest certification for sustainable forest management and set the aspiration of having

500,000 ha of certified forest in Portugal, and 20% of certified cork products by 2013. According to Ramos (2012), this aim was already achieved in 2012 with a total of 528,650 ha of forest certified in Portugal by FSC and PEFC. The total forest area in Portugal is 3.4 million of hectares. One of the main barriers to certification is the high costs for small scale forestry.

Real estate forest investment funds *(Fundos de investimento imobiliário na floresta)*– These funds were created by the government through the Law-Decree nº 60/2002 (*Decreto-Lei n° 60/2002*). The government's perception was that it was better to substitute the current private forest owners by other forest owners (new forest owners) who would better manage the forests and bring innovation to the sector. Therefore, the main objectives set by the government for this Fund were:

- Establishment of a forest legacy through the buying or renting of land, with or without forest stands;
- Improvement of forest infrastructures;
- "Appropriate" management of forest resources directed to maximize results.

The creation of the Fund intended to address the lack of professional forest management. According to the government, the main reasons for this situation were: 1) the fragmentation of forest holdings; 2) the failure of the private sector in managing their forests; 3) the lack of tradition in forestry management; and 3) the fact that the associative movement (forest owners associations) was still incipient. Therefore, the ultimate goal of the Fund was to increase the forest management unit and to create several types of benefits.

The Fund was established as a "closed fund" with a fixed number of participation units, with the aim of providing a continuous income. The participation units were allocated according to the placement of an individual subscription offer. The Fund aimed at benefit the following groups of investors:

- "Institutional investors" (pension funds, State investment funds, etc.);
- Forest owners: The existence of the Fund provided a solution for owners who own land and have no means to manage them. Forest owners could choose among several options, namely, selling the land at the market price, transferring the management rights or exchange by Fund participation units.
- The non-profit organisations in the agroforestry sector.

The Fund intends to favour the acquisition of agricultural land with potential for forestry activities (or management rights), which would meet the conditions for further implementation of projects focusing on the following activities:

- Wood production and forest management according to sustainable forest management criteria, in both cases of establishment of new forest stands and management of existing forest stand, prioritising the maritime pine;
- Tourist activities namely, nature and cultural tourism in rural areas and outdoor sports, including the purchase and transformation of the forest holding to support those activities;
- Management and concession of hunting areas;
- Promoting the provision and production of all forest resources occurring in areas held by the Fund;
- Renting of land for uses not conflicting with forestry activities.

The government foreseen between 100 and 500 beneficiaries of this programme but so far there is no evidence these numbers were achieved.

The **forestry intervention zones (ZIF's)** are areas of continuous forest managed under the same forest management plan. The forest holdings covered by the ZIFs can be owned by different types of forest owners: private (e.g. individual, industries), State, commons. The management entity of ZIFs is in charge of the implementation of the forest management plan. The ZIFs are a good opportunity for forest owners, who inherited their forest holdings but live in the city or other countries, and have no capacity to manage the forests by themselves to outsource management. The ZIFs aim to provide effective and suitable management of forests in order to overcome the constraints of small-scale forest holdings. The objectives of

the ZIF are to allocate concrete responsibilities to the management entity, to structure the territory, to homogenize local and regional policies and to integrate different angles of the local and regional policies.

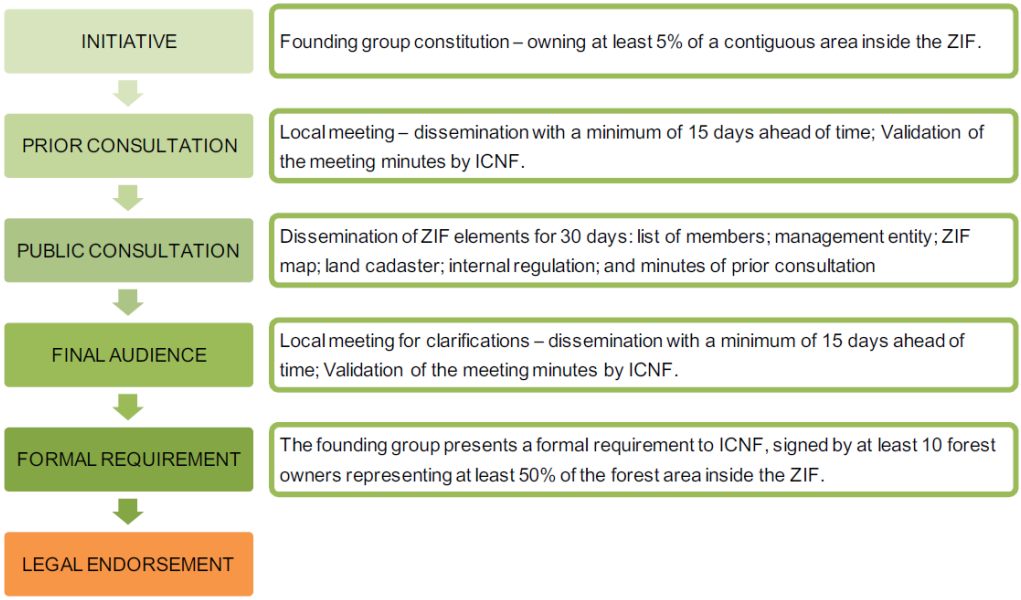

Figure 1: Steps required to establish a Forest Intervention Zone (ZIF)
Extracted from: Valente et al., 2013

Each ZIF is managed by a single entity, which can be a non-profit-making and voluntary organisation or a forest enterprise approved by the landowners and producers. The management entity will administer the ZIF territory and is responsible for defining the ZIF plans. The mandatory plans are: i) the Forest Management Plan (PGF), which set the forestry works and the activities within the ZIF, according to the guidelines of the Regional Forest Plan (PROF); and ii) the Specific Plan for Forest Intervention (PEIF), which define the actions to protect forest against biotic and abiotic risks. The Institute of Forests and Nature Conservation (ICNF) has to approve the plans and should support and monitor ZIF activities. PEIF term is five years and PGF term is 25 years.

After the legal endorsement of the first ZIF in November 2006, the implementation has been very uneven. There was a continuous increase from 2006 to 2009, either in the number of ZIF or in the area covered by ZIF. In 2010, there was a big decline, probably linked with the political changes and the internal economic crisis, which affected not only the forest organisations but also the availability of public funds to support the establishment and implementation of ZIFs. In 2011, despite the low number, the total area covered by ZIFs exceeded 200,000ha (the total forest cover in Portugal is about 3 million hectares, from which about 93% is privately owned). In 2012, the management entities were FOAs (n=57), private enterprises (n=7) (ICNF, 2012).

The "ZIFs' philosophy" is that fighting forest fires is more effective if forest owners are organised than if they are not. Therefore, the most relevant public good provided by the ZIFs has been the collective organisation of private forest owners.

Even though the success in the participation of forest owners and forest owners' organisations in the implementation of ZIFs, Valente *et al*. (2013) claim that the initial enthusiasm is starting to fade due to the absence of an effective implementation of measures and actions. Several problems might have contributed to this situation. Mendes & Fernandes (2008) pointed out the high level of bureaucracy associated to the implementation of the ZIFs and the lack of financial incentives to help forest owners undertaking the actions required by the approved forest management plan. The financial incentives were intended to be

delivered through the Permanent Forest Fund (*Fundo Florestal Permanente*) and the PRODER (Portuguese Rural Development Programme), but the money transfers were not always on time and this imposed struggles in the accomplishment of the forest work. Since the ZIF has no juridical capacity to intervene in the forest holdings, some of the necessary forest works are difficult to undertake.

Not long after the approval of the law that regulates the ZIFs, Mendes & Fernandes (2008) made some recommendations that could have helped overcoming the problems mentioned above:

1) public funding should be given at the medium-term and with a cap;
2) the management entities should be given freedom to set the objectives to accomplish the management plan and should be subjected to evaluation of effectiveness by independent entities;
3) the eligibility of public funding should be linked to the effectiveness of the management entities;
4) the management entities should be severely punished in case the managers take opportunistic advantage of the public funding provided.

5.3. Main opportunities for innovative forest management

The main opportunities for innovative (new/improved) forest management are:

Biomass – Portugal is one of the countries with highest forest productivity and presence of private property in Europe (≈93%). However, it is also one of the countries with the highest number of forest fires, the widest burnt area and the highest vulnerability to plagues and diseases. In these tempered forests, in order to obtain quality wood, as well as an efficient and sustainable forest management, certain cultural treatments are needed. This allows the production of different types of forest by-products that are currently increasing its economic value, such as biomass. The reduction of the number and intensity of forest fires, the price of electricity (fuel) and the mitigation of climate change through use of forest biomass are important reasons to take advantage of this resource in Portugal (Enersilva, n.d.).

Non wood forest products (NWFPs) - According to Mendes et al. (2004), non-wood forest products (NWFPs) represent the main component of the gross total value of forest production (48,76%). This can be desegregated as follow:

- Cork: 23%
- Resin, honey, fruits, mushrooms, plants, grazing and acorns: 26%

Apart from mushrooms, most NWFPs are private forest goods which mean that forest owners can get revenue from producing them. Cork, for example, provides a significant income to forest owners in the Portuguese region of Alentejo. With mushrooms, the situation is not so clear, as the issue of property rights over this good is not clarified. Currently, the harvest of mushrooms in private forests is free for everyone. But mushrooms have a market value and are subjected to the interest of forest owners who claim for a change in the law, as it happened with pine nuts about 40 years ago. The economic crisis in Portugal, which has been responsible for the high unemployment rate among the young segment of the population, has triggered some entrepreneurial initiatives in rural areas. Some of these young entrepreneurs leave the city to undertake an active management of inherited or purchased forest and agricultural land in order to establish themselves as forest and agricultural producers. NWFPs as well as rural tourism are the obvious options in the forest sector.

Payments for environmental services (PES) - Portuguese forests provide a great diversity of non-market services such as recreation, landscape, carbon sequestration, watershed and soil protection, support of biodiversity or conservation. In order to deliver these services, forests have to be sustainably managed and forest owners must be motivated to follow this type of management. The Permanent Forest Fund (*Fundo Florestal Permanente*) which is a public fund sourced by a tax on fuels, is available in the form of grants to public and private forests as well as commons, and it is the only instrument to “pay” forest owners for the services they provide. In the period 2009-

2012, 20% of the total funding provided through the Permanent Forest Fund was planned to be allocated to the provision of forest public goods, monitoring of forest health and biotic risks (Mendes, 2012). This fund could motivate new private forest owners to become members of forest owners associations or other form of collective action in order to provide these environmental services and be paid for that. Currently, the Permanent Forest Fund has several failures but this will be discussed more in detail in Chapter 6 of this report.

Carbon sequestration – Portugal has GHG emission targets and has to find ways to mitigate GHG emissions. Pay forest owners for carbon sequestration can be a way of motivating new and traditional forest owners to improve or start managing their forests in order to optimise the provision of this service.

Recreation – In 2016 Portugal will receive the World Mountain Bike Orienteering Championship[76]. Orientation activities have been popular in public forests in Portugal, including in *Pinhal de Leiria* (Leiria pinewoods), which receives sportsmen/women from all over the world. The expansion of this activity, which will is likely to be promoted by the world championship, can be seen as business opportunity to new and traditional private forest owners.

Resin – Resin tapping has sharply decreased since the mid-1980s due to competition from China, forest fires, the reduction of the area of Maritime pine and mortality due to pests and diseases (e.g. *Bursaphelenchusxylophilus*). Recently the production of resin started to slightly increase in Portugal after decades of stagnation (Anastacio&Buxo de Carvalho, 2008).

5.4. Obstacles for innovative forest management approaches

The most important factors that hinder forest owners from adopting or carrying out innovative (new) forest management are:

Forest fires – Fire is a major threat to Portuguese forests, especially to the pine forests in the Northwest and Central Western regions. This problem emerged in the 1960s when the emigration from the rural areas was more intense. So, the abandonment of traditional uses of forests, which until then helped to keep some minimum management standards, has certainly been an amplifying factor of the natural conditions (wet winters and hot and dry summers) favourable to the ignition of forest fires (Mendes et al., 2004). The 283,063 ha of forests burnt in 2003 were the worst forest fires since there is quantitative data on this type of damage. They represented 8.5% of the total area of forests and other wooded land existing in Continental Portugal, according the 1995 Forest Inventory.

The high risk of fire which Portuguese forest is subjected may discourage new forest owners to buy forest land since the profitability of forests is threatened.

Small-scale and absenteeism - Small ownership and landowners' absenteeism is one of the major constraints to forest management in Portugal and promoting cooperation between forest owners is highly important to mitigate the negative consequences of these two factors. Achieving sustainable management in small-scale forestry will be better achieved with a multiple-decision making framework rather than by individual decision-making (Martins and Borges cited by Valente et al., 2013).

Access to financial resources – The Permanent Forest Fund is established but is linked to several problems (Mendes, 2012). One of the problems is related to the fact that the grants provided by the fund are only paid after expenditures take place and after the required documents are verified and validated. The fund has high transaction costs due to long payment delays and there are frequent changes in priorities for allocation of funds and in criteria. This may discourage new forest owners to emerge because the access of funding to manage forests is difficult to obtain.

Lack of awareness and resistance to ZIFs - The public awareness about the Forest Intervention Zones (ZIF) approach is small and the resistance to cooperate is still high in some regions (Valente et al., 2013). Financial constraints, either coming from public funds

[76] http://orienteering.org/events/?event_id=409

or from landowners' contributions is also pointed out as a reason why this resistance occurs (Valente et al., 2013). Public funds are suffering adjustments and small forest owners do not have much money to invest in their own properties.

Pests and diseases – The *Bursaphelenchusxylophilus*, is an extremely dangerous worm that is destroying maritime pine stands in Portugal. It first occurred through contaminated wood products originated in Japan and China entering in Setubal's harbour. Between 1994 and 1998, 0.76 to 1.01 million of m^3 of maritime pine wood was lost due to this disease (Vasconcelos et al., 2007). This has caused the abandonment of maritime stands and the replacement with eucalyptus stands, some of which become to be owned by new forest owners.

CASE STUDY 4:FOREST CERTIFICATION IMPLEMENTED BY A FOREST OWNERS' ASSOCIATION IN BAIXO VOUGA REGION, CENTRAL PORTUGAL

The Forest Owners' Association of Baixo Vouga is located in Central Portugal, on the coast. The forest in this region is mainly composed by eucalyptus stands (about 67%) with the aim of producing wood for the paper and pulp industry. It is mainly small scale property, with an average of 2,5 hectares per forest owner, which is then divided into several smaller forest plots with an area lower than 0.5 hectares. These small forest plots are responsible for the majority of the wood production and of other forest resources.

Taking into account market needs and the difficulties of small forest landowners to gain access to forest certification, mainly due to the complexity of the implementation process and associated costs, the Forest Owners' Association of Baixo Vouga has been leading, since 2009, a Regional System of Forest Certification under PEFC scheme for all the NUTIII Baixo Vouga.

It started with 64 forest landowners, representing 550 hectares and more than 493 individual forest plans. Currently this Regional Certification System consists of 262 forest landowners, has certified 3.055 ha of forest and has already prepared 2.625 individual forest plans. In less than five years, the number of members increased 7 fold and the certified forest area has increased about 5,5 times.

This initiative has allowed any forest owner in the region to be able to certify its forest and in a more advantageous way, to get access to markets related to forest-based products. On the other hand, it has fostered and strengthened the network of institutional synergies in the region and it has integrated important natural and social values in forest management practices.

It should be noticed that in Portugal, the Regional Certification Systems have mobilized a largest number of members, which represents about 62% of the total members certified.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

Common Land Law – Lei dos Baldios

The most relevant policy change affecting forest ownership in Portugal is the one concerning the ownership and management of the commons (communal forests). This policy has changed dramatically in the 30s, with a new Law passed in 1932 (Commons Land Law – Lei dos Baldios) leading to the partial nationalisation and (or) partial management of large communal areas particularly in the North and Centre of Portugal (Decreto n° 12 956, 1932). Most of these areas were later afforested (after 1938) by the dictatorial regime Estado Novo (1933-1974) that ruled at the time, against strong opposition of the commoners, particularly in some regions (e.g. Serra da Estrela). In 1993, this Law was entirely revised, with some of the common land being returned to the commoners or their representatives, and other common land being given to commoners but in shared management with the State, depending on the commoners' decision. The new law also allowed the expropriation by the state for the public's good, privatisation for the benefit of housing or industry and the extinction following unanimous decision by the commoners

themselves or after three years of 'ostensive abandonment' (Jeanrenaud, n.d.). On the 10th, July 2014, the Common Land Law was again revised in order to favour more flexible utilisation of common lands. The main change is in the definition of commoner ("comparte") which now only includes the citizens registered as electors in the parish where the communal lands are located. This has generated controversy as farmers associations and cooperatives consider this new definition too constraining.

6.2. Influences of policies in forest management

6.2.1. Portuguese Rural Development Programme (PRODER)

Specific policy instruments within the Portuguese rural development programme (PRODER) support the creation of forest intervention zones (ZIF). The ZIFs are continuous areas of forest land owned by private forest owners who are usually members of a forest owners' association (FOA). The main objectives are shared forest management in order to obtain economies of scale and to decrease the incidence and severity of forest fires. PRODER includes policy instruments and incentives specifically and exclusively targeting the ZIFs. The new Rural Development Plan that will substitute PRODER after 2014 will extend such support to other forms of forest owners' organisation, apart from the ZIFs. Many policy instruments included in the PRODER require the design and implementation of Forest Management Plans (PGF, Portuguese acronym), which has to be discussed and agreed by the ZIF members.

6.3. Policy instruments specifically addressing different ownership categories

The current policies and associated financial incentives that support forest intervention zones (ZIFs) have the potential to promote economies of scale in the management of small-scale forestry, characteristic of North and Central Portugal. The Portuguese rural development plan (PRODER) also includes incentives to the establishment and maintenance of forest owners' associations (FOAs). These associations actively support their members in forest management, providing them advice and the opportunity of paying a reduced fee for forest services (including forest operations). In some cases, FOAs also support the trade of timber, mainly in the North and Central Portugal.

Another important policy addressing private forest ownership is the Permanent Forest Fund ("*Fundo Florestal Permanente*"), which is a pool of financial resources created by the Government in 2004 and funded by a tax on fuel consumption. The objective of this fund is to promote sustainable forest management, the increase in the size and concentration of forest holdings, and fire prevention actions.

The Bank of Land ("*BolsaNacional de Terras*"), includes both forest and agricultural land and it was created by the Government in 2012 (Law nº 62/2012, 10 December) is maybe the main policy targeting new forest ownership. The management model for the Bank of Land intends to link the DGADR (Agency for Agriculture and Rural Development), as the management entity of the Bank of Land, and the GeOps, as the authorised entities to be in charge of operational management. The ultimate management entity of the Bank of Land is the Ministry of Agriculture, Sea, Environment and Spatial Planning through the Directorate-General for Agriculture and Rural Development (DGADR). The Ordinance (*portaria*) No. 197/2013 of May 28th, regulates the DGADR activities in the Bank of Land.

The main objective of the Bank of Lands is to promote the access to agricultural, forest and agroforestry land through the identification and advertisement of available land, particularly if this land has not been used. The land is made available for lease, sale or other transfer model by the State, local councils or by any other public or private entities. The Bank of Land also provides communal land, in accordance to the Law of the Commons. The information about the available holdings and its characteristics is centralised and disseminated by the Information System of the Bank of Land (SIBT) in the website - www.bolsanacionaldeterras.pt.

The information includes the area of the holding, land use, soil characteristics, land use restrictions, type of transfer (sale, lease) and desired value.

The Bank of Land can be available to entities such as farmer's cooperatives, forest owners associations (FOAs), agricultural cooperatives or other entities that manage natural resources which are crucial for agricultural, forestry or agroforestry activities, following sustainable forest management criteria. The regional agencies of agriculture and fisheries (DRAPs) can also, individually or in cooperation with local councils, also apply to manage land listed in the Bank of Land.

According to the Bank of Land website, on the 31st of May, 2014 the area listed in the bank totalised 13,582 hectares. The State was the entity with more area listed in the Bank of Land, namely 12,108 ha (89%). Private owners listed 1,474 ha of land (11%). The distribution of land uses available in the bank is: forest holdings - 79%, agricultural holdings - 16% and agroforestry – 5%.

It would be important to investigate the impact of the Bank of Land policy in the promotion and emergence of new forest owners. Apart from disseminating information about the land available, the Information System of the Bank of Land (SIBT is the Portuguese acronym) aims at undertaking statistical analysis of the rural land market development and mobilisation, and at producing indicators about the price and market dynamics at the regional and sub-regional level. It is expected this information will allow some inferences about the land takers and consequently about new forest owners or their inexistence.

The main legislation associated to this policy can be consulted here:
www.bolsanacionaldeterras.pt/quem.php

6.4. Factors affecting innovation in policies

We list the factors affecting innovation in policies based on the literature reviewed and on other sources as well. More recent policies (e.g. Bank of Land) which have not yet been studied or evaluated are not included in this section.

Factors affecting forest policy in general

The processes of decision-making are centralised and top-down and because of that, unable to deal with the fact that forestry decisions are dynamic, multi-dimensional, complex, uncertain, long term and affect multiple stakeholders (Valente, 2013). Preliminary findings from research currently being undertaken in Portugal under the 7th Framework Programme project INTEGRAL 2011-2015 (www.integral-project.eu) also point out that the major problems of forest policy are related to top-down formulation, lack of organisation among forest owners, weak lobby power from forest owners, absence of record about forest ownership (cadastre) and areas without any management due to absenteeism and/or non-resident forest owners.

Factors affecting ZIFs

The initial enthusiasm of forest stakeholders is fading due to the absence of an effective implementation of measures and actions (Valente et al., 2013). Mendes&Fernandes (2008) had already pointed several problems before, namely, the level of bureaucracy associated to the implementation of the ZIFs and, as well as the lack of financial incentives to help forest owners undertaking the actions required by the approved forest management plan. Luciano Lourenco, cited by the Portuguese newspaper *Publico* has said: There has been a continuously and systematic lack of investment in Portuguese forests, which was profitable in the 1970s and the 1980s" (Publico, 26/08/2013)[77].

Revised Common Land law

The Common Land Law was revised on the 10th July 2014 in order to favour more flexible utilisation of the common lands but this has been very controversial because the commoners claim the Government wants to privatise the communal lands to increase profitability, threatening the provision of goods and services, and not taking into account its importance to local populations. According to Jeanrenaud (n.d.), there is

[77] www.publico.pt/portugal/jornal/zonas-de-intervencao-florestal-arderam-mais-do-que-o-resto-do-pais-em-2007-2010-e-2012-27004110

already a widespread practice of common land allocation for housing construction. Most commoners accept this, mainly when the houses are for villagers without much land. They also accept the use of the land for industrial development. However, Jeanrenaud (n.d.) points out that the commoners generally speak out against the abolishment of the commons altogether, since these measures pose a serious threat to the continued existence of Portugal's commons.

CASE STUDY 5: ZIF IN THE MUNICIPALITY OF GOIS, NUTIII – *Pinhal Interior Norte*

Góis municipality covers a total area of 26.330 ha and it is located in the Central Portugal. It is surrounded by important mountainous areas, whose main land use is woodland, covering about 69% of the municipality's area. The main trees species are maritime pine (48%) and eucalyptus (46%). The scrubland is also an important forest land use type, representing 24% of the total area of the municipality of Gois. As a whole, the forest area covers 93% of the territory.

Gois is a county with a strong rural component, but since the middle of the XIXth century has been losing a significant part of its population: In 1940 the population was 12.488 and currently the population is about 4.260, this representing a decrease of more than 66%.

Changes in the socio-economic context have resulted in a decrease of working people, mostly those associated with rural activities: Agricultural land use covered 512 ha in 1989 and only 170 ha were in 2009. Because of this, Góisrural land uses have been under a high risk of forest fires. For instance, in 2013 the burned area was of 1.263 ha, with an average of 90ha burned per forest fire (occurrence).

In order to tackle the abandonment of rural areas, promote better forest management and reduce the risk of fire, the Forest Owners Association of Góis implemented the Penedos ZIF (Forest Intervention Area) in 2008 with a total area of 1.318 ha. The ZIF is a grouped management tool that allows small forest holdings to have the necessary area for forest intervention works (the rational of economies of scale), ensuring that sustainable forest management is undertaken.

The implementation process included meetings and awareness sessions with forest owners and other local stakeholders, this resulting in the membership of 62 forest private owners with a corresponding area of 854 ha. One of the members was the municipality of Góis itself, which owns an area of 500 ha.

The Penedos ZIF is has Forest Management Plan (FMP) approved by the National Authority - ICNF (Institute for Nature Conservation and Forests of Portugal) - and a Specific Plan for Forest Intervention (PEIF) with several actions aiming at reducing biotic and abiotic risks.

The main motivations and expectations of forest owners, which led them to join the ZIF, was the possibility to get better access to funding and to be able to maintain the infrastructures for forest defence against fires e.g. forest roads).

From 2010 to 2014 some funded actions were implemented under Community Support, namely control and eradication of pine wood nematode in approximately 300 ha, afforestation of an area of 140 ha, and building and improving water points for the firemen. Forest improvement and management actions were also implemented in maritime pine stands.

The main difficulties encountered throughout this process were associated with:

- The implementation of the ZIF: because of the high number of forest owners in the area and the difficulties to identify them, including the time and resources required for that; because of the bureaucracy required by the national authority (ICNF - Institute for Nature Conservation and Forests of Portugal);

- Absenteeism/lack of interest of forest owners because of the small size of forest holdings;

- Lack of geometric records/cadastre of forest ownership.

In order to overcome these constraints, the Forestry Owners Association of Góis has made an effort to proceed, free of charge, with the identification and collection of GPS records, of the forest holdings owned by the ZIF members. This action seeks to stimulate the involvement of other landowners and to overcome the problem linked with the non-existence of forest ownership records (cadastre). So far, the association was able to record 692 ha corresponding to all forest plots of 8 forest owners and to record part of the total forest plots of another 15 owners. The latter has taken more time since the forest owners do not even know the boundaries or the location of some of their forest plots.

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ROMANIA

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1. Introduction

1.1. Forests, forest ownership and forest management in Romania

Romania has entered into communism shortly after the World War II and in 1948 a nationalisation process had started, merging all private properties on lands into collective farms. Compared with other ex-socialist countries, where small private forests survived to the nationalisation process, the Romanian State fully abolished the private ownership on forests. Therefore, during five decades, Romanian forestland was in public ownership, managed by a national forest administration.

After the political changes brought by December 1989 the Romanian forest sector has also entered in a tumultuous process of institutional changes. Three areas are still undergoing institutional transition: restitution of ownership; reorganization and consolidation of forest authorities; and opening the sector to foreign competition and investments. Moreover, the economic and political "shocks" that have affected the country since 1990 have also had substantial impact on the forest sector, giving incentives for corrupt practices while diminishing the resources available for control and enforcement (IRIS, 2003).

In Romania, the private property on forestlands is related to property rights restitution. In the overall context of the transition to the market economy and the EU adhesion, land restitution has been a sensitive issue for the Romanian politicians. The result is a piecemeal approach to restitution, characterised by a gradually increase of the private ownership on forestlands, based on three main restitution laws (1991, 2000 and 2005) although the initial pattern of forest ownership before 1948 has not been retrieved.

According to the latest results of the National Forest Inventory (IFN, 2012) the total area of Romanian forests is 7.8 million hectares, out of which 6.4 million hectares are still referred as the forest fund according to the old criteria used to define a forest before 2008, when the latest Forest Act has defined the forest in a more flexible manner. The forests distribution by age classes presents a disequilibrium due to historical felling patterns. Especially the age classes higher than 100 years are small (7 %). Nevertheless Romania is still reach in uneven aged forests (21 %) some of them being not managed given their low accessibility. Forest roads density is 6.5 m/ha which represents a major constraint to manage the forest properly (Austropojekt, 2008).

In spite of low effectiveness, the forestry sector is still a significant contributor to the Romanian economy: the forestry sector (including processing) contribution to the GDP ranged between 3,5 and 4.5% in the last 10 years (Abrudan et al, 2009). The total volume of the growing stock was estimated by IFN (2012) at 2,286 M m^3, of which 39% beech, 14% oak species, and 30% resinous. The annual growth is estimated at about 34.6 M m^3 corresponding to an average growth of 5.6 m^3/year/ha. Between 13 and 15 M m^3 are harvested annually from the country's forests (which is less than the annual allowable cut, estimated at 18 M m^3). The volume of logs available on the market represents 4.2 M m^3 softwood logs and 3.5 M m^3 hardwood logs.

Romanian forests are also important for their protection, environmental and social value, the percentage of „forests with primary protective functions" increasing from 42% to 52% between 1990 and 2003 even though only 160,429 hectares of forests are strictly protected (2,5%). The existence of primary, undisturbed forests is demonstrated by the presence of the large carnivores, including 40 percent and respectively 60 percent of all European brown bears and wolves. About

10.4% of the national forest area is included in the network of national and natural parks.

1.2. Overview of the country report

The Romanian country report presents the particular situation of the evolution of private forestry in the context of a post-communist country. Private property on forests in Romania is related to the process of forest *restitution* started in 1991– meaning the attempt to restore the ownership patterns on forest lands existing before the land nationalisation in 1948. The available scientific studies and official reports integrated in the literature review present the governance of the forest restitution process in Romania as being very problematic, resulting in large areas of disputed and mismanaged forestlands.

Consequently, the land restitution has opened important discussion regarding the sustainability use of the private forest resources. The private forestry has been generally perceived in a negative way ("*they should be killed*" – Dorondel, 2009) given the fact that effects of deforestation and lack of forest management were more visible on private forests.

The country report underlines that in spite of highly relevant changes in the ownership patterns, little has changed in the management rights of private owners. The main policy changes favouring private forest management are related to the establishment of private forests administrative units which has offered an alternative to the state administration since 2002, when the first private forest districts have been created.

In the current context of a highly restrictive regulatory framework, new management approaches in private forestry are difficult to implement. Examples exist in the area of private forest administrators established by large scale forest owners, some of them belonging to foreign investors, which have established connections with academia and consultancy companies to adapt their management to different challenges and to innovate in the context of the existing regulatory framework. The report identifies several opportunities for changing the policy framework of private forest management, opportunities enhanced within the frame of the 2013-2015 ongoing debate on the elaboration of a new forest code and the increased lobby power of the private forest owners associations.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The report has used available information from literature (academic publications) to answers qualitative data and from official sources (Ministries, National Institute of Statistics, National Forest Inventory, World Bank reports) to answer quantitative questions on forest ownership situation. The literature review, done in the period October 2013- January 2014 concerned more than 40 published articles which represent the quasi-totality of the available scientific information published on the topic of private forest management in Romania. The literature review presented in the next chapter summarises the main research approaches relevant to characterise the changes in the ownership structures, attitudes and management approaches.

The experience of the authors in conducting regional studies in the latest 15 years (some

of them being based on field work – enquiries with forest owners, forest managers and other categories of stakeholders from forest sector) was useful to deal with case-study examples and overview assessments. However, most of the information is based on existing published works.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

The evolution of the forest ownership patterns in Romania is strongly influenced by the 1989 political changes from an autocratic dictatorship to a multi-parties system, from a command and control economy to an economy integrated in the European structures. Therefore Romania offers a relevant "natural experiment" to study a dynamic process, characterised by multi-level institutional changes. Despite its huge potential, research regarding forest ownership in Romania can be clustered in few directions.

Several studies focused, using mainly statistical data and ministerial reports, on **forest restitution facts** and the link between the significant change in forest ownership and the development of the Romanian forestry sector in the transition period (Abrudan et al, 2009, Nichiforel, 2007, Ioras and Abrudan, 2006, Bouriaud et al, 2005). A recent report done by the National Auditing Court (2012) regarding the changing patrimonial situation of forests from 1991-2012 characterises the restitution process as "chaotic and without long-term vision", generating conflicts (Mantescu and Vasile, 2009) and opening the room for rent-seeking activities (Nichiforel and Schanz, 2011).

The poor capacity to enforce the forest legislation and to raise forest owners' awareness on sustainable forest management resulted in significant environmental damages in private forests (Abrudan et. al, 2009). While blaming their poor socio-economic conditions, individual private owners engaged in illegal logging activities, due to a slowly administrative reaction to the on-going changes in the property structure (Dorondel, 2009; Bouriaud, 2005). Almost half of the first privatized forest land was clear felled or over harvested (120,000 ha), in a short period of time (Nichiforel, 2007). The Ministry of Environment and Climate change has estimated that in the period 2000-2012 the illegal logging represented the equivalent of 1000 ha clear cut each year (Varga, 2013). The **effects of forest restitution on land use change** (Griffiths et al, 2012; Kuemmerle et al, 2009) and on protected areas

effectiveness (Knorn et al, 2012) have been also analysed by using remote sensing tools.

Another research approach grounded in the property rights theory and neo-institutional economics looks at **the distribution of property rights in private forestry** and the link with private forest management (Nichiforel and Schanz, 2011; Bouriaud and Nichiforel, 2010; Nichiforel 2010; Irimie and Essmann, 2009; Bouriaud, 2006; Bouriaud, 2001). The core idea of the Romanian forest policy system is that forestry activities are strongly regulated, promoting the same rules of forest management in public and in private forests. Withdrawal and management rights in private forestry are restricted and are an outcome of decisions made on the base of academic based technical norms, not adapted to the reality of private forestry (Bouriaud and Nichiforel, 2010). Irimie & Essmann (2009) have made an analysis of the reciprocal relationship between the evolving forest property rights and the conduct of policy and economic actors. The property rights analysis has been also used to examine the impact of ownership reforms and policy changes on forest utilisation in the CEE region (Bouriaud and Schmitzusen, 2005; Bouriaud, 2005). Based on a comparative study in 6 post-socialist countries it was also concluded that, with few exceptions, the forest owners' have little influence in the forest management planning and harvesting (Bouriaud et. al, 2013)

Based on sociological research approaches several studies have addressed the issue of **motives, attitudes and behaviours of new forest owners** as members of the communities (Mantescu, 2012; Dorondel, 2009; Mantescu and Vasile, 2009; Vasile, 2009; Lawrence and Szabo, 2005) or as individuals (Nichiforel and Schanz, 2011; Nichiforel, 2010). Based on two case studies of community forests from Bukovina region Mantescu and Vasile (2009) reveal the conflicts around the restitution process from an actor-oriented perspective concluding that the property restitution destroyed the social relations not only at the community level, but also at the family level. A similar approach has been taken by Lawrence and Szabo (2005), focusing on attitudes of foresters affected by forest restitutions and the effects felt by the communities involved. A subsequent paper provides an approach to understanding the relations between expertise in forestry science and cultural dependent practices (Lawrence, 2009). Due to failures in managing their forests, after the first restitution law, private forest owners have been generally perceived as "bad guys" in a forestry system in which, for a long period of time, the state was the only one being able to ensure sustainable forest management (Lawrence, 2009). They have been blamed for natural crises such as the floods in 2004, with the president in power saying that private forest owners cannot be trusted with the restituted forests (Dorondel, 2009). Irimie & Essmann (2009) stressed also the role of incentives and rationales for human actions in the reciprocal relationship between forest property rights and the attitude and conduct of policy actors. The exploration of the intrinsic motivations expressed by Romanian forest owners (Nichiforel, 2010) shows that the values one assigns to the forest, the perception of his/her social status, the understandings of forest related phenomena and the entrepreneurial ability are prevailing elements in taking a certain path of behaviour. All of these studies are based on qualitative research approaches.

The main forest organizations conducting research in the field of forest ownership are the research groups of University Transilvania of Brasov and University Stefan cel Mare of Suceava. The National Forest Research Institute is quasi-absent in this field of research. Social studies have been conducted also by the Francisc I Rainer Institute for Anthropology Bucharest. An important string of research has been conducted in foreign research institutes most notable in the Research Group on Postsocialist Land Relations of Humboldt University, Berlin (Stefan Dorondel), the Max Plank Institute for the Studies of Societies, Koln (Liviu Măntescu), ENGREF Nancy (Laura Bouriaud) and the University of Freiburg (Doru Leonard Irimie and Liviu Nichiforel).

Three relevant consultancy projects have been financed in the framework of the World Bank Forest Development Project (2003-2009), which provided a loan of US$25 million to improve the sustainable management of state and private forests. In 2003, World Bank

commissioned a report targeting problems related to Romanian Forest Governance among which corruption and the inefficient selling of timber by NFA have been for the first time directly addressed (IRIS, 2003). In 2007, INDUFOR Oy has launched the report on the "Support to the Establishment and Development of Associations for Local Forest Owners (ALFOs)". The project has proved that both ALFOs established within the project and ALFOs already existing will need support in the development of their services and businesses, especially during the organizing phase of the associations. In 2007, The Ministry of Agriculture and Rural Development of Romania has charged AUSTROPROJEKT Agency for Technical Cooperation, Ltd. to elaborate a nation-wide study on Forest Industry in Romania, aiming to encourage investment in forestry and primary processing industry by identifying current specific problems and future trends and opportunities.

In 2014, the World Bank has financed a rapid assessment of the readiness of Romanian forest sector to adapt to climate change that stresses out the urgent need of financing the sector. The report insists as well on the need to give more freedom to the private sector, in the form of Government interventions for "i) offering guidance for sustainable forest management rather than prescriptive legal and technical requirements, (ii) simplifying rules for administering forests, (iii) providing technical support for innovating in forest management, harvesting and value addition, (iv) offering incentives and opportunities for smallholders to associate and benefit from economies of scale, and (v) improving and extending road access in production forest areas" (World Bank, 2014).

3.2. New forest ownership types

In Romania private forest ownership is related only to property rights restitution which took place starting 1991 and subsequent transactions between landowners. The state has not privatised forestlands by selling it or by means of vouchers. The forestland did not have a spectacular trajectory of land transaction in the first decade of transition because small owners saw the forest as a stable source of income (Ioras and Abrudan, 2006). In the last decade, given the increase share of private forestry, new forest owners appeared by purchasing restituted forestlands (Curtea de Conturi, 2012) It is perceived that the strongly regulative legislative framework had as consequence a decrease in the value of private forestlands, opening opportunities for companies and individuals to invest in forests acquisitions (Nichiforel and Schanz, 2011).

Research has been done in respect to the changing forestry culture especially in the area of community forestry by comparing the current situation with the pre-nationalisation times. The experience of restitution and privatisation of the administration itself largely influence the values assigned to the forests by the members of the community (Dorondel, 2009; Mantescu and Vasile, 2009; Vasile, 2009; Lawrence and Szabo, 2005).

Authors are not aware of any research conducted/data available on the issue of urban or absentee owners.

3.3. Forest management approaches

New forest management approaches are seldom analysed in Romania even though most of the studies point the need to adapt the management principles to the reality of private forestry (Bouriaud et al 2013; Nichiforel and Schanz, 2011; Bouriaud and Nichiforel, 2010; Nichiforel, 2010; Bouriaud, 2001). Strimbu et al (2005) revealed that while many forest stand attributes were significantly affected by the forest ownership change most of the forest management attributes were not. Therefore, integrating new management goals in the forest production system requires first that owners spend efforts in changing the institutional setting of property rights as to gain the right to set new management goals (Nichiforel and Schanz, 2011).

However a new attitude to the former hegemony of forest science is emerging. The 'rightness' of the management norms is being challenged in numerous ways by foresters who can be described as 'negotiating' their way through the new challenges of private forest management (Drăgoi et al, 2013). In other words, they are no longer obedient members of a hierarchy, uncritically

implementing the silvicultural regime (Sandulescu et al, 2007).

According to the study done by Austroprojekt (2008), even though the general objectives of the technical norms are considered as being acceptable as they correspond to international standards, the specific objectives are not much operationalised; there are no benchmarks, indicators, time tables, activity planning, and budgets. Sandulescu et al (2007) examine the potential economic net benefits from timber harvests that could result from changes to the existing sustained-yield policy by comparing the state-approved management plan of a community forest with three alternative forest management plans.

Alternative management opportunities have been assessed also from the perspective of individual forest owners (Nichiforel and Schanz, 2011). Given the extent of deforestation in private forestry (Varga 2013, press release), alternative forest management approaches may be equally or more successful than the current management policies (Griffiths et al, 2012; Knorn et al, 2012; Nichiforel 2010).

3.4. Policy change / policy instruments

The main critique regarding the governance of the restitution process is that it has been done gradually and in the absence of a proper legislative framework (Bouriaud, 2001; Bouriaud et al, 2005). The graduate restitution of forest estates was an important field of competition between various individuals and interest groups: foresters, 'former owners'; rural communities, politicians and those concerned with its conservation (Lawrence and Szabo, 2005:1). The land privatization was viewed as an important element in getting the political support of the rural population in the political elections of 1996, 2000 and 2004 (Bouriaud and Marzano, 2014).

Despite the relevant changes in the forest tenure and the changes in the organisational framework of the forestry sector, the policy framework is still represented mainly by regulatory means, among which the forest code (Law 48/2008) and additional governmental regulations take a central place (Bouriaud and Nichiforel 2010). Financial instruments apply only in few special cases while informational instruments rely mainly on the involvement of NGOs and development agencies (IRIS, 2003).

The development of the forest policy has faced a transition from hierarchical top-down processes to more integrated processes. Yet, the formulation of the first forest code (1996) was still based on a limited integration of the newly formed interest groups (private owners, private market actors, environmental NGOs etc) and consequently was influenced by the same actors (Ioras and Abrudan, 2006). In recent years, increase processes of public participation and transparency can be seen in the formulation of policy and development planning. Yet, opinions vary regarding the influence of different stakeholders in the decision-making process. Abrudan et al (2009) consider that the National Forest Policy and Strategy was developed through open, transparent and participatory processes, coordinated by the public authority responsible for forests. The Austroprojekt study (2008) sees nevertheless the participation of stakeholders in policy formulation and review as rather weak: in the past mainly experts have done the job; the establishment of a large sectoral and regional dialogue platform is recommended.

An important institutional milestone in the implementation of new management approaches in Romania after the fall of communism was considered the establishment of the first private forest districts (Abrudan et al, 2009). In 2011, the 132 authorized private forest districts had under administration 1.529 million ha of non-state forests (23 percent of the total forest area of Romania) – and today situation seems to be similar. Based on a national survey of private forest district managers, Abrudan (2012) explores the main challenges such entities are facing, as an evolving administrative alternative for private forests.

The fostering of forest association has also been related to regulatory means by imposing a minimum area for elaborating a forest management plan (Bouriaud and Nichiforel, 2010). The INDUFOR study shows that especially the small ALFOs are really starting from scratch when it comes to both organizational skills (management and

administration) and the un-readiness to rush into comprehensive and financially risky interventions when it comes both to services and business.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Forests and other wooded land classified as "publicly owned" comprise land that belongs to the State, either at the central or provincial level (counties), as well as communal forest land owned by communes, cities and municipalities.

"Privately owned" forests comprise areas owned by persons and families either individually or under some form of cooperative arrangement, by forest industries or by private organizations, i.e. private corporations, co- operatives or institutions (religious, educational, pension or investment funds, nature conservation societies) (Schmithüsen and Hirsh, 2010).

According to the Romanian Forestry Code from 2008, the following classification applies when characterising forest ownership in Romania:

A. Public ownership (see also definitions above by Schmithüsen and Hirsh, 2010)
   - A1. State owned forests, managed by National Forest Administration Romsilva (NFA)
   - A2. Municipal forest – forests owned by administrative units (communes, municipalities, cities, towns), managed by the private forest districts or by NFA

B. Private ownership
   - B1. Individual owners- forest owned by individuals and families
   - B2. Community forests: *composesorates (obsti)* and other community forests. *Composesorate* is an undivided group ownership association within which owners could not physically locate their individual forestland, however they can demonstrate with documents that they own the forest in common. Owners receive every year dividends according to land enclosed in the association.
   - B3. Other institutions: Churches and monasteries; associations and foundations; other moral entities.

Providing exact figures on the forest ownership structure in Romania is difficult as the restitution process is still not finished and consequently slightly different figures are presented in latest official reports.

Table 1: Forest Ownership in Romania (2012)

Ownership forms	Area (1000 ha)	% Area
A1. Public property of the state	3350	51
A2. Public property of administrative units	980	15
B1. Private property of individuals	1274	20
B2. Private property of communes – indivisible	744	11
B3. Private property of legal entities	172	3
Total	6520	100

Sources: INF (2012); WB (2014)

4.1.2. Critical comparison with national data in FRA reporting

The FRA national report presents data at the level of 2005. Given the fact that in Romania the latest restitution law if from 2005 the data reported differs substantially from the current situation. The ownership categories in the

FRA template can nevertheless be completed with the latest official data.

It has also to be noticed that the results of the National Forest Inventory (IFN, 2012) present nevertheless a different figure for the forest area (6.73 mil ha) compared with the official figure of what it is considered forest fund and which is also presented in the FRA report (6.39 mil ha).

Table 2: Ownership data according to FRA categories (2012)

FRA 2010 Categories	Forest area (1000 hectares) 2005	Forest area (1000 hectares) 2012
Public ownership	5090	4330
Private ownership	1301	2190
...of which owned by individuals	688	1274
...of which owned by private business entities and institutions	613	172
...of which owned by local communities	0	744
...of which owned by indigenous/ tribal communities	0	0
Other types of ownership	0	0
TOTAL	**6391**	**6520**

4.2. Unclear or disputed forest ownership

The report done by the National Auditing Court (Curtea de conturi, 2012) regarding the changing patrimonial situation of forests from 1991-2012 identifies that 0.56 mil hectares of forest have been illegitimately restituted (representing 10% of the privatised forests). At the end of 2010, 1983 law suits were still undergoing to clarify the ownership status of another 0.66 mil hectares (which represents almost 10% of the national forest area). The report presents multiple cases where the juridical system has granted unlawfully land title by restituting forest to alleged heirs of previous owners based on outdated/fake documents, to associations which in 1948 were given administrative rights and not property rights, to owners who before 1948 have lost the property rights in favour of the state (as guarantee for credits from financial state institutions) or by giving a larger areas than the one owned in 1948 (e.g. applying for the same area in two different counties). There are also reported cases where the same area has been restituted to 2-3 different persons.

Table 3: Status of forest restitution at the end of 2010

Ownership form	Forest fund in 1948 (ha)	Forest fund (ha)						
		Requested for restitution between 1991-2010	Validated through administrative procedures	Restituted	Not-restituted	according to the law:		
						18/1991	1/2000	247/2005
State forest, managed by the NFA	1.879.000							
Privat forests of individuals	1.516.000	1.906.000	1.352.000	1.213.000	139.000	9.000	44.000	86.000
Commune forests *(composesorate, obsti)*	1.330.000	1.515.000	801.000	736.000	65.000		26.000	39.000
Forests of municipalities and institutions	1.761.000	1.503.000	1.142.000	1.111.000	31.000		10.000	21.000
out of which:								
Religious and educational institutions		428.000	154.000	144.000	11.000		1.000	10.000
Municipal forest of administrative units		1.075.000	988.000	967.000	20.000		9.000	11.000
TOTAL	**6.486.000**	**4.924.000**	**3.295.000**	**3.060.000**	**235.000**	**9.000**	**80.000**	**146.000**

Source: Curtea de conturi (2012)

The most epic and long lasting ownership dispute is on the forestland that belonged to the Orthodox Churches from Northern Romania (Fondul Bisericesc Orthodox al Bucovinei- FBO). A group of individuals and organizations has been recognised as representing the former FBO. They claimed 350 thousand ha of forests mostly in Suceava county, currently managed by NFA. The dispute is related to the status of the former FBO as “owner” as alleged by the actual foundation or as “administrator” as claimed by the state representatives. The litigation is in the Courts procedures from more than 15

years now, with several decisions done at different jurisdiction levels.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

The legal restrictions for selling the forestlands varies based on the type of ownership. The public property cannot be sold. In the early stages of the restitution processes, many abuses have been reported regarding the selling of community forests (*composesorate, obsti*). Therefore, a law established after 2001 that the community forests cannot be sold (they are unalienable).

For the private forests a pre-emption right (in favour of, in order: the renter, the neighbour, the local inhabitants, the family, the State) applies, meaning that the owner is obliged to send an official notice about his/her intension to sell. If no reply is received in 30 days the owner can find another buyer. Nevertheless the National Forest Administration has seldom used this right, blaming the lack of financial resources or the lack of official procedures. The case of University of Harvard, owner of 32000 hectares of forest in Romania, is largely presented in the media as the investors decided to sell the entire forest since more than 600 ha of the area are disputed in court. NFA did not used its pre-emption rights in this case.

Since January 2014, the 7 years moratorium prohibiting the right of non-Romanian citizens to buy land has ended (as established when Romania entered the European Union in 2007). Since 1st of January 2014, any foreign citizen can acquire land on the free market in Romania, after the pre-emption right rule is observed. However, the law establishing the procedures for such transition is still disputed between the Parliament and the president.

4.3.2. Specific inheritance (or marriage) rules applied to forests

Specific inheritance rules apply only in community forests. According to the legal statute of the community forests, there are two distinct situations:

1) the right to own forests belongs to the persons as long as the person is living in the village (community). When the persons establish his residence in other places, he loses the right to own forests. Further, this right is transmitted to new comers in the village, or, more often, the right will be shared amongst the remaining commoners;
2) the right to own forest in community forests cannot be loss, and cannot be transmitted besides to the inheritors. In this case, when a person dies without inheritors, the inheritance passes normally to the state.

Different situations may exists, however, as far as the restitution law states that the functioning of the community forest is regulated by the statute in force in the year 1948.

There are now other specific inheritance rules for the forests belonging to individuals.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

In 1948 a nationalisation process has started, replacing the private property on lands with collective farms. The process has resulted in forced "collectivization", since wealthier peasants generally did not want to hand voluntarily over their land (Kilgman and Verdery, 2011). In the last two decades, the transformations in the property rights system led to important changes in the Romanian forestry sector. The forestland restitution took place gradually, based on three main restitution laws that resulted from important political debates:

1) According to the first restitution regulation (Law 18/1991), only individual private pre-1948 owners of forests received one hectare of forest per person. Approximately 353000 hectares of forest (5,5%) were returned to more than 400.000 individual owners (Nichiforel, 2007); about 9000 hectares are validated under this law but not restituted given ongoing court disputes.

2) The second restitution law (Law no. 1/2000) sets restitution limits at: 10 hectares for individuals, all areas for previously owned forest in case of towns and villages, all area for forest in case of communities (or maximum 20 hectares per community member) and at maximum 30 hectares for churches and schools. Protected forests were exempted from restitution. More than 2 million hectares have been claimed under this law, thus increasing the share of non-state forest to 35%. About 80000 hectares are validated under this law but not restituted given ongoing court disputes.

3) The last restitution law (Law no. 247/2005) aims to re-establish the pre-nationalisation ownership structure and according to its provisions all forest (including protected areas) should be restituted to the former owners irrespective of size, location and ownership type. At the end of 2010, 47% of the Romanian forests were in non-state ownership and it is foreseen that, at the end of the restitution process, approximately 60% of the country's forests will be owned by other owners than the state (Abrudan et. al, 2009).

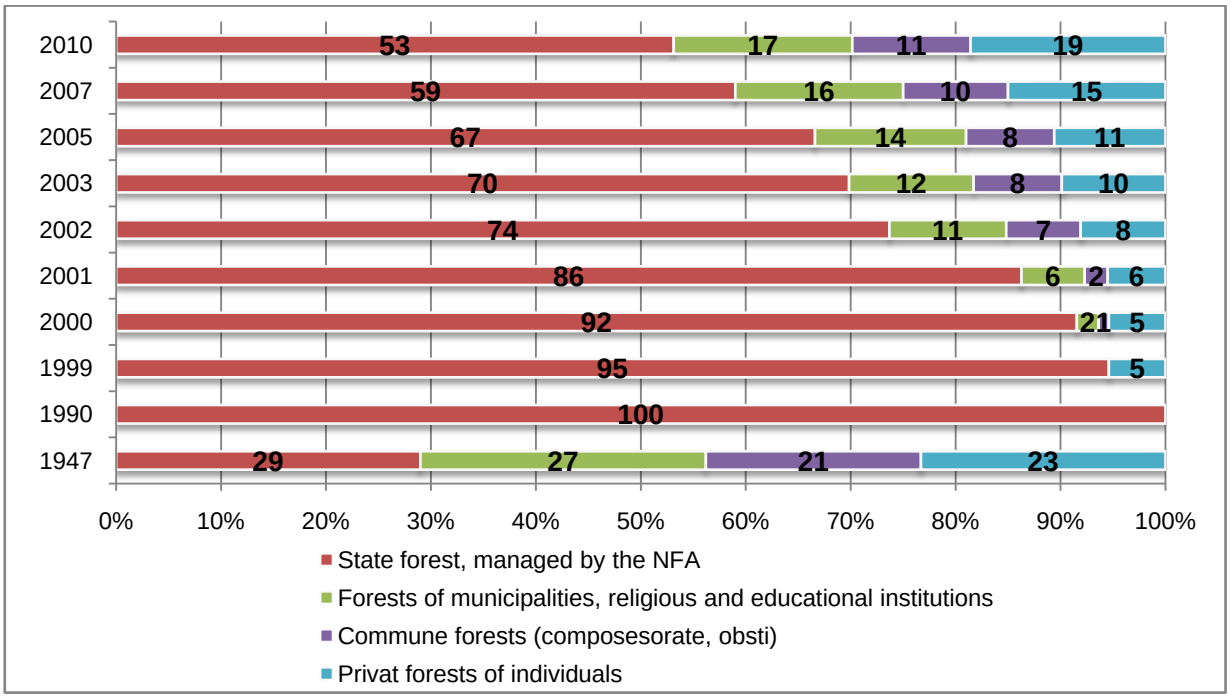

Figure 1: The evolution of forest restitution in Romania

4.4.2. Changes within public ownership categories

The public ownership categories are represented by the state owned forests (50%), managed by National Forest Administration Romsilva (NFA) and by municipal forest (15%) – forests owned by administrative units (communes, municipalities, cities, towns), managed by the private forest districts or by NFA.

As described above all areas for previously owned forest in case of towns and villages have been restituted based on the Law 1/2000 which makes that currently 0,98 million hectares (15% of the total forest area) are currently in the property of 1399 municipalities (IFN, 2012). Some of the municipalities with significant forest areas have established private administrative forest units (e.g. the forest of the municipalities of Baia Mare and Sighisoara which also got the FSC ® certification).

4.4.3. Changes within private forest ownership

Besides the changes in private forestry occurring as a result of the three restitution laws previously described (4.4.1) relevant

changes in the structure of private ownership occurred as part of subsequent transactions between private forest owners. Especially large forest estate have been of interest for private investors and financial funds. In 2010 seven large private forest owners from Romania (especially with private foreign investors) established their own association – Proforest – The Association of the Large Forest Owners from Romania. The Association intends to play an important lobbying and commercial role in the Romanian forestry sector (World Bank, 2014).

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

As described above (4.4.1) the main trends related to ownership changes refers to the restitution of forest lands which resulted in the fact that in the last 20 years half of the forest land has changed its ownership status (table 4).

Table 4: Main trends of forest ownership changes

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	3
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	3
• New private forest owners who have bought forests	2
• New forest ownership through afforestation of formerly agricultural or waste lands	0
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	1
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

An important changes in the private forest management was the privatisation of forest administration with the establishment, in 2002, of the first private administrative district. According to Abrudan (2012), 132 private forest districts were authorized by the public authority responsible for forestry at the level of 2011. They have under administration 1.529 million hectares of forests which are not public (23 percent of the total forest area). A more detailed description of the forest administration is described in subchapter 5.1.

The increase share of private property resulted in the fact that large forest owners appeared. Some of the large estates have been purchased by foreign investors who brought the know-how in private forest management and established connections with academia and consultancy companies to adapt their management in the context of the existing regulatory framework.

4.5. Gender issues in relation to forest ownership

Desegregate ownership data based on gender do not exist in the official reports nor in the literature review.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic (“Characterized or motivated by philanthropy; benevolent; humane” OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber

returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

The not-for-profit ownership of the forests in Romania is a new concept which provides only disparate examples (table 5). The main organisation which has claimed forest given their charitable status is the church. They have been successful in getting 30 hectares of forest for each parochial community given by the law 1/2000 which makes that today the churches and monasteries own around 140,000 hectares of forest in Romania.

Table 5: Forests owned by not-for-profit organisations

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts	X		
• NGO with environmental or social objectives	X		
• Self-organised local community groups		X	
• Co-operatives/forest owner associations			X
• Social enterprises		X	
• Recognized charitable status for land-owners	X		

The Foundation Conservation Carpathia provides a first example on the interest to acquire private land with the aim of protecting their biodiversity or restoring their natural ecosystem (see below the case study box).

The first forest planted by an NGO was established in 2010 by the Association ViitorulPlus. They have planted 37 ha of forests on public degraded land.

In July 2014 the NGO has reported that 8 ha have reached the canopy closure and have been declared as forests (www.viitorplus.ro/inaugurarepadureviitorplus).

Some examples of Payment for ecosystem services (PES) can also be identified when the NGOs get involved in the acquisition of the rights to restrict the harvesting of forest stands. For example, WWF has offered the municipality of Sinca Noua an annual payment in order to keep the pristine forest untouched from forest operations.

CASE STUDY 1: FOUNDATION CONSERVATION CARPATHIA (FCC)

The Foundation Conservation Carpathia (FCC) implements a project which aims to buy approximately 200 hectares of forests that have never been cut and where the natural tree composition and age structure is still intact. The aim is to make sure that these forests obtain complete protection by stipulating a non-intervention approach in the Management Plan for the Natura 2000 site Muntii Fagaras. Another focus is on purchasing approximately 400 hectares of clear-felled areas and 1,000 hectares of managed/planted forests which will allow FCC to take all the measurements necessary to restore the natural ecosystem.
The project is co-finananced via the EU's financial instrument supporting environmental, nature conservation and climate action projects - Programme LIFE+ namely the EU LIFE11/NAT/RO/823 Ecological restoration of forest and aquatic habitats in the Upper Dimbovita Valley, Muntii Fagaras.

Source: http://www.conservationcarpathia.org/life_en/index.php?lg=en

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of

traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

CASE STUDY 2: OBSTEA TULNICI

Localisation: centre of Romania (middle of the Carpathian Mountains), county Vrancea, municipality Tulnici, village Tulnici.

Area: 13058.3 hectares. Number of members: around 2000

Obstea Tulnici is an ancient forest owner who appeared probably in the year 1450, when the provincial king granted forest, agricultural and pasture land to the villagers. In exchange, the villagers engaged themselves to provide defending services, e.g. provide soldiers in the local kingdom army, and provide a permanent watching of the province border. The ownership title given to villagers in 1450 by the king Stefan cel Mare was recognized and respected during five centuries, until the socialist land nationalization occurring in 1948.

Forest management in the past. Before 19th century, the lack of infrastructure (roads) preserved the forests that were managed in a close-to-nature way, with selective cuttings based on villagers' needs (fuelwood and rural buildings). In the period 1905-1928, when large companies occurred in Romania, a large part of the forests was clear cut, but only a small share was reforested. In the period 1930- 1948, the timber extraction was limited again to supply the villagers needs, the most beautiful individual trees being extracted, mostly silver fire and Norway spruce. At that time, the lack of afforestation work, the practice of oak branch cutting for husbandry, grazing into the forests and a forest fire in 1945 which destroyed 900 ha lead to a high degradation of Tulnici forests. After nationalisation, the implementation of forest management plans established since 1951 has improved forests, managed mostly as even-aged stands, naturally regenerated.

Management regime after the forest restitution. Obstea Tulnici has been re-created in the year 2000 after the enactment of the second law on land-ownership restitution (Law 1/2000 for recognizing the property rights on agricultural and forest lands). In December 2002 (ownership title 709/2002) Obstea Tulnici received back 13058.3 ha, all of the forestland being situated in the area of the Tulnici municipality.

Initially, the Obstea effort to get back the forests was leaded by a steering group "Initiative Committee" of 30 persons who elected a president acting in the period 2000-2002. In 2002 the Administration Council (five members and one president) is elected through secret voting for a period of two years. The General Assembly of Obste Members decides in 2002 that Obstea will create its own forest administration unit (private forest district) and each family member of Obstea Tulnici will receive per year 3 cubic meters of firewood and 1 cubic meter of coniferous wood. The private forest district Obstea Tunici is created in September 2004. The villagers started to be unsatisfied with the forest management regime that allow them a small quantity of wood, while intensive harvesting activities are undertaken in the Obstea forests, and the Tulnici mayor' sawmill seems to flourish while the rights to harvest timber are granted by the Council to various firms at a very low price. This is the first conflict brought by the management of common forest of Tulnici Obstea. The second one was opened when the forests of Obstea Tulnici where included in the Natural Park Putna-Vrancea created by the Governmental Decision 2151/2004. The new protected area came up with strict regulations and between 2004 and 2006 the villagers did not get their timber rights, while the sawmills were taking all the timber extracted from the forests. Therefore, in 2006 association members organised new elections. The town mayor (owner of sawmill) has his own appointed candidate, and supported him through the distribution for free of firewood from his sawmill. Surprisingly, at the election the villagers have chosen as president another candidate, a forest engineer who was the chief of the forest private district Obstea Tulnici. The new president invests in infrastructure, sells the timber at a higher value, and increases the local competition in bringing for harvesting new firms (up to then the harvesting was provided only by the Tulnici mayor's firm). As results, the private forest district was able to provide the quantity of 3 cubic meters firewood and 1 cubic meter coniferous timber for each member of the Obstea families (previously, each family received this quantity). The president was re-elected and led the Obstea Tulnici organisation and the private forest districts managing the Obstea forest until the elections from 2010. Unfortunately, the president elected in 2010 sells the timber at low prices again, the Obstea Tulnici borrow large quantities of wood from the local firms to pay the villagers rights, putting the Obstea in a very difficult financial situation again.

Opinions, attitudes and expectations of Obstea Tulnici members. A questionnaire was conceived and implemented in 2012 by the USV team with the idea to identify opinions and expectations of Obstea Tulnici members regarding the management of their forests. A number of 52 persons answered 15 questions.

At the moment when they received the forest back, in 2002, most of the members (57%) have not particular expectations from forests (income, timber), considering that owing forest is more related to community value than to monetary benefits.

However, when asked "which are the advantages that owning forest brought to you", 67% of the expressed options make reference to firewood and to wood for buildings. Surprisingly, the answers to the next question, "in your opinion, why the forest is important" show a clear perception of villagers about the forest services and products, other than timber –related. Thus, the first two options, "forest is important for tourism" and "forest is important for people's health because it provide clean air", got each of them 33 answers from the total that means 22% for each. On the second place, the forest is important for mushrooms and berries (16%), but also for hunting and for climate change mitigation (7% of the preferences each). Overall, non-timber services cumulate 76% of the expressed options, while timber-related benefits 24%.

The answers given by 54 people to the question "Which were the problems you have had in managing your forests in the latest 5 years" (open-answer question) conveyed the villagers concerns about the forest management applied by the representatives of their organization. Thus, the answers received are classified as follow:

"massive deforestation, illegal deforestation, massive cuttings, timber robbery, excessive cuttings, illegal cuttings and massive cuttings, the non-respect of the forest legislation" cumulate 26 options, e.g. 47%;

"too much timber business, exaggerate importance of timber production, involvement of politics in the Obstea problems, political influence in forest management, lack of communication between the Obstea representatives, and Obstea members" cumulate 10 options, e.g. 18%;

"I do not know, the problems were not made public, I did not have problems" cumulate 19 options, e.g. 35%.

The high share of individuals who have chosen not to mention the problems is an indicator of the conflicting situation inside Obstea Tulnici. The problems mentioned by 46% of the respondents are the ones we have identified above: mismanagement, corruption-related issue, un-transparent management of Obstea forests, strong political influence (via Tulnici mayor) over the management of the timber resource and mostly over the timber selling.

Finally, the members were asked to evaluate the management of the forests inside the Obstea community (open-answer question). The answers received (53 in total) are classified as following:

- positive evaluation: acceptable, good, beneficial, satisfactory cumulate 11 options, e.g. 22%;
- negative evaluation: bad management, a lot of deficiencies, a disaster, very bad management, illegal management, not adequate, negative, bad organisation, the representatives of Obstea follow only their personal interests, cumulate 39 options, e.g. 72%
- not answered: 3 options, e.g. 6%.

Therefore, despite of their reluctance to nominate the Obstea management problems, a majority of respondents negatively evaluate the management of community forests.

Source: Laura Bouriaud, bouriaud@usv.ro

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Romania

The forest owners are obliged to manage their forests within an authorised forest district. Three alternatives are possible:

1. The owners can create their own forest district. The rule recently abolished has required a minimum surface area, e.g. the forest owners should hold, individually or in association, at least 3.000 hectares in plain area, 5.000 hectares in hilly area, and 7000 hectares in mountains. This was an important impediment for creating private forest districts.
2. The owners can also conclude administration contracts. The territoriality principle applies: the administrator should be the forest district which is closer to the location of the forest owned.

3. The owner can also conclude contracts for various forest services with a services provider for ensure the forest guarding, the forest regeneration, the forest management planning (principle of territoriality applies again: service provider is the forest district closer to the forest owned).

According to their legal status the forest districts are:

- public forest districts, which belong to the manager of the public forests Romsilva;
- public forest districts which manage the communal (municipalities') forests;
- private forest districts, which have the statute of associations or foundations.

The first private forest district has been established in 2002 as an administration entity responsible for the administration and management of a local community forest. Currently the private forest districts administrate about half of the private forests in Romania (Abrudan, 2012). The rest are administrated by public forest entities or they are not administrated. Especially the small parcels resulting from the first restitution law are not administrated. In total, 560 thousand ha of private forests are not under any form of administration (Raportul Curtii de Conturi, 2012).

Based on a survey conducted with 88 managers of private forest districts Abrudan (2012) identifies three most frequent problems in the relationship of PFD with the forest owners: the poor understanding of forestry by the new forest owners, the political and economic pressure on forests and management and not-fulfilling of the financial obligations of the administration contract.

5.2. New or innovative forest management approaches relevant for new forest owner types

There are no published results on new forest management approaches applied in private forestry. Considering the limited involvement of owners in deciding on the management objectives of their forests, the implementation of new management objectives often relies on processes of institutional changes at the bureaucratic or political level (Nichiforel and Schanz, 2011). In practice this is translated on the fact that in order to get financial benefits from their forests, owners adhere to bureaucratic procedures meant to legalise the harvesting. This has transformed for example the use of sanitation cuttings as one of the main forest operations in small scale private forestry as long as the forest owner can convince a forest technician that the wood is getting dried even though in many cases it is not. Obviously that corruption plays a role in this context (Bouriaud and Marzano, 2013).

The national financed project INFORMA (Institutional entrepreneurship and impacts on sustainable forest management in Romania: www.silvic.usv.ro/informa) has identified three directions of entrepreneurial approaches in private forestry: productive, institutional and predatory entrepreneurship. The first two approaches have an important innovative component and take various forms of investments from investments in silvicultural works to lobby activities. The identified categories are in the process of being empirically validated.

Examples of good practices may exists, such as the marketing of timber based on single logs, introduction of forest certification or marketing of non-wood timber goods and services, however the forest management appears to be dominated by a bureaucratic decision-making system, with few connections to the market.

Attitudes towards the adaptation of forest management practices vary according to the type of property, its size and the unit providing forest administration. Thus, forest of communities are perceived to perform better in term of the responsible use of the resource with the notable example of some private forest units which got their forests FSC certified. The increased implementation of forest certification in private forests shows that voluntary instruments are accepted as a solution to prove that private forest management may be done in a responsible way. Certification has actively contributed to a better understanding of the role of safety issues, environmental concerns and community involvement in forest related decisions.

The private forests districts established by foreign investment funds to manage their forests provide also examples of a modernization of the technical works conducted in their forests from more intense silvicultural practices to investments in forest roads and technical machineries. At the other extreme, individual forest owners, given the small size of their property and the lack of associations, are less interested in a sustainable use of the resource, contributing with an important share in the private forests deforestation rate. This had an impact on the general perception of private forestry in the country, which for many years was highly negative image both from the foresters itself, the civil society and from some politicians (Bouriaud and Marzano, 2014; Dima, 2013; Muresan, 2011; Lawrence, 2009; Lawrence and Szabo, 2005).

5.3. Main opportunities for innovative forest management

The discussions regarding the elaboration of a new Forest Code: according to the Romanian law formulation rules, the process of producing a new forest law is characterised by multiple level negotiations amongst forest sector officials, politicians, and civil society representatives. In our experience, the negotiation for a new forest law are an effective way of participation and an opportunity for eventual substantial changes, while the other policy processes associated with decision–making in forest sector are not.

The increased association of forest owners and of forest administrators and consequently of their lobby power. As reflected in many scientific articles published after 90's, Romanian forest policy is ignoring the specificities of private forestry. As concerned as they are to improve their daily operational legal environment, the representatives of private forest owners and private forest administration units have along the time performed an intensive lobbying for changes in the legal frame. Two forest owners associations (Nostra Silva and Proforest) have been active in bringing on the political agenda measures supporting private forestry.

The discussions regarding EU financial schemes 2014-2020 supporting private forests resulted in the creation of the first lobby groups aiming to influence the inclusion of private forests as possible beneficiaries of the financial schemes. This has launched a discussion of possible means to finance forest owners for new management approaches which could be possible in the current legal framework. At the moment the financial scheme approved by the government still excludes private forest owners from the possibility to access financial support for forest management, nevertheless active protests are currently ongoing. In May 2014, the forest owner association Nostra Silva has organized a five day protest in Strasbourg asking for the inclusion of private forests in the EU financial scheme 2014-2020.

The foreign investments in forest land acquisition: the investment requires clear, long-term rules about the forest management in order to do a profitable business. Forestland management business plans requires transparent and clear decision-making system, being less compatible with public bureaucracy and corruption. Managers of the acquired forestland have the obligation to produce profit, and often they are constrained to find innovative measures in order to obtain the expected results.

Training and capacity building projects implemented to support the management of private forests are a source of know-how transfer. Besides the projects implemented by the World Bank (see subchapter 3.1) capacity building projects targeting private forestry have been implemented by WWF and forest research organisations. Currently the Swiss Centre for Mountain Regions is implementing a project with a duration of tree years (2014-2016) which aims to strengthen the capacities of forest owners associations in order to 1) develop organizational strength, so that they become more efficient and gain higher internal cohesion 2) develop management skills that respect certification standards (PEFC and/or FSC) 3) create networks with other key players and 4) improve lobbying and policy-making in order to claim proper forest law enforcement (e.g. proper establishment of management plans and implementation of them).

5.4. Obstacles for innovative forest management approaches

5.4.1. Laws and regulations

Forest owners' needs are not taken into consideration in forest policies: In practice, the forest engineer's regular activities are based on 8 volumes of technical standards, covering all fieldworks needed in forest, from management planning and forest measurement to afforestation and forest harvesting. They were revised several times, but few changes occurred, compared with the changes in the general legislation. Although they are too detailed and too technical, in practice the control of law implementation is often based exactly on the "rule of technical standards". Therefore the forest engineer's flexibility of decision in the field is strongly limited/regulated (Bouriaud and Marzano, 2014; Bouriaud et al., 2013; Nichiforel and Schanz, 2011; Bouriaud and Nichiforel, 2010; Nichiforel, 2010; Lawrence, 2009).

Lacking the interest in forest policy the forest owners are also paying for their incapacity to address technical issues raised by the forest management. Yet the management plans which are the basis for all works carried out into the forests are produced according to a set of technical standards by specialized companies approved by the forest agency and forest owners have no word to say.

Lack of forest law enforcement leads to illegal logging: the main aspects of illegal logging are related to various means to avoid the highly restrictive legal framework which leads to not well-established or implemented management plans, involving: overestimating the age of trees (in order to cut them sooner), altering the stand density in order to apply to clear-cuttings, presumably followed by afforestations works, which never took place, or salvage cuttings applied to healthy and vigorous trees (WWF 2005). Incorrect estimations of wood volume and quality, illegal harvesting, and illegal transport and export are also factors and means to promote illegal fellings.

5.4.2. Logistics and access to resource

The forest infrastructure is among the poorest in Europe which restricts the process of introducing modern forest technologies and practices in harvesting and silviculture. The road density is very low (6.2 – 6.5 m/ha) which results in the fact that many forests are still untouched or with limited management interventions due to high forestry operation costs. While on the good side this turns in the fact that Romania still holds important area of pristine forests on the other side this limits the available harvesting quota in productive forests which are not accessible by the forest road network. It is to be mentioned that each year about 1.5- 2 M m^3 are not harvested being located in remote areas (Austroproject, 2008).

5.4.3. Education and training of forest owners

Forestry high schools and the higher education institutions provide the technical staff employed by the sector and also carry out forestry research. The recent "inflation" of graduates of both medium and higher education institutions has impacted both positively and negatively on the development of the forest sector. The negative effect resulted from the lower level of knowledge of the graduates (Abrudan et. al, 2009) and the lack of entrepreneurial skills. There is need for technical training at all levels of forest agents, private forest owners, harvesting companies, private wood processing companies etc. Government forest agents are not any more a kind of administration body, but are confronted with various duties of high responsibility in modern Romanian society. In addition to technical, financial and structural issues, the restitution process evokes complex social challenges with private forest owners. Forest Inspectors need specific qualifications to cope with this situation (Austroprojekt, 2008)

5.4.4. Biodiversity conservation designation

Forest owners organisations have been less involved in most of the processes, programs and activities related to nature conservation in the last decade. Consequently, there are examples of negative cumulative effects of harvesting on water quality, flora and fauna. However, in the last decade foresters have

increasingly become more open to the dialogue with conservation organizations and the general public on nature conservation issues. Forest certification processes in private forestry will certainly improve the nature conservation skills as well as the cooperation with other stakeholders.

CASE STUDY3 : APAPET – THE ASSOCIATION OF FOREST OWNERS AND FOREST ADMINISTRATORS IN EAST TRANSILVANIA

The Association of the forest owners and managers from the East of Transylvania, APAPET, (Asociatia Proprietarilor si Administratorilor de Paduri din Estul Transilvaniei) is a private entity, established in 2012 to stand for the economic, technical, commercial and social interest of its members in relation to public authorities and other juridical persons at the national and international level. Under its umbrella seven independent forest management enterprises, FMEs (Ocolul Silvic) and 5 unions of forest owners are gathered. The contractual management of forests by either governmental or private FMEs is mandatory under the Romanian law (46/2008, art. 10). Each of the FMEs has contractual agreements with a certain number of forest owners (FMUs) which are split in private owners, communal owners and compossesorates, an undivided common ownership type. The FMEs are responsible for management and protection of the forest.
All forestry activities, e.g. planting, harvesting inventory etc. are planned and supervised and monitored by the FMEs in compliance with the Romanian Technical Norms for forestry which are obligatory. The actual work is then carried out mainly by private companies that need to be testified by the Romanian Ministry of environments and forest. The sale of the timber is done either on the stump or at the road side, after having the trees cut by FMEs or directly by the forest owner.

The association has successfully applied for group forest certification a peculiar form of certification which puts the associations as a monitoring association for the implementation of FSC ® principles and standards among its members. This can be considered as an organisational innovation as it has substantially reduced the cost of certification at the level of individual owners and has strengthen the relation between the administration and the owners.

The FME Gheorgheni, part of APAPET has also become the first private administrator of a Natural Park braking the monopoly of National Forest Administration.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

The main process influencing the development of ownership is still the implementation of the restitution of forests to their former owners. The audit undertaken by Romanian Court of Accounts (Curtea de conturi, 2012) pointed out a long list of law trespassing situations associated to the implementation of forest restitution laws. According to this report that there are more than 0.5 million hectares of forests (e.g. 7.8% of the national forest area) in different phases of litigation in the Courts for clarifying their ownership status. Currently, there are no other policy actions or initiatives to change the forest ownership structure.

The Forest Code from 2008, still in force, tried to impose an inheritance right in favour of one inheritor, in order to avoid forest fragmentation. The rule was changed immediately, with the justification that the forest code (a sector-based, inferior law) can not regulate an issue that belong normally to Civil code (a basic law of the society). The Forest Code attempt to avoid forest fragmentation was the third one. The first two attempts were rejected in the same way. In other words, there is no means to avoid the fragmentation of forest parcels due to inheritance process.

Instead, the pre-emption right was instituted by the Forest Code from 1996 and it was maintained approximately the same in the Forest Code from 2008. In its formulation from 1996 and from 2008, the pre-emption right is maintained in the favour of the State

who exercises it through the public forest manager (NFA Romsilva). Romsilva should manifest in 30 days the intention to buy or not the forest holdings. The rule applies for forest holdings located inside or nearby the public forests. Ignoring this rule is sanctioned by declaring the selling void. In 2012 (Law 60/2012), this pre-emption right was modified. Now the right is constituted in the favour of co-owners and forest owners from neighbourhood, irrespective if they are public or private entities. However, the Law states that when the forestland has the State of the municipality as neighbours, then their pre-emption right is "stronger" that the pre-emption right of the other neighbours.

Currently, for agricultural land new rules were imposed by the Law 17/2014 on the selling-buying agricultural land (*Legea nr. 17/2014 privind unele masuri de reglementare a vanzarii-cumpararii terenurilor agricole situate in extravilan*). The Law comes to regulate the transactions with the land, due to the fact that foreign citizens were excluded from buying land during the seven years after Romanian accession to EU in 2007. The pre-emption right is established in favour of co-owners, renters, neighbours, and State, in this order and in the same conditions of price.

Afforestation of former agricultural land (or marginal lands) was one of the strongest sustained policy targets in the latest two decades (Governmental ordinance in 1998, Law in 1999, Forest Code in 2008 in force, Law 100/2010 still in force, Ministerial Order 2353/2012 on the Fond for forestland improvement; Law 289/2002 still in force on Forest belts). A National Programme for Afforestation was drafted and approved in 2010. The Programme forecast an amount of 400000 thousand lei (around 95 million euro) for the afforestation of marginal lands on private properties. The financing should be provided by the State budget, the Environmental Found, and the Found for forest improvement.

Until 2013, the first afforestation of agricultural land could be paid also through the FEADR (European Agricultural Fond for Rural Development – FEADR). For the period 2014-2020, the FEADR adopted by Romanian Government drastically reduced the part of money available for afforestation or other kind of payments in forest sector. Only 100 million euro were granted to the afforestation of agricultural or non-agricultural land for the period 2014-2020, while in 2011 only, for example, 50 million euro were spent in the same purposes. The civil society (owners and WWF) has organised a street protest in end of March against the forecast sub-financing of forest sector.

Despite of strong policy statements about the need of afforestation, practically there are no new forest owners due to artificial afforestation of lands. In fact the forest area is increasing mostly due to the natural extension of forests on abandoned agricultural lands, for example pastures or land not used anymore for hay-making.

In a press release, the executive director of Romsilva, main forest manager of State forests, acknowledged that, for the first time, 400 hectares of private owners forestlands (subject of clear-cut after the forest restitution) will be re-afforested in 2014 (http://ape-paduri.ro/doina-pana-avem-prevazute-29-741-hectare-pe-care-se-vor-derula-lucrari-de-regenerare-a-padurilor-in-2014).

6.2. Influences of policies in forest management

6.2.1. Legislative and administrative frame of forest management in Romania

The regime of the private ownership. The private ownership is granted by Romanian Constitution. However, the Forest Act states that the forests, irrespective to the form of ownership, represents "an asset of national interest". The restrictions of forest ownership, e.g. the prohibition to harvest, were attacked several times at the Constitutional Court, but each time the Court reinforced the obligation to comply with the forest legislation (there were 20 Decisions of the Constitutional Court between 2000 and 2008 regarding mostly the penalties against the forest owners).

Despite the strong State intervention in forest use, the title on the forestland is secured. Yet the Romanian State was sued in international Courts for violation of property rights in the context of the privatisation/restitution of lands, there are practically no taking over of land while the title is acquired via ordinary market transactions.

Principles of law. The private forests, irrespective to the form of ownership (individuals, corporative, common) is subject of forest regime. The forest regime applies equally in public and private owned forests, with few differences. Therefore, the Romanian forestry is based on the principle of unitary, compulsory, and ecological-sound forest management system:

- the forest regime applies to all national forest estate (forest fund). Forest estate includes all land covered by forests, e.g. minimum 0.25 ha covered by trees which should be at least 5 m tall at the maturity. The concept is used to design the territorial competences of forest laws;
- the ecological objectives of forests are prevailing over all other objectives;
- the forest ownership is subject of the regulation of Forest Code. The main obligations are:
  - to ensure the administration of forests;
  - to have a forest management plan;
  - to ask for approval of harvesting operation, that can be done only within the provisions of a forest management plan;
  - to ask for the marking of the trees before harvesting;
  - to comply with the rules regarding the control of legality of timber harvested and transported.

Therefore:

1. economic principles (obtain a reasonable profit by using the forestland) has little if any consideration in the forest policies;
2. the specificities of private investment in forests (shorter time horizon, return, market oriented strategies) are not recognised;
3. the principles of voluntary, partnership-based or incentive based mechanisms for forest management are not considered in the legislation.

The forest legislative system. The elements of the forest legislative system are the Forest Code, the implementing acts, and the forest technical norms. The new Forest Code, adopted 19.03.2008, and entered in force on 30.03.2008 contains the main rules of forest management regarding administration, forest management planning, forest regeneration, forest harvesting, forest protection, legality of timber harvested and transported. The new forest code does not bring essential changes; it does not represent a disruptive change of forest legislation as far as the Code is on line with the main principles of forest law governing the sector since 1996. The Forest Code is implemented via Governmental Ordinances, Governmental Decisions and Ministerial Orders. That means approximately 150 different legal acts in force that can be grouped in the following fields of regulation:

- administration of forests;
- control of law implementation, forest law infringements;
- timber marking, forest harvesting and transportation;
- forest reproductive material;
- statute of forest staff;
- hunting regulations;
- rules of selling timber from public forests;
- organisation of public forest manager;
- forest roads.

Forest sector is mainly regulated by forest law, which tends to cover all the activities in forests, and all forests. However, the environmental protection law started to influence the forest managers decisions, particularly in the case of protected areas and of forest areas included in Natura 2000 network. In the latter case, the forest management plans should be correlated with the Natura 2000 management plans. The incidence of environmental regulation is stronger in the forest harvesting activities.

While the Forest Code represents rather a simple, synthetic legal act, the subsequent regulation is overdeveloped, with sometime contradictory rules, bureaucratic procedures, and characterises a rigid frame of forest management. The main problem in the control of law compliance is that the legality of forest management practices assessed according to this very bureaucratic frame.

6.2.2. Forest management planning in private forests

Having a forest management planning is compulsory in all forests. Without a FMP, the owner cannot harvest any product from his/her forests. For forest areas under 100 ha, the costs of forest management planning (some 3 to 5 euro per ha, each 10 years) are supported by the State. The forest management is established for each production unit inside a forest district, with little attention paid to the structure of the ownership.

The forest owner is not consulted in the process of forest management planning, which is established by specialised firms, using specific technical norms and software. Once elaborated, the forest management plans are approved by the Ministry and become compulsory rules of forest management for the respective forests.

Clear cutting is allowed only for some species, eg. Norway spruce, pine, on restricted areas (maximum 3 ha at once); they are prohibited in national parks. Forest regeneration should be done in two seasons after the final cutting. 15 to 25% of the income from final cutting should be directed to the forest regeneration and conservation fund. The harvesting age results from the process of establishing target grade for each stand, and it is usually higher than 100 – 110 for Norway spruce or 120 for Beech. In stands with protection functions, the harvesting age is even longer by 20 to 40 years. Therefore some oak-based or Beech based stands can be harvested only when they reach 140-160 years.

At the beginning of each year, the forest district should report about the realisation of the forest works planned in the forest management plans.

Despite the imposed regulation there are approximately 1 million ha of forests (approximately 15% of total forest area) without management plans (World Bank, 2014). It is assumed that the majority of these are smallholders' forests because of the expense of complying with policy requirements for forest management planning. Most of these areas are lacking any investments in the forest regeneration phase being subject to natural succession of species.

6.2.3. Timber harvesting and transportation

The volume harvested cannot be higher than the volume established in the forest management plan, and it cannot be harvested in other stands than in those forecast in forest management plans;

The harvesting can be done only with authorised forest harvesting provider; the private owner can harvest by himself up to 20 cm per year only. The trees to be harvested should be marked with special hammer by the forest staff.

Timber transported need special papers as provenience proof. The origin of timber can be checked any moment on public roads or at the sawmill gate or inside by mixed teams formed by policemen and forest officials.

Starting October 2014 Romania has implemented a new legislation meant to combat illegal logging elaborated in the framework of the "due diligence system". The legal act aims to assure the traceability of timber by means of an on-line system where every transport of timber has to be registered in real time. Every citizen can now call the emergency number and check if a certain truck with timber is legal (registered in the system) or not.

6.3. Policy instruments specifically addressing different ownership categories

The private administration of private forests has increased the efficiency of advisory systems. In some of the large private forest administrative units the management of private forest was increasingly based on more contacts with consultancy companies, financial funds, certification bodies, academia etc. Despite these changes the current advisory system in Romania can still be considered limited to the poor extension services provided by the state agencies and some successful examples in large scale private forestry.

The existing policy instruments do not differentiate the traditional forest owner from the non-traditional ones. At the moment there is no official or empirical criteria to differentiate various types of forest owners other than the size of the property.

Few of the measures integrated in the current version of the Forest Act (2008) stimulates the association of **small scale forest owners**. This is mainly done by the requirements to have a management plan elaborated only at a minimum size of 100 hectares. In practice it means that forest owners get associated only with the purpose to be able to have a forest management plan and harvest the timber legally. It is also true that the side effect of these measure is that about 0,5 million hectares of forest have no management plans so timber harvesting is done illegally. A new version of the Forest Code has been brought into the public discussion in autumn of 2014. Among other measures targeting private forest owners it came with the proposal that forests with an area of less than 10 hectares should be excluded from the need to have a management plan. Many professional associations and NGOs are against this measure. Another proposed measure in the new version of the forest code tries to stimulate forest certification as certified private forest owners will be exempt from the payment of the tax land.

6.4. Factors affecting innovation in policies

As introduced along the report the Romanian case present the conditions of a highly regulated political framework which direct the management of private and public forests. The forest legislation and especially the technical norms are considered obsolete being largely set during the times when all the forests were in public ownership (Austroproject, 2008). Therefore it is based on prescriptive type of forest management regime, with an over-reliance on technical norms as opposed to general guidance regulations which may allow for flexibility and innovation (World Bank, 2014).

Modernizing the forest legislation is currently a frequent statement of the existing associations of forest owners. Unfortunately the forest owners associations as well as their umbrella associations (Nostra Silva and Proforest) have important organizational weaknesses such as non-defined sense of purpose and strategies, missing administrative and organizational structures, non-active members etc. In general this leads to a forest policy not taking into account the interest of private owners and does not recognize their potential to contribute to a sustainable management of forests. Despite these constraints Nostra Silva has become very active in influencing the discussions for the elaboration of a new forest code, being successfully to introduce measures to support a more efficient administration of forest, compensations for private forests with high protective status or the exemption from the payment of the tax land for certified private forests. Nevertheless the frequent political changes at the level of government and ministerial agency responsible for managing the national forest's fund led to a reduction of efficiency in the process of forest policies elaboration. As a result, in spring 2015 the new Forest Code went back to the elaboration phase and the measures proposed by private owners associations have to be integrated again on the political agenda.

The lack of advisory systems for forest owners as well as the lack of skilled work-labour, particularly for harvesting sector are also important barriers for adapting the management practices even in the context of the current regulatory framework. The examples of foreign investment funds who bought forest in Romania and brought the know-how in private forest management establishing connections with universities, research institutes and consultancy companies may be soon followed by other private administrative units.

High competition and unsecured access to the raw material limits the firms role as drivers of innovation in forest management: Due to the strong competition on timber market and high cost of information about the quantity and quality of available raw material, the firms from sector spent much more effort in securing the wood procurement that in finding new markets or new products. The cooperation between the firms and the owners is weak, partly because the system of

selling timber is opposing to any form of long term partnership. For the owners perspective the short terms benefits are prevailing having no inventive for long term value adding. The concept of "niche" products is barely developed, the business culture being still dominated by routine exporting of saw-mills products.

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SERBIA

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1. Introduction

1.1. Forests, forest ownership and forest management in Serbia

According to the National Forest Inventory (NFI), the total forest area in Serbia (excluding Kosovo and Metohija) covers about 29.1% of the territory of the whole country making Serbia an averagely forest-covered country comparing to the European average. The total growing stock of forests amounts to 362,487,000 m^3 of wood, and the annual increment of timber is 9,079,000 m^3 of wood. Private forests in Serbia today occupy an area of 1,058,400 hectares, which is 47% of all forests in Serbia (Banković et al., 2009). This percentage is expected to increase, once the process of restitution of religious communities and individuals is completed. Forests in Serbia play very important role in national economy, particularly in rural areas where local population is very dependent on wood and non-wood products use.

Current forest ownership structure is deep-rooted in the historical development of the Serbian state. The first reliable statistical data on forestry funds were processed in 1938. They revealed the dominance of different forest ownership categories over the state one. State forests covered about 21% of the total forest area in Serbia in 1938. The present ownership structure is dominated by the state forest ownership (53%) and influenced by nationalization of forest land from former communal, private and church forests. The state of ownership after nationalization can be considered relatively stable with the close relationship between state and private forests. Private forests can be characterized by small forest properties, scarce representation of interest, and relatively low productivity. Due to nationalization, only small private forest lots exist under the strong domination of public service and fully dependent on public administration. New forest regulations create more freedom for small forest owners to decide on their property. Church property restitution in 2006 brought ownership changes and new forest management approaches.

The management of state forests is given to public enterprises and other public institutions, such as state universities or Serbian army. Long-term contracts were made with public enterprises according to the Law on Forests (2010) and law on Public enterprises (2012). Small private forest lots are in hand of individual owners but their management is under the big influence of Public enterprises located on their territory. The management of small forest lots (planning, silvicultural decision etc.) is under the strong influence of the state forest service while freedom is given to owner during implementation phase of management. Church forests make a new private forest owner category and they are considered to be a big private forest owner in Serbia since the end of the Second World War. Forest management in church forests is independent of the public enterprises and their decision making is absolutely free compared to the individual forest owners. Forest companies established by churches employ forest staff that can conduct all phases of forest management independently of the state forest services on their territory.

Serbian government enacted plurality of new policy documents as a consequence of the transition to democracy and market economy or as part of the preparation for the EU accession. A number of adopted documents have had direct or indirect influence on the forest sector. A significant change in the Serbian forest policy has been externally driven by the project named “Forest Sector Development in Serbia" (2005-2008) funded by the Finnish government and implemented by the FAO office in Rome. The Forestry

Development Strategy (2006) emerged as one of the outputs. In this document the Government declares that it will further support “the participation of the private sector in forestry development”, through more transparent and simpler governance procedures, among others. As an instrument for the implementation of the Strategy, the new Forest Law of the Republic of Serbia was adopted in 2010. The major difference between this Law (2010) and the former Forest Law (1991) is that private and public forests are considered to be equal ownership categories. Private forests got their recognition as an ownership category, contrary to the past times when they had been mostly neglected.

1.2. Overview of the country report

A country report gives a comprehensive overview of forest ownership issues in Serbia. **The review of literature** shows that the research conducted in the territory of Serbia was mainly focused on the following topics related to private forest owners:

1) association of private forest owners;
2) characteristics of private forests and private forest owners (social, economic, structural, ownership, etc.);
3) typology of private forest owners;
4) ownership transformation and change;
5) management of private forests;
6) policy instruments and policy issues;
7) restitution process;
8) system of support for the private forest sector in Serbia.

In this research, the main theoretical approaches are: theory of collective action; pluralism; exchange theory; voice, exit and loyalty; theory of critical mass; group theory; system theory; organization in forestry; forest management planning; forest policy, etc.

Regarding the **ownership structure** in Serbia, there are two types of ownership: state (53%) and private (47%). It should be noted that in the statistics related to private forests, the category of monastery and church forests, which have been returned through the process of restitution, has not been distinguished as a separate category and they belong to the category of private forests. There is another unclear situation regarding the ownership of the forests that belong to the legal entities that have arisen with the privatization of former cooperatives, public companies, and factory farms. However, there are no official data about this.

The structure of private forests in Serbia is characterized by a big number of forest owners, small to average area of forest property and a lot of small forest lots. Such forest ownership structure is the biggest obstacle to efficient forest management.

In Serbia, there is one forest community, named "Beočin Forest Community". Forest community performs all activities related to forest management. The establishment of **private forest owners associations** in Serbia started in 2006. Since then, 22 associations have been established at the local level. From 2010 onwards, some of them have been cancelled due to the changes in the Law on Associations and today there are only three active associations.

Forest management approaches in Serbia largely depend on the category of ownership. All state forests are managed according to the country's decision on the establishment of public companies that have rights to use the state forest under the law. The business policy of public enterprises is characterized by large influence of political parties and an excess number of employees that result in poor economic performance of enterprises. Private forests owned by natural persons have a large number of private forest owners. These forests are used mainly to meet the needs of their owners for firewood or not used at all. The process of plan development and tree marking in small-scale forests is the responsibility of public companies while the owners have the freedom to make their own decisions concerning the use of forest properties. After the restitution of church forests in 2006, new management approaches emerged. They were reflected in the emergence of independent forest companies for forest management without the involvement or influence of public enterprises. The business management concept in these new private companies has changed towards making profit for owners in accordance to the Forest Law.

Policy and ownership are related in various

ways: policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; on the other hand, the policy instruments that are emerging deal with the ownership changes, including the instruments designed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

The change of the forest policy in Serbia started as an externally driven process. During 2006, The National Forestry Development Strategy of The Republic of Serbia was created as an outcome of the Forest Development Program funded by the Finnish Government. The new Forest Law of 2010 emerged as a legal support to the Strategy and it defines new directions in the development of the private forest sector with the special focus on providing support to their interest organizations and enhancing the efficiency of the small-scale forestry management (Petrović, 2012). The process of Church Property Restitution brought new actors into the forest policy arena and generated new management approaches. Forest policy and legislation have not created proper policy instruments to deal with new forest owners.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include: literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European-scale state-of-art report. Case examples are used for illustration and to gain a better understanding of the mechanisms of change and of the new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The main methodological approaches used in previous researches are: case study, survey questionnaires *(door-to-door surveys)*, qualitative *(in-depth)* questionnaires, method of content analysis, etc. The review of the used literature is presented in this report.

Previous studies were conducted on the following levels: national (Serbia), regional (Western Balkans) and cross-national (South-eastern Europe, and Central and Eastern Europe).

The prevailing methods applied in all chapters are:

- collection and analysis of secondary data (from scientific and grey literature reviews and official statistical sources) and
- authors` expert knowledge.

The report includes a detailed review of the literature related to the main objectives of the COST action. The first activity was the search for literature (scientific papers, reports, and grey literature) on the topics of the Action. Then, the method of text analysis was applied. Furthermore, a bibliography of relevant and accessible literature was compiled. These activities were conducted in February 2014.

The study data used to determine forest owner types (Nonić et al., 2013) were collected during 2012-2013, and altogether 248 private forest owners were surveyed.

The questionnaire comprised 40 questions, divided into 3 groups. (Nonić et al., 2013):

1) Group 1: `socio-demographic characteristics of forest owners`
2) Group 2: `aspects of forest management`
3) Group 3: `economic aspects`

The data were processed in SPSS ver. 19 using non-hierarchical and hierarchical cluster analyses. The applied non-hierarchical methods were post stratification, two-step cluster analysis, and k-mean clustering. The hierarchical cluster analysis was selected because it can define homogeneous groups, i.e. the variables based on the selected characteristics (Nonić et al., 2013).

In order to study the changes in the governance of the protected areas in Serbia,

the method of trends was used. Methods and techniques of data processing are ways in which data are collected and instruments are used. In order to determine the changes in the governance of PA, the statistical techniques based on the analysis of time series were used. The following basic parameters were used:

1) absolute level of occurrence;
2) mean absolute level of occurrence;
3) average annual exponential growth rate (*Is*).

The method used for the collection of data on PA managers was non-reactive (Neumann, 2006). The group of non-reactive methods also comprises the analysis of secondary data, i.e. analysis of quantitative and/or qualitative data that were not collected by the researcher. In this sense, we analyzed statistical data on PA, relating to area representation (ha) and PA categories, as well as the basic information about the managers.

Forest management approaches and forest policy chapters were written by studying national and international scientific papers, national legislation, and experts` knowledge. This report contains a comprehensive list of literature related to private forests in Serbia and can be a good basis for further research into private forest issues and private forest owner objectives in Serbia.

3. Review of literature on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages, and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types);private forest owners' motives and behaviour; management approaches to new forest owner types; related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 page summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).The literature review answers the following questions: Which research frameworks and research approaches are used in the research? What forms of new forest ownership are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence the ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

3.1.1. Main themes covered by the studies in the country that are relevant to the Action

The research conducted in the territory of Serbia, related to private forests, was mainly focused of the following topics:

1) Association of private forest owners: e.g. Ratknić, Ranković and Nonić, 2001; Nonić, 2004; Nonić et al., 2006; Milijić et al., 2007; Nonić and Milijić, 2008; Avdibegović et al., 2010a; Avdibegović et al., 2010c; Glück et al., 2010; Milijić et al., 2010; Petrović and Čabaravdić, 2010; Glück et al., 2011; Mendes et al., 2011; Nonić et al., 2011a; Nonić and Glavonjić, 2012; Petrović, 2012;
2) Characteristics of private forests and private forest owners (social, economic, structural, ownership, etc.): e.g. Damnjanović, 1986; Milijić, 2007; Milijić et al., 2007; Avdibegović et al., 2010a; Avdibegović et al., 2010c; Milijić et al.,

2010; Petrović and Čabaravdić, 2010; Glück et al., 2011; Petrović, 2012; Jankov, 2013; Nonić et al., 2013; Halder et al. 2014;

3) Typology of private forest owners: e.g. Glück et al., 2010; Petrović and Čabaravdić, 2010; Glück et al., 2011; Nonić and Glavonjić, 2012; Nonić et al., 2013;
4) Ownership transformation and change: e.g. Nonić, Ranković, 1997; Nonić, 2004; Nonić and Milijić, 2008; Glavonjić et al., 2011; Nonić et al., 2011a; Nonić et al., 2011b; Nikolić et al., 2012;
5) Management of private forests: e.g. Petrović, 1985; Milin, 1986; Nikolić, 1986; Vučićević, 1986; Vučićević and Vandić, 1996; Jović, Banković and Medarević, 2000; Ratknić and Toković, 2001; Petrović, 2012;
6) Policy instruments and policy issues: e.g. Nonić, 1993; Nonić, 2004; Milijić, Nonić and Grujičić, 2008; Nonić and Herbst, 2008; Nonić et al., 2008; Nonić and Milijić, 2008; Nonić et al., 2009; Nonić et al., 2011a; Nonić et al., 2011b; Avdibegović et al., 2010b; Nonić, Milijić and Radosavljević, 2010; Glavonjić et al., 2011; Bouriaud et al., 2013;
7) Restitution process: e.g. Glavonjić et al., 2011; Nonić et al., 2011a; Nonić et al., 2011b;
8) System of support for the private forest sector: e.g. Nonić, 2004; Nonić, 2005; Nonić et al., 2007; Nonić and Milijić, 2008; Glück et al., 2011; Mendes et al., 2011.

3.1.2. Types of organizations

The research was conducted at three public forestry institutions - Faculty of Forestry, Forestry Institute in Belgrade and the Institute of Lowland Forestry and Environment in Novi Sad. The Faculty of Forestry conducted two studies in close cooperation with foreign organizations:

- PRIFORT project which was focused on four countries of the Western Balkan region: Bosnia and Herzegovina, Croatia, Macedonia and Serbia. The project was conducted in concurrence with the European Forest Institute and the Finnish FOPER project, and with the Austrian Ministry of Agriculture and Forestry, Environment and Water Management;
- PROFOR project (Private and Community Forestry - Developing Livelihoods on the Basis of Secure Property Rights): CEPF developed assessments of the status of non-state forestry in Macedonia, Albania and Serbia. CEPF worked with the FAO's National Forest Programmes (NFP) staff to conduct workshops at the national level in three countries. The project was financed by the World Bank.

3.1.3. Types of funding

The main types of funding used for conducting the research on private forests in Serbia are:

1) National (public) – ministries in charge of forestry;
2) Public EU/cross-national Europe – e.g. FAO; World Bank-PROFOR; Austrian Ministry of Agriculture and Forestry, Environment and Water Management; Finnish Ministry for Foreign Affairs, EU – FP7 project RoK-FOR, etc.

3.1.4. Theoretical and methodical approaches, and regional scope of the studies

The main theoretical approaches are related to the following:

- Theory of collective action;
- Pluralism;
- Exchange theory;
- Voice, exit and loyalty;
- Theory of critical mass;
- Group theory;
- System theory
- Organization in forestry;
- Forest management planning;
- Forest policy, etc.

The main methodological approaches included in the previous research are:

- Case studies
- Survey questionnaires*(door-to-door surveys)*
- Qualitative *(in-depth)* questionnaires,
- Method of content analysis, etc.

Regional scopes of the studies are:

- national (Serbia);
- regional (Western Balkans);
- cross-national (South-eastern Europe, and Central and Eastern Europe).

3.1.5. Major results and insights

3.1.5.1. Association of private forest owners

The first association of private forest owners in Serbia was in the form of forest cooperatives. Their establishment started at the beginning of 1930s, with the purpose of joint forest management and protection of forests and pastures (Nonić, 2004; Glück et al., 2011). Two models of forest owners' association currently exist in Serbia (Milijić et al., 2007; Nonić and Milijić, 2008; Glück et al., 2011; Nonić and Glavonjić, 2012):

1. Community forest model, which aims at joint forest management, has its historical roots in the community ownership developed in Austria (Vorarlberg) during the Austro-Hungarian monarchy, and is based on "ideal parts of forests" for owners who were not farmers;
2. Private forest owners' associations (PFOAs), which were formed during the period 2006-2009, when the FAO projects resulted in an increased interest of owners for associating. The aim of the associations was to represent their members' interests, which were mainly economic. PFOAs coordinate joint works such as construction of forest roads, joint marketing activities, training and cooperation with other associations and institutions.

Recent studies of private forest owners` attitudes toward forest owners' organizations reveal that a half of owners think that their interests are well-represented. Approximately the same number state there is a lack of private forest owners' organizations in terms of forest management support and in terms of lobbying and interest representation. However, almost none of them are members of forest owners' associations, but majority of the interviewed owners are ready to join PFOAs provided that economic benefits are provided. On the other hand, more than a half of owners strongly disagree with the obligatory membership in forest owners' associations, and only about a quarter are ready to engage themselves in the establishment of a PFOA in the region they live in (Avdibegović et al*.,* 2010a; Glück et al*.,* 2010; Petrović and Čabaravdić, 2010; Glück et al., 2011; Nonić et al., 2011a; Petrović, 2012).

3.1.5.2. Characteristics of private forest owners (social, economic, ownership, etc.)

The structure of private forests in Serbia is characterized by (Milijić et al., 2007; Avdibegović et al., 2010a; Glück et al., 2010; Petrović and Čabaravdić, 2010; Glück et al., 2011; Nonić et al., 2011a; Petrović, 2012; Nonić et al., 2013):

- Large number of forest owners;
- Small average size of forest properties;
- Small parcels – problem of fragmentation.

According to some estimates, there are '500 to 800 thousands forest owners' (Petrović, 2012). The results of the previous research studies show that 'more than 72% of owners possess properties smaller than 1 ha', that 'the average size of a forest holding is 4.03 ha' and that 'the average size of a parcel is 0.6 ha' (Glück et al., 2011). Some other studies show that 'the average number of parcels is 5, while the average distance between them is around 3.5 km' (Nonić et al., 2013).

The characteristics of forest owners are (Avdibegović et al., 2010a; Avdibegović et al., 2010c; Petrović and Čabaravdić, 2010; Glück et al., 2011; Nonić et al., 2011a; Petrović, 2012; Jankov, 2013; Halder et al. 2014):

- They are mainly male aged from 40 to 60;
- They are mainly pensioners and farmers;

- Most have high school education (no compulsory education).

Previous studies also show that almost all of the forest owners use the forests for fuel wood for domestic purposes (Petrović and Čabaravdić, 2010; Glück et al., 2011, Petrović, 2012). Less than 10% consider that 'the returns from timber sale and domestic use are important for the household income. However, for 50% of the respondents the forest as a source of fuel wood for domestic use is very important for the household budget' (Glück et al., 2011).

3.1.5.3. Typology of private forest owners

According to the attitudes of private forest owners regarding the formation of PFOAs, they belong to one of the following 3 groups (Glück et al., 2010; Petrović and Čabaravdić, 2010; Glück et al., 2011):

1) Drivers (31%);
2) Facilitators/supporters (35%);
3) Free riders (34%).

With regard to property size classes, there are 3 types (Nonić et al., 2013):

1) Type of owners with forest property below 4.19 ha (49%);
2) Type of owners with forest property of 4.20-8.38 ha (25%);
3) Type of owners with forest property more than 8.39 ha (26%).

There are also 3 types of forest owners, identified by the combinations of the following criteria (Nonić et al., 2013):

- Size of forest property;
- Annual cut of fuel-wood;
- Number of parcels;
- Percentage of total annual activities spent in forestry;
- Share of returns from fuel-wood sale in the total annual returns.

According to forest objectives, it is possible to distinguish 3 types of private forest owners (Nonić et al., 2013):

1) `Indifferent` (23%);
2) `Traditional` (50);
3) `Owners with multiple objectives` (27%).

Based on the willingness and ability of owners to participate in the wood market, Nonić and Glavonjić (2012) distinguish 2 types of forest owners:

1) Traditional;
2) Non-traditional (urban) forest owners.

3.1.5.4. Ownership transformation and change

The development of 'property relations in Serbian forestry and their organization are the result of historic events', because 'the forms of property and their modifications are closely related to the forms and changes of socio-economic relations in Serbia during its formation and development as a state' (Nonić et al., 2011a).

In 1920, the structure of forest ownership was (Nonić et al., 2011a) as follows:

- State 37%;
- Communal and rural 43%;
- Private 19%;
- Church 1%.

In 1926, the structure was (Nonić, 2004; Nonić et al., 2011a):

- State 47.7%;
- Communal 19%;
- Private 33.3%.

The first reliable statistical data on forestry funds were processed in 1938 (Nonić, 2004; Nonić and Milijić, 2008; Nonić et al., 2011a):

- State 21%;
- Monastery and fund forests 2%;
- Community 32%;
- Private 45%.

Great social changes in the state system and the system of ownership as well as in the legal and property structure of forests occurred in the communist period following WWII (Nonić, 2004; Nonić and Milijić, 2008; Nonić et al., 2011a). One of the first steps was 'the establishment of social property, or public forests originating from state-owned, communal, monastery and church forests' (Nonić et al., 2011a).

According to the Forest Inventory of 1979, there were predominantly two categories of forest ownership: public (49.43%) and private (50.57%).

According to the data from The National Forest Inventory, private forests in Serbia today cover an area of 1,058,400 hectares, which is 47% of all forests in Serbia (Banković et al., 2009). This percentage is expected to increase, once the process of restitution of religious communities and individuals is completed (Glavonjić et al., 2011; Nonić et al., 2011a; Nonić et al., 2011b; Petrović, 2012).

3.1.5.5. Management of private forests

In Serbia, there is 'a legal obligation to produce forest management plans for private forests'[78] (Petrović, 2012), but, at the same time, there is 'a general lack of these plans in practice, with a few exceptions' (Petrović, 2012). The conducted research shows that 'the existing content and the procedure of making plans for small private estates are almost identical to those for large state-owned estates' (Petrović, 2012). Bearing that in mind, previous research studies recommend that 'the plans for small forest estates should not have the character of legal provisions, but rather of recommendations for economically successful management, and they should reflect the needs of private forest owners' (Petrović, 2012).

Forest management in private forests can be characterized by slight change during the last 30 years. Due to nationalization, there are only small private forest lots which are under the strong influence of the public sector on the decision-making concerning the property. Private forest owners are fully-dependent on public administration but since the new Law on Forest was passed in 2010, they have been free to make decisions about their property provided that they form a forest owners association with the total forest size of minimum 100ha. Due to the small average size of forest properties and the costs of this organization, such system does not exist so far. New forest owners, established after The Law on the Restitution of Property to Churches and Religious Communities was passed in 2006, bring several solutions to the organization but same in management. Most of the eparchies[79] with the forest property above 100 ha organize their independent management based on their own objectives in accordance with the Law on Forests. Such organization is innovative and in comparison to existing public enterprise organization has a notably smaller number of employees and bigger net revenue per production unit (Petrović, 2012).

3.1.5.6. Policy instruments and policy issues:

Policy instruments and policy issues have been mainly analyzed by e.g. Nonić, 1993; Nonić and Ranković, 1997; Milijić, Nonić and Grujičić, 2008; Nonić and Herbst, 2008; Nonić et al., 2008; Nonić and Milijić, 2008; Nonić et al., 2009; Avdibegović et al., 2010a; Avdibegović et al., 2010b; Nonić, Milijić and Radosavljević, 2010; Glavonjić et al., 2011; Glück et al., 2011; Nonić et al., 2011b; Bouriaud et al., 2013.

These publications were focused on:

- property rights (Nonić, 1993; Nonić and Ranković, 1997; Milijić, Nonić andGrujičić, 2008; Nonić et al., 2011b; Bouriaud et al., 2013);
- role of the private sector in NFP process (Nonić and Milijić, 2008; Nonić, Milijić and Radosavljević, 2010);
- legal and political aspects of the private forestry sector (Nonić and Milijić, 2008; Nonić et al., 2008; Nonić et al., 2009);
- policy options for PFOs (Avdibegović et al., 2010a; Avdibegović et al., 2010b; Glück et al., 2011).

3.1.5.7. Restitution process

In Serbia, there is an ongoing process of restitution, which was started in 2006 (Glavonjić et al., 2011; Nonić et al., 2011b; Nikolić et al., 2012). According to Glavonjić et al. (2011), 'subject to return are the following fixed assets: agricultural land, forests and forest land, construction land, etc. If the property cannot be returned or if it is not in

[78] Itis obligation of state administration to provide forest management plan at municipality level (article 23 Law on Forest 30/2010). State enterprises are responsible to produce forest management for single owner and this work is financed from state budget (Article 71 Law on Forest 30/2010)

[79] An "eparchy" is a territorial diocese governed by a bishop of one of the Orthodox Churches. It is part of a metropolis, which is further divided into parishes.

nearly the same form and condition in which it was during the seizure, it is possible to partially restore or monetary compensate for the difference in value'.

During the two-year deadline for filing claims for restitution (1st October 2006 – 30th September 2008), churches and religious communities submitted 3,049 claims for the refund of property to the Directorate for Restitution. Almost the whole area of forests and forest land (99%), which is 33,798 ha in size, is claimed by the Serbian Orthodox Church, while other religious communities claim around 70 ha (Glavonjic et al., 2011; Nonić et al., 2011b). Glavonjic et al. (2011) state that, 'by the end of 2008 with the process of restitution of property to churches and religious communities, a total of about 12,000 ha of forests and forest land had been returned, which is about 0.5% of the total forest area in the Republic of Serbia'. By 2011, 'the process of restitution of property to churches and religious communities in Serbia had returned 23,195 ha of forests and forest land, which accounts for around 69% of the total claims, and 1% of total forest area of Serbia' (Nonić et al., 2011b). The total number of actors who participated in the process of restitution by 2011, and 'to whom forests were returned is 77, located in 14 dioceses of the Serbian Orthodox Church. The claims of churches and religious communities for the restitution cover 32,498 ha of forests and forest land, which accounts for around 1.3% of the total forest area' (Glavonjic et al., 2011).

When it comes to the management of the returned forest, the situation is quite complex in Serbia. The holders of the returned properties are in some cases monasteries and in some dioceses, depending on the internal decision of the Serbia Orthodox Church. Depending on the right-holder, dioceses or monasteries have established their own service (Šabac diocese), or the forest management is done by private entities engaged in these activities, e.g. Braničevo diocese (Glavonjic et al., 2011; Nonić et al., 2011b). In the situations where forest management is done by an enterprise established in the monastery ("Monastery Forest"), 'the majority of professional staff comes from Public Enterprise `Srbijašume`. Smaller forest complexes (monastery Kaona) are managed by monasteries themselves while forestry experts provide expertise' (Nonić et al., 2011b).

3.1.5.8. System of Support for the Private Forest Sector in Serbia

When it comes to the system of support to the private forest sector in Serbia, previous researches state that reorganization of the private forest sector is one of the major priorities. The aim of this process was to implement the concept of sustainable management of private forests, through participation in the process of private forest sector reorganization and co-operation of all relevant actors (Nonić et al., 2007). Besides, there is a clear 'need to change the existing system of support to the private forest sector', because of its 'inefficiency and due to significant changes both in the public administration, and in the environment' (Nonić, 2005).

Previous researches also show that, 'regarding the transformation of the relations between public forest administration and private forest owners, it is necessary to upgrade these relations in the direction of co-operation and partnership development' (Nonić, 2004). The same researches also propose 'the model of upgrading the relations between the public forest administration and private forest owners in Serbia through the establishment of advisory system, introduction of forestry extension and advisory service, provision of finances, implementation of support measures and association of private forest owners' (Nonić, 2004).

3.1.6. Critical assessment, gaps and future research needs

The basic principles and concepts of forest policies in Serbia often do not take into account different types of forest owners that exist in the country. Consequently, the same measures apply to all private forest owners. Decision-makers in forestry usually assume there are `typical` forest owners with an active interest in managing their forest.

However, practices from other countries in transition show that the `new` forest owners

have different values and attitudes to their forests, as compared to `traditional` forest owners who are mostly farmers. At the same time, these two types have different goals in the management of their forests. A growing number of `new` forest owners raise issues important for forest policy, for example, how policy instruments can "reach out" to these owners and how extension services can address them.

As a result of the aforementioned changes (e.g. restitution process), there is an increasing number of private forest owners of small-scale forests. They have limited knowledge and little practice in the field of agriculture and forestry. Therefore, they are not interested in managing their forest land. This phenomenon is known as a growing share of `new` forest owners. In this sense, there is a need for better understanding of how different types of private forest owners make decisions and what factors influence their selection of priorities in managing forests.

Besides, the consultations on forest biomass and sustainable forest management (held in 2010 and 2011) showed that private forest owners are willing to cooperate with administration and science workers in defining common research needs (Stevanov et al. 2013).

Future research needs are related to the following topics:

- Typology of private forest owners;
- Need for selective support measures for different types of private forest owners;
- Causes of inactivity of private forest owners associations;
- Detailed research on ownership changes;
- Possibility for wood-mobilization;
- New and/or innovative forest management approaches, specifically relevant to new ownership types.

3.2. New forest ownership types

Base on the study of Nonić and Glavonjić (2012), two main broad categories of private forest owners can be identified:

1) Traditional forest owners;
2) Non- traditional forest owners or `urban owners`.

Traditional forest owners (Nonić and Glavonjić, 2012):

- Participate in the wood market;
- Have contact with agriculture and forestry (i.e. these industries are the main source of income for this type of owner);
- Possess adequate knowledge in these areas;
- Can be characterized as the owners who are economically oriented;
- Have the expertise in management of their forest tenure and practical experience in cutting wood.

Non- traditional forest owners or `urban owners` (Nonić and Glavonjić, 2012):

- Have no contact with forestry and agriculture;
- Do not have knowledge in these areas;
- Live away from their forest holdings;
- Inherited the forest or got it in the restitution process;
- Do not participate in the market;
- Are not economically oriented;
- Primary goals might be ecological and protective functions, and recreation.

The reason for the absence of non-traditional forest owners in the market may be the lack of appropriate services that provide necessary information (Nonić and Glavonjić, 2012).

3.3. Forest management approaches

Since the restitution in 2006, church forests can be considered a new ownership type in Serbia (Glavonjić et al., 2011; Nonić et al., 2011b; Nikolić et al., 2012; Petrović, 2012). In silvicultural and technical terms, forest management approaches are the same for this new owner type as they were for the type that existed before the restitution. Private companies that are in charge of forest management in different eparchies are responsible for the development of 10 year forest management plans (Law on Forests, 2010). These companies are also responsible

for the implementation of the plans with the pressure to make profit and fulfill of other silvicultural and technical requirements in forest management. The new management approaches in church forests have been adopted either through external concession contracts or by establishing their own management companies within eparchies. In the latter case, a church employs professional forest staff. This approach opens up new business opportunities by using other forest resources such as hunting ground, non-wood forest products, saw mills, biomass production and hydro power plants (Manastirske šume, 2010; Fornet, 2012).

3.4. Policy change / policy instruments

The emergence of `new forest owners" can be explained by the process of restitution of property to the religious communities and individuals (Nonić and Glavonjić, 2012), which started in 2006. It should be stressed that there are neither forest policy instruments nor selective support measures orientated towards certain types of forest owners (e.g. toward the `new owners`). At least, no literature sources on specific policy instruments that are directed at new forest owner types and their effects could be found.

On the other hand, there are policy instruments that foster the establishment of PFOAs. The Law on Forests (2010) predicts the establishment of PFOA, which can be considered as a new organizational form of private forest owners. Forest owners who are members of an association have a priority status when applying for grants from the Budget Fund for Forests.

According to the Forestry Development Strategy (Department for Forests, 2006) one of the measures to achieve the set goals is to encourage the establishment and development of PFOAs in order to strengthen their capacities for implementation of sustainable forest management and the application of scientific and technical knowledge.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format used in Forest Resources Assessment by FAO. The transfer from national data sets to international definitions is, however, not always easy.

This report therefore critically assesses in how far national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

In Serbia there are two types of forest ownership: private and state (Table 1).

Table 1: Forest area by type of ownership in Serbia (2008)

№	Type of ownership	Forest	
		(ha)	(%)
1.	State forests	1,194,000	53.0
2.	Private forests	1,058,400	47.0
∑	Total forest area	2,252,400	100

Source: Banković et al., 2009

According to The Law on Forests (2010) private forests are forests owned by a physical or a legal person (companies, cooperatives, churches and religious communities, associations of private forest owners). There is no precise data on the participation of individual sub-categories within the category of private forests, because some PFOAs are not active anymore, and the processes of privatization and restitution are still in progress. State forests are forests owned by the State, by administrative units of the public administration, or by institutions or corporations owned by the public

administration (Law on Forests, 2010).

The structure of private forests in Serbia (Table 2) is characterized by big number of forest owners, small to average area of forest property and a lot of small forest parcels (Milijić et al., 2007; Avdibegović et al., 2010a; Glück et al., 2010; Petrović and Čabaravdić, 2010; Glück et al., 2011; Nonić et al., 2011a; Petrović, 2012; Nonić et al., 2013). Such forest ownership structure is the biggest problem for efficient management of the forests.

Table 2: Structure of private forests in Serbia

Area of private forests (ha)	1.058.400
Estimated number of forest owners	900.000
Forest property size per owner (ha)	1,27
Number of forest parcels	3.900.000
Average size of forest parcels (ha)	0,30

Source: Glück et al., 2011

The structure of private forests by property size classes and the number of owners are presented in Table 3. More than 72% of owners have properties smaller than 1 ha, 26% of them own property from 1 to 10 ha, and 2% of the total number of forest owners have forest property bigger than 10 ha (Glück et al., 2011).

Table 3: Structure of private forest property by number of owners*

0,01-1 ha	1-10 ha	10-20 ha	20-30 ha	over 30 ha	Total
638.322	233.846	8.372	1.516	426	882.482

**The data relate to the territory of Serbia without Autonomous Provinces of Kosovo and Metohija and Vojvodina*
Source: Glück et al., 2011

After 2006 (i.e. after the adoption of Law on Restitution of property to churches and religious communities), a new sub-category of private forests - church forests – occurs in the private forest ownership category. According to the data from the Directorate for Restitution the total area of returned forests was 23.196 ha by the end of 2010 (Nonić et al., 2011b).

4.1.2. Critical comparison of national data with the data in FRA reporting

According to FRA report, the total area of forests in Serbia is 2.713.000 ha (Table 4).

Table 4: Forest areas by sub-groups in Serbia (2010)

FRA 2010 Categories	Forest area (1000 hectares) 2010	%
Public ownership	1,382	50,9
Private ownership	1,213	44,7
...of which owned by individuals	1,213	
...of which owned by private business entities and institutions	0	
...of which owned by local communities	0	
...of which owned by indigenous / tribal communities	0	
Other types of ownership	118	4,4
TOTAL	**2,713**	

Source: www.fao.org/docrep/013/al622E/al622E.pdf

Difference in the Table 1 and data from the FRA report, regarding the total area of forests in Serbia (which in FRA is 2.713.000 ha) are caused by the territory to which the data relate. Data from FRA refer also to the forest area from the territory of Autonomous Province of Kosovo and Metohija.

4.2. Unclear or disputed forest ownership

In Serbia, there is an unclear situation regarding the ownership of the forests that belong to the legal entities, which have arisen with the privatization of former cooperatives, social companies and factory farms. However, there are no official data about this,

because there are no precise data on the sub-category of company forests. There are also cooperatives that have not been privatized and which have management planning documents, but there are no official figures.

Apart from cooperatives, there are agricultural complexes that own forests. The ownership relations are very complicated, because all of these farms cultivate state-owned land, and sometimes the forests are owned by the state, while the factory farms are registered as users, but sometimes they are the forest owners.

4.3. Legal provisions for buying or inheriting forests

4.3.1. Legal restrictions on buying or selling forests

In the field of private forest ownership there are no restrictions on buying or selling forests. Selling or buying of forests is done through the process of privatization, where a buying business unit (cooperatives, companies, etc.) or a new owner buys the forest. In most cases, the new owners are not interested in forest management. Besides, individual forest owners can buy forests from other owners.

According to The Law on Forests (2010) it is forbidden to sell a state forest, except in some specific cases. The Law states: 'a part of a state forest or forest land, in which cannot be organized rational management, can be sold by the forest user, with the Government approval, under market conditions, or exchanged for a private forest or forest land if such forests are isolated, i.e. if they are enclaves or semi-enclaves in the complexes of state forests' (Law on Forests, 2010).

4.3.2. Specific inheritance (or marriage) rules applied to forests

In Serbia, there are no specific inheritance or marriage rules applied to forests. This situation will cause problems in future in the field of efficient management of forests, because the limit for forest fragmentation is 0.5 ha. Also, there are a lot of properties that are still not divided in property terms between the heirs, and the property is related to the previous owners.

4.4. Changes of the forest ownership structure in the last three decades

4.4.1. Changes in the public and private ownership

In the period after WWII, with the new government, there were great social changes in the state system, in the system of ownership and in the legal and property structure of forests. The first step in this direction was the establishment of social property, or public forests originating from state-owned, communal, private, monastery and church forests, larger than the legal maximum forest area (detailed data on maximum forest area are given in chapter 4.4.2). Rural and communal forests disappeared as property categories and they were defined as state forests.

According to the available statistics, it can be concluded that in the period after WWII, there were predominantly two categories of ownership of forests in Serbia (Table 5): social and private forests (which changed their name in "*forests with the right of ownership*").

Table 5: Forest area by type of ownership in Serbia (1979)

№	Type of ownership	Forest	
		(ha)	(%)
1.	Social forests	1.143.334	49.43
2.	Private forests	1.169.533	50.57
∑	Total forest and forest land area	2.312.867	100

Source: Inventory of growing stock, 1983

According to the latest National Forest Inventory, private forests cover 47% of the total forest area in the territory of Serbia, without the Kosovo province (Banković et al, 2009).

4.4.2. Changes in the public ownership categories

The ownership category of social forests was introduced after WWII. According to The Law on Agrarian Reform and Colonization (1945), social property included public forests originating from state, communal, private, monastery and church forests, with the area larger than the maximum legal area:

- for monastery and church forests max area was 30 ha of forests,
- for private individuals max area was 5-10 ha of forests.

Social forests were not the same category as the state forests. Social ownership was the property of the whole community. It is typical of socialist regulations. Former rural and communal forests disappeared as property categories after WWII and they were defined as social forests. These forests (rural and communal) today belong to the state forests.

According to The Law on Forests of the Republic of Serbia (1991), the new categories are highlighted and built around new forms of ownership - state property (in addition to the existing social property) and private property.

4.4.3. Changes in the private forest ownership

It should be noted that the statistics related to private forests does not include the category of monastery and church forests, which have been returned through the restitution process since 2006 and cover a bit over 1% of the country area. They belong to the category of private forests.

Furthermore, in the process of privatization of social assets (companies, cooperatives, etc.), some small areas of social forests became private forests, but there are no official data about this process.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes have been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state-owned companies)
- New private forest owners who have bought forests
- New forest ownership through afforestation of former agricultural or waste land
- Changing life style, motivation and attitudes of forest owners (e.g. when farms are abandoned or the heirs are not farmers any more)

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	2
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	0
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	0
• Other trend, namely:	0

**0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: RESTITUTION

The process of restitution in Serbia started in 2006, with the adoption of The Law on Restitution of Property to Churches and Religious Communities (2006). The law regulates only a part of the restitution - the one that deals with only one category of entities, church and religious communities, their foundation and societies.

During the two-year deadline for filing claims for restitution (1st October 2006 – 30th September 2008), churches and religious communities submitted 3,049 claims for the refund of property to the Directorate for Restitution. Almost the whole area of forests and forest land (99%) is claimed by the Serbian Orthodox Church (33,798 ha), while other religious communities claim only 68 ha.

By 2011, a total of 23.195 ha of forests and forest land, and 10.028 ha of agricultural land were returned to churches and religious communities (Agency for restitution, 2014). In 2011, The Law on Property Restitution and Compensation was adopted in Serbia. This Law regulates another part of restitution which is focused on physical persons. According to this Law, the subject of restitution is the nationalized property: construction land, agricultural land, forests and woodlands, residential and commercial buildings, flats and business premises and other buildings that exist on the date of this Act enactment. This process has recently been started. In the first phase, a two-year period (from March 2012 to March 2014) was provided for the submission of the restitution applications. The second phase, the return of property, has not started yet, considering that the deadline for the submission of the claims has just passed.

Through these processes, forests were given back to churches, religious communities and physical persons whose property had been confiscated on the basis of regulations on agrarian reform, nationalization, etc., which were applied in 1945. These properties were, before the WWII located mainly in the vicinity of churches and homes of these physical persons. According to this, we can say that these are `new forest owners`. These private forest owners are very important because they represent large-scale forest owners (church), and it can be expected that their influence on forest policy will increase. Moreover, these changes will lead to a great diversity in terms of interests, values and demands of different private forest owners, which will influence the priorities in terms of their management.

The management of forests owned by churches and religious communities is done in different ways. Some dioceses (diocese of Šabac) have formed their own companies for forest management, while some other dioceses (Diocese of Braničevo) engage other legal entities in the management of their forests. Smaller forests complexes (monastery Kaona) are managed by the monasteries themselves, and expertise is provided by professionals (Glavonjić et al., 2011).

4.5. Gender issues in relation to forest ownership

In Serbia, there is no gender related ownership data.

4.6. Charitable, NGO, or not-for-profit ownership of the forests

This section is concerned with forests owned by organizations such as conservation and heritage NGOs, self-organized community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane", OED) organizations. The management objective of these forests is usually to deliver social or environmental aims with maximization of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognized in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		x	
• NGO with environmental or social objectives		x	
• Self-organized local community groups	x		
• Co-operatives/forest owner associations	x		
• Social enterprises		x	
• Recognized charitable status for land-owners		x	
• Other forms of charitable ownerships, namely:		x	

In Serbia, there is a forest community, named `Beočin Forest community`. The community was founded in 1903. It covers an area of 293 ha of forests and counts 77 members. The functioning of forest communities relies on joint management of forest land. The aim of the association was to help owners who were mostly poor peasants earn additional income and meet their needs for firewood through joint forest management (Nonić, 2004).

The forest community performs all activities related to forest management. The basic principle of community organization is that each member, i.e. co-owner has a certain number of `ideal parts` and makes profit on the basis of the participation in the ideal parts. Ideal parts always remain in the property of the individuals or the community because no owner is allowed to sell his/her share in the property to a person who is not a member of the forest community. Assembly of the community members decides who can buy a patch of forest on sale.

The establishment of private forest owners associations (PFOAs) in the territory of Serbia began in 2006. Since then, 22 associations have been established at the local level. From 2010 onwards, some of them have been cancelled due to the changes in The Law on Associations (2009) (Table 6). The changes related to the process prior to the registration of associations and the need to collect certain funds for this purpose. Most of PFOAs were established with the support from FAO projects[80] at that time and thanks to government subsidies for the construction of roads in private forests. The basic support included logistic and professional support.

Table 6: Private Forest Owners Associations in Serbia

No	Name and headquarters	Year of foundation	Active (2014)*
1.	Rastište - Bajina Bašta	2006.	No
2.	Miličinica - Valjevo	2006.	No
3.	Podgorac - Boljevac	2006.	No
4.	Bigrenica - Ćuprija	2007.	No
5.	Selacka - Zaječar	2007.	No
6.	Negotin - Negotin	2007.	No
7.	Mačkov Kamen - Krupanj	2008.	No
8.	Kršijora - Zlot	2008.	No
9.	Stol - Kej	2009.	No
10.	DAR - Knjaževac	2009.	No
11.	Krivelj - Bor	2009.	No
12.	Kandalica - Kandalica	2009.	No
13.	Grezna - Grezna	2009.	No
14.	Vlaško Polje - Vlaško Polje	2009.	No
15.	Plavna - Plavna	2009.	No
16.	Crni Vrh - Crni Vrh	2009.	No
17.	Tilve - Slatina	2009.	No
18.	Ćuštica - Prekrsni Del	2009.	No
19.	Crni Timok - Mali Izvor	2009.	No
20.	Prijepolje	2008.	Yes
21.	Majdanpek - Majdanpek	2013.	Yes
22.	Kamena Gora - Kamena Gora	2013.	Yes

** According to data from Serbian Business Register Agency*
Source: Regional Centre for Forestry and Rural Development, 2013; Serbian Business Register Agency, 2014

[80] FAO project FAO/TCP/YUG/2902(A): *"Institutional Development and Capacity building for the NationalForest Program"* and FAO project GCP/FRY/003/FIN: "*Forest Sector Development in Serbia*".

As can be seen from the table, there are only three active associations today. These associations have the same organizational structure as the associations that existed in the past, but they are registered in accordance with the new legislation which regulates this area.

PFOAs are NGOs and their statutes and overall goals are very similar (Milijic, 2007). Their aim is 'to represent the interests of their members and not of joint forest management. Every owner manages his own forests, while the association coordinates joint works like forest infrastructure, and joint marketing activities' (Nonić and Milijić, 2009). PFOAs bring owners of small forest holdings benefits similar to those of the owners of large forest holdings, which is very important considering the intense fragmentation of forest property in Serbia. It is typical of this model of organization that the owners themselves do all the most important forest management jobs (Nonić and Milijić, 2009).

In 2009, Serbian Federation of Private Forest Owners' Associations (SFPFOA) was founded as an umbrella organization, with the support of CEPF/PROFOR project[81] (Milijić et al., 2010). It was an independent organization, established to represent interests of the Federation members and private forest owners (Nonić et al., 2010). The main objective of the SFPFOA was to support the work of local forest owners' associations, implementation of projects related to forestry development, improvement of forest management in private ownership, utilization, silviculture, and maintenance of forest order, which would all contribute to the sustainable development of the private forestry sector, improving the quality and value of private forests and rural living conditions.

SFPFOA ceased its operations in 2011 due to unfavourable changes in The Law on Associations, when all national NGOs were obliged to re-register. It was a costly procedure that the association could not afford. No support from external projects or donors was found at that moment and the only feasible solution was to abolish the national association, while local associations of private forest owners continued to exist, but with limited activities.

The model of private forest owners associations in Serbia has been functioning since 2006, but it has not been fully developed yet. The reason lies in the fact that, without the harmonization of the public interests of the state and the personal interests of the owners and without their partnership, it is not possible to make associate forest owners in a suitable way.

CASE STUDY 2: FOREST OWNERS ASSOCIATION `PODGORAC`

Forest owners association `Podgorac` was established in 2006. The association had a status of a legal entity. According to the Statute, the objective of the association was to improve living conditions in rural areas through agricultural and forestry activities (Milijić, 2007). The main goals of the association were: protection of the common interests of the association members and of rural population, protection of natural resources and their use in accordance with the principles of sustainable development, organization of joint market activities, promotion and development of forestry and forestry products, rural tourism, food production, development of other activities (hunting, use of medicinal plants and wild fruits, wood and other products). The membership in the association was voluntary. The association had 23 members with an average size of a forest amounting to 7.7 ha (Milijić, 2007). The main activities of the association were charcoal production, selling wood, and operations of cutting and transporting wood to state enterprises. This organization received a government subsidy for the construction of forest roads. A total of about 10 km of roads was built. The statute allows the establishment of the professional service for administrative, technical, financial and other tasks needed to carry out the activities of associations. However, this service was not established (Milijić, 2007).

[81] CEPF/PROFOR project: Private and Community Forestry - Developing Livelihoods on the Basis of Secure Property Rights (www.profor.info/knowledge/private-and-community-forestry-developing-livelihoods-basis-secure-property-rights)

4.7. Common pool resource regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-managed, collective action, and self-organization (of rules and decisions). Examples of traditional CPR regimes are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs in new CPRs and vice versa. Example of the new CPR regime is the community woodlands in UK, established in the last 20 years, mainly in Scotland, Wales.

Our interest in "traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of property rights. Ongoing practice shows that local land users (without an ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organization and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are the key factors for sustainable use of CPR regimes.

There is an example of CPR in Serbia. It is `Beočin Forest Community`.

CASE STUDY 3: `BEOČIN FOREST COMMUNITY`

The management of the forest land is based on the principle of so-called 'ideal parts'. Ideal parts always remain in the property of individuals or the community, thus preventing possible arbitrariness of individual members to burden the community with obligations of a private arrangement, which would be prejudicial to forest community and its other members. The share of individual owners, as compared to the size of the share, indicate that the majority of owners (54) have a smaller share, and only two owners have a greater share of ideal parts (Beočin Forest Community, 2003), as shown in Table 7.

Table 7: Share of individual owners in their forest community

Size of forest share	Number of owners	Number of ideal parts	Part for distribution (m^3)	
			By owner	Total
11/2	1	1,50	18	18
11/4	1	1,25	15	15
1	21	21,00	12	252
¾	1	0,75	9	9
2/3	2	1,33	8	16
½	27	13,50	6	162
1/3	12	4,00	4	48
¼	8	2,00	3	24
1/6	4	0,67	2	8
∑	77	46,00	-	552

Source: Forest community Beočin, 2003

The principle of harvested wood distribution is based on 'the division of 552 m^3 into 46 integral parts, resulting that the ideal part share amounts to 12 m^3' (Nonić and Milijić, 2009). 'The rest of the harvested wood is sold and the profit is divided according to the shares again' (Nonić and Milijić, 2009). About 25% of the annual revenues cover the cost of production (tree cutting and extraction), and about 15% is allocated for further investment (Beočin Forest Community, 2003).

The forest community is located in the National Park (NP) Fruška Gora, in the second zone of protection and managed on the basis of special forest management plans, in accordance with the spatial plan of the NP. Members of the forest community follow the defined management measures and modes, and professional - technical jobs in the community forests are performed by a forestry technician (secondary school education), who is also a member of the community (Beočin Forest Community, 2003).

The Association does not have joint machinery. Furthermore, they finance the construction of forest roads themselves. The only help from the state, so far, has been in seedlings. The bodies of the forest community are the Assembly and Board of Directors. The majority of members (65%) live in Beočin and its surroundings (Beočin Forest Community, 2003).

5. Forest management approaches to new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals regarding their forests there must be new kinds of management; if they have not the skills any more to do it themselves, then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organization, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Serbia

The state is the biggest forest owner in Serbia. It delegates management services to several public enterprises. Public enterprises manage state forests and give technical and advisory services to small private forest owners all round Serbia. State companies have not defined time span for management rights with the state. State companies were established 20 years ago and their duties and rights are very similar to the ones that existed when they were established.

Small private forest owners (estimated at around 900,000) are dispersed without any strong association or voice. They are not represented in the forest policy arena. This stagnant situation exists for quite a long time. Private forest owners are used to their property being dominated by state forest administration.

After the restitution process (2006), private companies in forest management made an arrangement with **churches and monasteries** to manage their forests and with the obligation of paying concession fees for doing this job.

The management of forests is still based on old national legislation and forest acts although a new private forest owner entity has emerged. There are two types of organization in church forest management. The first type of organization is represented by **church-owned limited companies** within the eparchy where the forest is. The second model exists when the management rights are given to a private company with qualified staff. Both management approach types require ten-year management plans for the property they manage. Private companies that have won the right to manage a church forest sign a ten-year contract with the church authority.

5.1.1. Forest management companies

There are two main public enterprises (PE) responsible for the management of state forest resources. PE `Srbijašume` is responsible for the management of state forests in the central part of Serbia and PE `Vojvodinašume` in the autonomous province of Vojvodina. The responsibility for the autonomous province of Vojvodina was delegated according to The Law on Establishing Certain Competencies for the Autonomous Province of Vojvodina (2002). Apart from these two enterprises, state forests are also managed by five public enterprises that are responsible for the management of national parks. Furthermore, PE `Borjak` manage state forests in one municipality in central Serbia and The Faculty of Forestry has the use right of state forest with the main purpose of education and research. Other organizations, mostly agricultural, water or military entities (Table 8) have management rights for a small part of state forests. In the table below we can see the percentage distribution of different management entities.

Table 8: State forest managers in Serbia

No	Organization responsible for the management of forest	Area (ha)	Area (%)
1	PE Srbijašume	775.000	77,9
2	PE Vojvodinašume	108.000	10,9
3	PE National parks	80.000	8,0
4	PE Borjak	8.000	0,8
5	Faculty of Forestry	6.000	0,6
6	Other organizations	23.000	2,3
	Total state forest	995.000	100

Source: Nonić, 2010

As it was previously said, the management of state forests is given mainly to public enterprises, while there are no official data for other types of ownership. Public enterprises have contracts made on a long term basis and defined by The Law on Forests (2010) and The Law on Public Enterprises (2012). In 2012, The Church of Braničevo region, as a new private forest owner, signed a ten-year contract with FORNET LTD Company for the management of their forest (around 7000 ha). In other regions, there are few small private companies that provide services of church forest management. Another approach applied in some church regions is that relevant church authorities establish their own church limited companies and employ qualified staff for the purpose of forest management. These companies do not pay fees to the church and the profit goes into the church budget. In both church management approaches they are not dependent of state forest services or public enterprises while they rely on the existing forest staff within their companies.

Since private forests account for around 47% of forests, they are of huge importance. Technical expertise in small private forests is provided mainly by the state enterprises. This expertise is financed by the ministry responsible for forestry. The table below contains a list of public enterprises that provide such technical expertise and their percentages (Table 9).

Table 9: Private forest area under the responsibility of public enterprises

No	Organization responsible for the management of forest	Area (ha)	Area (%)
1	PE Srbijašume	989.000	96,7
2	PE Vojvodinašume	5.000	0,5
3	PE National parks	25.000	2,4
4	PE Borjak	4.000	0,4
	Total private forest	1.023.000	100

Source: Nonić, 2010

Enterprise represents the basic organizational form in the process of reproduction whose function is related to the satisfaction of social needs for specific products and/or services (Ranković, 2008). It represents a legal entity which carries out work for profit. The owners of enterprises may be legal, individual, state, or local government. Public enterprises perform duties of special and general interest (Živković, 2006), and the state is involved in its management through its representatives.

The establishment of a public enterprise is aimed at ensuring and protecting the interests of the state in the operation of the most important industries (Paunović, 2013). State capital in PEs comprises funds invested by the state, the right of use of the property and rights owned by the state. The capital is divided into shares of a particular nominal value and they are entered into the share register (2012). Public enterprises for conducting activities in forests and PAs are defined by the Law on National Parks (1993) and The Law on Forests (2010). Public enterprises are founded by the state, autonomous provinces, and local self-governments. They are formed to perform tasks in the field of infrastructure, public services, important government economic systems and exploitation of natural resources that are of public interest. In the case of national parks, these PEs have a productive purpose and in the form of organization they are obligatory. By size, all PEs responsible for the management of NPs are medium and they are established for an indefinite period of time.

5.1.2. Forest management in protected areas

Beside PEs, which are involved in the management of forest, there are also other types of management bodies that are present in the sector of nature protection (Figure 1).

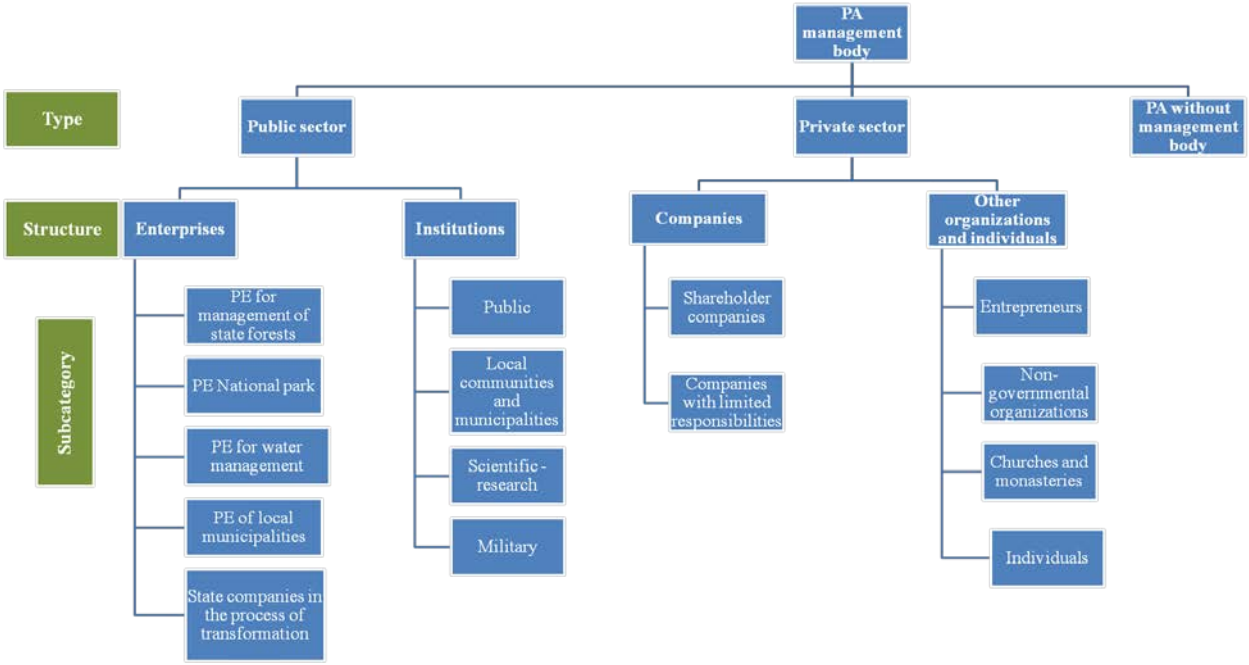


Figure 1: Types and structure of PA managers in Serbia (Source: Đorđević et al., 2014)

According to the current legislation, protected area managers can be different legal entities, from state enterprises and different types of private enterprises to non-governmental organizations and religious institutions. State enterprises with the largest share in the management are public enterprises, tourist organizations, local self-management units and military institutions. Private enterprises with the largest share in the management of protected areas are limited liability companies and joint-stock companies. Non-governmental organizations are a new type of management and they are increasingly popular in the field of protected areas. Apart from the managers who are directly involved in the work of the protected areas, The Law on Nature Protection designates entities of protection at national, provincial and local levels (Đorđević et al, 2011). It is important to indicate that these management categories are not ownership categories since most of the land is still owned by state and this represents just a decentralized system of managing PAs.

5.1.3. Change in the governance of forest management

The change in the ownership concerning the churches and monasteries is still in progress, but most of this has already been explained in the previous chapters. The change in the management of forests is also present in the management of protected areas. In the last decade, due to the restitution process, some of the forests have been given back to their original owners. The greatest part of the restitution in this sector has been done concerning the forests that were owned by churches and monasteries. In the case of protected areas, only the landscape with exquisite features “Dolina Pčinje” has a full private ownership and management authority over one part of the PA. This shift is really relevant since it represents the process of decentralization of management authority to a local actor, NGO, private body or some other authority. In the graphs below we can see the trends in establishing PAs in Serbia, for the

whole period from 1950 to 2010 (these data have not been published yet). Comparison will be made for companies owned by the state, private, NGO, and other bodies, using average annual exponential growth rate (Is) and absolute values (Diagram 1).

Diagram 1: Management of public, private and NGO sector in PA

Diagram 1a. Management of the public sector in PA (1948-1989)

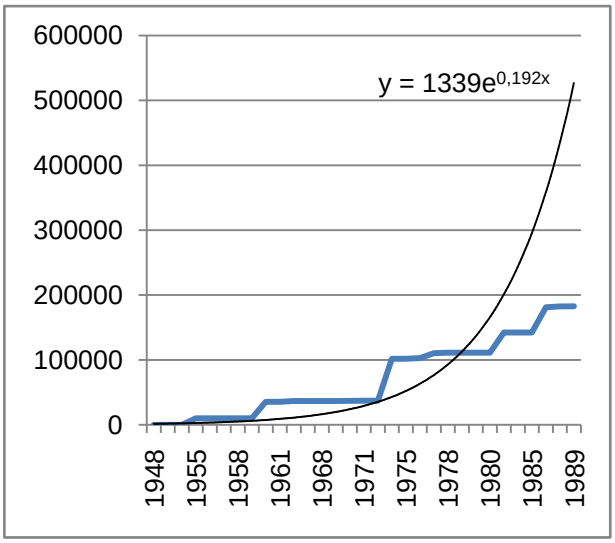


Diagram 1b. Management of the public sector in PA (1989-2009)

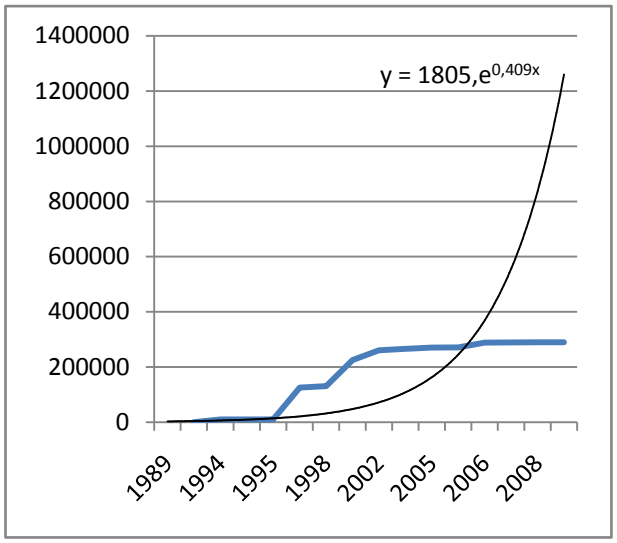


Diagram 1c. Management of the private sector in PA(1989-2006)

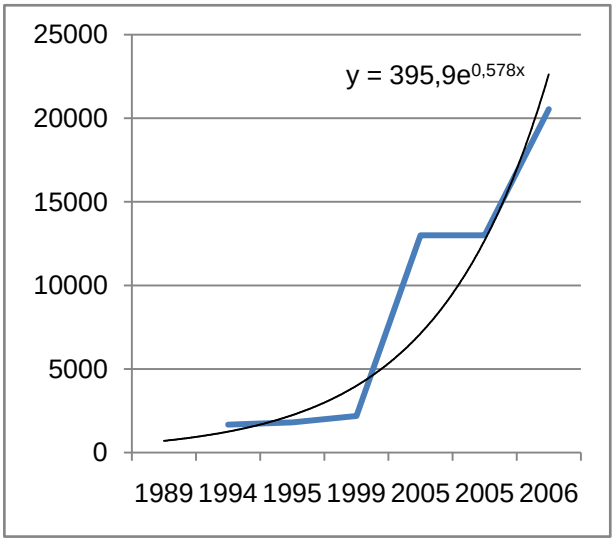
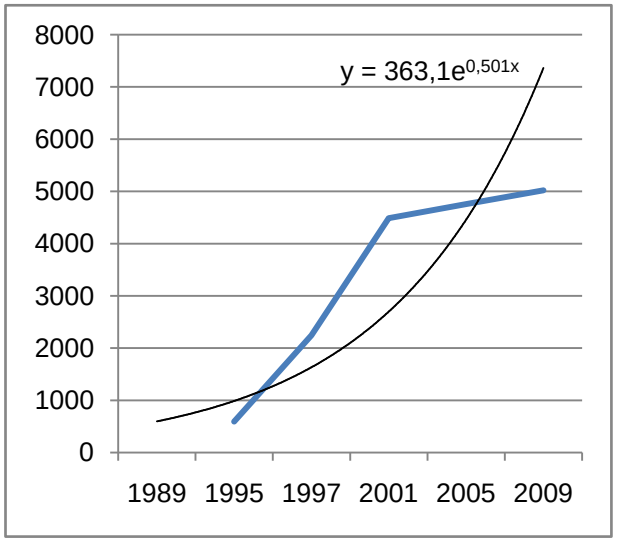


Diagram 1d. Management of the NGO sector in PA (1989-2009)



Source: Register of protected natural goods, 2012

As can be seen from the diagrams above, there has been a growth in the change of governance concerning the management of protected areas in Serbia since 1990. Most of PAs are still managed by companies on the state level (PEs, local municipalities, or tourist organizations), but around 8.7% of the total area is given to some other management bodies. This change started two decades ago and is still in progress.

Forest management service is in the new forest ownership organized the same way it is organized in the management of state forest. The basic plans for the management of forest areas are (The Law on Forests, 2010):

1) The plan for the development of forest areas, with a respective plan for the development of forests in national parks;
2) The forest management plan (10-year)
3) The programme for forest management

(this programme is carried out for the forest management units that cover the forestland of a large number of private forest owners, with each forest holding being smaller than 100 ha);

4) The annual forest management plan;
5) The operational forest management plan.

5.2. New or innovative forest management approaches relevant to the new forest owner types

There are several new forest management approaches in Serbian forestry. They can be divided as follows:

1) Management after restitution, mainly church forests;
2) Management in nature protected areas by non-governmental organizations;
3) Management of forests that belong to forest community;
4) Management of state forests by municipal public enterprises.

The process of restitution has brought a new model of forest management. After the restitution of church forests, several church or private limited forest companies started with the management and utilization of church forests. In nature protected areas, e.g. in the Special Nature Reserve `Zasavica`, the management is based on tourism and recreation. Manager is one NGO Nature movement. `Beočin Forest community` has 77 members and it covers an area of 293 ha of forests. The forest community performs all activities related to forest management. The functioning of forest community relies on joint management of forest land.

The restitution of church forests has created a different forest management model. The companies responsible for the management of church forests employ an optimal number of skilled and trained workers. The number of employees with forestry background is significantly higher compared to the number of their counterparts in state forest companies. Flexibility and adaptability of the decision-making process in forest management open up new opportunities for diversification of income sources much oftener than in the state companies (bio-energy, non-wood forest products). Public enterprises are burdened by complicated public procurement laws and under the direct influence of the ruling political parties, while private companies significantly faster respond to market changes and can easily adapt to new challenges in the forest management. The emergence of large private forest owners with professional staff has opened up possibilities for the improvement of management of small forest lots. This ownership change can enhance the interest representation of all private forest owners in the national forest policy arena.

Certain improvement of forest management has been identified in the state companies that manage state forests and national parks, in NGOs managing nature protected areas and in private companies. State companies have made improvements in the forest services – mainly recreational services, new technologies – harvesters, new technology in road constructions, organizational and institutional innovations – like new Laws and Strategies or cooperation. NGOs have made improvements in the field of forest recreation and nature tourism. Private companies have introduced product innovations such as pellets and briquettes. Innovative forest management has been recognized in several fields (Poduška et al., 2011):

- Service innovation: recreation and forestry-based tourism; leasing of forest land,
- Technological innovation: machinery and processing technology,
- Organizational and Institutional innovation: laws and policies; environmental innovation; internal reorganization; co-operation,
- Product innovation: wood production.

The most common improvements were achieved in the field of innovative services, such as recreation and forestry-based tourism. Recreation is a value-added service mostly in protected forest areas. Regarded the new ownership types, it is recognized in Special Nature Reserve `Zasavica`. `Zasavica` is managed by a non-governmental organization on mainly community land.

Organizational and institutional improvements

in the forestry sector resulted from the harmonization of a set of laws regulating the field of forestry. There have been attempts to improve business operations by means of the restructuring of state companies. A new way of land use was introduced through a land lease agreement between PE `Vojvodinašume` and Beška Agricultural Cooperative.

Private forest owners have made significant organizational innovations. Sixteen PFOAs have joined to form a Union of private forest owners association in Serbia. The Union was founded in 2009. Unfortunately most of PFOAs do not exist or are not active any more. The main goal of the Union was to enhance the private forestry sector and to improve the quality and value of private forests and rural living conditions. The cooperation between forest owners may, apart from defending their own private interests, lead to the introduction of the principles of sustainable forest management and thus satisfy public interest as well.

The expected effects of the association of private forest owners are: joint activities to protect forests, construction and maintenance of roads, joint marketing activities, lobbying and representing members' interests, spread of shared knowledge and experiences, spread of information, financial assistance, provision of grants and loans, provision of management services for absent forest owners; physical consolidation of very small forest plots, motivation for reforestation.

Support has mostly been provided to forest owners in the framework of projects carried out by the United Nations Food and Agriculture Organization - FAO and the Forest Administration (FAO/TCP/YUG/2902 (A): "Institutional Development and Capacity Building for the National Forest Programme in Serbia" and "Forest Sector Development in Serbia" (GCP/FRY/003/FIN) (Poduška, 2010).

Another example of organizational innovation is the Agreement on cooperation between PFOAs from the Balkan countries (2011b). According to this agreement PFOAs from Bosnia and Herzegovina, Montenegro, Croatia, Macedonia, Slovenia and Serbia made consensus on mutual cooperation, networking, project preparation, exchange of information and experience, possibilities of certification and standardization.

The new business model in the management of forest areas has been influenced by the process of restitution that has been going on for a decade. Based on the Law on Restitution of Property to Churches and Religious Communities, certain forest areas have been given back to their original owners. Consequently, churches and monasteries have become one of the biggest forest owners, following public enterprises. Some of these churches and monasteries manage the forests themselves, but some of them have given the land to the companies specialized in forestry. In our country, the biggest company that deals with this issue is `FORNET`, specialized n consulting and providing services in forestry. Today “FORNET” manages 6,500 ha in the region of Braničevo (2014).

The biggest change occurred after the enforcement of the Law on Restitution of Property to Churches and Religious Communities which hire private companies and individual organization to organize management of their forestland. Another change occurred after establishing PFOA, discussed above, and their engagement in managing forest areas. So today, basically we have four approaches in managing forests. One approach represents the management of state forests by PEs which includes advisory service. The second approach is applied by private companies that are registered for this activity and provide forest management services. The third approach is implemented by churches and monasteries, which use their internal organization to manage their forest land and the fourth approach is the management by PFOA.

5.3. Main opportunities for innovative forest management

5.3.1. Needs of forest managers

Studying the main needs of forest professionals and managers, some researchers started investigating the needs for professional education. Education and professional training programs are carried out by Universities, Research Institutes,

Associations of PFO, Enterprises and other organizations. The majority of forest managers (85.7%) attend such events, but 14.3% do not (Poduška et al., 2013). The main professional education needs are as follows (Poduška and Đorđević, 2012):

1. New knowledge in professional domain
2. Professional Seminars and Fairs
3. Professional journals
4. Foreign language
5. Software literacy
6. Computer literacy

Forest owners and managers need new knowledge in the relevant domain of forestry. This is the most important measure that has to be taken to improve management. According to managers` attitude, they need to attend fairs and professional seminars. Then come professional literature and foreign languages, while they still do not see software and computer literacy as an urgent issue for forest owners and managers.

5.3.2. Main opportunities for innovative forest management

The main opportunities for innovative forest management can be found in shifting from mere production of wood to offering ecosystem services, especially recreational services. A recent research reveals that managers in protected areas need different types of support. Flow of information is considered to be a very important factor influencing the forest management in PA. The research shows that various sources of information affect the possibility to improve forest management. They are ranked in the following way (Poduška et al. 2013):

1. Professional literature
2. Experience from colleagues
3. Seminars
4. Internet info
5. E-mail
6. Fairs
7. TV
8. News paper

The most important source of information for forest owners and managers are professional literature, followed by colleagues and professional seminars.

The same research reveals what managers perceive as business opportunities. The most important business opportunities by priority are as follows (Poduška et al. 2013):

1. Recreational services and Nature Tourism
2. Branding of local products
3. Fishing
4. NWFP
5. Forest management on the municipal level
6. Big game hunting
7. Small game hunting
8. Biomass production
9. Real estates
10. Extension service PFO
11. Mining

The most promising opportunities are recognized in recreational services and nature-based tourism. They are followed by: branding of local products, fishing, collecting and processing of non-wood forest products. Less applicable management opportunities are: forest management on the municipal level, hunting activities, biomass production, real estate business, extension service to PFO and mining.

Having in mind the difficult economic situation our country is faced with, tradition of the forest sector and demands of society, at least one strategic orientation for forest owners and managers can be proposed. Strategies should go in the way of diversification into tourism and recreational services. Recreational services are a type of environmental services and need to be planned by the management in each organization. Besides planning the activities, evaluation of recreational services is still an open issue and need to be performed in future. Diversification into recreational services will provide financial autonomy of organizations and lead to multifunctional management of forests, which implies harmonization of numerous forest benefits (Poduška and Đorđević, 2012).

5.4. Obstacles to innovative forest management approaches

To develop new and innovative forest management approaches, managers need to overcome various obstacles. According to a research with managers in nature protected areas, they can be summarized and cautiously applied to the whole forest sector in Serbia. The main hindering factors for forest managers in PAs are listed according to priority (Poduška et al., 2013):

1) Lack of funds
2) Interference of politics in forest management
3) Lack of information on new products and services
4) Lack of information on new procedures
5) Procedures and Certificates
6) Cooperation with other companies
7) Law on Nature Protection
8) Law on Forests

Forest owners generally miss funds for appropriate forest management. Interference of politics in forest management is direct, especially in enterprises. Lack of information is in the middle of the revealed hindering factors. It s followed by procedures and cooperation with other companies.

Analyzing the main needs of forest professionals and managers, some researchers start with investigation in needs for professional education. Education and professional training programs are carried out by Universities, Research Institutes, Associations of PFO, Enterprises and other organizations. The majority of forest managers attend such programs 85.7%, but 14.3% does not attend professional education and trainings (Poduška et al., 2013). Main needs for professional education are as follows (Poduška and Đorđević, 2012):

1) New knowledge in professional domain
2) Professional Seminars and Fairs
3) Professional journals
4) Foreign language
5) Software literacy
6) Computer literacy

CASE STUDY 4: SPECIAL NATURE RESERVE "ZASAVICA"

`Zasavica` was declared a Special Nature Reserve (SNR) of the first category by the Government of the Republic of Serbia on June, 12th 1997. It covers 671 ha and has a protective zone (buffer zone) of 1.150 ha. The ownership structure of this first category protected territory is as follows: 472 ha are in public property, 138 ha are state-owned, and the remaining 60 ha are privately-owned.

`Zasavica` Special Nature Reserve has special natural values, including more than 700 plant species, some of which are protected and listed in the Red Book of Serbian Flora. It is a habitat of 180 species of birds, 20 fish species and as many amphibians and reptiles.

Most of `Zasavica`Special Nature Reserve` is located on community land. The Nature Conservation Movement (NCM) `Gorani` from Sremska Mitrovica town manages this property. Sremska Mitrovica is the political, economical and social centre of the Srem county. The town has a long history and it is mostly known as one of the four Roman empire capitals – *Sirmium.* The Nature Conservation Movement is the oldest ecological non-governmental organization in Serbia and Europe. The activities of the organization are related to education and participation of citizens, especially the young, in the field of preservation and improvement of natural values. The NCM has been planting trees for more than 40 years. They have planted trees on 400.000 ha of waste land as well as a few millions of seedlings in the cities, villages and parks of Serbia. For these activities, The NCM was awarded *Global 500 Honour Roll* by the UN**.**

For their excellent results in the field of Nature protection, the NCM of Sremska Mitrovica was given to manage the SNR Zasavica. It is the first time that the management of a protected nature property in Serbia has been given to a non-governmental organization. In that way, one of the basic goals of modern concept of managing through cooperation with local people has been achieved.

After the first three years of work, the NCM of Sremska Mitrovica has successfully carried out the programme for protection and development of the area, its presentation to the public, cooperation with educational, scientific and expert institutions and it has provided conditions for using this area for the purposes of education and different kinds of tourism.

Preserved authentic landscapes, folklore, and cultural-historical monuments describe Zasavica as a unique and complete tourist entity. A picturesque mosaic of forests, meadows, rivers and river banks, abundance of plants and animals, traditional way of life on the river presented in folklore and everyday life, historical heritage dating back to ancient times, all offer visitors a rare, attractive and unique experience all the year around.

SNR Zasavica offers: relaxation, recreation, sailing, watching and study of nature as well as educational programs for pupils and students.

Due to its biodiversity, presence of relict, endemic, and rare species and their communities, insufficient knowledge about some groups (e. g. insects), possibility to study inter- and intraspecific relations, interactions of biotic and abiotic factors, the area can be designated as an area of scientific interest suitable for scientific research (Zasavica, 2014).

Currently there is a conflict between the farmers whose farms are adjacent to the Reserve and who want to increase the productivity of their fields by lowering the water table, and the SNR managers who claim that a high water table is required to protect critical biodiversity. This problem can be resolved by extending the area of the reserve and including the adjacent areas in the management. The future border of the reserve should coincide with the border of the hydrological unit or catchment. Naturally, it does not mean that the farmers should stop farming the land. It is indispensable that the farmers stay and continue farming but without having to compete with farmers who work in more optimal conditions.

The Government should support the farmers by introducing agro-environmental measures that would help the farmers replace their traditional production methods with more nature-oriented ones. There is a growing demand for nature-friendly products that offer farmers a good option to earn a good income. However, the adaptation to environmental agriculture will take time and it will require coordinated efforts of PA managers and farmers. On the other hand, introduction of nature-friendly farming will help keep the workforce and income in rural areas and keep the countryside alive (Zasavica, 2014).

Foresters are applying close to nature forestry techniques using only native tree species and supporting the protection and management of typical habitats and species in the SNR. The new management approach is in close relation to agro-forestry where agriculture is restricted to grazing and hay making and farmers are not allowed to use pesticides, herbicides and chemical fertilizers. They use domestic cattle typical of the region like the Manguliza pig and Podolian cattle for grazing. Farmers earn additional income by offering services to tourists. Recommendations to improve the forest management are (Zasavica 2011):

- Improve the forest management by prohibiting clear cuttings, restoring natural oak and ash forests, replanting with native deciduous tree species and reducing the area covered with non-native poplar plantations. Preserve mosaic structure of the forest habitats on Zovik (*Morimus funereus, Lucanus cervus, Zamenis longissimus, Equisetum hiemale, Viola elatior)*.
- Establish/maintain ecological corridors between forest patches in meanders. Preserve forest and forest edging habitats (*Quercus robur* and *Fraxinus angustifolia*). Restore forest ecosystems and convert shrub vegetation to forest vegetation (*Morimus funereus, Lucanus cervus, Zamenis longissimus, Equisetum hiemale, Viola elatior)*.

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6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

6.1.1. Private forest owners and new legislation adoption

During the last decade, Serbian parliament and Serbian government introduced plurality of new policy documents into majority of sectors, either as a result of the transition to democracy and market economy or within the process of preparation for the EU accession. A number of adopted documents proved to have influence on the forest sector. The most remarkable influence is certainly exercised by the new Forest Law of the Republic of Serbia, which was enacted in 2010. The major difference between this Law (2010) and the former Forest Law (1991) is that private and public forest ownerships are now on an equal footing. Thus, private forests got their recognition as an ownership category, contrary to the past times when they were mostly neglected. For the first time, an independent role of private forest owners (PFOs) was acknowledged through the support of developing private forest owners' associations (Forest Law 2010, article 73). It creates a new basis for the relationship between the state and private forest owners,

especially when sustainable management of small private properties is concerned (Petrović 2012).

6.1.2. Regulation

The new Forest Law (2010) was created as a legal support to the first national Forestry Development Strategy of the Republic of Serbia enacted in 2006. This Strategy defines new directions in the development of the private forest sector with the special focus on the support to its interest organizations and getting the small-scale forestry more efficiently managed (Petrovic 2012). In particular, the Government was obliged to create normative preconditions and measures of economic policy in order to stop the process of ownership fragmentation (Forest Directorate, 2006). Currently, the Inheritance Act of the Republic of Serbia(1995)still favours such fragmentation processes. It allows division of the inheritance into equal parts (1995), which affects further creation of smaller parcels. The current number of parcels is estimated at 3,900,000 (Table 2) and if the fragmentation trend continues, one would in the future `probably speak more about family ownership rather than about private ownership in a common sense` (Petrovic 2012). Due to the average parcel size of 0.3 ha (Medarević, Banković 2008), Serbian private forests already have a character of `heavily` fragmented ownership. Accordingly, the effects of the currently enforced Inheritance Law (1995) might lead to the situation where long-term forest policy measures can hardly be effective (Petrovic 2012). Private forest owners themselves seem to be aware of the fragmentation barriers and consider that they hinder an organized and efficient (fuel) wood production in the first place (Jankov et al. 2012).

6.1.3. Afforestation

Together with the forest policy, the newly adopted forest-related policies also affect the development of the forest ownership. For instance, the adoption of the new Law on Agricultural Land (2006) affects afforestation issues. Article 23 of this Law allows owners/users of agricultural land to change its current purpose and conduct afforestation, provided that they have Ministerial approval. The new Forest Law (2010) complements this allowance as it foresees planning and economic instruments to support the priority measure of “increasing forest area through afforestation“ (Articles 19, 80). Planning refers to the Forestry development programs (of the Republic and of the Autonomous Province) and their implementation through Forest management plans (Forest law 2010, Article 19), whereas the financial support needed for afforestation measures can be driven from the newly established budgetary fund for forestry (Forest Law 2010, article 80). Finances go directly from the fund to the producers of seedlings who are obliged to provide plants and advisory services free of charge to the landowners. In the autonomous province of Vojvodina the finances are provided from the provincial fund and the landowners get additional financial support for the first five years of tending. In both Vojvodina and central Serbia, landowners have to submit the afforestation proposals first, which are then followed by the annual call announced by the state and province (Annual program for using budgetary funds). According to the official statistics (Statistical Bulletins of the Republic of Serbia 2002 to 2013) the amount of afforested agricultural land in the period 2003 -2012 was 12 349 ha in total (both state and private).

6.1.4. Regulation on church property / restitution

The Law on Restitution of Property to Churches and Religious Communities was enacted in 2006. This Law initiated the restitution of the property that was seized from churches, religious communities and their endowments, according to the regulations on agrarian reform, nationalization, sequestration and other regulations that were adopted in the period after 1945 and all other acts by which property was seized without compensation (Nonic et al. 2011b). So far, 69% or 23 195 ha of forests and forest land have been returned, which makes 1% of the total forest growing stock in Serbia (see chapter 3.1.5.7). Accordingly, church and religious communities appear as a new category of forest owners. The emergence of additional forest owner categories is expected after the ongoing restitution process in Serbia has

been finished. This primarily refers to the process of restitution of properties to individuals and subjects other than church. The Law on Property Restitution and Compensation (2011) should provide a legal basis for that process, as previously mentioned. This Law defines, among other things, the cases in which forests and forest land can (Articles 15, 24) or cannot be returned (Article 25) to the former owners and their successors. Although it is in the initial phase, the implementation of this Law and the preferred natural type of restitution (prioritized in Articles 8 and 9) will lead to a further increase of the private forest area.

6.2. Influences of policies on forest management

6.2.1. Forest management plans

According to the Forest Law (2010) private forests are managed either by their owners or this right is conferred to the Association of private forest owners which then licenses a professional body. Whatever the case, the Law requires forest management plans to be designed and approved by the Ministry (Article 25). The Law (2010) foresees annual plans (Article 30) and work projects (Article 31) as implementation instruments. It further prescribes a number of duties for the owners/associations, such as recording conducted works (Article 34), recording changes in the forest (forest chronicle, Article 35), forest guarding (Article 39), conducting protection measures (Article 42), maintaining forest roads (Article 66), etc. All activities in private forests need to comply with forest management plans. According to the same Law (2010), PFOs are required to obtain cutting permits, get the trees marked before harvesting, be in the possession of delivery notes when the wood is marketed, etc. The existence of a large number of obligations and restrictions makes private forest owners heavily dependent either on the representatives of the forest service or on the public enterprises managing state forests (Petrović 2012).

The Forest Law (2010) differentiates between the PFOs/Associations that have more than 100 hectares and the ones with less than 100 hectares, not only because the requirements for their forest management plans differ but also because of the financial support for their development. Whereas the former finance the development of the forest management plans on their own, the latter have the designing work subsidized (plans for PFOs with the property size under 100 ha are financed by the State).

6.2.2. Measures for improved management of private forests

The Forestry Development Strategy of the Republic of Serbia emphasizes that the principle of sustainable forest management might be endangered in private forests (in the periods of significant disturbances of economic and social development forest owners are often forced to harvest their forests beyond the forest potential) which means that mutual and harmonized efforts of the State and the owners are needed in order to obtain permanent protection of those forest functions that are both in the general interest and in the owners' interest. The Strategy foresees several measures for the improvement of the state of private forests (Forest Directorate, 2006):

- Assessment of the state of private forests and development of the planning and control system of private forest management;
- Professional and financial support to the organization of forest owners with the aim of strengthening their capacity for the realization of sustainable forest management;
- Efficient system of support to private forest owners and to the establishment of small and medium enterprises in forestry and related activities;
- Creation of legal preconditions for smooth implementation of sustainable management in the cases when the owners are not able to, do not want to, or do not have the interest to execute the plan documents, by which they endanger the general interest and the interest of other forest owners;
- By creating normative preconditions, the consolidation of private forest holdings will be enabled, which will be stimulated by measures of economic

policy whereas further fragmentation of forest holdings will be prevented;

- The Government will use the optimum measures of economic policy and ensure permanent and long-term financial means to stimulate private forest owners to ensure the protection and improvement of the state of private forest resources.

Creation of a favourable investment climate in the private sector includes financial means, removal of market barriers, initiation of amendments to forestry regulations, finding the optimal form for financing forest protection and enhancement, as well as development of a more transparent and reliable governance and regulation system. It will enable the development of the market-oriented forestry (Forest Directorate, 2006).

6.2.3. Forest Directorate

Forest Directorate was established in 2002 under the Ministry of natural resources and environment, in order to conduct authority duties over the whole forest area, regardless of ownership. Today it works under the Ministry of agriculture, forestry and water management. Together with the formulation and implementation of the (forest-policy) program goals, it conducts implementation control and strives toward the improved state of private forests. The latest research results demonstrate weak forest authority that fails in fulfilling public tasks in private forests (Stevanov and Krott 2013). This finding goes in line with the expectation that in every case when the state forest authority acts as a separate unit, without sufficient financial support, its performance is always weak (Krott 2005, in Stevanov and Krott 2013).

6.2.4. Compensations

Formally, the new Forest Law (2010) foresees the cases in which a forest is assigned the priority function of general interest (by the document regulating nature protection). In such cases, the owner should get compensated for the restrictions in use or increased management costs (Article 14). The compensation should be provided either by the legal entity requesting establishment of the particular priority function or by the end users (Article 14). Although some private properties are subject to this regulation (private forests in national parks, protected areas, etc.), their implementation is still vague.

6.3. Policy instruments specifically addressing different ownership categories

6.3.1. No specific policy instruments exist

There are no specific policy instruments directed at new forest owner types (chapter 3.4). The Forestry Development Strategy (Directorate for Forests, 2006) recognizes “insufficient information and unawareness” of private forest owners with respect to “the available forest resource potentials and the method of management which enables maximum utilization of the potentials under the principle of sustainability”, which requires “a special approach to permanent and qualified education and information of private forest owners” (p. 22). In the same document, the Government is obliged to provide “better technical and consulting support“, by “taking into account the rights and demands of private forest owners” (chapter 5.4.4). The new Forest Law (2010) recognizes provision of relevant advisory services. It offers the possibility of technical support in private forests in the form of a Public Forest Enterprise service or the legal body with the license. Similar to the above-mentioned case (i.e. lack of forest management plans in the practice of managing private forests, with a few exceptions - Petrović 2012), the implementation of new advisory types is still poorly-developed. As main reason of existing situation can be mentioned lack of development of advisory programs within institution responsible for service providing. Institution responsible for service providing simply implement technical requirements defined in Law on forests (marking the tree, issuing transport licences in private forests, etc) and neglect advisory services due to lack of financial and precise rules for such support. Small-scale private forest owners are used to dominance of strong public service on their private property during long time of

communistic period, when government did not nationalized small-scale forest, but pretty neglected interest of private forest owners. This situation is somewhat changed today, but most of the advisory services related to needs of private forest owners is lacking in practice.

Contrary to the previous law, the new Forest Law (2010) supports the establishment of private forest owners` associations (Article 73). They should represent and protect the interests of their members, by putting these interests into political agenda. Interviewees claim that the best approach for the private forest owners' association is a voluntary approach, which can be best realized if financial initiatives are provided (Avdibegovic et al. 2010b).

6.4. Factors affecting innovation in policies

6.4.1. Weak political role

After the system change in Serbia, the United Nations Food and Agriculture Organization (FAO) and the Serbian State Forest Administration initiated "Institutional Development and Capacity Building for the National Forest Programme in Serbia" 2003-2004 and a follow-up project "Forest Sector Development in Serbia" 2005-2008. The main innovation related to these processes was participation of different stakeholders, incl. private forest owners, through workshops and survey questionnaires. The Forestry Development Strategy (2006) emerged as one of the outputs. In this document the Government declares that it will further support "the participation of the private sector in forestry development", through more transparent and simpler governance procedures, among others.

Although a certain change can be observed in the attitudes of policy makers toward the role and significance of private forest owners (Avdibegovic et al. 2010b), these actors are still underrepresented in the policy processes (Petrovic 2012). In spite of their great number, private forest owners are not organized and lack their strong political lobby (Petrović 2012). New institutional environment proves to be unfavourable for PFOAs, due to the changes in the Law on NGOs. Consequently, most of the associations are currently either not active (Table 6) or show limited activity.

It seems to be common that the political role is neglected not only by private forest owners/associations but also by the whole forest sector in Serbia. The forest authority keeps being silent in advocating forestry interests in the broader policy arena (Stevanov and Krott 2013).

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SLOVAKIA

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1. Introduction

1.1. Forests, forest ownership and forest management in Slovakia

The Slovak Republic covers a rather small area but the proportion of forest is relatively high compared to that of other European countries. In 2013, the area of forest land was 1,941,521 hectares, or 41% of the total land area. Slovak forest are characterised by highly levels of diversity, with both coniferous (39.3%) and broadleaved species (60.7%) abundant.

Slovak forests represent an important natural heritage, reflecting their ecological and environmental worth, their economic value, and their cultural significance. All these values may be appreciated in a national, European and global context. A key document which defines the objectives and priorities of national forest policy, the National Forest Programme was designed with the aim of securing the sustainable forest management.

Forest land on the territory of the SR is owned by the State (40% of forest area) and non-state entities (44.8% of all forests). The category of non-state includes those under private, community, church, agricultural cooperative and municipal ownership. Remaining 15.2% of forest areas are forests of unidentified ownership.

An area of 53.9% of forest is managed by the 4 state organizations, the largest one is the state enterprise Forests of the Slovak Republic, Banská Bystrica. The state enterprise manages also the forests of owners whose forest land has not been handed over to them for various reasons and land leased from the non-state subjects by contract, as well.

In the use of non-state subject is 46.1% of the total forest area. An organizational form of subjects in the non-state sector consists of land communities, civic associations, business companies, natural persons recorded for business activity or without recording, as well as special units (commercial, contributory) of municipal office.

1.2. Overview of the country report

Slovakia has a complicated ownership structure of forests which results from historical and political factors. The main issue which had an impact on the development of forest ownership in Slovakia has been restitution process, after the year 1989. It was not only about the restitution of ownership's and users' rights but also about creation such conditions where owners themselves will be able to be effective farmers at their forest land resources

New forest owners try to diversify the activities carried out in forests. Besides the mostly used timber production they use it for other purposes which require new management goals. An average level of diversification in Slovakia is 20%, but in small private forestry it is only 6-7%. One of the opportunities for innovative forest management in Slovakia is the emerging debate on payments for ecosystem services, as well.

Forest owners that want to implement new management approaches have to comply with forestry and environmental legislation which is rather restricting. Lack of financial resources and lack of state financial support also present an obstacle to apply new management approaches.

The basis long-term goal of state forest policy is to ensure sustainable forest management based on appropriate use of its economical, ecological and social functions for the society and foremost rural areas. To ensure sustainable forest management is the use of forest management plan in forestry. Professional forest management is a legal

obligation of each forest owner irrespective of the property regime, ownership or land cover.

All ownership categories have some barriers in the adaptation of forest policies. Main barriers are: lack of association, political lobby, information, and they also lack funding from public sources.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

Qualitative data collection relied on literature review (mainly scientific papers and reports) on restitution process in Slovakia, forest ownership structure changes, management approaches in Slovakian forestry and policy instruments relating to forest ownership.

In addition to qualitative data, quantitative data were also collected. Statistical data were gathered from the Compendium of the Slovak Forestry Statistics prepared by National Forest Centre-Forest Research Institute Zvolen, from the Reports on the Status of Forestry in the Slovak Republic (Green reports), from the statistical database of the Statistical Office of the Slovak Republic (SLOVSTAT) and also from different international and national scientific studies on forest ownership.

For illustration and better understanding of the issues of new forest owners types, case examples as well as own expert knowledge was used.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

The problem of non-state forest sector in Slovakia has been particularly studied in the 1990s and marginally in other contexts later. This fact allows to introduce new innovative methodologies in the procedures and to fill the gaps of information.

Main themes covered by the studies in Slovakia are focused on the description on non-state forest sector as a whole. New private forest owners were not really in the centre of interest. Only exception is the ongoing research project VYNALES implemented by National Forest Centre and Technical University Zvolen, which is directly connected with the main topics of the Action, but only preliminary non-published results are available so far (www.ipoles.sk).

Project VYNALES (supported by the Slovak Research and Development Agency) is focused on the analysis of non-state forest sector in Slovakia, formation of interest groups and associations, determination of their priorities and goals. It also analyzes the impact of non-state forest ownership on the forestry policy, rural development policy and nature protection policy. The results will provide new working models and methods for forest owners.

Selected methodologies were based on literature review, questionnaires and interview surveys. Project VYNALES uses a combination of these methods of empirical research in sociology and political science with methods of geo-process services (using instruments of geographic information systems).

3.2. New forest ownership types

According to the reviewed literature no details on the number of new owners and their development over time are available. The only quantitative figures are for the aggregated groups of owners (Green report, 2013). From the qualitative research within project VYNALES we can assume that there are new categories of owners in terms of urban, absentee, and non-traditional owners.

The main distinction of “new ownership” from traditional ownership, in terms of structural attributes, outputs, goals and management are described in the context of innovation in forestry (e.g. Dobšinská, Z., et al. 2010). “Innovative owners” improve their management practices and introduce new products and services. The main challenge for diversification of activities in private forest sector flows from national forest policy, represented by National forest program, and Rural Development Policy.

3.3. Forest management approaches

There are no many specific forest management approaches described in the Slovak literature. “New management approaches” are emerging in relationship to provision of recreational services or hunting activities (Sarvašová, Z. and Kovalčík, M. 2010). The possibilities to get direct payments for biodiversity conservation through RDP - Forest Environment or NATURA 2000 sites on forest land open the discussion on that new management approaches (Šálka, J. and Sarvašová, Z. 2011).

3.4. Policy change / policy instruments

On the one hand, private forest owners are affected by different social, economic and political impacts. On the other hand, also non-state forest actors (i.e. non-state forest owners and their interest group such as forest owners associations) in Slovakia have a permanent interest in the enforcement of its requirements towards various policies (e.g. nature conservation, rural development).

Issues related to the forest ownership structure, their interest groups, opinions and priorities were described in relation to the formulation and implementation of public policy measures. For example, papers directed at new forest owners expectations in forest planning (Sedmák et al. 2013), problems in implementation of nature conservation policy (Sarvašová, Z., et al. 2013) or in the context of formulation of rural development program (Dobšinská, Z., et al. 2012). Currently, research on this issue is of the particular relevance in the sustainable forest management, increasing competitiveness and the introduction of innovations in forestry, rural development,

and climate change or biodiversity or water protection.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Ownership categories in Slovakia are classified as state, non-state and unknown ownership. The detailed structure of forests' ownership is given in Table 1 in the Annex.

State forests

The category of state forests represents forests owned by the Sate including military occupied land, managed by state agencies.

According to the Compendium of Slovak Forestry Statistics (2013), the State holds property rights to 40.0% of the total forest area (i.e. 777,599 ha), but manage 53.9% of forest (i.e. 1,046,288). Besides forests owned by the State, state agencies also manage forests leased from non-state owners and un-claimed forests (13.9%)

State forests are managed by the following state agencies: the Forests of the Slovak Republic, s.e. Banská Bystrica; Forest – agricultural Estate s.e. Ulič; and the State Forests of Tatra National Park. All these fall under the Ministry of Agriculture. The Military Forests and Estates, s.e. Pliešovce are administered by the Ministry of Defence.

Non-state forests

The category of non-state forests includes forests under private, community, church, agricultural cooperatives, and municipal ownership. The most common legal and organisational forms of non-state forest include: land associations; limited companies; shared companies; individual persons with or without a business licence; and administrative units (commercial, semi-budgetary) attached to municipalities.

Non-state forest owners who have legally settled their ownership rights own 44.8% of forest area (i.e. 869,124 ha) but manage 46.1% of forest (i.e. 895,233 ha). Non-state owners manage also leased forests (1.3%).

Private forests

Private forests are owned by individuals or families. Private forests generally cover avery small area (average size of private holding is only 2.8 ha). Private owners have the largest possibility of conducting the management. They can manage their forest on their own, lease it or set up forestry cooperative or land community (i.e. limited company and others).

Community forests

Community forests belong to property owned by many co-owners that cannot be divided, because forests are supposed to be managed as a whole. By adoption of Land Community Law No. 181/1995 the expiration of former entities that existed before community forests - as for example urbars, was set up. Also other duties for management of these forests were adapted – legal and economic status, method of management, expiration of legal entities and rights, duties and relations between members of the land association. More information on land associations are found on page 13.

Municipal forests

Municipality, as an owner of the forest, can manage its own property or rent it. Municipal forests are usually managed by subsidized or limited companies founded by the municipality. In Slovakia there are around 60 forest enterprises managing forests in municipal ownership, the biggest one is founded by the city Košice, which manage 19,432 ha of forest land. Many of them also

maintain parks and other green areas within their municipalities. Municipalities realize their ownership right through municipal office bodies, local council or company boards through the approval of the budget, balance sheet of the forest enterprise and management of the forest enterprise (director, deputy, staff numbers, etc.). Municipality does not intervene into expert forest management.

Church forests

These are forests privately owned by churches and religious communities. They were established under the Act no. 282/1993 and no. 161/2005. Forests that were returned to church use to form an association, for example a company PRO POPULO Poprad, that was set up in 1991 and is charged to manage forest and agricultural estate in ownership of Roman Catholic bishopric of Spišské Podhradie (Sarvašová, Z. and Šiška, P. 2009; Weiss, G. et al. 2011). By the year 2013, forest land with an area of 70,500 ha has been returned to church, however there is still 2,810 ha of unsettled forest, which should be returned to church (Správa o transformácii….2013).

Unknown owners

In Slovakia, there are still 294,798 ha of forests (i.e. 15.2% of the total forest area) with unidentified ownership. This category includes forests of owners who have applied for their property right, but their restitutions have not been completed yet; forest of unknown owners or owners with unknown residence. There is also a group of owners who still have not request for their restitution, refused to associate or have not submitted the required documents relating to their property (Green report, 2013)

4.1.2. Critical comparison with national data in FRA reporting

According to FRA categories, public ownership includes forest owned by the State and corporations established by municipalities. The forest area in this category reached 952,000 ha in 2013. According to the national definition, the category of private ownership includes only forests owned by individuals (around 206,000 ha).

However according to FRA, this category includes forests owned by individuals, business entities, co-operatives, religious institutions, and communities with a total forest area of 694,000 ha. Other type of ownership includes areas where ownership is unclear or disputed (295,000 ha). The data on ownership structure according to FRA categories are found in Table 2 in the Annex.

4.2. Unclear or disputed forest ownership

According to the Report on the Transformation of Forest Land Ownership and Tenure (2013), it is still necessary to settle ownership rights to forest land with an area of 200,672 ha. The highest proportion of unresolved forests is in the category of private forests (156,909 ha). This fact is primarily caused by the character of private properties, majority of which are of small size with a lot of small individual owners or shared ownership. Therefore these cannot be identified easily on the ground and it is difficult to determine the borders of these small scale private forest properties. In the category of community forests, it is need to settle forest land with an area of 18,859 ha. In the category of municipal forest unresolved land represents an area of 1,579 ha, in the category of church forests it is an area of 2,810 ha and area of unresolved forest land of other owners is 20,515 ha.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

Fragmentation of forest property is considered as an unfavourable factor in sustainable forest management. In order to avoid fragmentation of forest land, legal restriction was enacted. According to the Act no. 180/1995 Coll. on Certain Measures for the Settlement of Ownership Rights to Land, in case of buying or selling forests, dividing of forests lands into parcels with an area of less than 0.5 ha is forbidden. This legal restriction does not apply to community forests.

4.3.2. Specific inheritance (or marriage) rules applied to forests

In the Act no. 180/1995 Coll. on Certain Measures for the Settlement of Ownership Rights to Land, there is a specific inheritance rules applied to forest. Under current inheritance system, existing forest land can be divided into several parcels between heirs. If the area of new plot is less than 2 ha, the inheritor is obligated to pay a fee of 10% of the value od the land. In case of an area of less than 1 ha, the amount of the fee is 20% of the value of the forest land.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

The ownership structure in Slovakia has changed considerably during the last three decades and has been influenced by long term legislation amendments, particularly land reforms, and giving the institute of forest use superiority to forest ownership (Weiss, G. et al. 2011).

Private ownership and use of forests lasted until the year 1977, when forest Act no. 61/77 Coll. and the Act no. 100/77 Coll. on Management in Forests and State Administration of Forestry came into force and it abolished “de facto” private use of forests though private ownership "de jure" was preserved. At that time there were 99.14% of forests in the use of state forest organizations; cooperatives used 0.81% and private owners 0.05% of forests (Sarvašová, Z. and Tutka, J. 2005). During the Communist period, until the year 1991, forests were held and managed by state organizations (1,912,905 ha) and agricultural cooperatives (8,800 ha) which were under the supervision of the State Forest Enterprises (Schmithüsen, F. and Hirsch, F. 2010).

In 1991, the process of restitution started when the so-called Restitution Law came into force, which allowed the return and use of property to former landowners. All kinds of ownership (private, municipal, community, church and cooperative) have been restituted and are now equal in law. Currently, 44.8% percent of the country’s total forest area is in non-state ownership compared with the 57.8% originally subject to private, municipal, church, cooperative (urbariat) and community (komposeseorat) ownership.

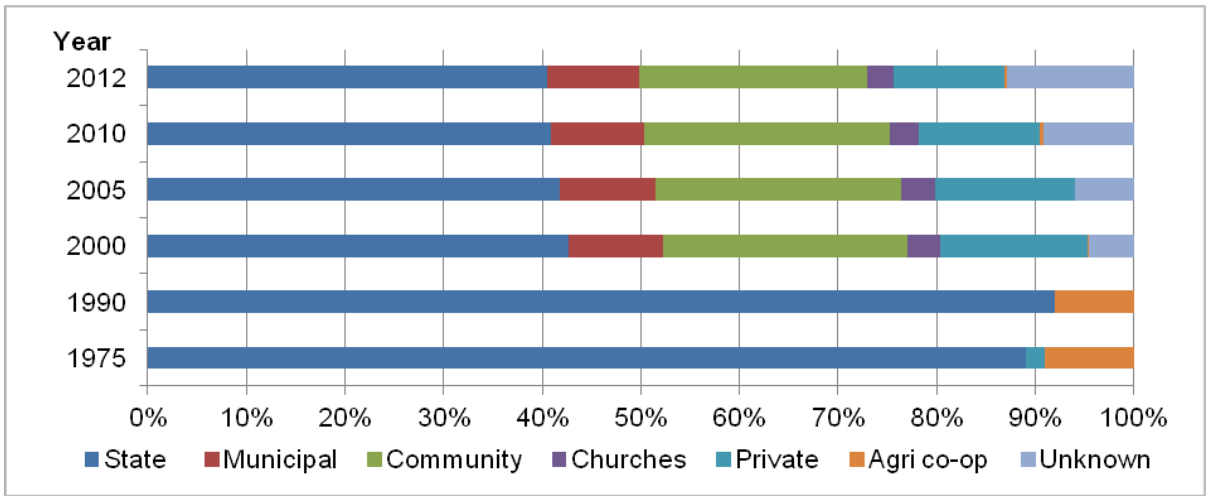

Figure 1: Changes of ownership's structure in Slovakia during 1975 – 2010
(Forests in Slovakia 2009, Green report 2013)

4.4.2. Changes within public ownership categories

In 1991, after the fall of communist regime, the monopoly of state organizations in forestry was cancelled and the non-state sector was restored (Moravčík, M. et al. 2009). Area of forest land owned by the State has fallen to 40% since 1990.

4.4.3. Changes within private forest ownership

Within a non-state ownership, a significant proportion of forests are joint-owned by more than 3,500 land associations, which manage more than 0.5 million hectares of forests. Meanwhile the sub-category of forest owned by agricultural co-ops has disappeared (they manage just 0.3% of forest). A specific category of forest ownership is forests of unknown owners (15.2%). Majority of these forests are of a very limited size, of individual or shared ownership, and impossible to identify in the field. In addition, there is a group of forest owners who still have not applied for their ownership right. The largest area of unresolved forests is in private hands. Nowadays, ownership's structure has had more or less established structure, which means that the structure of ownership's categories and size classes is almost completely stabilized. Finalization of the process of re-privatization should not be accompanied by some more substantial changes in this structure.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	3
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	2
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2

**0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: PRIVATIZATION AND RESTITUTION OF FOREST LAND IN SLOVAKIA

The privatization process started in 1991 when the Czechoslovak Republic Federal Assembly adopted the legal Act no. 92/1991 Coll. on State Property Transfer Conditions to Other Persons. However, Slovakian forests were excluded from the privatization process. Railway roads, Eastern Slovak transship centre in Čierna nad Tisou and Maťovce, forest soil and resources, buildings and facilities for forest industry and shares of state-owned forest enterprises and water courses were not privatized either (Weiss, G. et al. 2011).

An important part of the reforms after the year 1989 is a transformation of the ownership rights to forests. The reform consists of restitution of property to original owners and to a larger extent mainly of restitution of user's rights to owners who have not been formally withdrawn from the property. Equality of all kinds of ownership was assured firstly by Constitutional law and then by adoption of so-called "Land law" No. 229/1991 of the Coll. in May 1991 in Federal Assembly. Due to this change, all kinds of ownership were restored and made equal and a process or restitution of forest property to former owners has started altogether with diversified management of this property. Restitution concerned all estates that were taken by the state non-legally and then were socialized. Re-privatization should serve as a process that will improve the management of former state agricultural and forest land that was farmed in very ineffective way (Ilavský, J. 2001).

The restitution process created a new situation for former forest owners and their heirs, whose property rights had been interrupted during the socialist regime and who therefore had no knowledge of forestry. New owners with no experience of administering and managing private property joined together to form associations that could advocate for their interests in the formation of suitable economic, social, organizational and legislative conditions. For these "new" forest owners, interest or stakeholder organizations are a way of protecting and representing their common interests in the policy-making process (Weiss, G. et al. 2012a).

The return of forests to their former owners has stagnated since 1997, as in most of the unsettled cases the property is derelict, frequently in the ownership of shareholders, on cadastral territories with insufficient descriptive and geodetic information. Completion of this process will be possible after overcoming the existing legislative, technical and economic barriers (Ilavský, J. 2001, Schmizhüden, F. and Hirsch, F. 2010). Up to now about 100,000 subjects required restitution of ownership and users' rights to the area of about 1,044,177 ha. From the total area of 1,161,782 ha of original non-state forests, 961,110 ha of forest was returned. An area of 200,672 ha (17.27 %) of non-state forest has not been settled yet (Správa o transformácii….2013).

CASE STUDY 2: STATE FOREST ENTERPRISES REFORMS

Until 1990, forest management evolved in the framework of centrally planned economy. State forests (including military forests, school forests and forests managed by the Ministry of Industry) comprised 99% of the total forest area. Forest land was managed by forest enterprises, commercial organizations, directly connected with the state budget. Financing and budgets were centrally planned. Benefits from production activities (92% from wood products) were unable to cover costs and forestry was subsidized by the state budget. After 1991, state funds for forestry assistance have been utilized by offering subsidies. During last decades organizational management structure of the State forest has been modified (Mizaraite, D. et al. 2013).

Nowadays the area managed by state forests (including the rented forest from other non-state subjects and forest of unknown owners) consists about 54.6% or 1,059,000 ha of the total forests area in Slovakia. The forests under the ownership of the State are managed by 4 state forest enterprises, of which 3 state organization (the Forests of the Slovak Republic, s.e. Banská Bystrica; Forest – agricultural Estate s.e. Ulič; and the State Forests of Tatra National Park) fall under the Ministry of Agriculture and the last one (The Military Forests and Estates, s.e. Pliešovce) fall under the Ministry of Defence. The forest enterprises provide some of the forest management services, such as seed purchase or sale of wood by own capacities. The rest of forestry operations are performed by private companies. For example, external contractors carry out around 95 - 97% of felling operations and 98 - 99% of artificial forest regeneration and forest protection. State forest enterprises are working on self-financing condition with an obligation to deliver profits to state budget (Ambrušová, L. et al. 2013; Mizaraite, D. et al. 2013; Green report 2013).

4.5. Gender issues in relation to forest ownership

No relevant data

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic (“Characterized or motivated by philanthropy; benevolent; humane” OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		X	
• NGO with environmental or social objectives	X		
• Self-organised local community groups	X		
• Co-operatives/forest owner associations	X		
• Social enterprises		X	
• Recognized charitable status for land-owners		X	
• Other forms of charitable ownerships, namely:		X	

NGO with environmental or social objectives

In 1993, in Slovakia there was established a civil association The WOLF Forest Protection Movement. The WOLF is creating a network of private reserves without any human intervention called Evolution forests®. Up to now, they have created nature reservations with an area of 1,036.73 ha. The WOLF's main goals include saving natural forests, detecting illegal activities in forests, contributing to changes in forestry legislation and enforcement of forest's and carnivorous animal's protection.

Self-organised local community groups

In Slovakia, there are two legal forms of community forests:

- land association with legal entity
- land association without the status of corporate entities.

The land associations with legal entity are based on the contractual association of physical persons who are the owners of shares of common. These associations are typical corporations with special management bodies established in accordance with the provisions of the Act on Land Associations. The central management body of such land association is the plenary assembly of all shareholders. The main executive body of the land association with legal personality is the executive committee lead by the elected chairman as a legal representative of the land association. The supervisory board is the central control body of the land associations which consists of at least three members (Šulek, R. 2006). Generally, land associations with legal entity involve larger areas of forest land with favourable production and logging possibilities (Sarvašová, Z. and Šiška, P. 2010).

The land associations without legal personality are based on the free association of physical persons who are the owners of shares of common property. Such land association is represented by one authorized representative – because of this, there are not any special provisions on their organisation and administration and they perform their activities according to the general provisions of the Civil Code (Šulek, R. 2006). Usually, these associations represent the cases of the management of small forest areas, with limited possibility of rational, productive management. The owners themselves undertake forest management activities. They use the timber either for their own consumption or sell it to different business entities. The main way by which small private forest owners can be involved in forest management is through participation in joint meeting at which collective decision are made regarding the exploitation of the timber resources of their forest (Sarvašová, Z. and Šiška, P. 2010). However, by adoption of Act no. 97/2013 on Land Association in May 2013, establishment of land associations without legal entity is forbidden. Existing land associations without the status of corporate entity must be transformed into associations with legal entity till the end of February 2014.

Co-operatives/forest owner associations

Following political and social changes of 1990, different organization and interest group presenting their views were established. The activities of non-state forest owners are coordinated by the Council of the Non-state Forest Owners Associations (established in 2006), which is an informal umbrella body of non-state forest owners representing the interests of: the Union of Regional Associations of non-Sate Forest Owners in Slovakia (10 members, owns 276,200 ha of forest area), the Association of Municipal Forests in Slovakia (60 members, owns 146,125 ha of forest area), the Union of Diocesan Forests in Slovakia (13 members, owns 40,000 ha of forest area), and the Association of Private and Cooperative Forests Owners in Banská Bytsrica County (534 members, owns 134,011 ha of forest area). The main roles of forest owners associations in Slovakia are to: coordinate activities for ensuring the sustainable management and productivity of forest land; influence the drafting of policy proposals and legislative documents; and train their members. There is still a substantial group of owners managing around 33% of non-state forests who do not belong to any association (Sarvašová, Z. et al. 2011; Weiss, G. et al. 2012a; Weiss, G. et al. 2012b).

Another group of associations are land associations with legal entity. In this case forest land belongs to more co-owners and

cannot be divided, because forest is managed as o whole. They usually involve larger areas of forest land with favourable production and logging possibilities (Sarvašová, Z. and Šiška, P. 2010).

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

Forest common property in the area of Slovakia originates from the 18th century, when Austrian empress Maria Theresia in 1767 had issued special decree on the land ownership of Hungarian noblemen and their serfs. In 1898, the act specifying legal status of common property was issued in the Hungarian part of the monarchy – the common property was defined as a form of indivisible property owned by the group of local inhabitants and their heirs in a form of ideal portions (so-called land association, in Slovak "urbar association").The institution of common property as a special type of ownership of pastures and forest land, formed as it was described, has survived in the area of Slovakia up till now. The legal act from 1898 has been valid in Slovakia till 1995, when new Act on Land Associations was introduced. However, in the 20th century, the forest ownership structure including common property of forest resources has been significantly changed. Forest common property is the most important type of ownership in the Slovak non-state forestry sector.

CASE STUDY 3: FOREST COMMON PROPERTY IN SLOVAKIA

At the present time, there are 2,791 land associations managing forest common property – 1,455 of them do not dispose of legal personality while 1,336 of them are land associations created as legal persons. Land associations are obliged to manage their forests according to the rather strict forest management plans – they must protect forest land and forest stands, utilise them rationally and improve them permanently, systematically and in accordance with the advanced biology, technology and economic knowledge. Moreover, they must ensure the proper management of their forests by the professional foresters with required education and experience in order to manage all forests in a sustainable way. The control of their forestry practice is performed through a system of the state administration bodies (the central authority of forestry state administration is the Forestry Section of the Ministry of Agriculture, the local authorities of forestry state administration are district and county forest offices).

The most common management problems are financial situation, conflict arising from interests of the forest owners (local communities) and interests of the society (the State) in the field of nature protection and the process of forest certification (Šulek, R. 2006).

A new Law has been enacted on Land Association (act no. 97/2013) which states that all land associations without legal personality are obliged to change its legal form to legal personality till the 28th of February 2014. This was problematic mainly for the small association with an area less than 50 ha. They have the possibility to change the legal form to association according to the Civic Code (association contract) or Commercial Code (legal person).

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Slovakia

The largest forest management subject is the state enterprise Forests of the Slovak Republic, Banská Bystrica. The state enterprise manages also the forests of owners whose forest land has not been handed over to them for various reasons. The enterprise manages also land leased from the non-state subjects by contract, all together 53.9% of forests (Green Report, 2013). The forests under the ownership of the state are being managed by the 4 state organizations of forestry as follows: Lesy SR, š. p. Banská Bystrica (Forests of the Slovak Republic, state enterprise, Banská Bystrica), Lesopoľnohospodársky majetok, š. p. Ulič (Forest-Agricultural Estate, state enterprise, Ulič), Štátne lesy TANAP-u (State Forests of the Tatra National Park) and Vojenské lesy a majetky SR, š. p. Pliešovce (the Military Forests and Estates of the Slovak Republic, state enterprise, Pliešovce). First three organizations belong to the competence of the sector of the Ministry of Agriculture of the Slovak Republic. The Military Forests and Estates of the Slovak Republic, state enterprise, Pliešovce) belongs to the competence of the sector of the Ministry of Defence of SR.

The non-state sector recently manages 45.4% of forest stands. In this are included the private (7%), municipal (8.6%), and church forests (1.4%), as well as forests of agriculture co-operatives (0.4%) and in shared ownership (28%). Gap of 12.8% forests of unknown owners are managed by the state organisations of forestry (Green Report, 2013).

Reconstituting the sector of non-state forests was influenced by not very favourable public climate as well as by actual situation in the cooperation with state sector. With a very few exceptions non-state subjects started without any financial means, any mechanization or technical means as well as without administration and technical equipment for forest production and access to the market (Weiss, G. et al. 2011). Whole process of forests restitution was accompanied by many problems, which are specific for each individual region of Slovakia.

Alegal and organizational form of subjects in the non-state sector consists of land communities with or without legal entity, associations founded according to the Civil Code, business companies, natural persons recorded for business activity or without recording, as well as special units (commercial, contributory) of municipal office.

What concerns functionality of respective legal-organizational forms in non-state sector, we distinguish in fact two cases. The first case is larger lands with favourable production and logging possibilities and management develops quite positively. These subjects usually employ professional foresters. Second case represents management of small area forests, where is the possibility of rational management limited. Usually the owners themselves carry out forest works. They use logged timber either for own consumption (especially heating) or they sell timber to various entrepreneurial subjects.

They either do it by themselves or lease the forest management rights to private companies or state forest enterprises. The contracts can be short (for timber harvesting) or longer (for all the forest management activities required by national law regarding silvicultural activities).

5.2. New or innovative forest management approaches relevant for new forest owner types

New forest owners try to diversify the activities conducted in forests. Besides the mostly used timber production they use it for other purposes which require new management goals. According to quantitative analysis of data from Economic Accounts for Forestry average level of diversification in Slovakia is in average 20%, but in small private forestry only 6-7% (Sarvašová, Z. and Kovalčík, M. 2010).

- Forest owners associations used financial resources from EU funds to improve the infrastructure (build forest trial, paths, cycling routes, renovating cottages, etc.) and so promote the recreational function of the forest (see Case study box: Urbariat Velky Kliz, page 19).
- NATURA 2000 payments for biodiversity conservation. Forest owners can get direct payments per hectare for not managing the forests in areas listed as NATURA 2000 sites. This was a measure supported under the Rural Development Programme 2007-2013. The financial support was granted as an annual payment for forest land in designated NATURA 2000 areas. The applicant had to be a forest owner or forest owners association owning at least 1 hectare of forest land and could not manage his land in any way.
- Biomass production where they plant fast growing trees.
- New business model in the form of market for forestry services is being developed at present.

5.3. Main opportunities for innovative forest management

Planned sustainable forest management has a long tradition in the territory of the Slovak Republic. History of sustainable forest management (SFM) in Slovakia is characterized by many institutional changes. Forest act no. 61/1977 Coll., adopted during the socialist period, promoted large scale forest management which applied less sustainable management principles. There are currently several levels of forest management planning in the Slovak Republic. The most complex strategic national planning instrument is the National Forest Programme at the political level. Lower level planning is represented by Forest management plans which are elaborated for forest management units (minimum forest area is 1,000 hectares) for the period of 10 years. Professional level of forest management is ensured by the Forest manager who is a licensed individual guaranteeing expert treatment of forest property for the forest owner in accordance with the law (Sarvašová, Z. et al. 2014, forthcoming). Using FMP at practical management is obligatory for all kind of forests in Slovakia. The duty of elaboration of FMP, list of its mandatory components and exact descriptions of steps and terms/dates applied at FMP elaboration process are stated in the Act on Forests no. 326/2005 Coll. The elaboration process results in only one FMP proposal, which is considered to be the optimal (Sedmák, R. et al. 2013).

Advisory services have a long tradition in Slovakia. Not only FOAs but also the state provides advisory services for forest owners. Advisory services are provided by state forestry administration (ministry, forest offices and specialized state organizations), by professional forest managers and private companies dealing with forest taxation and FMP elaboration. FOAs also provide advisory services to their members.

One of the opportunities is the emerging debate on payments for ecosystem services. At present, no PES are implemented in Slovakia though.

5.4. Obstacles for innovative forest management approaches

The main challenges lay in the public perception of forests. Historically, forests have been perceived as a good that serves everybody. There is still free access to forests and no willingness of people to pay for the services that forests provide for society.

Forest owners that want to implement new management approaches have to comply with forestry and environmental legislation which is rather restricting. Forest owners have to manage their forests according to the approved FMP. The plan contains obligatory measures containing exact descriptions of steps and terms/dates that need to be followed by the forest owner. The licensed forest manager oversees the whole process and ensures compliance with the law. In protected areas there are even more restrictions resulting from the nature conservation law which prohibits certain forestry measures in different protection areas according to the protection level.

The accessibility to forests is also one of the obstacles. Building forest roads has always been the hot topic among foresters and forest owners.

Lack of financial resources and lack of state financial support also present an obstacle to apply new management approaches. At the moment no PES are implemented in Slovakia.

CASE STUDY 4: URBARIAT VELKY KLIZ

The Urbariat Velky Kliz is a joint-ownership form of 600 forest owners with the total area of 786 hectares. The annual felling rate is approx. 800 m³, from which half of it is used for fuel wood. The urbariat offers also various recreational services for the visitors of their forests: accommodation in forest cottage "Spring", children facilities near the forest cottage, sport path "From Swell to Spring with Squirrel", football playground "Swell", hiking trails - marked in detail with accompanying leaflet, cycling routes, forest pedagogic activities for school kids and families with children, forest guided tours on selected issues (observing wildlife population), forest touristic on marked trials, rest places with fireplace, tables, benches and shelters (www.ipoles.sk).

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

6.1.1. Restitution process

After November 1989, in Slovakia, similarly with many other countries, restitution has been the main issue which influenced the ownership structure.

Equality of all kinds of ownership was assured firstly by Constitutional Law and then by adoption of so-called "Land Law" no. 229/1991 Coll. in May 1991 in Federal Assembly. Due to this change all kinds of ownership were restored and made equal and a process or restitution of forest property to former owners has started altogether with diversified management of this property. It concerns all estates that were taken by the state non-legally and then were socialized.

Re-privatization should serve as a process that will improve the management of former state agricultural and forest land that was farmed in very ineffective way. Re-privatization, started also in 1991 with Land law no. 229/1991 Coll., should serve as a process that will improve the management of former state agricultural and forest land that was farmed in very ineffective way.

Implementation of the Act on Land as well as other restitution acts represented a considerably complicated process because of complicated ownership in Slovakia and difficult registration in the terrain. For all that it was not only about the restitution of ownership's and users' rights but also about creation such conditions where owners themselves will be able to be effective farmers of their forest land resources (Bútor, P. 1999).

Different behaviour of state institutions during adoption or reduction of forest owners' rights, as well as during their restitution, had a great effect on this process. Though the substance of differences results from different political situation in given periods and neglected

works on keeping records on and applying ownership's rights, former forest owners as well as public expected much more positive approach on the side of the state. Up to now about 96,000 subjects required restitution of ownership and users' rights to the area of about 994,000 ha (49.5 % of the total area of the forest land resources).

6.1.2. Legislation

Most recent law is the Act on Land Communities no. 97/2013 Coll., effective from the 1st of May 2013, according to which communities without legal entities had to be transformed into legal subjects. Otherwise, they will be abolished.

Afforestation of agricultural land

The first afforestation of agricultural land was supported under the Rural Development Program in 2004- 2006 and also in the same program for the period 2007-2013. This arrangement was implemented by the Slovak government by regulation no. 150/2008 Coll. based on the conditions for granting payments for the first afforestation of agricultural land. Eligible for support were persons working in agriculture on area of at least 1 ha of agricultural land, which were: owners of agricultural land proposed for afforestation or owners associations with legal entity, tenants of agricultural land proposed for afforestation or association of tenants with legal entity with the consent of its owner. Afforestation after timber harvesting is obligatory under the Act no. 326/2005 Coll., on Forests.

6.2. Influences of policies in forest management

Professional forest management using FMP is compulsory for all ownership types with forests exceeding 50 hectares since 1930. The basic long-term goal of state forest policy is to ensure sustainable forest management based on appropriate use of its economical, ecological and social functions for the society and foremost rural areas. The main tool for ensuring SFM is FMP (Act on Forests).

Some changes came after 1989 where the shift to better management in the aspect of ensuring all forest functions was installed and the Forest Law was revised in 1991 and 1993. In the past evolution of the forest management the trend to intensify the state influence on forest owners was visible. Nowadays, after the new Act on Forests in 2005, a tendency is to minimize this influence. This change resulted in outsourcing the FMPs elaboration to private companies.

Today FMPs are perceived as a tool of the state, forest owners, forest administrators and forest managers for sustainable forest management. In the past FMP weren't elaborated for private forest owners and for small forest areas. Today it is elaborated for the whole area of the country. The expenses regarding the elaboration are covered by the state. The Ministry of Agriculture charged the National Forest Centre with the selection of FMP producer in the form of public procurement. The forest manager can charge other natural and legal persons with the elaboration of FMP but has to cover the expenses by himself. Plans can be elaborated by adept and technically skilled natural and legal persons who have trade permission in this area. FMPs are elaborated for the period of 10 years for each forest unit (the whole area of Slovakia is divided into forest units). FMPs are authorized by the Regional Forest Office.

The use of FMP in forestry is to ensure sustainable forest management. Professional forest management is a legal obligation of each forest owner irrespective of the property regime, ownership or land cover. Each forest owner (forest manager) has a legal obligation to ensure forest management of his forests according to existing FMP for that forest unit by an Authorized forest manager if he does not have the required knowledge. Authorized forest manager is a natural person who has the license given by the state for conducting forest management in the forest.

6.3. Policy instruments specifically addressing different ownership categories

6.3.1. Compensations

Non-state forest owners are compensated for restricted common management due to restrictions and measures of ban and other

conditions resulting from the Act no. 543/2002 Coll., on Nature and Landscape Protection. The compensation for the restriction of common management should be understood as: (i) exchange of land for other suitable land in state ownership, (ii) lease of land, (iii) repurchase of land to the State, (iv) contractual treatment or (v) financial compensation.

The amount of financial compensation is determined by the difference between cost and revenues in case of common and restricted forest management. The person entitled to a financial contribution corresponding to the restriction of common management is a land owner, with the exception of owners of private protected areas and their buffer zones. If the land is in co-ownership, the entitled person is a representative appointed by co-owners.

6.3.2. Legislative instruments

Act no. 83/1990 Coll., on Association of Citizens, prescribes that everyone can associate and create interest group, regardless of the number of members.

Act on Forests 2005. Amendment of this Act should allow the support of associations of non-state forest owners with a small acreage, and the proposal area is 50 ha. This acreage is based on the experiences and needs and is a minimal acreage for sustainable forest management with the assumption of regular income from forest management.

Act no. 247/2006 Coll., on the Promotion of Agriculture and Rural Development, provide a support for association of forest owners to the property of 50 ha in the associations with the legal entity and also counselling and education, establishment and activities of regional associations of forest owners.

Act no. 543/2007 Coll., on the Competence of Government in Providing Support in Agriculture and Rural Development, where the paying agency created by the Ministry decides on the granting of aid under a special regulation and on the provision of advance payment, decisions on state aid in the agriculture, food, forestry and fisheries.

Act no. 274/2006 Coll., on Detailed Rules on Aid for Agriculture, Food and Forestry sectors. Support for association of forest owners to the property of 50 ha to the associations with the legal entity.

6.3.3. Concept of agriculture development for 2007- 2013

Concept of agriculture development for 2007-2013, Part Forestry, Priority 3.2 Ensuring the interests and needs of forest owners and local communities - Use of property in accordance with the principles of sustainable forest management, conservation forestry in disadvantaged areas in terms of environmental improvement, landscape and cultural functions of forests; support of association of forest owners with small areas.

Association of small scale forest owners has a great importance from the viewpoint of rational management of non-state forests. Entities managing larger forest-land parcels with more favourable age structure and harvesting possibilities are generally more profitable. Therefore, one of the main task of this Priority is to support association of small scale forest owners with insufficient income from management due to natural production condition into communities with legal entity.

6.4. Information needs and factors affecting innovation in policies

All ownership categories have some barriers in the adaptation of forest policies. Main barriers are lack of association, political lobby, information, and they also lack funding from public sources.

Actors in political field influence programs in forestry sector in the form of acts for private forest and their implementation. The results of this process depend on the reactions of private forest owners as well as the ecological basis for growth and use of the forest. The State Forestry Administration should intervene in the market mechanism and do not leave only market self-regulation to the forest management. It should work on the reallocation of funds to create additional economic motives, which should be oriented to eliminate or mitigate the disadvantages of forest with small properties, which would ultimately lead to increased efficiency production of wood, raw material, but also to

strengthen implementation of production functions. Also, measures to ensure awareness of the intentions of the state forest policy in relation to small forest owners are very important.

CASE STUDY 4: RDP 2009-2013 FORMULATION

The institutional provisions of rural development programs (RDP) expect the involvement of several actors, which allows the bargaining process with the aim of improving the consistency of rural development policy. At the beginning of the entire formulation process the ministry set a hierarchical list of actors who should be contacted to participate in the formulation process of RDP. Among the actors were the FOAs in Slovakia, represented by their chairs. The partners participated in the preparation of incentives, recommendations and comments. The actors were divided into working groups according to the particular axes of the RDP. The FOAs representatives played an active role in the RDP formulation process. In the working group 1 they agreed together with other forestry actors on the selected measures that represented priority areas of interest of the concerned actors. For example, the bases for draft of measures in the case of forestry actors were measures from the previous SOP Agriculture and Rural Development 2004–2006. It concerned measures: sustainable forest management and forestry development, sub-measure: investments to improve and rationalize forest silviculture and protection, harvesting, primary processing and sale of raw wood and other forest production (investments bringing net profit) and public investments (investments bringing no profit). The final form of the document emerged from the working groups, so we can conclude that FOAs influenced the proposed forestry measures (Dobšinská, Z. et al. 2013).

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8. Annexes

8.1. Forest ownership structure – detailed tables

8.1.1. Ownership's structure of forests in Slovakia

Table 1: Ownership's structure of forests as of 31.12. 2013

Ownership category		State	Private	Community	Church	Agri co-op	Municipal	Non-state together	Unknown owners
Forest land	Ha	777,599	206,246	432,314	50,624	5,590	174,350	869,124	294,798
	%	40.0%	10.6%	22.3%	2.6%	0.3%	9.0%	44.8%	15.2%

Source: Compendium of Slovak Forestry Statistics 2013

8.1.2. Ownership's structure of forests according to FRA

Table 2: Ownership structure according to FRA

FRA 2010 Categories	Forest area (1000 ha) 2005	Forest area (1000 ha) 2013
Public ownership	996	952
Private ownership	823	694
…of which owned by individuals	275	206
…of which owned by private business entities	68	56
…of which owned by local communities	480	432
…of which owned by indigenous/tribal communities	0	0
Other types of ownership	113	295
Total	1932	1941

The forest area in the category of public ownership decreased from 996,000 ha in 2005 to 952,000 ha in 2013 (decrease by 4.5%). In the category of private, forest area felt by 15.7%. However, forest land increased in the category of other types of ownership by 182,000 ha. Changes in particular ownership categories arose due to more accurate evidence of forest land, ongoing inheritance and restitution processes.

SLOVENIA

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1. Introduction

1.1. Forests, forest ownership and forest management in Slovenia

More than half of Slovenia is covered by forests (58.4% or 1,183,433 ha). The average growing stock is 289.33 m^3/ha (132 m^3/ha conifers and 157 m^3/ha deciduous trees) (SFS, 2013). The forests are diverse in stand structure with prevailing private small-scale forest ownership. According to the official data (Medved et al., 2010), there are about 320,000 individual private forest owners (together with the co-owners almost 470,000) who own 75% of the total forest area. The ratio between conifers and deciduous trees is almost balanced, although beech forest sites prevail. The demand for wood is not stable and differs for different categories (round-wood, fuel-wood, which is described later); the mean annual harvest rate amounts to only 60% of the total increment. Weak and declining forest-based industry in the country and strong industry in the neighbouring countries contributed to a decline of wood production, although the production function should be respected in forest management together with the ecological and social functions. Mobilization of timber wood supply remains one of the main issue of forestry in Slovenia. Strong emphasis is constantly given to public interest, which is assured through several legislative regulations reflecting mainly through free access, clear-cutting prohibition and common forest management planning system for private and public forests. Disturbances such as windstorms or ice-breakages are frequent due to bioclimatic diversity of the territory, changing wind and snow patterns. The average salvage logging amounts to 30% of the total cut in the last twenty years. Recent country-wide ice-breakage in February 2014 damaged 9 million m^3 of wood which is more than the total annual increment of Slovenian forests.

Forest planning in Slovenia is organized in a hierarchical structure. The Slovenia Forest Service is in charge of planning of all forests. It is organized on the state level with a strong local structure (14 regional units and 69 local units). The SFS monitors the conditions and the development of forests, guides the management through forest management plans and silvicultural plans, keeps records and forestry databases and offers some forestry extension services (e.g. professional advice, organization of trainings for forest owners). There are more than one hundred forest enterprises in Slovenia. Only a few of them have the concession for forest management in state forests (cutting and skidding of timber, sale of wood assortments, protective and silvicultural work, forest infrastructure construction and maintenance). The current concession contract between the state and the enterprises is valid since 1996 and expires in 2016.

The major problems regarding forest management are related to private forest management. Some priority problems include mobilization of wood and improving the efficiency of forest management in private forests, balancing stakeholder demands on forests, improving the participatory planning system and meeting the demands of the urban forest owners. A great challenge for the policy is also the cooperation and association of forest owners in order to accelerate and stimulate better use of resource potentials for the vast majority of Slovenian forests. The challenges of modern forestry (i.e. mechanized cutting operation in sensitive ecosystems and domestic innovative wood processing, climate change adaptation and mitigation in practice) require the development of new and innovative approaches to secure efficient forest management also in the future.

1.2. Overview of the country report

The ownership structure of the forests has changed in recent years, mainly due to the restitution process, urbanization and deagrarization of population. In Slovenia, the small-scale private forest property has predominated for a long time due to the land reform in 1848, when the share of the small-scale private property exceeded 75% of the forests. In ex-Yugoslavia the share was 50%. Nowadays, 75% of forests are privately owned, 22% are state forests and 3% are owned by local communities. According to the Farm Structure Survey (2010) the number of family farms is decreasing. The reason for this is the abandonment of farming on small family farms with forests. The decrease of family farms with forests resulted in the decrease in the overall share of forest in the context of agricultural holding. In the restitution processes the former forest ownership categories (e.g. Agrarian commons) has again become relevant in the contemporary management.

Presently, most of the privately owned forests are managed by natural persons, typically by individual owners and their family members. The majority of work in the forest is done by the owners. The traditional business models for wood supply may no longer be dominant in the next decades due to increasing numbers of non-farmer forest owners and consequently lack of skills.

The realized supply of wood from private forests is decreasing and on average reaches only 65% of the allowable cut. The major obstacle for wood mobilization from private forests in Slovenia is the small size and fragmentation of properties; in addition, there are objective, physical constraints, such as poor openness of forests with roads, unknown locations of plots, etc. Other constraints are transitory, such as low timber prices, no qualification for forest work or too expensive forest operations, and are not related to the general belief that management is worse for the ecosystem than non-intervention. Many business models such as long-term property lease, harvesting leasing, cooperatives, or contracting are still scarce. The role of forest owner associations is becoming more and more important. We expect that new forest owners will also need more organized and more user-friendly environment to manage their properties (e.g. E-Systems for access to data on forest property, centralized database of different service providers etc.). Recently, a lot of effort has been put into the adaptation of a forest planning concept towards a forest-owner-friendly and efficient forest management. Simultaneously, forest planning is trying to be more diversified at the operative level and adapted to an owner-oriented private forest property plan.

The most relevant issues in Slovenian forest policy as stated by the National Forest Programme in the field of forest ownership are: the (low) share of state forests and the fragmentation of private forest property.

Very little attention is paid to different types of forest owners and especially to new forest owners. We estimate that the most important reason for not addressing new forest owners as an emerging issue is the current system of forest management which does not differentiate between different types of ownership. In the absence of salient issues connected to forest owners, present forest policy does not deal with topics that are related to new forest owners. Different categories of forest owners have not been put on the forest policy institutional agenda. The reason for that could be the centralized forest management planning for all types of forests regardless ownership and lack of any salient issue related to ‘new forest owners’ as a target group which would stimulate dealing with topics related to new forest owners. Moreover, the impact of forest owners on forest policy is low because closed forest policy network and weak political power of forest owners and political parties connected to them. The main trigger of policy changes regarding forest ownership would be to empower forest owners by raising their awareness regarding their property rights.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert

interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The report was elaborated using the following methods:

Mainly, a literature review and official National Forest Inventory Data, managed by the Slovenian Forest Service, were used. Additionally, authors used their own expert knowledge as the basis for specific assessment which was not available in literature.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

In the literature review we have found 296 units of relevant literature. More than one third of literature is composed of different level thesis. From the set of literature reviewed we have selected most relevant reports or publications.

The literature comes from researchers employed in four different organizations. Many studies are the result of joint projects based on multilateral cooperation of the following organizations: University of Ljubljana, Biotechnical Faculty, Department of Forestry and Renewable Forest Resources, Slovenian Forestry Institute, Slovenian Forest Service and Institute for Adult Education.

It can be concluded that the majority of studies come from researchers' education process (master's theses, doctoral theses and articles from those theses). Some of the studies were done also in the frame of national projects or financing public forestry service funds.

With the exception of graduation theses, the studies are mainly done on national level, only few of them from international cooperation (comparative analyses). In some of the studies, theoretical approaches were used, for example a "theory of collective action" and "theory of commons". In the studies, the following methodologies are

used: qualitative and quantitative research methods followed by statistical analyses (i.e. cluster analyses, logistic regression and non-parametric analyses) and GIS analyses. From the studies, we learn mostly about the issue related to private forest management, property and ownership structure, cooperation between owners and deagrarization of forest owners. Part of this issue originates from social and economic changes after the breakup of Yugoslavia, while other part from restitution processes in the 90s. In some of the studies the new type of forest owners does represent a research subject (Pezdevšek Malovrh, 2010) but generally a more in-depth approach is missing. There were studies done about the possibilities of cooperation between forest owners (Pezdevšek Malovrh et al., 2011) and studies about forest owner behaviour (Ficko, 2013, 2015). There is an increase in the studies published in international journals or in the proceedings of conferences in recent years. International research cooperation and lack of funding for research projects presents a challenge for Slovenian scientific community, especially as there are plenty of interesting research questions in relation to forest owners structural changes, behaviour, and attitudes.

3.2. New forest ownership types

The impact of long-term general socio-economic changes are seldom an interpretative frame and some more accent is given to the change of political system in the nineties. With this change, the reinstitution of previous ownership took place. Despite constant but dispersed literature on this topic on the issue of forest owners, an increase in publications related to new – old forest ownerships types can be traced after reinstitution. For example cases of ACs (Bogataj, 1990, Fučka, 1999 and Zavrtanik, 1994) and bigger forest owners (Nunar, 1995) were analysed and the reinstitution of previous “social property” into state property (Krajčič, 2000). However these categories cannot be attributed to new forest owners as they existed before the socialist Agrarian reform in 1947. Even though scholars in Slovenia recognise non-traditional forest owners - forest owners who are not farmers, with other financial means, mostly from the urban areas we have only one study related to this “non-traditional forest owners” category (Pezdevšek Malovrh, 2010, Pezdevšek Malovrh et al. 2011, Pezdevšek Malovrh et al., 2013).

Hence, understanding of the term “new forest ownership types” is related to the buying property (not its inheritance; Medved, 2005), 10% of absentees (Ficko, Bončina, 2010a, 2013b), insufficient professional competence, poor technical equipment, lack of links among them and low level of innovation (see Table 10, page 21).

3.3. Forest management approaches

Changing patterns in forest management can be recognized by comparing several indicator values in annual reports of the Slovenia Forest Service (e.g. SFS, 2012) and Statistical yearbooks of the Republic of Slovenia by Statistical office (SURS, 2014), such as average cutting intensity, property size etc. However, due to not always harmonized surveys and different sampling designs in small-scale and family farm studies, changes in forest management cannot be systematically monitored and detected statistically. There is not a national forest owner survey in Slovenia, which could serve as a basis for a review of changes in forest management. Individual studies dealing with adaptation of forest management were mostly focused on adaptations of planning (details, the content of the different level plans, participation etc.) to account for the demands for more efficient and participatory planning (e.g. Bončina, 2004). Some studied alternative silvicultural regimes to secure the minimum level of silvicultural measures, improve the cost-efficiency and maintain the desired stand structure even with low inputs (Diaci et al., 2006). One of new forest management approaches that was studied much is the modern private forest planning, which supposed to combine the traditional forest planning with business planning in a private forest property plan (Papler-Lampe et al., 2004; Ficko et al., 2005; Ficko and Bončina, 2010a).

3.4. Policy change / policy instruments

The adoption of The Denationalization Act in 1991 and Act on reestablishment of agricultural communities and restitution of their property and rights in 1994 are two regulations which have influence on the current forest ownership structure. With this legal basis the former forest ownership categories has become relevant again in the contemporary management. Two studies have been done which describe these political changes from the perspective of private forest owners (Winkler and Medved, 1994) and one from the perspective of state forest owners (Krajčič, 2000). In the first study authors found that the process of denationalisation will lead to an increase in the number of forest owners, though the average size of a private forest property will remain virtually unchanged and that the rightful claimants or their heirs are not farmers. The second study tackles the topic of reorganisation of management structure in state forests (forestry institutional organization is expected to change in the next two years). The author suggests that a public enterprise is the most appropriate management structure for state forests. To date, in Slovenia only one study have been carried out dealing with specific policy instruments directed at forest ownership types. The study of Pezdevšek Malovrh et al., 2011 showed that forest policies in many southeast European countries have changed considerably in the past few decades due to the unprecedented scale of socio-political changes. Three owner clusters - active, supportive, and passive owners - were identified in each country, based on their willingness to cooperate and their expectations of this cooperation; actual harvesting performance; and the importance of ownership, property, and socio-demographic characteristics. Policy options for each group were then provided, based on Smart Regulation principles and requirements. The results reveal that several policy types are needed to reach the three private forest owners types and this variety of policy options covers a wide range of policy approaches.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments (FRA) by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

The ownership structure analysed on the basis of Forest Management plans (FMP) for the 2011-2020 period is presented in Table 1. According to the data the total area covered by forest amounts to 1,184,526 ha or 58.4% of the state's territory. The data about forest ownership structure showed that 75% of forests are privately owned, 22% are state forests and 3% are owned by local communities.

Table 1: Forest ownership structure of Slovenian forests in 2012 (SFS, 2013)

Ownership type	Size (ha)	Share (%)
State forests	262,569	22
Private forests	890,830	75
Municipality forests	31,127	3

In combination with the data gathered by the Farm Structure Survey (FMS), conducted in 2010 on farms comparable to European criteria (SURS, 2010), private forest ownership was analysed in detail (Figure 1). According to the data, private forests are

owned by family farms (33%) and non-farm private owners (37%). The discrepancy between SFS data and FMS data is a result of the restitution activities and land use changes. The latest Farm Structure Survey (2013) shows that in comparison with 2010 the number of family farms decreased by almost 3%.

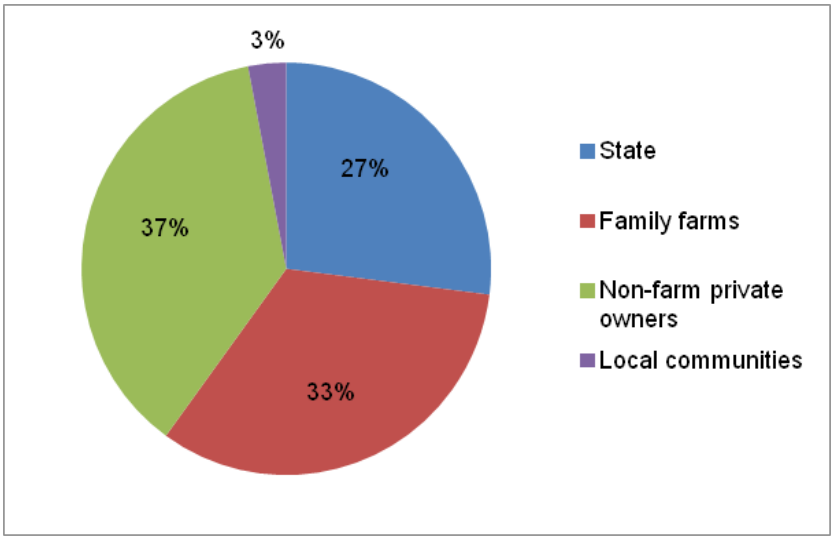

Figure 1: Ownership structure according to Farm Structure Survey 2010 (SURS, 2010)

According to the Farm Structure Survey (2013) the number of family farms decreased from 77,042 in 2005 to 72,600 in 2013. The reason for this is the abandonment of farming on small family farms with forests. The fall in the number of family farms with forest led to the corresponding decrease in the overall share of forest in the context of agricultural holding (http://www.stat.si/eng/pub.asp).

4.1.1. National definitions

Private forest owners/co-owners – any natural person who individually or collectively owns a forest and whose property is recorded under his/her name or whose co-proprietorship share is registered in the Land Register of Republic Slovenia (Medved, 2004)

Family farm – in organizational and managing sense a complete, rounded-off unit (agricultural land, forests, buildings and premises, equipment) owned by one or several natural persons who in the framework of the same household work and manage for collective account and which also comply with Comparable European Criteria (CEC). These criteria are especially related to the area of land in direct use and to the number of larger farm animals (livestock units-LSU) or beehives. Conditions for complying with CEC are fulfilled by the farm that uses 1 ha of agricultural land or 0.1 ha of agricultural land and 0.9 ha of forests or that possesses at least 1 LSU or more than 50 beehives (Medved, 2004).

Non-family forest holding – all households that own only forest or do not meet the CEC (Medved, 2004).

State forests – are forests owned by a state whose property is recorded under the Republic of Slovenia in the Land Register of Republic Slovenia. The exploitation rights for the state forests have been given to different forest enterprises for a 20- year concession period (till 2016)

Municipality forests – are forests owned by municipalities. Historically some of land came under the municipalities´ authority (e.g. due to emigration shareholders of individual owners but also for other reasons). Recent forest management of municipalities is not homogenous and vary from direct involvement into forest management to taking only a representative role.

4.1.2. Critical comparison with national data in FRA reporting

When it comes to the definitions of ownership types, there is only a small difference between national definitions and those

provided by the FRA. Otherwise definitions of ownership types tend to be clear; only the definition of local communities is not correct. It describes ACs and not local communities. In national data only local communities as an ownership type are represented separately and not as part of public ownership. The data from national reports are no comparable with the ones in FRA 2010. According to the SFS, the total forest area in 2005 was 1,169,196 ha, of which 303,778 ha are public forests, 832,343 ha are private forests. Therefore, according to the national data total forest area has increased and not decreased as seen from the FRA 2010 data for the year 2005. In the last decades considerable changes in ownership structure took place.

Table 2: FRA categories for Slovenia

Ownership type	Forest area (1,000 ha)	
	2005	2012
Public ownership	323	263
Private ownership	920	922
...of which owned by individuals	885	891
...of which owned by private business entities and institutions	n.a.	
...of which owned by local communities	35	31
...of which owned by indigenous / tribal communities	0	
Other types of ownership	0	
TOTAL	**1,243**	**1,185**

Ownership structure of the forest has changed in recent years, mainly due to the denationalization procedures. Since 1996, the area of State forests has been decreasing constantly and the area of private forests has been on the increase. The ratio of the areas of state and private forests (including local communities) changed from 33.9:66.1 in 1996 to 22.2:77.8 in 2012 (SFS, 2013).

4.2. Unclear or disputed forest ownership

In Slovenia official statistics or public forestry service do not publish data on unclear or disputed ownership in their annual reports. Therefore, it can be concluded that there are no areas where ownership is unclear or disputed.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

Forests can be freely traded taking into account restrictions from the Forest Act (Official Gazette of Republic of Slovenia No. 30/93 and its subsequent amendments) and the Agricultural Land Act (Official Gazette of Republic of Slovenia No. 59/96 and its subsequent amendments). The purchase of forest is conducted according to the procedure prescribed by the Agricultural Land Act.

Forest Act (1993, 2007) describes pre-emptive rights of forest owners. The owners of land which borders on forest which is being sold shall have priority right of purchase to this forest. If this priority right is not exercised, then the priority right of purchase shall fall to another owner whose forest is nearest the forest which is being sold.

Forest Act (1993, 2007) also adequately defines the pre-emptive rights of the Republic of Slovenia in order to enlarge the complex of state forests. The Republic of Slovenia has a pre-emptive right to purchase a protective forest and forests with a special purpose (Forest Act, 1993). Furthermore, the Republic of Slovenia has the pre-emptive right to purchase the forest in complex greater than 30 hectares (Forest Act, 2007). Also the local communities have a pre-emptive right to purchase forest if there is special stress in the functions for which the forest was declared a forest with a special purpose, in the interest of the local community. If the local community does not exercise its priority right to purchase, the right shall fall to the owner whose land borders the forest which is to be sold. Based on Agricultural Land Act (2011) the pre-emption right is given also to the farmers whose land borders the land that is being sold.

In Slovenia private forest properties are very fragmented. Therefore Forest Act prevents further fragmentation. According to the Forest Act (2010) forest plots of less than 5 ha are not permitted to split, except in the construction of public infrastructure, if the plot or part of the plot is not planned to be used as forest and if the plot is in joint ownership with the Republic of Slovenia or the local community.

4.3.2. Specific inheritance (or marriage) rules applied to forests

Inheritance law has an important impact on the land ownership structure. In 1868, Austro-Hungarian legislation permitted the division of farm households among heirs, which contributed to the substantial subsequent fragmentation of the farm property. The possibilities for farm partition were reduced in 1973 by adoption of the Law on Agricultural Inheritance which introduced the category of "protected farm" and prohibited the division of such units. The protected farm is defined as agricultural or agricultural/forestry unit owned by one or several persons linked by marriage or close affinity; its size should be no less than five but not more than 100 hectares of so-called "comparable agricultural land". The 1995 Law on Farm Inheritance (Inheritance of Agricultural Holding Act) maintained the concept of protected farm and stipulated that such farm could be inherited by a single successor only. The law determines the procedure by which the successor of a protected farm is defined. If a protected farms owned by a single owner and there are several lawful successors, the farm is inherited by the one who intends to cultivate the land with the consent of all other successors. If agreement is not reached, preference is given to the spouse or descendants that are qualified or are being educated to undertake agricultural or forestry work. Among these candidates, preference is given to those who have grown up on the farm and have contributed to its development (Review of Agricultural Policies, Slovenia, 2001). In case of forest land, it is manly a subject of family heritage and inheritance is regulated by Act on inheritance of agricultural land and private agricultural holding (1973).

4.4. Changes of the forest ownership structure in last three decades

Commons are not understood as particular type of ownership but as private ownership, state steered into co-ownership.

4.4.1. Changes between public and private ownership

Table 3 shows that the share of privately owned forest has increased during the last decades, due to denationalization process.

4.4.2. Changes within public ownership categories

There are no changes within public ownership categories.

4.4.3. Changes within private forest ownership

The changes in the private forest ownership are identified in the last decades (Table 3), as the share of family farms is decreasing and new types of forest owners have occurred.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies),
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company),
- New private forest owners who have bought forests,
- New forest ownership through afforestation of formerly agricultural or waste lands,
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

The ownership structure has been constantly changing owing to a number of factors: property inheritance, land trading, land use changes etc. In Slovenia, the small-scale private forest property has predominated for a long time following the land reform in 1848, when the share of the small-scale private property exceeded 75% of the forests, which was the highest share in all countries under Austrian rule at that time (Žumer, 1976). In the early 20th century (Winker and Medved, 1994), the forests were still mostly owned by small private forest owners (52%), while a fairly high share of the forests was in the hands of large forest owners (30%). The state and administrative units owned approximately 4% of the forest, while the rest belonged to the church (6%) and municipality (8%). After the Second World War, large forest properties were nationalized whereas rural and other private property was limited by size (farmers were allowed to possess up to 45 ha, non-farmers up to 5 ha). In the period from 1945 until 1991, during the times of socialism, private property was restricted by law according to the size of the estate as well as with respect to its management (obligatory tree cut and sale of timber). After 1991, when Slovenia stepped on the path of democratisation and gained its independence, the Government adopted legislation on denationalisation of all expropriated possessions (e.g. farmers, agrarian communities, church) after the Second World War (Medved, 2004). Today the consequences of this law are reflected in the increased diversity of private forest ownership in the increased surface area of the private forests and the greatly increased number of (co)ownership relations due to the transfer of property rights to all eligible successors.

Table 3 presents the trend of changes in ownership in Slovenian forest after 1950. After 1951, when Slovenia had 67% of privately owned forest, the share gradually decreased until 1990. Owing to denationalization, however, a trend of their increase was eventually noticed.

Table 3: Development of ownership structure in the last six decades (Medved, 2009)

Year	Family farm forests (%)	Other private forests (%)	State forests (%)	Source
1951	64	3	33	Ivanek, 1954
1970	55	9	36	Winkler, 1970
1985	37	25	38	Winkler, Gašperšič, 1987
1995	62		38	FAO, 2010
2000	35	36	29	Medved, 2003
2010	30	47	23	Medved, 2010

Table 4: Trends in forest ownership change

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	3
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	2
• New forest ownership through afforestation of formerly agricultural or waste lands	2
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY 1: CHANGES IN THE FOREST OWNERSHIP STRUCTURE DUE TO DENATIONALIZATION AND THE IMPACT ON FOREST MANAGEMENT

Winkler and Medved (1995) find in their research that political and economic change after 1990 brought about considerable changes in the ownership structure. Ownership structure of forests has been affected particularly by the process of nationalisation of forests after the Second World War. Under the Denationalization Act, which was adopted in 1991, approximately 180,000 ha of forest should be returned to former owners. The surveys show that for 60% of the owners, the return of a forest property means an increase in their property, whilst 40% of the claimants had not had a forest property so far. Half of the claimants are non-farmers. The average size of forest property returned to the private sector is 30 hectares, which is to be shared on average by three heirs. Approximately 50% of heirs have already agreed on how property would be shared. Most of them are of the opinion that the returned forest would be divided physically among the heirs, 15% want to manage the estate jointly and 27% share the opinion that one of the heirs would become the sole owner, who would buy out the other heirs in 2-3 years. The owners surveyed were asked about their opinions on some aspects of the management of a forest property. According to the analysis, forest property is important for farmers, especially the production of technical wood for sale and maintenance, and the production of wood for heating. On the other hand, forest is primarily regarded as a financial reserve by non-farmers or new owners. They give high importance to the sale of a forest under favourable conditions. Also new owners will not manage their forests - a quarter of them are going to hire a manager. Due to such a long tradition of private ownership and the already mentioned literature, a strong symbolic affiliation of population can be traced, predominantly positive, so the process of denationalisation will lead to an increase in the number of forest owners, though the average size of private forests will remain virtually unchanged.

4.5. Gender issues in relation to forest ownership

The gender structure of private forest owners shows that 51.3% of them are males and 48.7% females. While both genders are represented equally in terms of the number of forest owners, males are by far predominant in terms of forest area. Males own 61.6% of the private forest area, while females 38.4% (Medved et. al., 2010). According to Bogataj (2010) female forest owners became owners through inheritance. They are around 45 years old (only 1% of them are younger than 26 years), with low formal education, with a broad range of experiences, living in the countryside and prioritize social and ecological functions of forest.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" Oxford English Dictionary) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

After the Second World War a radical agrarian reform was carried out in Slovenia. Private ownership was limited by the agricultural land maximum, which was established separately for farmers (20-35 ha of agricultural land and 10-25 ha of forests, with the overall maximum of 45 ha) and non-farmers (up to 3 ha of land in lowlands and up to 5 hectares of forest in forest area). One of the main goals of agricultural land policy at that time was to increase the share of state and later socially owned[82] land (Avsec, 2005). As Commons are neither of them, a separate Act is provided, usually amended (ZPVAS, 1994).

The Denationalization Act from 1991 settles the privatization of that part of social property that was created as a result of nationalisation of private property after the Second World

[82] Social ownership is usually comparable with state ownership. Yet, the term was used in the former Yugoslavia to refer on the model of cooperative enterprise.

War. The nationalised property was returned primarily in kind. Beneficiaries of denationalization are individuals whose property was nationalised and their heirs as well as legal persons (e.g. church and religious communities) (Avsec, 2005). So the potential for getting new ownership categories (like charitable, NGO or not-for-profit) was low. Nevertheless, for identification of this ownership categories Land and Property Register from the Surveying and Mapping authority of the Republic Slovenia (SMARS, 2007) was used.

FOUNDATIONS OR TRUSTS: There exists at least one foundation. It is called 'The Pahernik Foundation'. This foundation manages 552 hectares of forests. The revenue is used for funding research activities at the Biotechnical Faculty, Department of Forestry and Renewable Forest Resources and for scholarships for faculty students.

NGO: There are 174 hunting and fishing clubs/societies that own forest in Slovenia. With the exception of some hunting clubs, they own just a small size/area of forest around the club house. Furthermore, we have another 121 associations that own forests but their share is not important.

SELF-ORGANISED LOCAL COMMUNITY GROUPS: Traditional ACs, here represented as self-organized local community groups, are present in Slovenia and there are presented in chapter 4.7.

FOREST CO-OPERATIVES/FOREST OWNER ASSOCIATIONS: Cooperatives (n= 86) own in total 1564 ha of forests. The biggest share of forest is owned by *Zgornje savinjska* cooperative (388 ha), followed by *Mozirje-Ptujska* cooperative with 164 ha, *Ruše* cooperative with 144 ha and agriculture-forestry cooperative Lesce (114 ha). Forest owners' association does not possess forest land.

OTHER: Slovenian Roman Catholic Church with its monasteries, parishes and dioceses is an important forest owner. They own in total almost 30.000 ha of forest, which represents 3% of all forests in Slovenia. As an organisation with charitable activities, we can classify it under the category of charities.

Table 5: List of different Charitable, NGO or not-for-profit forest ownerships

Forests owned by…	Yes	No	Uncertain
Foundations or trusts	X		
NGO with environmental or social objectives	X		
Self-organised local community groups	X		
Co-operatives/forest owner associations	X		
Social enterprises		X	
Recognized charitable status for land-owners	X		
Other forms of charitable ownerships, namely:	X		

4.7. Common pool resources regimes

In Slovenia an official term of "agrarian commons" is used to describe Commons, which exist for centuries under diverse terms. Agrarian commons have been re-established since Slovenian independence on the basis of legislative restitution(ZPVAS, 1994). AC's in Slovenia have similar principles of management as other forms of CPR management known in neighbouring countries and worldwide.

Slovenian AC's share typical characteristics with commons in neighbouring countries and worldwide. They share experience of nationalization and restitution with other post-communist countries like Czech Republic and Slovakia.

According to the Register there are 547 commons in Slovenia. Members in these ACs manage slightly less than 80,000 hectares of land, mainly forest and pasture land. They are facing some problems in relation to legal system and restitution process and some problems regarding the statutory changes in membership – appearance of non-farmers and non-resource users' members - as result of the restitution model (Premrl, 2013) and (Premrl, 2014). However, their revival from the nineties is obvious (Bogataj and Krč, 2014), so recent studies (e.g. Rodela, 2012) contribute not only to filling up the gap of using their experience in forest management,

but also to public recognition of their practice. Moreover, they extend beyond resource management which is particularly relevant due to fragmented property and goals, not linked to production.

CASE STUDY 2: AGRARIAN COMMON RAVNIK ORLOVŠE

AC Ravnik Orlovše. This common has 112 members who own in total 657 ha of land; 630 ha of forests and 27 ha of pasture land. AC was reinstituted after political changes in the 90s. The majority of members are citizens of nearby towns. Half of them regularly harvest fuel wood from commons' forest for household needs. Annually they harvest around 2.000 m^3 with subcontractors and sell wood. The income from harvesting is needed for some silvicultural works, investments in forest roads network, donations to the local community. But the majority of income is distributed among members of the AC (Premrl and Krč, 2010).

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silvicultural, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Slovenia

Most of the privately owned forests are still managed by natural persons, typically by individual owners and their family members. The prevalent working model of active private forest owners is for the workers to do the work by themselves, although the number of family farms with forests and their round-wood production has gradually decreased in the last 10 years (SURS, 2014, table 6). There was an increase in the fuel-wood production for sale from family farms by the index of 1.20 from 2000 to 2010. In addition to the decrease of family farms with forests (table 6), the proportion of forests in the total farm size decreased as well. In 2003 and 2007, the proportion of forests in the total farm size was 1.5% and 2.9%, respectively, less than in 2000. The number of farms living from forestry decreased in the last decade (Figure 2). Conversely, there has been a rising trend in private companies offering services of forest operations for more than a decade; the proportion of proprietorship and companies slightly increased indicating gradual professionalization of forest work in private forests (Figure 2).

Table 6: Reported cut of the family farms and their number in the period 2000-2010 (SURS, 2014)

	Year	Total cut	Round-wood for domestic purposes	Round-wood for sale	Fuel-wood for domestic purposes	Fuel-wood for sale
Cut (m^3)	2000	1,286,868	107,578	362,341	658,810	72,538
	2003	1,316,431	102,166	344,998	701,666	90,855
	2005	1,423,074	107,088	370,669	774,147	103,263
	2007	1,557,151	126,554	498,843	728,342	122,176
	2010	1,357,867	87,449	346,298	705,447	144,264
Number of family farms with forests	2000	51,571	7,687	9,746	47,528	3,106
	2003	46,909	5,763	8,072	43,215	3,855
	2005	50,480	5,903	8,213	47,041	4,051
	2007	47,713	6,212	8,334	43,798	4,313
	2010	42,624	4,938	5,930	38,901	4,643

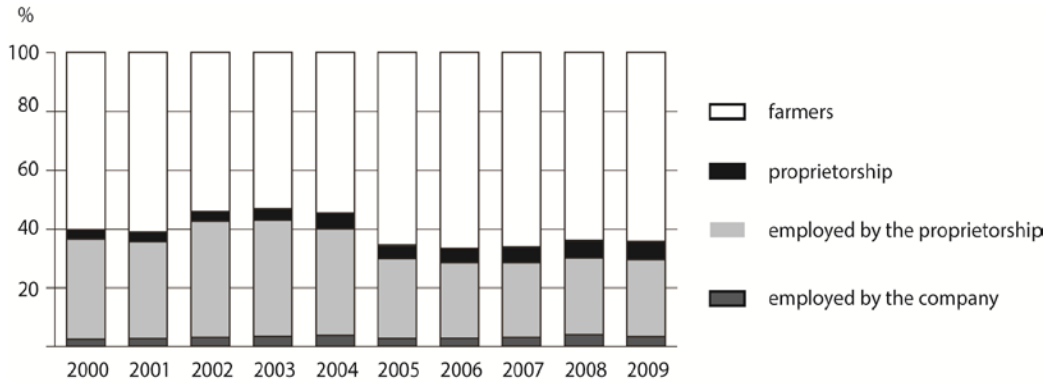

Figure 2: Employment structure in forestry in Slovenia (adapted after Gale et al., 2011)

There are no reliable data on the proportion of absentee owners for the last 30 years and the definition of the absentee owner is rather broad. However, two case studies from two forest management areas in the north-west of Slovenia (Ficko and Bončina, 2010a, 2013b) indicate that the proportion of the owners not personally managing their properties is significant; it amounts to approximately 10%. Given the fact that the realized supply of wood from private forests is on the decrease and on average reaches only 65% of the allowable cut (Figure 3) and that we are being faced with the urbanization of the lifestyle (e.g. Hogl et al. 2005), it may be expected that the traditional business models for wood supply will no longer be dominant in the next decades.

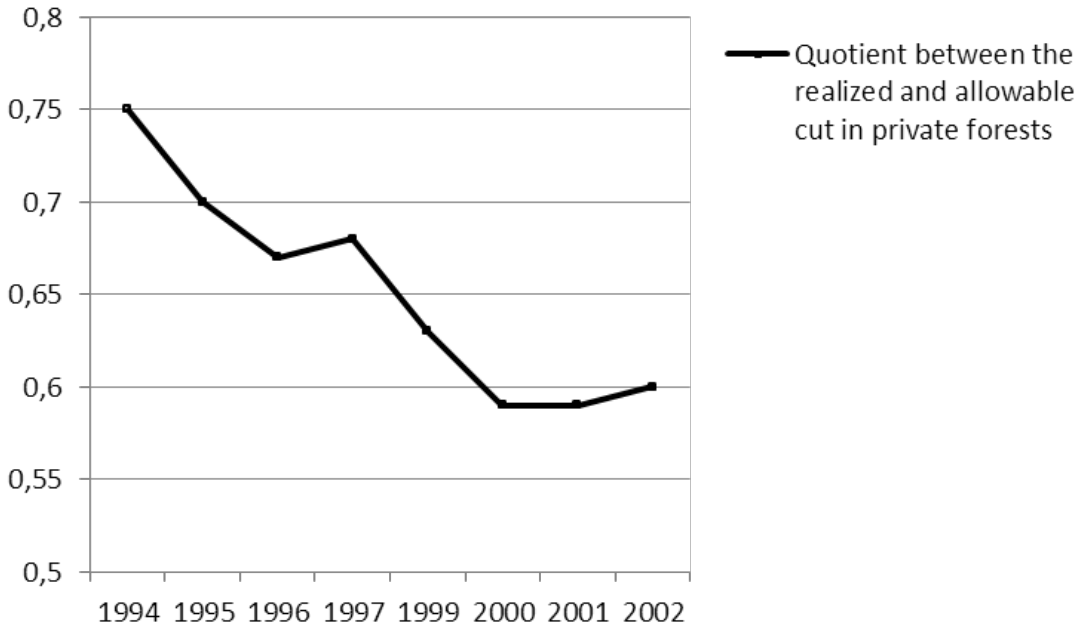

Figure 3: Quotient between the realized and allowable cut in private forests (adapted after Tavčar, 2005)

Forest owner associations typically do not formally possess forests. They were formed on a voluntary basis in the 2000s to better serve the interests of their members and to secure certain benefits, such as networking, education, common organization of the cut and selling including high quality auctions, taking care of building forest roads in fragmented ownership etc. The number of forest owners associations is increasing, with the first one established in 1999. They can be seen as the pioneers of several new management approaches in fragmented small-scale forest properties. Alliance Of Private Forest Owner Associations established in 2006 helps forest owners to promote their wood more efficiently by organizing high-quality timber auctions, taking

care of the promotion of new forest mechanization among the members, and keeping the owners informed by establishing and maintaining the Web portal *Moj gozd* ("*My Forest*") (Moj gozd, 2014). *Moj gozd* portal provides information about the current wood selling prices and forest operation services, lists open contracts and tenders, and informs about the events related to forest management and forest operations.

State Forest Enterprises which were responsible for forest management of state-owned forests and planning before 1992, were partly succeeded by the Slovenia Forest Service (planning), and partly by private companies (forest operations), which gained 20-year concessions for wood exploitation in state-owned forests. State-owned forests are officially owned by the Farmland and Forest Fund of the Republic of Slovenia (OG RS, 2010a). The concessions will expire in 2016. This may bring new impetus in the development of private forestry, particularly the segment of mountain farms, which was secured to have the priority right to apply for the concession for state owned-forests (OG RS, 2010b). As a result, more professionalization in terms of technical equipment, work organization and business orientation of private forestry is expected for the larger forest properties in the mountainous areas.

5.2. New or innovative forest management approaches relevant for new forest owner types

We identify the following processes in private forest management as relevant:

1) A decrease in silvicultural measures: The number of silvicultural measures applied in private forests has decreased (Table 7), despite the incentive schemes available for some of the measures. Diaci and Grecs (2003) identify the decrease in silvicultural activities as one of the major problems in Slovenian forestry. However, the problem may have more to do with low profitability of forest work in general than being a direct consequence of new forest owner types with no forestry or agricultural background. Recently, when the prices and the demand for fuel wood increased, the cut increased as well, but it did not lead to an increase in the number of silvicultural measures (Table 7). New silvicultural approaches have been studied mostly for state-owned forests (Diaci et al., 2006) in a project searching for cost-efficient tending. The recommendations for the improvement in silvicultural are given in Roženbergar et al. (2008).

A general conclusion of these two studies was that German and French tending models for beech forests (which prevail in Slovenia) with the reduced number of crop trees (100, 80, respectively vs. the conventional number of approximately 130) could also be applied in Slovenian forests. In addition, natural automation and biological rationalization were considered to be an additional option for improving the silvicultural faced with rising tending and labour costs. Krč and Diaci (2001) studied tending priorities of young stands using multiple criteria aiming for an increase of productivity and reducing the costs. Krajčič and Kolar (2000) surveyed forestry workers to determine their acceptance of minimal tending techniques. The study showed high determination of forest workers on the positive effects of minimal tending evidenced by saved time in both marking crop trees and felling the competitor trees. However, the study showed that minimal tending is not a less time consuming technique than the classical tending. Triplat (2010) published a research on the effects of different thinning regimes in private forests. However, the study was carried out in an ex-state-owned forest that was later reinstituted to a private forest owner, meaning that there was no direct involvement of private forest owners in the study design. Thus we have no evidence that private forest owners have significant interest in accepting new silvicultural approaches.

Table 7: Regeneration, tending and protection in private forests in the period 1980-2012 (after denationalization in 1993, private forests of natural and legal persons are taken into account) (Source: Statistical Yearbook 1995, 2013)

Year	Regeneration (ha)	Tending (ha)	Protection (hours)
1980	1,999	11,187	-
1985	2,995	13,116	-
1990	1,491	8,247	-
1991	915	7,619	5,107
1992	1,139	4,197	4,768
1993	741	2,546	9,074
1994	358	2,554	19,148
1995	511	2,974	52,296
2000	1,573	6,777	69,073
2005	1,201	4,646	132,630
2008	1,054	3,180	93,650
2009	940	2,310	78,403
2010	909	2,628	82,316
2011	961	3,443	78,129
2012	589	1,958	37,250

2) Professionalization of forest work: Figure 2 shows that the forest work market is slowly developing, though innovative approaches in work organization and business models are still scarce. There is an evident shift from the self-work to outsourcing.

3) Forest owner-oriented forest management planning: In the late 2000s, the idea of forest management planning in private properties proliferated, though the idea of private forest property plan (FPP) had been introduced earlier (e.g. Bončina, 2003). Some district foresters at the Slovenia Forest Service initiated the voluntary campaign to activate the owners. They started making silvicultural plans extended with economic evaluation for a selected number of forest owners in the district they were in charge of. Approximately 20 to 30 private property plans of a rather simple form were made to stimulate the owners to manage their forests more regularly. It is important to note that such efforts of district foresters were fully voluntary and not officially encouraged by the SFS or resulting from a policy initiative. The content of such plans was rather simple and limited to the silvicultural/operational plan for the property and the calculation of the costs. The idea of the FPP was first formalized in the context of participatory planning techniques (Papler-Lampe et al., 2004). Ficko et al. (2005) presented two proposals for the adaptation of forest planning that relate to forest-owner oriented planning. The first one deals with the content and possible spatial categories of detailed planning, which should be more diversified. The second proposal introduces the Forest property plan (FPP) as a planning instrument within the current forest planning concept. The FPP may differ in content and complexity depending on the size of the property and the owner´s interests. Problems with different interpretations of such plans which are expected due do different interests of the participants in forest planning were also discussed. The feedbacks from the owners in terms of their interest for a FPP and their willingness to pay for it have already been collected by the surveys in 2010 and 2013 and partly published (Ficko and Bončina 2010a, 2011). However, detailed WTP analyses were finalized in August 2014 and should be available publicly in 2015.

5.2.1. Other phenomena related to innovative forest management

In the last few years, we have been facing increased pressures on forests especially in suburban areas but also in the rural areas with intensive agriculture. Many applications for consent to interventions in the forests in the last few years illustrate this. In 2012, the SFS recorded 2,405 interventions in forests with a total area of 415 ha, which is approximately twice as much as in the period 1995-2005. By far the most important cause for the intervention in the forest was agriculture (76%), far behind was infrastructure (9%), and the third factor/cause

was urbanization (5%) (SFS, 2012). This indicates that the traditional family-run farms, having the potential to grow into a small production facility, increased their production substantially also by converting low productivity forests or forest remnants into agricultural land.

Additional concern regarding forest management by new owners is related to the non-approved cut in private forests. Though we have no reliable evidence that this phenomenon is specifically associated with new forest owner types, the problem will likely increase in the future with rising demands for wood and increasing numbers of non-traditional forest owners. In the period 1994-2005, the registered cut in predominantly privately-owned forest management units (n= 13) captured only 45.7% of the realized cut, which yielded 4.3% higher cut than the one approved in FMPs (Medved and Matijašić, 2007). A similar conclusion was reached by Medved et al. (2005), who compared the official statistics on cut in private forests for the period after 1990 with the results of family farms surveys from 1990, 1995, and agricultural census in 2000. They found that the realized cut in private forests slightly exceeded the planned one in the period before 1990. They also found a substantial discrepancy between the official cut statistics and the realized cut in the early 1990s, which is the period of forestry reorganization. However, they estimate that the realized cut did not exceed the planned cut.

5.3. Main opportunities for innovative forest management

We identify the following opportunities for forest management in private forests in the future:

1. *Mobilization of wood resources by activating new work and business models*

The innovativeness of private sector and particularly of the owners themselves is low (Šinko, 2009). The cooperation of forest owners is mostly limited to voluntary and ad-hoc networking. There is almost no long-term strategic cooperation and new forms of property governance develop only slowly. In the next decades, many business models from abroad could be applied in Slovenia such as long-term property lease, harvesting leasing, cooperatives, or contracting.

2. *Better organization and the transparency of woodlot market and round & fuel-wood market*

Many surveys (e.g. Tavčar and Winkler, 2005; Veselič et al., 2010, see Table 8) show that the obstacles to wood mobilization from private forests in Slovenia are related either to objective, physical constraints, such as poor openness of forests with roads, not knowing plot locations, etc., or to other constraints, which can be considered transitory, such as low timber prices, no qualification for forest work or too expensive forest operations. The constraints are not related to conceptual reasons such as extreme forms of nature protection. The non-intervention forest management, which is reported to be the prevalent conceptualization of forest management by forest owners in some European countries (e.g. Lawrence and Dandy, 2014), is not adopted by the Slovenian forest owners (Ficko and Bončina, 2015). However, new forest owners will likely need more organized and transparent environment to manage their properties efficiently or in cooperation (e.g. new e-tools for easier decision-making, more advanced communication) unless we want the management of private forests to be left under-controlled.

3. *Marketing of non-wood products and services*

Many properties are too small and in addition their owners have no production goals. Some private forests are of no special importance for wood production. Demands for natural environment and convenient livelihoods may be compensated with the use of different types of financing instruments for ecosystem services that private forest owners offer in such popular areas. This might contribute to a spin-off of a new dwelling culture, particularly in the sub-urban areas, while at the same time help to preserve the land from deforestation.

5.4. Obstacles for innovative forest management approaches

We report some conclusions of the recent surveys on management constraints in private forest management as perceived by private forest owners (Table 8). Though not all surveys used the same study design and the same set of variables for identifying possible constraints, and some of them were case studies, we can draw some conclusions on the major reasons for inefficiency. Private forest owners underuse their wood resources mostly due to objective constraints (physical constraints in forest work, dissatisfaction with the timber market, lack of skills, unclear borders, not knowing plot locations, lack of time to manage). This indicates that although family farms represent only 33% of all forests, the new owners who no longer belong to a socio-economic type of family farms (i.e. 37%, Medved et al. (2005), still maintain some relation to their properties in terms of traditional forest management. Looking from another point of view this could also be the reason why the innovativeness of private forest owners is so low.

Table 8: Comparison of main constraints for the underuse of wood resources in private forests based on selected surveys (results transformed to ranks, given also principal components and item loadings for (Ficko and Bončina, 2010b; 2013c)

	Tavčar and Winkler (2005)	Veselič et al. (2010)	Ficko and Bončina (2010b)				Ficko and Bončina (2013c)			
	N=86[1]	N=648[2]	N=67[3]				N=103[3]			
	Rank	Rank	Rank	Factors[4]			Rank	Factors[4]		
				1	2	3		1	2	3
I don't need wood	1	N/A	7	.209	.782	-.054	10	.216	-.022	.662
I have my forest as a reserve	2	N/A	1	.087	.637	.004	7	.345	-.067	.635
Forest operations take too much costs	3	N/A	3	.477	.390	-.100	5	,608	,104	,023
Timber prices are too low	4	N/A	2	-.211	.003	.439	9	,420	,208	,207
No cut is necessary	4	N/A	8	-.111	.643	.293	13	-,003	,067	,651
I don't need money from wood	6	N/A	15	.212	.284	.148	14	,112	,230	,607
I am not qualified for forest work	7	N/A	11	.900	.004	.134	3	,685	,295	,204
I am not properly equipped to work in forest	8	N/A	13	.923	.052	.105	4	,789	,275	,130
The work in forest is life dangerous	N/A	N/A	10	.899	.105	-.039	2	,866	,066	,100
The work in forest is physically demanding	N/A	N/A	9	.855	.063	-.062	1	.810	.048	.169
My forest property is too small to be efficient	9	7	5	.422	.453	.048	6	.505	.144	.274
I was not called for cutting	10	8	14	.744	.052	.197	11	.254	.446	.359
The openness of forests with forest roads is poor	11	1	4	.263	.086	.468	8	.249	.506	-.172
The boundary lines are partly unclear	12	3-5	16	-.071	.156	.844	15	.081	.771	.112
I don't know the exact locations of the parcels	13	N/A	17	.177	.165	.774	16	.007	.849	.110
I don't have time to manage the forest	N/A	N/A	6	-.161	.765	.252	12	.135	.566	.278

	Tavčar and Winkler (2005)	Veselič et al. (2010)	Ficko and Bončina (2010b)				Ficko and Bončina (2013c)			
	N=86[1]	N=648[2]	N=67[3]				N=103[3]			
	Rank	Rank	Rank	Factors[4]			Rank	Factors[4]		
				1	2	3		1	2	3
The allowable cut is below my desire	N/A	N/A	12	-.220	-.030	.097	17	.340	.639	-.083
Fear against tick-borne diseases and wild animals	13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ungulates	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Distance between my residence and my forest	N/A	3-5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[1] *Case study: a combined telephone, face-to face, and postal survey, ranking.*
[2] *Representative sample: postal survey, ranking.*
[3] *Representative samples: N= 380 (face-to-face interviews in 2010), and N= 754 (telephone interviews), of which only the self-perceived inefficient owners rated the relevance. Transformed to ranks.*
[4] *Extraction Method: Principal Component Analysis, rotation method: Varimax with Kaiser Normalization*

CASESTUDY 3: PRIVATE FOREST PROPERTY PLAN

The Department of Forestry and Renewable Forest Resources, Biotechnical faculty, the Chair of Forest Management and Planning also researches forest-owner oriented management planning. The research should serve as a basis for adaptation of forest planning concept towards forest-owner friendly and efficient forest management. The vital part of the research is the series of surveys on forest owners' attitudes towards private forest property plan (FPP). The results from the 2004 survey show that most of the forest owners have never heard of the forest property plan, although some practical examples have already been made available for private properties of different size and socio-economic statuses. In 2004, 11.3% of the interviewed owners were familiar with the FPP in forest management region Bled, and in 2009 13.9% were familiar with the FPP in Forest Management Region (FMR) Kranj and 14.0% in FMR Slovenj Gradec. Forest owners possessing more than 30 ha of forest land are significantly better informed about the FPP than all the other forest owners in all management regions. Nearly 43% of the interviewed shared the opinion that FPP might nevertheless be useful for management. On the other hand, 71% would not share the costs for the elaboration of the FPP. The FPPs should be produced as modern forest property plans and act as new supportive instruments for strategic and operative planning at the level of forest owner. The concept has recently been theoretically developed (Papler-Lampe et al. 2004; Ficko et al., 2005). The aim of a FPP is to help the owners to manage their properties and to support them in business oriented activities. It emphasizes private interests while taking all public interests into account. The research consists of 4 basic steps: (1) analysis of forest owners' conceptualization of forest management and resource-efficiency; (2) analysis of forest owners' decision-making types; (3) willingness-to-pay analysis for FPP; (4) analysis of forest owners' experiences with FPP prototypes.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

For a description of the contents of forest policy dealing with forest ownership, we use the approach which divides the content of public policy into problems, objectives and instruments (Pal, 1997) and is presented in Table 9 for state forests and in Table 10 for private forests.

The description of the contents of the forest policy was designed according to the Resolution of the National Forest Programme (2007) (ReNFP), which is the basic strategic

and non-binding forest policy document and which defines the national forest policy. The contents of forest policy in columns 1 to 3 (Table 9 and 10) are presented in ReNFP and in the fourth column of the respective tables are the instruments of forest legislation.

Table 9: Issues connected to ownership of state forests

Resolution on national forest programme			Legislation
Problem	**Aims**	**Guidelines**	**Instruments**
Low share of state forests	Increase the share of state forests.	Adequately define the pre-emptive right of the Republic of Slovenia with regulations in order to enlarge the complex of state forests.	Low share of state forests
Make criteria for priority purchase of forests with emphasized ecological and social functions and implement active purchase policy.	Forests act (1993)		Make criteria for priority purchase of forests with emphasized ecological and social functions and implement active purchase policy.

Table 10: Issues connected to ownership of private forests

Resolution on national forest programme (ReNGP)			Legislation
Problem	**Aims**	**Guidelines**	**Instruments**
Private forest holdings are very fragmented (with the average size of 2.6 ha),	Stop further fragmentation of forest holdings	Amend regulations which will prevent fragmentation of holdings and stimulate their association.	Private forest holdings are very fragmented (with the average size of 2.6 ha),
Forest owners on average have poor technical equipment	Efficient timber production	Accelerate the use of modern technologies and organisation forms	Forest owners on average have poor technical equipment
Only 60% of the possible timber removal determined in FMPs is implemented silvicultural works are difficult to be implemented even in the scope which is financed by state and European Union (EU) funds.	Provide implementation of necessary cultivation and protective works in forests.	Only 60% of the possible timber removal determined in FMPs is implemented silvicultural works are difficult to be implemented even in the scope which is financed by state and EU funds.	Provide implementation of necessary cultivation and protective works in forests.
Private forest owners are insufficiently professionally competent, which results in frequent accidents at work.	Intensify education of forest owners and counselling.	Increase the number of educational workshops for the work in forest and with forest and expand their content (in particular in the area of economy	Forests Act – Art. 53
Lack of links among forest owners in the implementation of works in forests and sale of wood			Lack of links among forest owners in the implementation of works in forests and sale of wood
Insufficient competence of forest owners for the work in forests	Provide implementation of works in technologically modern and safe way.		Insufficient competence of forest owners for the work in forests
Low level of innovation in the marketing of other functions of forests, related to non-wood forest products and services provided by forests;	Improve marketing of forest wood products, other forest products and functions of forests.	Provide education and marketing counselling to forest owners.	Low level of innovation in the marketing of other functions of forests, related to non-wood forest products and services provided by forests;

The two most relevant issues in the field of forest ownership are: the (low) share of state forests and the fragmentation of private forest property. The ReNFP also tackles the issue

of distribution of private forest owners on farmers and non-farmers, but it is less relevant to the content of forest policy (e.g. instruments). Other types of forest property (e.g. municipal, common) are not formally subject to specific forest policy instruments.

Denationalisation in Slovenia began in 1992 and until 2014 99% of nationalized property was returned to their rightful owners. Specific data on forests are not available, but we estimate that the return of nationalized forests is practically completed.

After completing the denationalization of forests there will be around 20% of state forests, which is perceived in Slovenia as too low and as such an important problem. Before the transition there were about one-third of publicly-owned forests. The aim of forest policy is to increase the share of state forests, so the Fund of Agricultural Land and Forest (FALF) buys forests and increases the share of state forests. Area of purchased of forests depends on the profit for the year, strategy and the decisions made by FALF. FALF also sells smaller state forests due to rounding its possession and ensuring efficient management. The country has a pre-emptive right to purchase forest complexes larger than 30 ha and protective forests and forests for special purposes, when they are declared as such by the state.

Forest area in Slovenia is constantly increasing, mainly due to spontaneous afforestation (overgrowth) of abandoned agricultural land. Therefore, there is no program for afforestation of agricultural land in Slovenia.

6.2. Influences of policies in forest management

Forest management plans are mandatory for all forests in Slovenia irrespective of the type of ownership or size of the forest and are the basis for the management of all forests (private and public). Therefore, the ownership of the forest is not a very important factor for the goals of forest management. FMP are made at three levels (regional unit, forest management unit and silvicultural plan). Public forest service makes plans free of charge for forest owners. Plans are adopted by the Ministry of Agriculture and the Environment and the Government of the Republic of Slovenia. The validity of the plans is ten years.

FMP identify the fundamental objectives of forest management (also in private forests). Private forest owners have the opportunity to influence the content of plans in the process of participation, but the owners do not often choose to participate although Forestry law provides a detailed procedure for participation of forest owners in the forest management planning process. The draft forest plans are presented on public display for 14 days, followed by a public hearing. Participation is organized by the public forestry service, which, in cooperation with the Ministry of Agriculture and Environment, ensures proper informing of forest owners and other stakeholders. Participation of forest owners is small (probably less than 1% of owners).

The reasons for the low participation of forest owners in public hearings and public displays of drafts of plans may be:

- non-adjustment of topics and information in the presentation and draft FMP to non-expert audiences (crowded with specialist vocabulary and figures, graphs);
- hearings are moderated by public forest service;
- a lot of comments and contributions of forest owners and stakeholders are rejected by forest experts (public forest service) after the participation process;
- forest owners have low interest in forest management;
- they trust in the professional judgment of the public forestry service;
- small relevance of contents of FMPs in terms of liabilities (except the maximum allowable cut);
- the possibility of forest owners to influence the implementation of the FMPs.

Silvicultural plan is the basis on which the public forest service issues an administrative order to forest owners, after prior consultation and a joint selection of trees for possible felling.

The order defines:

- necessary silvicultural measures for reforestation and tending seedlings up to the care of saplings;

- necessary forest protection measures;
- guidelines and time limits for implementation and repetition of silvicultural and protective measures;
- quantity and structure of trees for the maximum possible felling;
- guidelines and conditions for felling and skidding timber;
- guidelines and conditions for obtaining resin and decorative trees.

A complaint against the order, lodged with the ministry responsible for forestry, shall be permitted. A complaint against an order does not delay its implementation.

The FMPs set the maximum allowable cut, which is mandatory for forest owners. Forest owners are entitled to compensation for restrictions on forest management, if forest management is affected by the social functions of forest (e.g. a forest of special purposes). State subsidies for silvicultural work in private forest are a form of compensation for restrictions on forest management of private forest owners.

The SFS affects the objectives of forest owners primarily through information instruments. The owners of forests are also influenced by non-financial incentives such as a prize for the best forest owners, although the criteria for the selection of the winners are not clearly defined.

6.3. Policy instruments specifically addressing different ownership categories

In Slovenia, the management of forests is equal and common for all types of property. The Forests Act (1993) explicitly defines the equality of all types of property. Thus, FMPs are produced as overall plans for all forests irrespective of ownership, taking into consideration only the particularities of individual regions (Forests Act, art. 9)

According to Forests Act (1993) rights of ownership to forest are exercised in such a manner that ensures their ecological, social and productive functions. The owner of a forest must:

- manage the forest in accordance with regulations, FMPs and administrative acts issued on the basis of the Forests Act;
- allow free access to and movement in the forest to others; except in cases of profitable tourist or profitable recreational activities;
- allow beekeeping, hunting and the recreational gathering of fruits, herbal plants, mushrooms and wild animals in accordance with regulations.

Owners of forests have the right to participate in procedures for preparing forest management and hunting plans and in the preparation of silvicultural plans. Their needs, proposals and requests shall be respected as far as it is possible and consistent with ecosystem and legal restrictions.

Forestry legislation of Slovenia does not deal with special categories of forest owners and therefore different categories of forest owners, which would be subject to the activities of forest policy, do not exist.

In Slovenia, two organizations deal with advising forest owners, the Public forest service since 1993 and the Chamber of Agriculture and Forestry of Slovenia (CAFS) since 1999: Slovenian Forest Service, in accordance with the Forests Act ensures education and provision of advice to forest owners (art. 56). The CAFS provides its members with generally expert advice and general technical assistance in the field of agriculture, forestry and fisheries. The CAFS also promotes, organizes and coordinates measures to improve working conditions and agriculture, forestry and fisheries (art. 4). Consulting CAFS is limited to only some areas of Slovenia and only to its members, who are mostly farmers.

Consulting of SFS and CAFS is free of charge but the extent of advisory activities depends mainly on the internal decisions of both organizations and government financing. In Slovenia there are no other providers of advisory services what can be a result of free services offered by SFS and CAFS, which may also prevent the development of market of consulting services for private forest owners.

ReNGP deals with issues, objectives and guidelines related to forest owners, but the implementation is unplanned, since there are

no systematic programs to integrate forest owners. The Slovenian Forest Service is engaged in organizing private forest owners although this is not mentioned by law as their activity. An important instrument for the promotion of association of forest owners is technical assistance of the SFS. SFS employees are important in the assistance of administrative procedures in the establishment of associations of forest owners; they prepare programmes of work and often lead societies. The establishment of associations of forest owners often takes place in the direction from top (SFS) to bottom.

Promoting the association of forest owners was regulated in 2007 in amendments of Forest Act because of the impact of the EU and its Rural development policy. State can support the start of the associations of forest owners. The measure was not implemented in the period from 2007 to 2013 but its implementation is expected during the next EU financial perspective.

6.4. Factors affecting innovation in policies

Dealing with different categories of forest owners in the Slovenian forest policy has not yet been placed on the forest policy institutional agenda. Important reasons could be centralized forest management planning for all types of forests irrespective of ownership and lack of any salient issue, which could be connected to 'new forest owners' as a target group of forest policy. In Slovenia, for forest management formally does not matter whether the forest is public or private property. And therefore in the making of FMPs there is no systematic research of objectives of forest owners nor are they explicitly presented and discussed. Public forestry service is not committed to the success of the implementation of FMPs, which may require specific treatment of individual categories of forest owners. Therefore, we assume that there is a lack of need to detect differences between different types of owners among private forest owners.

In terms of forest policy we cannot detect explicit conditions related to the ownership of the forests, which would be perceived as a salient public policy issue or public problem and would require a public intervention and would initiate policy changes.

We have neither experienced the pressure from the bottom up for changes related to forest management of different types of private ownership, since private forest owners are still in the process of learning about their property rights.

In Slovenia, the forest policy is formulated in closed policy subsystem, and currently there is no indication that external factors can cause the formation of policy changes. Even the financial crisis, as an important external factor for forest subsystem in recent years, has no significant impact on forest policy. We estimate that only new information is not enough to affect a change in the goals and strategies of policy actors in the policy subsystem.

Policy actors who advocate the interests of private forest owners in the policy subsystem are less important because of lack of power. There is only one political party in the parliament that after the snap elections of 2014 represents the interests of private forest owners. It is not a member of governmental coalition and therefore has small structural power to influence forest policy making. An important actor in Slovenian forest policy is the CAFS, which represents the interests of private owners of forests and agricultural land. Its role is currently less important but here are some indicators that forest owners have become aware of how to promote their interest through CAFS. Creating a forest policy that would also address the new forest owners can be a problem because of competition between forest owners, who are farmers, and others.

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SPAIN

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1. Introduction

1.1. Forests, forest ownership and forest management in Spain

Spain is one of Europe's largest forest area and it has been in constant growth for 30 years, their forest plays an essential role in the conservation of biological diversity, the regulation of the hydrological cycle and the fight against desertification as well as providing space for leisure and enjoyment for society as a whole. These qualities of forest ecosystems, however, are increasingly threatened by fire, climate change and the abandonment and absence of management, among others.

In Spanish Autonomous Communities, the regional environmental authority is responsible for RFPs while the regional civil engineering authority is responsible for the land planning programmes. All these particularities make important differences among the regions in Spain. We here will try to compile some papers regarding the main characteristics through regional case studies.

1.2. Overview of the country report

Navarro et al (2010) present quantitative and qualitative information about the situation of the forest sector in the region of Catalonia. They focus on the new forest owners and the drivers for the change on the traditional structures, especially focusing on fragmented forest private ownerships. Their main conclusions are that most of the Catalan forest owners are getting old, and therefore there is less motivation for performing forest operations and management. Moreover for the new owners of the forest properties, either for inheritance or purchase, forests are not considered a productive good. New owners many times consider the forest as a second residence, investment for patrimony or leisure. Catalonia shows a high forest private property of 87% and 70-90% of the total number of forest properties is considered small and the forest owners of fragmented areas do not know the existing forest information very much. Some owners do not know even the dimensions or locations of their own properties.

The rural abandonment and increasing urbanization of the population has led to a crisis of traditional values and a certain loss of traditional knowledge. This affects inheritance systems (loss of importance of the hereu, a low that entitle the inheritance to the oldest son in the family), management skills and priorities (the forest loses the role of economic resources generator).

The collective forest ownership figures comprise a varied casuistry and enclose a great complexity in Spain. Regional differences and specificities, in most cases come from stately particularities of the Old Regime, these properties have followed contrasted evolutions depending on local socioeconomic contexts and dynamics. Valbuena et al (2010) presents a proposal for the classification of the various categories of existing collective forest ownership in the country, along with representative examples of the different types. Communal land tenure is especially important in Northwest in Spain, representing over one third of the area of some regions --ie. Montes Veciñais en Man Común (MVMC) in Galicia.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a

literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

For the Spanish country report we have consulted several sources of quantitative and qualitative data that can be seen in the references section. In a first step we used the data from Spanish Ministry of Agriculture, Food and Environment (MAGRAMA) through the statistics data set. Also the information for literature review on international and national databases (Scopus, Web of science, Repec, RedIRIS, etc), grey literature and policy briefs. Part of these results was the construction of a list of 10 publications that summarise the main aspects on forest ownership in Spain.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Valbuena et al (2010) presents a review of how the Spanish forests have been historically influenced by human activities and their changes. Forests were cleared for mining, charcoal, shipbuilding and caulking. The most fertile lands were converted into cultivation and more productive cultivars were introduced. Then, mobile livestock, in particular sheep, became widespread, and with it the burning of wooded land to produce pastures. Woods were privatized through a series of changes of entitlement of forest ownership. All these factors are linked to profound changes in the landscape and vegetation. Not until the beginning of the 20th century were real efforts devoted to invert the trend to deforestation inherited from the negative woodland management of previous centuries.

The present Spanish model of political and institutional organisation as a federal state has been developed since the Constitution of 1978. Until this time, the extremely centralised forest policy has been one of the

policies which have induced most relevant territorial consequences. Due to the constitution, the regions received a large number of political and administrative competences, land planning policy and forest management amongst them. Coinciding with the emergence of the new land planning policy, the forest policy suffered an identity crisis due to a lack of renovation of its basis.

The processes followed by the Comunidades Autónomas (Autonomous Communities) for the definition of Regional Forest Programmes (RFPs), within the context of European policies set within the framework provided by international agreements, have provided an opportunity to reform the Spanish forest policy into a new de-centralised administrative system. Despite the fact that the responsibility of RFPs and the land planning programmes falls upon the same governmental level, important coordination difficulties exist due to the nature of the policies – sectoral in the case of RFPs versus territorial in the case of the land planning programmes.

3.2. New forest ownership types

Navarro et al (2010) present quantitative and qualitative information about the situation of the forest sector in the region of Catalonia. They focus on the new forest owners and the drivers for the change on the traditional structures, especially focusing on fragmented forest private ownerships. Their main conclusions are that most of the Catalan forest owners are getting old, and therefore there is less motivation for performing forest operations and management. Moreover for the new owners of the forest properties, either for inheritance or purchase, forests are not considered a productive good. New owners many times consider the forest as a second residence, investment for patrimony or leisure. Catalonia shows a high forest private property of 87% and 70-90% of the total number of forest properties is considered small and the forest owners of fragmented areas do not know the existing forest information very much. Some owners do not know even the dimensions or locations of their own properties.

The rural abandonment and increasing urbanization of the population has led to a crisis of traditional values and a certain loss of traditional knowledge. This affects inheritance systems (loss of importance of the hereu), management skills and priorities (the forest loses the role of economic resources generator).

The collective forest ownership figures comprise a varied casuistry and enclose a great complexity in Spain. Regional differences and specificities, in most cases come from stately particularities of the Old Regime, these properties have followed contrasted evolutions depending on local socioeconomic contexts and dynamics. Valbuena et al (2010) presents a proposal for the classification of the various categories of existing collective forest ownership in the country, along with representative examples of the different types. Communal land tenure is especially important in Northwest in Spain, representing over one third of the area of some regions --ie. Montes Veciñais en Man Común (MVMC) in Galicia.

3.3. Forest management approaches

Aiming to gain a better understanding of the attitudes of forest owners, Domínguez and Shannon (2011) analyse how forest owners get involved in forest management and the factors that influence their active decision-making process in Catalonia. The main finding is that forest owners are more likely to engage in the management of their properties when they believe that through their actions they are fulfilling a moral norm, they are reducing the risk of forest fires, they have an archetypal image of what the forest should look like, and they can justify forest management as part of their economic strategy. So the main conclusion is that other factors besides the economic are important for forest owners in decision making. The change from traditional to modern societies has a big influence in some of these factors.

Over the years, communal land tenure has undergone many changes in terms of ownership and resource management. Such changes have resulted in land tenure insecurity among current landowners, who live in rural areas. The new land uses–mainly related to energy sources–the demographic changes, the role of the Public Administration

as a manager of communal land tenure, the presence of private companies with interests in forests, and the disagreement between forest communities or among commoners of the same community have brought many conflict that have gone beyond the limits of forests and have been reflected in public opinion, being more important when environmental conflicts are also present.

Rodriguez and Marey (2009) also show that non-industrial private forest (NIPF) owners' management mainly responds to investment and increasing the productivity of the land as a capital asset, which is directly influenced by the size and degree of fragmentation of the holding, and directly or indirectly related to the owner's interest in timber production.

3.4. Policy change / policy instruments

Fragmentation of ownership and the lack of strong markets for most forest products it the hindering factor. The emphasis of public policies in supporting the income of owners through subsidies in the timber producing regions have shown its clear limits.

Land tenure is the second most important external influence factor on National/Regional Forest Programmes (N/RFPs) in Spain after decentralization. More than 2/3 of the Spanish forest area is privately owned, which poses some problems that must be taken into account when formulating and implementing policies forest regions. The private forests are in general distinguished by the smallholding and a rather undefined legal status. This fact is an impeding factor on forest policy because it has been only focalised on public forests. Nevertheless, N/RFPs have introduced a new concept of forest policy and forest management which allows and encourage the participation of stakeholders in the planning and implementation processes. Considering the influence of land tenure on N/RFPs, the substantive N/RFPs in Spain are those which integrate the topic of land tenure in their procedural elements and in their contents.

Society's participation in decisions regarding land planning and management is essential to reach viable and long-lasting solutions in forest management. Inducing private forest owners to undertake any kind of forest management poses a challenge to policymakers in Spain. Moreover, for the design and implementation of forest policies, it is essential to know the factors that determine the decisions of forest owners as key actors in forest management. Gorriz et al (2013) investigates the relationships between the motivations of owners and their preferences on instruments for the regulation of the demand and supply of ecosystem services. The case study in their analysis is Catalonia, and they focus on collecting mushrooms -recreational and commercial dimension - like an environmental service that varies by forest management. From an inductive and constructivist approach has been performed a qualitative analysis based on Grounded Theory.

Different hypotheses have emerged from in-depth interviews conducted. The heterogeneity of owners has been reflected in the perception on the activity of mushroom collecting. According to the owner's profile, the preferences vary among regulatory, tax collection or informational nature instruments. In any case, it is noted the preference of design of a voluntary instrument, where potential negative reactions from collectors toward the owner discourage the initiatives.

In general, Navarro et al (2010) enlightens the main problems that forest policy has to address in Spain has to be with the following aspects:

(i) forest tradition is disappearing, much knowledge and culture have been lost due to the abandonment of the rural areas and the traditional activities.

(ii) lack of technological innovation and few investments in R&D, for the forest operations and works as well as for the industries.

(iii) high costs of operation.

(iv) little dissemination of the benefits of the forest sector for the society and the forest.

(v) forest information arrives only to the zones with more forest activity.

(vi) little profitability of many local forest products, due to a lack of added value.

(vii) degraded and non optimised forest road network.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

At present, 66% of forest area is in private ownership (18.1 million hectares), and the rest (just over 9.5 million hectares or 34%) is publicly owned. Local authorities, especially Town Councils, own most public forest area, much more than the State or Autonomous Regions. Approximately, 6 million hectares of public forest area is of public domain and is included in the Catalogue of Public Utility Woodland (Table 1).

Table 1: Ownership forest area in Spain

Ownership forest area	Thousand ha	%
State or Autonomous Region	1400-1600	≈ 5
Local entities of the public domain	≈ 6000	≈ 22
Local entities free disposition	≈ 2000	≈ 7
Public Ownership	**≈9500**	**≈34**
Private family	14884-15384	≈ 55
Private industrial	≈ 100	≈ 1
Private joint-owners of commonly-owned land	≈ 620	≈ 2
Private Collective	2000-2500	≈ 8
Private Ownership	**≈ 18104**	**≈ 66**
Total	27604	100

Source: The situation of forests and the forestry sector in Spain 2013 (SECF). Data from 2010

The main source of information in relation to the rural ownership are the Cadastre (Catastro) and also the “agricultural Holding Census” (Censo Agrario). In the 90’s the information contained in the Cadastre was reviewed but the revision focussed in the more valuable lands (urban or industrial) and let aside the revision of the forest lands. It can be said at this moment that the Spanish administration ignores the number of forest owners and their basic characteristics, such as type, age or address.

The Agricultural Holdings Census, conducted every ten years by the National Statistics Institute does not include data regarding forest plots not included in active farms; and the forestry administration itself does have a forestry inventory. The Spanish Cadastre still collects countless confusing references in relation to the ownerships, which generally relate to neighbourhood groups in the affected areas (SEFC 2013).

It should be noted that commons --the properties of collective or community type-- are estimated at more than 10,620 thousand ha. These common lands have been strongly influenced by two processes. The first one happened in the beginning of 19th century. Most of the forests proceeding from lordship domains were bought by individuals or collective people through a process called “desamortización” So they became private or communal forests (Bauer 1980, Bringué 20039).

The second happened during the rural crisis of the 50’s and 60’s many forestlands were abandoned and forest owners migrated to cities. Therefore, the Town Halls led a process of appropriation of communal lands (montes comunales) and they became municipality forests (montes de propios). As a result, most of the Spanish public forests are owned by the local governments instead of the State (Montiel)

4.1.2. Critical comparison with national data in FRA reporting

Comparing to the data provided to FRA, the categories relate as shown in Table 2.

Table 2: Comparison among National and FRA categories of forest ownership

National Category	FRA Category	
State or Autonomous region	Public	1400-1600
Local Entities		8000
Private ownership	Private, individuals	14000-15000
Joint-ownership, collective	Private collective	2500-3000
Others	Unclear or disputed	NA

Source of data: FRA (www.fao.org/docrep/013/al631S/al631S.pdf)

The data from the table 1 cannot be compared to FRA data. Data from FRA refers only to wooded land, while this data is related to forest land wooded and non wooded land. Data provided in both cases are estimates, given the incomplete knowledge of the Spanish forest ownership –due to unclear or disputed areas-- in many forests.

4.2. Unclear or disputed forest ownership

In Spain the share of forest in private, public and other ownership (properties unknown or unclear) differs considerably between regions. In Spain the share of forest in private, public and other ownership (properties unknown or unclear) is of 12.3% of wooded lands and 13.6 of the non-wooded lands. The share, however, differs considerably between regions. (www.magrama.gob.es/es/biodiversidad/estadisticas/aef_2010_estructura_forestal_tcm7-226977.pdf). In most of the cases where the ownership is unclear is due to lands that belong to group of neighbours.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

In some regions there are specific restrictions, as for instance, in Catalonia in 1985 the minimum forest surface was defined as 25 ha. That means that properties of 25 ha cannot be split or a part of this surface can be sold. In common lands there are also restrictions for selling, according to the law on neighbourhood forests in common hands (Ley de Montes Vecinales en Mano Comun) the land cannot be sold or divided among owners.

4.3.2. Specific inheritance (or marriage) rules applied to forests

In general in Spain forest inheritance rules for private ownership follow the common law for private properties. Therefore the land is split in equal parts among the heirs. However there are some specific inheritance regulations in some regions where ancient civil laws have survived. This is the case for regions that where part of the former Aragon Kingdom (Catalunya, Aragon, Valencia, Balears), the Basque Country, Navarra and Galicia, along with a few municipalities in Extremadura . The regulations differ from one region to the other. So, for example in Catalonia most of the families respect the figure of “El hereu” with origin in the Middle Age, which is the institution that establish the inheritance rights to the eldest son to avoid the division on the properties. And the same happens in Castilla and Leon with the “mayorazgo” that is similar to the hereu. In the Basque territories and Navarra there is the freedom to nominate a single heir -not necessarily the older son and not necessarily a male. In Bizkaia there are other regulations that limits who can be heir for land that was, in its turn, receive as inheritance. The aim is to maintain those properties in the same family branch. However, nowadays, not all the families follow this tradition, and a certain trend can be observed towards the creation of societies run by all the heirs.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

In the last three decades not many significant changes can be reported. The forest land market is very week and there are not many transactions.

The main changes are:

- new urban forest owners (descendants of forest owners but no longer connected to the property)
- farmers that now own forest land (due to a process of forestation or also to the abandonment of crop lands).
- Involuntary forest owners: Spain´s Booming Housing Market in the early 21th century caused also important changes in the ownership. The prize of the houses (even ruins) increased dramatically and due to certain regional laws that do not allow to sell a rural house without the attached land, the forest land marked was dynamized. Many houses (with forest land) were sold and a new kind of forest owner, mainly interested in the houses and its recreational use and without knowledge about forest management or agriculture (Dominguez 2007)

A new kind of forest owners (but almost not significant in hectares) are the banks or foundations linked to banks that bought forests for social responsibility reasons.

The current ownership structure of forestlands in Spain has been built during the 19th century within the transition from Feudal to Liberal Regime and through the Desamortización process (the church ownership was changed to public institutions). In the beginning of 19th century the forestland property and use rights were an essential component of the land domain in manors.

It was through the Desamortización process when the Spanish land tenure was defined. Most of the forests proceeding from lordship domains were bought by individuals or collective people. So they became private or communal forests (Bauer, 2010). On the opposite side, public forests were much reduced.

Since that period not important changes has been observed in the share between public and private ownership.

4.4.2. Changes within public ownership categories

Some changes can be stated within public ownership categories. During the rural crisis of the 50's and 60's many forestlands were abandoned and forest owners migrated to cities. Therefore, the Town Halls led a process of appropriation of communal lands (montes comunales) and they became municipality forests (montes de propios). As a result, most of the Spanish public forests are owned by the local governments instead of the State (Montiel, 1992).

4.4.3. Changes within private forest ownership

Within private forest ownership not many changes can be described. The forest land market is very week and there are not many transactions.

As mentioned before, the Spain´s booming housing market has been an important driver force for the recent changes in the ownership. The prize of the houses (even ruins) increased dramatically and due to certain regional laws that do not allow to sell a rural house without the attached land, the forest land marked was dynamized. Many houses (with forest land) were sold and a new kind of forest owner, mainly interested in the houses and its recreational use and without knowledge about forest management or agriculture.

In some regions, where there are significant commercial forestry operations like the atlantic, Basque provinces dominated by forest plantations there has been some consolidation of forest properties as entrepreneurs (rematantes) will by forest land along with timber offering small typically urban owners an additional amount. This process is known in the forest owner associations but it has not been quantified. Also there are other locally relevant situations as when a given industry such as Sniace in

Cantrabria, sold all its forest real state to its supplying rematantes.

Lately, some foundations owned by banks (e.g. Fundació Catalunya Caixa) have bought forest lands as a part of their social corporation (responsabilidad social coorporativa) and undertake there awareness rising or educational activities.

4.4.4. Main trends of forest ownership change

Maybe, the biggest change in the structure of property comes from the fact that significant areas of former agriculture or pasture lands have been abandoned and have become forest lands, that according to the Spanish forest law cannot be deforested. And this trend is likely to continue. According the SOEF 2011, Spanish forests have expanded at an annual rate of 2.1% that corresponds to 218.000 hectares per year, for a total of 4.4 Million hectares of “new” forest lands. This must have produced an important impact in the structure of forest property and the appearance of tens, hundreds of thousands of new forest owners.

Also, abandoned lands are increasing at a rate that is difficult to quantity. Often heirs of a given piece of forest will not resolve the inheritance and will not pay the corresponding taxes of fees, thus rejecting to receive the forest. In this way, there is a significant pool of forest land, which being private has no owner.

Finally, there are no investment funds or TIMO operating in neither Spain nor are significant cooperate land purchases. However this could change in the near future, at list in the more fertile, typically plantation oriented areas of northern Spain.

4.5. Gender issues in relation to forest ownership

Gender disaggregated ownership data does not exist for Spain.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Spain

Management forest is an expression of political will in terms of a balanced government planning for such region. Then, one should rather refer to different regional forest management policy models, based on their own Regional Forest Programmes (RFPs).

Private forests are mainly managed by the owner (the owner is the decision maker). In many areas the trees are sold before they are cut to a dealer (rematante). The dealers pay for the wood and undertake the exploitation works, the transport and sells the wood to the different industries according to the required sizes and qualities. Some of those dealers work for just one industry. Typically information channels on who is willing to sell are totally informal and prices are the result of a case by case negotiation. This type of widespread arrangement has a few very relevant consequences:

1. Typically the forest owner has no clue on the final use and destination of the wood and it cannot properly judge its true value that can be totally over or underestimated putting noise and rigidity to the supply chain;
2. The predominance of informal channels makes it difficult for new actors to enter the chain and makes supply operations for big mills extremely complicated. A pulp mill may need to sign over 1000 independent contracts with owners or its own supply investments.

Some forest owners (especially those that also have agricultural activities) prefer to carry out by themselves the exploitation works and then the wood is sold on the road side. (Navarro et al. 2010)

State lands are mainly managed by the government staff (forest engineers). They make the management plans (long term) and the short term plans (10 years). Normally the wood is sold through public auctions.

5.2. New or innovative forest management approaches relevant for new forest owner types

In Spain, forest associations provide support in:

- Technical matters (management decision making, paper work related to grants)
- Selling
- Grants and paperwork

There are some changes in management practices (ie fertilisation,) or in forestry operations (new machinery or improved logging operations) but the change is slow and of relatively low relevance. The most relevant changes are linked to the organisation of the markets and the new roles that forest owners are starting to play.

Forest owner associations are mostly limited to the atlantic, wood producing regions and are relatively young. The Basque associations are founded in 1982, the main Galician association if from 1986 and the Asociacion Forestal de Sorio, the most important association in Castilla is form 1988. Not even 30 years old. These three regions provide above 70% of all Spanish wood. Maybe the exception is the Catalunya, a more Mediterranean region, but with significant wood producing tradition in the Pyrenees, were the Consoci Forestal de Catalunya, the oldest forest owners organisation in Spain, is over 60 yrs old.

Contrary to the Nordic countries or to France, there are no significant forest cooperatives operating in the market. Forest associations are more centred in political representation (lobby work) and in providing some services (i-e insurance) and technical assistance to members. Until very recently there have been not significant efforts for joint management of wood commercialisation. On the other hand, they did develop service companies.

Instead, forest owners associations developed service companies (basoeking in the basque country, Selga in Galicia). Through them they prepare management plans for private owners, provide technical assistance for certification in SFM and, with limited success, they manage under contract the forests of some owners.

In Castilla Leon, the federation of Forest Owner organisation started some decades ago to organise public auctions for selling poplar, one of the most relevant timber products. In order to improve prices, more recently, ambitious approaches are developed for joint commercialisation of wood, typically to export markets (Basque). In Galicia a producer association negotiates volumes and prices for the year with the big pulp industries, but those are just reference prices and a compromise to supply. It is still the individual owner that makes the transaction. These initiatives have given forest owners associations news sources of information and they have now a better understanding of the European markets and the evolution of prices.

In communal lands there are other worth mentioning innovations as the selling of mushroom picking rights in Navarra and Castilla Leon. In the later region, using mobile data technology and supporting a full-fledged rural development strategy.

This use of TIC technology is also being applied to the commercialisation of hunting rights in Castilla Leon, in order to improve transparency and increase the income. For some villages, this provides far greater income than timber.

5.3. Main opportunities for innovative forest management

The most important innovations, in private timber commercial forests, are linked to new organisational structures that overcome fragmentation and allow for management at a larger scale. Only in that way management can be professionalised, environmental

performance improved. This is also a necessary condition to develop PES or other market mechanism to support the provision of Ecosystem Services.

In Mediterranean, less timber oriented forests, new business models need to be developed. Markets of PES systems need to be developed in relation to some key services In order to be able to manage forest in a significant way.

5.4. Obstacles for innovative forest management approaches

Fragmentation of ownership and the lack of strong markets for most forest products it the hindering factor. The emphasis of public policies in supporting the income of owners through subsidies in the timber producing regions has shown its clear limits.

CASE STUDY 1: PARTNERS' WOODLANDS (*MONTES DE SOCIOS*)

Many forests in Spain are property of a group of people. This type of joint ownership has different names depending of the region but almost all of them share the same characteristic, the woodland is pro indiviso, which means that the property is not divided between its owners. They can have different shares of the land property but there are no demarcations dividing what belongs to each member.

The property passes from fathers to sons, multiplying the number of owners with each generation and, in most of the cases, these transfers are not documented, being the title holders people dead 100 years ago. Hence, the cadastre shows that the land belongs to nonexistent companies, deceased owners or entities that do not accurately represent the legitimate owners.

This complex property regime extremely complicates the management of the forests, having to face a lot of administrative obstacles in order to complete any kind of procedure. The result is woodlands managed and exploited in a way far from ideal or completely abandoned in many cases.

Partners' Woodlands (Montes de Socios) is a management model based on traditional mechanism that establishes clear partnered ownership and management of the forest.

These model, the Management Boards (Juntas Gestoras), were integrated in the Spanish legislation trough the 2003 Forestry Act (Ley de Montes). These Boards allow the co-owners of woodlands to act as a single legal entity, making possible their management and conservation, adding value to otherwise abandoned land. But also become a liaison between city and countryside people that have inherited the ownership from ancestors which were fellow countrymen, creating a renewed interest and a sense of connection to the countryside.

Partners' Woodlands also works on the recuperation of the documental base of the forest confiscation; offers guidance for forest management and conservation and promotes the creation of legal frameworks for co-owned woodlands.

At present day, many Management Boards have been constituted through Partners' Woodlands.

(http://spain.ashoka.org/fellow/pedro-medrano)

(http://www.eoi.es/blogs/juancarlosgomezmartin/2014/05/11/montes-de-socios-social-entrepreneurship-for-rural-development/)

CASE STUDY 2: FOREST OWNERS ASSOCIATION (CONSORCI FORESTAL DE CATALUNYA)

It is a private association created by forest owners of Catalonia in 1948, having as a main objective to save guard the interests of private owners and the forest sector in general. The first Forest Cooperative has been created within, and also a guide of the forest sector and a Biomass Observatory.

One role of the main forest owners association is to increase awareness and to put some pressure over public administration in order to get better subsidies, and keep forestry activity. All the mentioned measures are improving forest management and implementing forest fire prevention tasks. (Rovira, 2005)

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

The political and territorial configuration in force since the 1978 Constitution in Spain,

has meant a transition from a centralized state system to a decentralised one. This has led to the assignment of new political and administrative competences and the definition of land planning policies by regional policies has produced ownership structure changes. It is not possible to talk about a single Spanish forest policy model since the establishment of the new political and territorial order into regional competences results in every Autonomous Community developed their own regional forest policy according to the relevant regional forest plan (Montiel and Galiana, 2005). The heterogeneity of Spanish forest landscapes (Mediterranean areas, mountain and central regions, Cantabrian and Atlantic coasts, etc.) and the consequent heterogeneity in forestland use and management were taken into consideration in the development of regional forest plans, which were defined by a variety of objectives and guidelines that conformed to the particular forest conditions of each Autonomous Community. The State Public Administration retained only the following functions: co-ordination and mediation between Autonomous Communities and European institutions, representation and decision making in international contexts, and co-responsibility and co-financing under the principle of subsidiary adopted by the European Union.

In terms of property rights' dimensions, a new emerging concept is the long-term concessions in public forests. It refers to public forests whose management for certain forest product exploitation is eased to a private entity. So far only *Castilla La Mancha* and *Comunitat Valenciana* have been discussing these terms, with no actual implementation in practice. In *Castilla La Mancha* the concessions under discussion had hunting as main forest product, whereas in *Comunitat Valenciana* they aimed at promoting energy wood, with a tentative duration of 30 years. This is new in so far the procedures for public forest exploitation have traditionally been done with the public sector own means (e.g. public forest companies) or through annual auctions to e.g. wood dealers, hunting clubs, shepherds for pasture rights, or truffle hunters, correspondingly.

Inheritance law depends on the Autonomous Communities and hence it may differ from one to another. The prevailing trend is that lands are divided among inheritors in equal value pieces. Some restrictions may apply; for example in Catalonia, where forest parcels cannot be split into plots smaller than 25 hectares (DOGC, 1988), or in Aragón, where the limit is set in 20 ha (BOE, 2014). This applies for divisions stemming from inheritance processes but also applies to land sales.

As in other EU countries, the Common Agricultural Policy (CAP) and its related subsidies are the main incentive for afforestation of agricultural lands.

During the period 2000-2006, 218,273 ha of previous agricultural lands were afforested, meaning an increase of 1,7% in the total forestall area; special emphasis had in Castilla-León.

6.2. Influences of policies in forest management

Forest management planning is voluntary, and public administrations in the Autonomous Communities are entrusted to promote them as a manner to encourage Sustainable Forest Management. Indeed forest abandonment is perceived to be one of the most problematic facts, due to fuel accumulation and subsequent higher risk of wildfires. Hence, subsidies for forest planning differ across Autonomous Communities. For example, in Catalonia the forest management plan with duration of 10 years is fully subsidized; the landowner applies for the grant, and if awarded then s/he selects the forest consultant who will elaborate the plan, pays them in advance and later gets the cost reimbursed. In parallel, forest management plans are incentivised by (i) their synergies with SFM certification, (ii) their requirement or prioritisation for eligibility in other subsidy lines, and (iii) with the Catalan inheritance normative, through which forest properties with planning have a lower inheritance tax.

Also Andalusia counts with tax reductions if the private landowner counts with a forest management plan while Madrid counts with subsidies for the management plans (DOM, 2010). An overall incentive for forest management planning at the State level consists of the property tax exemption (BOE, 2004).

Rodriguez-Vicente and Marey-Perez (2009) describe the influence of policies in forest management looking specifically at non-industrial private owners in Galicia. Since land tenure regimes influences changes in land use, they looked at management interventions in these forest property type. Private ownership constitutes the main type of ownership in Galicia, with almost 2 million hectares (98% of Galician forest), and only the remaining 2.2% is publicly owned. They found that public forest subsidies coming from the regional and European governments explained forest plantations, where owners have incentives for converting marginal meadows to woodland (Rodriguez-Vicente and Marey-Perez (2009).

Several studies observed that forest private owners have other sources of income are less keen to invest in afforestation. IN this context, capitalization of marginal land can result into improved land productivity and ensure a complementary source of household income (Rodriguez-Vicente and Marey-Perez, 2009).

Also the Centre de la Propietat Forestal gives some educations and grants oriented to influence the goals of the forest management in private forestry.

Generally forests categorised as “protective” (*montes protectores*) have priority criteria in public aids or larger amounts.

There are other aids linked to private forest owners within protected areas, but again these differ from Autonomous Community to another. For example, for Catalonia, having a part of the forest in Natura 2000 or another protected figure gives priority for forest management subsidies. In other communities, like Galicia, forest management grants require a smaller minimum forest area in forests with special natural interest, favoring interventions in such places. At the European level, the CAP has promoted afforestation with slow growth species such as oaks in contrast to pines based on the potentially higher biodiversity conservation benefits (Santos et al., 2006). In the Basque country, for example, only one out of five forest landowners have their forest land as the main source of income (Murua et al., 2013).

Table 3 shows the main legal restrictions with respect to forest property and management rights.

Table 3: Forest property and management rights in terms of ownership types in Spain.

Ownership forest type	Property rights	Use/ Management rights
Public Ownership	Inalienable, non-sizable nature and not subject to any tax. No possibility for buying or selling	Public use subject to concessions.
Private Ownership	Private property rights apply. No restrictions to buy forest land	Autonomy, management responsibility + incentives for volunteering sustainability criteria.
Private collective ownership	Private property rights apply but inalienable, non-sizable nature and not subject to any tax. No possibility for buying or selling	Private use for community ownership

6.3. Factors affecting innovation in policies

There is no official figure of forest extensions. Instead, each Autonomous Community has a different structure to deal with private forest owners. For example, while in Comunitat Valenciana there is hardly any structure to deal with private forest management, in Catalonia the Forest Ownership Center (CPF), established in 1999, is a public body devoted to support private forest owners. The CPF employs forest technicians to review forest management plans, inform landowners about news in forestry techniques, public aids and legislation.

In the Basque Country, forest owners are grouped in the Confederacion de Forestalistas de Euskadi (CFE), with more than 5000 owners mainly holding small forest land (Murua et al., 2013). This association offers services such as planning and forest management through the associated private company BASOEKIN. There is also since 1994 an independent institution based on voluntary participation called Mesa intersectorial de la Madera de Euskadi (MIME), that provides a platform for

interaction and consultation among owners (Murua et al., 2013).

No specific campaigns have been broadly launched.

In Catalonia, the proliferation of **forest owner groupings** has been indirectly bolstered by subsidy lines, by establishing the membership to a FOA as eligibility priority or even requirement: e.g. the Provincial government of Barcelona through wildfire prevention and post-fire regeneration subsidies (Navascués Ramos & Llobet Just, 2007), at the regional level for aids for forest catastrophic events (wind and snow storms), or at the CAP-related aids for sustainable forest management.

Another indirect incentive for groupings is the SFM certification, which in some areas (i.e. Galicia for *Eucalyptus*, Catalonia for cork, as can be found in the FSC database[83]) has boosted also gathering of forest owners. Still achieving an actual up scaling and joint management is not visible.

Recently, the figure of Forest Development Societies (*Sociedades de Fomento Forestal, SOFOR*) has been established in Galicia. SOFOR are mercantile associations of limited liability which foster sustainable forest management at an economically profitable scale (Rojo Alboreca, 2013).

Another type of land lease relies on the **Land Stewardship** Contracts (*Acuerdos de Custodia del Territorio*) (Prokofieva & Gorriz, 2013). In this case the counterparts are environmental organisations, which sign agreements with forest owners for different forest management aspects: from direct management from the NGO volunteers, to monitoring some species present in the forest or improving some features of the property (recovering old fountains, refurbishing old stone constructions, etc). The ownership of the land is kept by the owner, but some management aspects are shared or delegated to the third party. The aim is usually to conserve and enhance the natural and cultural patrimony in rural areas. These agreements are marketed independently of ownership type. Some national (BOE, 2007) and regional (DOCV, 2013) policies promote this type of private-private or public-private agreement.

[83] http://info.fsc.org/certificate.php > Country: Spain; Type: FM/COC [last accessed: 28/08/2014]. Those labelled as "GFA-XXX" stand for Associated Forest Management.

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SWEDEN

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1. Introduction

1.1. Forests, forest ownership and forest management in Sweden

In Sweden about 28 million ha is covered by forest[84] (Forest Statistics, 2013) of a total land area of 41 million ha. Out of 28 million ha forest about 23 million is classified as productive[85] forest land. The total number of individual private forest owners in 2011 was 321 thousand whereof 199 thousand men and 124 thousand women. They own about 51 % of the productive forest area, private owned companies 23%, state owned company 14%, other private owners 6 %, state authorities 3% and other public owners 2%, respectively (Swedish Forest Agency, 2013).

The growing stock amounts to around 3.3 billion m³ distributed on Scots Pine (39 %), Norway Spruce (42 %), Birch (12 %) and other species (7 %). The annual growth amounts to around 115 million m³ and the annual cuttings to around 91 million m³. The Swedish forest industry is number three among the world leading exporters of sawn wood, pulp and paper (Swedish Forest Agency, 2013). The predominant silviculture managing system uses area regeneration with planting or seed trees when regenerating. Usually, the rotation period range from 50 to 120 years depending on geographic location and site productivity. The revised Swedish Forestry Act in 1993 (Swedish Riksdag, 1979a) sets the demands placed upon forest owners by society regarding wood production and considerations for conservation of nature and the cultural heritage.

[84] Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.

[85] Forest land with a production potential of at least 1 m³ timber per hectar and year

1.2. Overview of the country report

Changes between different owner categories last 3 decades have been small and no new forms of ownership in Sweden have occurred. Since 2001 a smaller share of the state owned forest has been sold out to individual private forest owners. In 2012, 68 % the forest holdings were locally owned, 25 % were owned by non-residents and 7 % partly by non-residents. Co-ownership is common, and 2 out of 3 forest owners own their holding together with someone else – often family member/-s. The average holding size is about 47 ha. Compared to figures from 1976 number and proportion of female forest owners has increased a lot, from 21 % to 38 %, but since beginning of the 1990s the change has been rather slow (34 % in 1992 and 38 % in 2012). Research shows that gender has an impact on how family owned holdings was transferred from one generation to another. In 2011 the Ministry for Rural Affairs launched a National Gender Equality Strategy for the forestry sector.

Availability of quantitative data from official statistics including NFI data and research is fairly good. The focus in research has moved from explaining the forest owners harvesting behaviour by “simple” models towards attempts to understand impact of underlying motivations, values and attitudes using multidisciplinary approaches.

Management decisions are decided by the individual forest owner, but the main part of the forestry operations and especially the harvesting are outsourced to large-scale companies, timber merchants and contractors. The self-activity in small scale forestry has decreased and the share of felling (weighted by volume) made by forest owners has decreased from about 30% down to 11 % from 1993 to 2012. Nevertheless, more than 50 % of regeneration and cleaning are performed by self-active forest owners

today. It is not compulsory to have a forest management plan but many forest owners have a plan as an important source of information when deciding management activities. The owners have to pay themselves for the service to get a plan.

For commons and companies management decisions are taken by management board/assembly and for municipality forests by the municipal executive board.

Professional contractors working with timber procurement for forest companies, forest owners associations (FOA), the forest industry and state company Sveaskog performs the majority of the practical forest management. The buyers contact the sellers in different ways as direct business proposals, direct advertising, advertising in newspapers and information events. Authorities and organisations within the forest sector use different approaches to contact new owners as well as old owners with objectives as implementation of the forest policy to knowledge development of forest owners.

For individual forest owners the FOAs are an important actor on the timber market, and they also;

I. Protect the individual forest owners' economic interests,
II. Work towards an active and environmentally responsible forestry
III. Convey members' timber to the Swedish forest industry
IV. Offer their members comprehensive forestry service, advice and training. Normally, the FOAs are represented in reference groups when it comes to major investigations dealing with issues connected to forestry as ownership rights, environmental goals of Sweden, etc.

There are numerous village commons, seven parish commons and sixty district commons, all of them with roots in a pre-industrial society. The latter sum up to about 130 000 hectares of forest land, and are located in southern part of Sweden. A more recent category of forest commons were established in the northern interior of Sweden at the time when forest industry expanded into the extensive and previously unexploited northern inland forests. Taken together these 33 forest commons cover 540 000 hectares of forest land and thereby represent the largest type of private forest holdings owned in common with about 25 000 shareholders. Municipalities own some 321 000 hectares whereof about 3/4 of the area has production of timber as main objective and the remaining 1/4 are primarily managed with other objectives such as outdoor life, nature conservation or future building sites.

The current Swedish forest policy from 1993 was manifested in a revised and deregulated Forestry Act and brought on two radical changes.

i. An environmental goal was written into legislation, explicitly made to be of equal importance to the former production goal.
ii. Previous policy instruments – detailed regulation, economic incentives, command and control enforcement and monitoring – were abandoned in favour of 'softer' means and instruments such as information and education, advice, extension services and voluntary agreements resulting in a move from steering to supporting structures. However, there are still regulations that hinder fragmentation of forest estates and some incentives that promote merging forest estates into larger units.

Another important change influencing the forestry last 20 years has been the development of forest certification. In 2012 all larger forest owners and about 60 % of individual private forest owners' forest area is certified by PEFC and/or FSC.

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A

literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

In Sweden, availability of quantitative data from official statistics including NFI data (Fridman et al., 2014) is fairly good. Also the body of scientific literature (articles published in scientific journals or doctoral/licentiate thesis) using different methodological approaches, sometimes in combination is quiet rich. Therefore, we have mainly used these two types of sources, and only in a few cases used published master thesis or grey literature in order to provide answers to the questions asked.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). The literature review contains the following questions: Which research frameworks and research approaches are used by research? What forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

The literature covers in a comprehensive way all fields relevant for FACESMAP including following research:

The implementation of the new paradigm (sustainable forest management) and the shift towards "smart regulation" via the use of various forms of flexible instruments, including forest certification, in a context where more stakeholders are involved. Thus the role of "regulatory" authorities has moved from governing to governance.

- Research historically focused on the practical problem of efficient production using a weak theoretical foundation regarding forest owners' motivations and behaviour.
- By applying the Tipple Helix concept, a comprehensive research program on small-scale forestry "Privatskogsprogrammet" was carried out 1986/87 – 1990/91 involving about 50 different projects and some 200 people (Håkansson & Persson, 1992). The technology-oriented part of the program focused on the development of machines, mechanised systems and working methods to improve productivity, safety and job-satisfaction. In silviculture, alternative methods for harvesting and regeneration, also on abandoned farm land, were developed and analysed from a technological and economical perspective. Within the economy-oriented part of the program,

the financial and legal conditions were analysed, and the basis for understanding the diverse motivations and roles of the forest owners were established by using multidisciplinary approaches.

- Comparison of different types of ownership regarding to management behaviour including environmental considerations. (State, companies, commons and small-scale private ownership).
- Impact of gender on ownership and management behaviour.
- The emergence and view of private forest ownership, the social and institutional frameworks for ownership, and the modes of actions in which the forest owner engage.
- Forest owner cooperative as tool for the forest owner to optimise the (economic) value from the property and the ownership, and its role as service provider.
- How forests will be managed in the future due to the trend towards an increased share of non-resident forest owners, and the increased female forest ownership.

All research has been conducted by Universities and primarily by the Swedish University of Agriculture Sciences. In the last few decades an increasing number of authors affiliated with non-forest research organizations as Umeå University, Lund University, Luleå Technical University and Uppsala University have done research in the subject area. Research has been carried out with funding both from public as well as from private funds. Quite often studies get funding from a mix of funding sources.

Methods used:

- questionnaires to individual forest owners and forest experts
- interviews including focus groups with stakeholders
- use of NFI data and other national databases
- literature review.

Several studies uses a combination of quantitative data from databases and data achieved from specific surveys using qualitative approaches. The focus in research has moved from explaining the forest owners harvesting behaviour by “simple” models towards attempts to understand impact of underlying motivations, values and attitudes using multidisciplinary approaches.

In order to evaluate the impact of polices and incentives, surveys of attitudes are not sufficient. There is an apparent need for a consecutive quantitative data assessment of high quality in order to describe and understand present forest conditions and forest owner behaviour and predict future trends. Whenever there is possible to combine surveys based on self-assessment of behaviour with on ground observations based on environmental monitoring data it should be used for critical assessment. To measure changes in forest ownership including management behaviour there is a need to define relevant measurable indicators.

3.2. New forest ownership types

There are no new forms of ownership of importance and changes between categories have been limited (Swedish Forest Agency, 2013). However, the characteristics of forest owners have changed over time. A smaller share of the state owned forest has been sold out to small-private forest owners, see chapter 4.4.1.

3.2.1. Characteristics of forest owners

The share of female owners has slowly increased since the beginning of the 1990s (it was 34% in 1992 and 38 % in 2012) contrary to the 1970s and 1980s when there was a significant increase of female owners (see chapter 4.5). The total number of forest owners has however decreased and in 2012 there was approximately 6% less forest owners compared to 1992 (Swedish Forest Agency, 2013; National Board of Forestry, 1997).

In official statistics the owner’s residency is classified by whether they are living in the same municipality as the forest estate (resident owners) or not (non-residential owners). The share of estates with resident

owners (at least one of the owners living in the municipality) has been at same level since 1990s. In 1992 about 70% of the forest estates where owned by residential forest owners and in 2012 the share was 68% (Swedish Forest Agency, 2013).

There are differences between resident and non-resident when it comes to attitudes. Resident owners put larger values on most goods from forest ownership than non-resident. For example, forest income, firewood and housing, is more important to resident owners than it is for non-resident owners. Women put a higher value on ecological and recreational aspects. Still there are no major gender differences in forest values and forest management attitudes (Nordlund & Westin, 2011).

3.3. Forest management approaches

The Swedish Forest Agency´s annual questionnaire survey (Swedish Forest Agency, 2013b) of forest owners shows that in 2012;

- Pre-commercial thinning of young forest amounted to a total of 388,000 hectares.
- Site preparation was carried out on 167,000 hectares, and 166,000 hectares were planted with seedlings.
- Forest fertilization was carried out on 46,000 hectares whereof only about 2000 – 3000 ha on individual private forest owner land.
- Planting was the dominating method of regeneration (73 %) followed by natural regeneration (20 %) and sowing (5 %). The difference between individual private forest owners and other owner categories is very small.
- 7.6 m³ standing timber of conservation trees and 1.4 m³ standing timber of dead trees was left per hectare. For conservation trees, this means about 12 trees per hectare on average.
- The total annual felling for the two year period mid 2010 – mid 2012 was 87 million m³. The individual private owners share was 44 million m³.
- The dominating forest management approach is clear-cut felling with planting. The rotation period ranges from 50 to 120 years depending on location (south to north) and site conditions.

3.3.1. Ecosystem services and certification

Lately, there has been a growing interest regarding the use of the forest (ecosystem services to produce). One example is a growing interest in and views on which forest management practices that should be used. Stakeholders bringing up the issues are NGOs, researchers, individual citizensand journalists. In spite of an intensive debate in newspapers and other media no observable changes can be seen when it comes to forest management practices in general (Swedish Forest Agency, 2013).

An important change occurring in the last 20 years is the process of certification. In 2012 about 60 % of individual private forest owners' forest area was certified by PEFC (PEFC, 2015) and/or FSC (FSC, 2015). However, with regards to indicators of environmental quality objective as regards to sustainable forests (Swedish Environmental Protection Agency , 2015), only minor improvements have been reported, somewhat more improvements can be found on small private forest owners land (Johansson & Lidestav, 2011; Keskitalo & Liljenfeldt, 2014).

3.4. Policy change / policy instruments

The revised Forest Act from 1994 (Swedish Riksdag, 1979a) placed the two aims of forestry production and environmental protection on formally equal footing, and also placed a large focus on that forestry and forest owners themselves were to choose implementation in order to comply with the aims in the Act. This relative de-regulation and focus on multiple aims has, however, also led to a large complexity in terms of the levels of requirements placed on forest owners. To control compliance with the legal requirements require relatively large monitoring systems, which have sometimes been criticized for measuring compliance in ways that do not cohere with other systems.

The equal focus on protection has largely been developed at policy level, where Swedish authorities for instance note that a higher level of protection than the minimum one mandated by law is required for Sweden to meet its environmental protection targets, including for instance the broad Environmental Objectives set by the Government. Here, the Swedish Forest Agency is the national authority in charge of forest-related issues. The main function is to promote the kind of management of Sweden's forests that enables the objectives of forest policy to be attained, with the Forest Agency mainly providing advice to forestry at a level somewhat higher than that of legal requirement, in order to support Swedish policy (Johansson and Keskitalo, 2014).

The minimum legal level is thus complemented with a broad policy level including that of the Environmental Objectives, and an interpretation of this at a Forest Agency "advice level". In this relation, the voluntary market-based and third-party assessed system of forest certification, with the two main systems FSC and PEFC have become particularly important, as they provide a way for companies to indicate both to the state and the international market that they integrate higher environmental protection requirements (Johansson and Keskitalo, 2014). However, as criteria measured in certification differ from those measured in state monitoring large forest companies often develop own company policies to integrate these systems, further adding to the complexity of criteria used.

For private forest owners, however, as these increasingly live off their property and are employed in other sectors, this complexity may seldom be recognized, as their interactions with requirements on forestry may be limited to contacts with the FOA through which in particular logging may be undertaken. New individual private forest owners may thus only get the question of whether they would like their forest to be logged in accordance with specific certification criteria as a question of whether they are prepared to trade leaving some additional wood in the forest for getting a somewhat higher payment for wood taken out. The complex policy context may thus in extension result in increased difficulties for new forest owners to comprehend of the complex choices that they according to law are responsible for, in that they legally hold the responsibility for logging and management on their own land (Keskitalo & Liljenfeldt, 2014).

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by Food and Agriculture Organization (FAO). The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

Since 2004 the classification of ownership harmonizes with the concepts and definitions used by FAO and other international organizations. Statistics reported below are published in Swedish Statistical Yearbook of Forestry 2013 by Swedish Forest Agency (Swedish Forest Agency, 2013).

Definitions and collection of statistics on different ownership classes' holdings of productive forest land is gained through the Swedish NFI and General Property Tax Assessment of Agricultural unit (AFT). The NFI and AFT almost use the same definition of productive forest land.

The distribution of productive forest land[86] (23.1 mill ha) by ownership classes in 2010

[86] Include forest land with a production potential of at least 1 m³ timber per hectar and year

(Swedish Forest Agency, 2013) is shown in table 1.

When using the international definition of forest land (FAO, 2010) the ownership will be distributed somewhat differently. According to statistics from NFI in 2010, publicly owned land amounts to 28.7 % and private 71.3 %, (private owned companies 22.3 and individual owners 49.0 %). The larger share owned by state is because large areas of low productive mountain forests (not classified as productive forest) belongs to the state.

In 2011 there were 227 129 forest holdings (productive forest land within a municipality belonging to same owner) each owned by individual owners. The number of individual forest owners were 327 727, of whom 38 % were women. Of the forest holdings 68 % were locally owned, 25 % were owned by non-residents and 7 % partly by non-residents. The numbers above show that co-ownership is common, and 2 out of 3 forest owners own their property together with someone else – often family member/-s. The average holding size is about 47 ha of productive forest land and the size distribution of holdings is shown in figure 1.

Table 1: Distribution of ownership of productive forest land in Sweden, %

Ownership	Share, %	Definition
Individual owners	51	Single owner, estates and small companies (sole trader)
Private owned companies	23	Company/corporation that is more than 50 percent privately owned.
State owned companies	14	Companies more than 50 percent administrated by the Swedish government.
Other private owners	6	Religious associations including the Swedish Church, privately owned foundations and funds, profit and non-profit associations, profit driven community groups (commons).
State authorities	3	Swedish state owned institution funds, foundations etc.
Other public owners	2	Swedish local and county councils including limited companies, foundations and funds owned to 50 percent or more by local and county councils

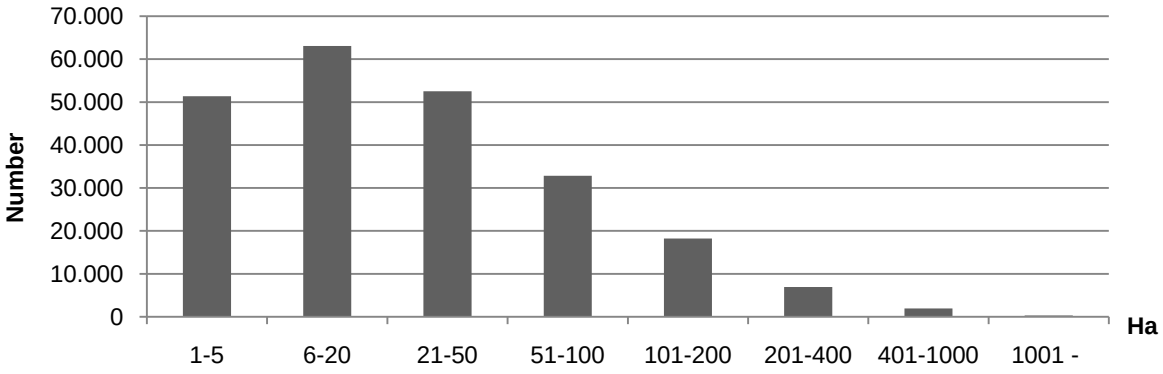

Figure 1: Number of holdings owned by individual owners distributed on size class.
Source: Swedish Tax Agency, Swedish Tax Agency Property Register, processed by Swedish Forest Agency.

4.1.2. Critical comparison with national data in FRA reporting

Normally, Sweden don´t need to transform or "Reclassify" national forest data with appurtenant classes and definitions when reporting for international statistics as the FRA 2010 (FAO, 2010). The main bulk of national information for the FRA 2010 global reporting tables can be extracted as primary data from the detailed NFI database using FRA 2010 variables and definitions. Exceptions was data on forest land and other wooded land area within the alpine region and the estimates of below ground carbon, which were delivered by the environmental monitoring programmes National Inventory of Landscapes in Sweden (NILS, 2015) and Swedish Forest Soil Inventory (SFSI, 2015). Additional data on protected land has also been extracted from the Swedish Forest Agency registers.

4.2. Unclear or disputed forest ownership

There are no areas of importance where ownership is unclear or disputed.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

There are two legal restrictions for buying forest in Sweden:

- The first one's aim it to support work opportunities and living in rural areas (defined according to figure 2).
- The second one's is to maintain the balance in ownership proportion between private persons and juridical persons (companies, the church, municipality, associations and foundations).

The legislation (Swedish Riksdag, 1979a; Swedish Riksdag, 1979b) differ between rural areas and other areas. Some areas with a high degree of small and very narrow forest holdings have the same regulations as for rural areas (included in rural areas in figure 2). The regulations are given below, but there are also some exceptions not included here.

Buyers need an acquisition permit in the following cases (Swedish Riksdag, 1979b);

- Juridical persons buying from private persons.
- Juridical persons buying from other juridical persons if the forest is located in rural areas or areas where structural improvement of the geographical pattern of the forest holdings is needed.
- Private persons buying from other persons except in cases below.

Buyers do not need an acquisition permit in the following cases;

- Juridical persons buying from other juridical persons in other areas or areas where structural improvements are not needed.
- Private persons buying forest located in other areas or areas where structural improvements are not needed.
- Private persons buying (exchange, receiving a gift) from parents, grandparents, spouse or via inheritance or testimony.
- Private persons owing a share of a forest holding buying more shares of the holding.
- Private persons since at least one year registered (living) in the same rural district where the forest is located.

The decision about an acquisition permit is based on the following;

A private person can get exemptions from the rules if no other potential buyer fulfil the criteria for acquisition permit, or if the buyer can show he or she will start living in the rural district. A permit can be given to a juridical person if they sell another area of the same size to private persons or to the state for nature conservation purposes. Other reasons for a permit can be to use the forest land for exploitation, for use of timber in own industry in the district, or special reasons.

The forest owner may not cut the forest until the permit is approved. Also non-Swedish citizens can buy forest land in Sweden.

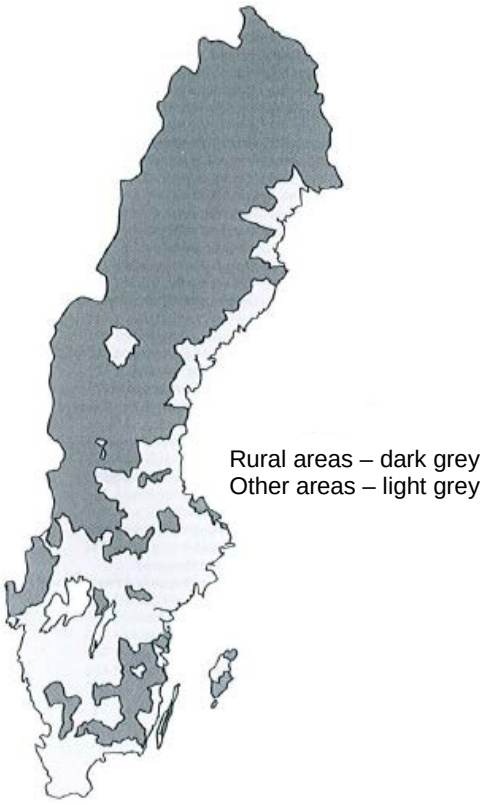

Figure 2: Rural areas and other areas according to the Swedish Land Acquisition Act (Swedish Government, 2005). Rural areas also include some islands east of Stockholm.

4.3.2. Specific inheritance (or marriage) rules applied to forests

No specific inheritance rules apply to forests.

4.4. Changes of the forest ownership structure in last three decades

4.4.1. Changes between public and private ownership

Sveaskog has by its owner the Swedish state received a mandate in 2001 to sell 10% of their forest land in order to strengthen private farming and forestry in rural areas (Government Bill, 2010). In 2014 less than 10 % has been sold out and there is still possible to buy forest land from Sveaskog. Sveaskog owns 14 % of the productive forest land in Sweden, i.e. the transfer of forest land from state to individual private owners will be about 1,4 % of total forest area.

4.4.2. Changes within public ownership categories

The forest land owned by the state was in 1993 divided into two separate organisations, the National Property Board and AssiDomän AB (from 2001 Sveaskog) (Riksrevisionen, 2010). The National Property Board manages 750 000 hectares of productive forest land of which about 450 000 ha is formally protected, and another 40 000 voluntarily protected. Thus only 260 000 ha is managed for timber production.

The state owned stock company Sveaskog manages 3.1 mill hectares of productive forest land. More than 20 % are set aside for nature conservation purposes. The ownership situation for Sveaskog has changed over time, and between 1993 and 2002 the state owned part was 50.25 % whilst 300 000 private persons and institutions had the other part. The state bought back those shares in 2002.

The Swedish Environmental Protection Agency has since 1999 long term lease on 294 000 hectares below but close to the mountain area for nature conservation purposes. They have also got 100 000 hectares from Sveaskog with the purpose to be able to exchange forest land with high nature conservation value from other forest owners. This exchange program is currently running and will continue years ahead.

4.4.3. Changes within private forest ownership

The changes within private forest ownership are very small.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more).

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	1
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	2
• New private forest owners who have bought forests	1
• New forest ownership through afforestation of formerly agricultural or waste lands	0
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2
• Other trend, namely: Number of small-scale forest owners is somewhat decreasing separated ownership of forest land and industry, see chapter 4.4.3.	1
• Other trend: Contractors	3

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

CASE STUDY1: PRIVATIZATION

In a case study by Lindgren (2013), an investigating of the sale of Sveaskog forest land was conducted: "Sveaskog has by its owner the Swedish state received mandated to sell 10% of the land holdings it had in 2002 in order to strengthen private farming and forestry". This because it is expected to be easier for private individuals to earn a living in rural areas being forest owners. The objectives of the study were to examine the sale process and the properties sold and the buyers, motives for purchasing and how it affected them and their surroundings. Key people within Sveaskog were interviewed to understand the sales process and what criteria they had in areas that have been sold. The case study included 36 properties sold by Sveaskog in the municipalities of Dorotea and Vilhelmina from 2003 to 2011. The properties were analysed to see how they met the criteria set for the sale. It was concluded that the sales process applied has changed over time. In the beginning there were relatively high standards set up for the purchasers of the properties compared to the current situation where anyone can buy a property. Conflicts with other industries such as reindeer husbandry in the area have not increased with the sale, but the reindeer owner's points out that they want the opportunity to be heard before the sales starts. The impacts by the sales on buyers vary in terms of the opportunity to stay / reside in the municipality and the impact on livelihoods. Thus, it is far from obvious that property sales had a positive impact on rural areas in Vilhelmina and Dorotea as intended.

CASE STUDY 2: CHANGING LIFE STYLE

Due to increased mobility, economic restructuring and urbanization many forest owners reside in urban areas (urban forest owners), engaging in urban life styles. Although life style is a much debated concept, recent research on forest owners and life styles has suggested that in addition to the classical aspects of social situation (such as income, age, sex, residential region), dimensions of mental level (values and attitudes), and expressive behaviour (e.g. leisure time behaviour) (e.g. Ziegenspech et al., 2004). Private forest owners constitute a heterogeneous group, yet there are certain life style characteristics that differ between forest owners residing in urban areas vs those residing in rural areas, as well as between residential and non-residential forest owners. Urban forest owners, as well as non-residential forest owners, are less dependent on forest revenues as they often have an income from off-farm work. Partly related to higher incomes is higher education level (ASTRID database, Umeå University). Regarding the life style dimension mental level, non-residential owners assign greater value to preservation of virgin forests, while residential forest owners assign greater importance to production. Management attitudes follow the same patterns; resident owners assign greater value to the economic aspects of management than non-residential owners do. In this respect, though, there is no difference between urban and rural forest owners (Nordlund & Westin, 2011).

CASE STUDY 3: CONTRACTORS

In Sweden, contractors have played a prominent role since the technological developments matured in the late 1970s, driven by the decision of large-scale forestry companies to outsource mechanized forestry operations to reduce costs. During the 1980s, the number of machine contractors and their share of logging activities increased rapidly. These increases were primarily due to a shift from machine owners employed by large-scale forestry companies towards full contractors. Many changes have affected forestry management since the 1990s, and the contractors' sector has undergone continuous change. However, there have been no major breakthroughs in technological development in recent years.

Based on data from the national survey Häggström et al. (2013) estimates that between 1993 and 2009, the number of forestry contractors has increased by 80% and the number of employees by 157%. Yet, throughout the whole period, most enterprises were either one-person or small-sized enterprises (1-4 employees). In 2009, 60% of contractors were mainly performing logging activities, whereas 30% were mainly performing silviculture activities. These increases were mainly due to increased silviculture activities. Although one-person enterprises still dominate among Swedish forestry contractors, most logging work is performed by small-sized enterprises, whereas most silviculture work is performed by large-sized enterprises. It was suggested that there is an increased dependency upon contractors and forestry contractors have become more diversified, but still specialized, in the type of work they perform.

4.5. Gender issues in relation to forest ownership

In Statistical Year Book on Forestry 1997 (National Board of Forestry, 1997) and henceforth number of forest owners are reported by gender, age class and size class of productive forest land. However, the figures are not updated every year. The most recent statistics (reference year 2011) shows that there are 124 050 female forest owners and 199 145 men (38% women and 61 % men, for 1% of owners gender is not reported/ not relevant). Compared to figures from 1976 number and proportion of female forest owners has increased significantly (see table 2). At present official statistics also provide figures on number of forest owners (single owners) by gender, age class and size class of productive forest land, and region. In addition, a number of studies with a gender perspective or using/reporting gender disaggregated data/analysis have been carried out since 1998. In 2004 a governmental report on gender equality in agriculture and forestry was presented (Ds 2004:39) and in 2011 the Ministry for Rural Affairs launched a National Gender Equality Strategy for the forestry sector (Ministry for Rural Affairs, 2011b).

Table 2: Number and proportion of owners distributed on gender

Gender	1976[a]	1992[b]	2000[c]	2011[d]
Women	51 000(21%)	116 563(34%)	135 116(38%)	124 050(38%)
Men	197 000(79%)	226 515(66%)	219 207(62%)	199 145(61%)
All	**248 000**	**343 078**	**354 323**	**327 727**

a. *Statistics Sweden 1979*
b. *Swedish Forest Agency 1997*
c. *Swedish Forest Agency 2003*
d. *Swedish Forest Agency 2013*

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts[87]		x	
• NGO with environmental or social objectives		x	
• Self-organised local community groups	x		
• Co-operatives/forest owner associations	x		
• Social enterprises		x	
• Recognized charitable status for land-owners		x	
• Other forms of charitable ownerships, namely:		x	

[87] There are a number of foundations that owns forest. The total area in not very large and the objectives varies a lot from support to nature conservation, research to education.

CASE STUDY 4: MUNICIPAL FORESTS

Municipal forest lands can be found in most of Sweden's municipalities and their origins vary considerably as land originating from royal donations as well as donations from farmers as compensation for their elder-care of poor relief. During the first part of the 20th century the number of holdings and the total area expanded considerably mainly because;
i) a widespread concern for the poor forest conditions especially in southern Sweden
ii) expectations of a positive impact on the municipal economy
iii) as means of controlling unemployment
iv) securing land (including forest land) for future need of housing, infrastructure and recreational areas (Lidestav, 1997; Stjernström et al., 2013). However, ¾ of the 321 000 hectares forest land owned by municipals can be considered as regular forest land and the remaining 1/4 are primarily managed for outdoor life, nature conservation or future building sites. Typically, a municipal forest land holding is in the range of 1-2000 hectares, but there are also a few with more than 5000 hectares (Lundquist, 2005). Although it could be expected that municipalities would have goals and management practices based on the wishes and needs of their citizens, expressed through a process of participatory planning, it rarely seems to be the case. Generally, there is little integration in in the overall municipal planning and involvement by politicians' civil servants, and many municipal forests are more or less managed by external forest organisations (Lidestav, 1994). Still there are exceptions to be mentioned. By combining a traditional forest planning and valuation system with a multi-dimensional economic called position analysis, a planning instrument for municipally owned forest was developed and tested in Sala municipality respectively Säter municipality (Lidestav, 1994). More recently, scenario analysis in combination with multicriteria analysis has been applied to evaluate alternative forest management strategies for Linköping municipality, and in the planning process of urban forest in Lycksele municipality (Nordström et al., 2010; Nordström et al., 2013). Further, if forest land has such qualities that it is labelled a national interest (Riksintresse), the municipality has to report this in its comprehensive plan and describe a vision for how to secure the national interest (Stjernström et al., 2013).

CASE STUDY 5: FOREST OWNER ASSOCIATIONS

In response to their exposed position on the timber market in the beginning of the last century, Swedish private forest owners started to organize themselves in forest owner cooperatives. Initially the cooperatives' only business was collecting timber from the members in order to bring larger volumes to the timber market (Andersson et al., 1980). Through these joint deliveries, the forest owners (members) gained an improved bargaining position and could get better pay for their timber deliveries (Glete, 1987). In the early 1940s, when the cooperatives could not reach their economic goals only by trading their members' timber, some of the cooperatives bought or established new sawmills and other wood processing industries. From the board of the cooperatives the main motive put forward was that, by owning their own industry, members could achieve surplus values (Gummesson, 1993). Thus, the Swedish forest owner cooperatives follows the general characteristics of a cooperative summarized by Skår (1981) such that the cooperative constitutes of an economic business with joint action between members and consists of a democratic association and an enterprise (corporation). Further, individuals are assumed to become members for social and other reasons, but their interests lie in their individual activities and benefits. However, for members who join cooperatives, dilemmas arise when members' decisions are made as joint decisions that can be very different from the individual's own decision. This could, according to Nilsson & Björklund (2003), cause organizational problems when the association and the enterprise are two different sides of the same coin. The analytical implications of this organizational duality and complexity of the cooperative will be developed further in the next section. In practice, the Swedish private forest owner associations has, as one way of dealing with the duality and the multiple needs of members, introduced other services to their members such as management planning, providing tax advice, undertaking silviculture on the forest owner´s request, arranging forest-days and evenings for the members. Additionally, employees at the cooperative represent the private forest owners in dialogue with authorities and advocate for good policies concerning business in the timber market and in various forest policy issues. The lobbying to the government and other authorities is however mostly handled from The Federation of Swedish Family Forest Owners, an umbrella organization for the Swedish private forest owners´ cooperatives (LRF, 2011). With an increasing industrial demand for timber and forest fuel, there are, different to earlier situations, other actors in the forest sector who are eager to serve and start business with the private forest owners and offer comparable services as cooperatives (Törnqvist, 1995). Further, due to the Swedish competition act, the cooperatives are not allowed to restrict or complicate member´s mobility on the market. For example, a cooperative member can sell to any buyer, while the forest owner cooperative cannot refuse a delivery from one of its members, if nothing else is said (Swedish Government, 1992/93; Swedish Government, 1999/2000; Swedish Codes of Statues, 1993). Similar to the structural changes in other parts of the society, the cooperatives have gradually merged and today there are four major cooperatives, namely Norra Skogsägarna, Norrskog, Mellanskog and Södra skogsägarna that cover the entire Sweden. In 2011, the Swedish forest owners' associations had more than 112 000 members with a total area of 6 million hectares. (LRF, 2014).

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-

organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are the key for sustainable use of CPR regimes.

In Sweden there are numerous village commons (unknown how many), seven parish commons (sockenallmänningar) and sixty district commons (häradsallmänningar), all of them with roots in a pre-industrial society. The latter, (häradsallmänningar) sum up to about 130 000 hectares of forest land, and are located in southern part of Sweden (Bergman, 2002).

A more recent category of forest commons were established in the northern interior of Sweden at the time when forest industry expanded into the extensive and previously unexploited northern inland forests, see New Swedish forest commons.

CASE STUDY 6: NEW SWEDISH FOREST COMMONS

In the late 19th century, much forest land in the interior of Northern Sweden still remained unallocated, and in connection to a widespread land tenure reform a new type of forest commons was established. Simultaneous many politicians and officials were convinced that Swedish forests were on the brink of devastation and both the authorities and forest experts had little confidence in the farmers' ability to manage their forests appropriately (Carlsson, 1999). These commons were created (1861-1918) by allocating a proportion of each owner's forestland to be managed jointly. At the time of establishment the aims were:

1. To serve as an instrument for improved forest management (timber production)
2. To serve as an instrument for sustainable economic support for farmers and the local economy
3. To provide a solid basis for taxation and secure the existence of an independent class of farmers
4. To support rural development and wellbeing

Further, the intention was to prevent forest companies from gaining control over the forest resources (Holmgren et al., 2004).

There are currently 33 such "new forest commons", all in four of the six northern counties covering 540,000 ha of productive forest land. In total, there are around 25,000 shareholders of whom 46% are non-residential (Holmgren, 2009). In the districts where they occur, they make up to about 7% to 13% of the forest area. The shares in the common are tied with the private landholding (farm/forest) and thus cannot be owned in isolation but transferred or sold along with the associated private holdings, but the forest is jointly managed by an elected board and a professional manager (staff). Moreover, shareholders in the Swedish forest commons could not only be the individuals but also the companies, church or the State as long as they own the property linked to the share in the commons (Holmgren et al., 2004).

The owners receive a dividend on their share and have hunting and fishing rights on the land. Forest management is decided through boards elected by shareholders and supervised by county administration and forestry boards according to county by-laws. This is based on adherence to the approved management plans and is a view challenged by recent research (Holmgren, 2010b). Holmgren et al. (2004) found considerable diversity in the management of commons in different districts. The same authors also examined and compared biodiversity indicators on forest land owned by commons and by other ownership types (Holmgren et al., 2010a). They found 'no evidence that forests managed in common have been conducted in ways promoting biodiversity more effectively than other ownership categories'. Other research concludes that other interests, including reindeer husbandry, tourism and nature conservation have reduced the owners' control of the forest commons and limited the range of action they can take (Lisberg Jensen, 2002; Holmgren, 2009).

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Sweden

Management decisions are normally decided by the individual owner on their forest holdings. For commons and companies these decisions are taken by management board/assembly and for municipality forests by the municipal executive board.

Today, individual private forest owners outsource majority of the forestry operations, especially the harvesting, to large-scale companies and timber merchants. The self-activity in small scale forestry has decreased a lot from 1993 to 2012. The share of felling (weighted by volume) made by forest owners was 11 % in 2012 compared with 30% in 1993 (National Board of Forestry, 1995; Swedish Forest Agency, 2013), but even today more than 50 % of regeneration (mainly planting) and cleaning were performed by self-active forest owners, see table 3. Even if a forest management plan in not compulsory many forest owners have a plan as an important source of information when deciding management activities. There are many different players offering forest owners plans such as Swedish Forest Agency, FOAs, companies and specialized enterprises. The owners have to pay themselves for the service to get a plan. See chapter 6.3 for more information.

The most common types of delivery of timber from private forest owners to buyers are (Swedish Forest Agency, 2013);

1) *Felling by purchaser.* The purchaser carries out the felling, after which measurement and pricing are carried out in the same manner as for standing forest timber. The purchaser's felling costs are then deducted from the gross price. The costs may be those actually incurred, or established by agreement in advance.
2) *Delivery stumpage.* The trees are sold as standing forest timber, but with a fixed net price per cubic meter of felled timber for each assortment category measured at a scaling station. This eliminates uncertainty about the volume of standing forest timber and costs for timber scaling in the forest. The agreed upon price applies to all assortments and tree species. Prices sometimes vary by assortment.
3) *Delivery timber* - Timber which the forest owner delivers by lorry, with or without the assistance of employees or contractors. In most cases, volume and quality are assessed upon delivery in accordance with the Timber Measurement Act as applied by the regional timber measurement councils. The amount of payment is determined by price lists.
4) *Standing forest timber.* Total price is determined prior to felling. Estimated volume is based on trunk diameter at breast height. The heights of a random sample of trees are also measured. After the trees to be felled are marked and their volume estimated, they are offered for sale, usually by tender.

Professional contractors working with timber procurement for forest companies, FOAs, forest industry and Sveaskog performs to a large extent the management of forests when it comes to fellings. The buyers contact the sellers in different ways as direct business proposals, direct advertising, advertising in newspapers and information events.

An important actor on the market is the FOAs. The forest owner's association tasks are to:

- Look after the individual forest owners'

economic interests.

- Work towards an active and environmentally responsible forestry.
- Convey members' timber to the Swedish forest industry.
- Offer their members comprehensive forestry service, advice and training

Usually, the FOA are represented in reference groups when it comes to major investigations dealing with issues connected to forest as ownership rights, environmental goals of Sweden, etc.

Table 3: Self-activity in small-scale forestry in 1993 and 2012. Amount of felling and terrain transport in 1000 m^3 stand volume, of silviculture in hectares, beeting in 1000 of seedlings. Proportion in percent of total volume

Activity	1993		2012	
	Amount	Proportion	Amount	Proportion
Final felling (FF)	2 432	15	690	3
Thinning (Th)	3 501	44	1 906	16
Other felling (OF)	2 861	63	2 309	31
Terrain transport FF	2 346	14	889	4
Terrain transport Th	3 110	39	1 768	15
Terrain transport OF	2 413	53	2 266	31
Site preparation	6 000	12	5 265	7
Planting	41 000	63	32 333	37
Pre-commercial thinning	113 000	84	156 280	55
Beeting	17 835	74	14 833	47

Source: National Board of Forestry 1995 and Swedish Board of Forestry 2013.

5.2. New or innovative forest management approaches relevant for new forest owner types

There are no new or innovative forest management approaches specifically addressing new ownership types or new owners.

5.3. Main opportunities for innovative forest management

Authorities, organisations and companies within the forest sector are very interested to get in contact with new owners. Reasons can be to build up long-term customers' relationship (companies and FOA) and implementation of the forest policy and knowledge development of forest owners (Swedish Forest Agency).

Internet has increased the opportunities to make educational material easily available for forest owners. An example is the web portal "Kunskap Direkt" (Skogforsk, 2015) financed by the research institute Skogforsk, the central organisation for Forest owners associations, Swedish Forest Agency and some other research foundations.

The portal includes different modules (topics) where forest owners and also professionals and others can get information and practical advice on different management actions. There are also many computer based tools for calculations of when and how to apply different management actions and cost and income from these actions.

Another service freely available for all forest owners are a handbook mainly written by researchers with advice on forest silviculture Swedish Forest Agency (2015).

On "Mina Sidor", administrated by the Swedish Forest Agency (2015b) the forest owner can see his/her forest estate with background maps (road map or aerial-photo maps). There are also tools for planning and sending in compulsory notifications for final felling to the Swedish Forest Agency, see example in figure 3.

Figure 3: Example of planned final felling made by a forest owner in the web-based tool for forest owners.

5.4. Obstacles for innovative forest management approaches

New attitudes and motivation among new forest owners should be taken care of by professionals because they execute the main part of the forest management. It is not always the case that professionals' motives and attitudes coincide with forest owners. According to Kindstrand et al. (2008) there were differences between these groups as professionals' value timber production higher and recreation and environmental values lower compared to forest owners.

Forest owners´ peer-to-peer learning is an innovative concept, in Sweden mainly practiced in the form of study circles. A recent study concludes that peer-to-peer learning among forest owners cannot replace the guidance given by forest professionals; however it can support and complement the prevailing extension practices when the aim is to inform, engage and inspire forest owners. (Hamunen et al. 2014).

It will probably be a slow process to change the predominant forest management approaches if desirable. This because many professions are involved and have to change attitudes and be educated, for example managers, timber buyers, forest officers and forest workers as well as forest owners themselves.

CASE STUDY 7: ATTITUDES TOWARDS VARIOUS FOREST FUNCTIONS

Kindstrand, et. at., (2008) compared the attitudes of the forest owners with how forest officers perceive those attitudes. The data in the study originated from a postal questionnaire survey from 2002 primarily focused on how important various research areas were to forest owners and forest officers. The result indicates differences between these groups. The forest owners consider timber production as the most important function followed by recreation and biodiversity. The share of forest officers considering timber production very important was significantly higher and for biodiversity and recreation significantly lower than what forest owners consider to be very important. The authors conclude that a deeper understanding of these differences is important for successful implementation of a forest policy.

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

The Forestry including the forest and wood industries as well as the potential for nature tourism, hunting and fishing, create employment in rural areas and are very important for the rural economy. In order to strengthen and promote decentralisation and rural development, the government has launched the Rural Development Programme (Government Offices of Sweden, 2012). The programme provides various forms of support such as counselling and subsidies for different areas, for example improved competiveness in forestry and agriculture and improvement in the environment and landscape. The target group are mainly private individual forest owners engaged in forestry and rural businesses. The previous programme was in force in 2007 to 2013 and comprised three different measures for forestry including knowledge transfer, support and subsidies for biodiversity and hardwood. The current Rural Development Programme extends from 2014 to 2020 and it is not yet clear what kind of support it will imply for the forest sector.

There are regulations today that hinder fragmentation of forest holdings and incentives promoting merging of holdings into larger units, see 4.3.1. The provision of how real estate is formed and registered is contained in the Real Property Formation Act (1970:988). Before agricultural land can be afforested, the land owner must apply to the County Administrative Board, and a consultation with authorities and relevant stakeholders must be held according to the Environmental Code (Swedish Government, 1998) ch 12, sec 6. In Sweden, there are no policies creating new legal forms of ownership.

6.2. Influences of policies in forest management

The change of Swedish forest policy in 1993 (Swedish Government, 1993), see more in chapter 6.5, with a revised and deregulated Forestry Act brought on two radical changes. First of all environmental goal was written into legislation, explicitly made to be of equal importance to the former production goal and secondly previous policy instruments – detailed regulation, economic incentives, command and control enforcement and monitoring – were abandoned in favour of 'softer' means and instruments.

6.3. Policy instruments specifically addressing different ownership categories

In Sweden there are no policy instruments specifically addressing different ownership categories. The Forestry Act is valid for all owners irrespective of ownership category. Still, there are some differences dependent on size of holding where smaller holdings have fewer obligations. For example obligation to have consultation with Sami villages related to forest management (compulsory if holding > 500 ha) and restrictions of maximum share (should be less than 50 % of the holdings forest area) of stands younger than 20 years (compulsory if holding > 20 ha).

6.4. Forest management plans

Today, forest management plans are not mandatory for forest owners. It was mandatory according to the Forestry Act between 1983 and 1993. This was largely a result of the forest industry's inability to obtain sufficient amounts of raw timber. Forest owners with management plans had proven to be more active (and supplied more timber). Many private forest owners had high marginal taxes (>70%) on incomes from the forest and therefore unwilling to sell timber. Forest management plans and rules forcing the forest owner to cut were introduced as well a lot of detailed rules forcing the forest owner to cleaning and thinning of the forest. During this period there were many subsidies for management activities, road construction and also for making forest management plans. The mandatory requirement to have a plan as well as the subsidies was removed in the changed Forestry Act in 1993. Reasons were critics of the low quality of the plans, and too much focus on timber production.

A Forest and Environment Declaration was

required from 2003 to 2007 according to the Forestry Act (Swedish Riksdag, 1979a). The owner was obliged to have information about his or her forest corresponding to the data that you find in a forest management plan. Also some data about environmental variables were included (area with broadleaved hardwood, nature reserves, protected biotopes, wetlands with special value, the presence of archaeological sites, and other valuable areas). This regulation made at least a simple forest management plan necessary. The information was for the benefit of the forest owner and there were in practice no follow-up of that regulation from the Swedish Forest Agency.

In an official forest report from 2006 (SOU, 2006) it was suggested that a forest management plan should be mandatory. In the general election later same year a new government was elected and they did not approve the suggestion. Also, they withdrew the regulation about the compulsory Forest and Environmental Declaration from 2008, and changed the definition of forest land to be in accordance with the FAO´s definitions.

There are only minor subsidies for forest management today. Most of the money goes to authorities giving advice to forest owners, or to inventories with a focus on nature values. “The forest kingdom” (Sw: Skogsriket) gave subsidies for different purposes in four topics: Sustainable management, processing and innovations, experience and recreation and Sweden in the world. The program was decided by the Ministry for rural affairs and the budget was 10 Million € per year 2011 to 2014 (Ministry for Rural Affairs, 2011a)

6.4.1. Tools for policy implementation

An important source of information for the Swedish Forest Agency's when controlling and following up of the Forestry Act is the mandatory harvesting notifications (if final felling area > 0.5 ha). In 2013 there were almost 58 000 notifications of planned final fellings. Control can roughly be divided into two parts, before and after harvesting. Control before harvest priorities the cases where the planned harvesting can involve a risk for lack of nature considerations or bad regeneration results. After harvesting the control focus on performed logging and regeneration measures (Swedish Forestry Agency, 2013).

Individual forest owners can get free advice from the Swedish Forest Agency. Free advice can be given on these subjects; Management of broad-leaved deciduous forests, measures that favour natural and cultural values of the forest, cleaning and use of continuous cover forestry.

The total budget for subsidies is small and mainly directed to measures connected to environmental and cultural goals.

It is possible for forest owners to get subsidies for some measures in forest as;

- Support to creating conditions for jobs related to forest.
- Support to natural and cultural measures in the forest to enrich the forest environments of public interest.
- Subsides for regeneration of hardwood forest to compensate for higher cost compared to regeneration of conifer forests.

6.5. Factors affecting innovation in policies

The Swedish forestry sector has a number of properties that can help us understand the proposed shift from government to governance, and thus the increased use of soft law instruments. Firstly, it is a central policy arena with a tradition of a 'laissez-faire policy' with wide administrative discretion which means that the governmental agency, the Swedish Forest Agency, has a quite unclear role and a growing uncertain existence. Secondly, the forest arena contains many actors and conflicting interests, where especially the conflict between production and environmental goals has been of great importance when organizing the sector. The two 'paradigms' we see today – one that sees the forest as a raw natural resource, and the other that emphasizes the forest as an experiential and recreational place with nature conservation as a central value, has a long historical tradition. In this context the implied conflict between public and private interest is broached, first in terms of the *state’s* interest in and need to direct production and returns from forestry versus the individual forest owner’s right to

decide over his or her own forest, then later in terms of the state's promotion of the general public interest via environmental goals.

As a catalyst, in line with the deregulation trend in the Nordic countries during the 1990s, the Swedish forest policy of 1993 brought on two radical changes. On the one hand, an *environmental goal* was placed in parity with the former production goal. In other words, the environmental goal was written into legislation, explicitly made to be of equal importance to the production goal. The second radical change was that the previous policy instruments – detailed regulation, economic incentives, command and control monitoring and enforcement – were abandoned in favour of 'softer' means and instruments. In this sense one can speak of deregulation in regard to the 1993 policy, but not absolute deregulation. The political aim of the environmental goal was very ambitious, well above the legal demands, and the expectation was that the forest owners should be more active in attaining this goal, take a greater voluntary responsibility to protect valuable core sites on their land, by formal protection as well as by voluntary set-asides.

In such a rather clear-cut situation of expected beyond-compliance outcomes, the famous slogan "Freedom with responsibility" is an appropriate summary of the intent behind these radical changes. This move from direct legal steering to softer, inclusive modes of steering requires adequate resources, financial as well as the public authorities having enough personnel to carry out their duties. This is especially important in a rapidly changing forestry sector where different target groups of forest owners needs different steering-approaches. Today it is obvious that the resources are not sufficient to meet the demands of a shift to the softer, voluntary steering approach that the new policy implies. The lack of state funding and financial support for nature conservation is a shortcoming in regard to the environmental goal and the attempts to stimulate forest owners to take voluntary efforts for protecting valuable nature areas. Nor is the demand for increased information and knowledge transfer - and in part new ways of working in public administration - met by sufficient personnel resources at the Swedish Forest Agency (Appelstrand, 2012; 2007).

CASE STUDY 8: THE ÖSTRA VÄTTERBRANTERNA PARTNERSHIP

An example of a successful application of the new, softer means of the Swedish forest policy is the Östra Vätterbranterna (ÖVB) project in the southern part of Sweden (Jönköping). The ÖVB-project started in 1998 as a top-down initiative initiated by the County Administrative Board (CAB) due to conflicts and lack of trust between various groups of forest owners, public authorities and local NGOs. Conflicts took place over the establishment of new nature reserves and an ongoing inventory of woodland key habitats. With the intention of creating a dialogue forum as a first step in resolving the conflicts, representatives of the authorities' concerned and other stakeholders were gathered in the project ÖVB. Since this founding, a group comprised of the CAB, Swedish Forest Agency, the municipality of Jönköping as well as representatives of the Federation of Swedish Farmers , the FOA SÖDRA, the World Wide Fund for Nature and the local branch of the Swedish Society for Nature Conservation has been in operation. Initially there was a great degree of resistance from land owners and their organizations against protecting land for conservation purposes. The local NGO protested against felling plans, and the conflicts were both deep and difficult to resolve. A first step was to create trust and common goals amongst the members of the project group, to find the 'social key habitats'. An important condition for creating trust was that both the landowners and the NGOs demanded that 'all cards be laid on the table' with regard to the mapping and inventory of the area´s natural values. Through these activities even the interest of land owners for conservation was awakened, and a dialogue was initiated with authorities and the other actors. As the ÖVB area is characterized by small-scale and fragmented holdings a combination of tools were proven to be most effective. Formal, legal instrument such as nature reserves and habitat protection were combined with voluntary, softer instruments such as nature conservation agreements, forest certification and green forest management plans (Appelstrand 2012).

A long process has taken place, going from conflict to successive understanding to constructive collaboration in turning the ÖVB into the successful partnership it is today. To reach this end great effort has been made in anchoring decisions and eliciting participation from the local community. This way of working has led to a great deal of attention, both locally, regionally and nationally. Some of the preconditions for the success and applicability of the soft steering approach in the ÖVB-case have been described in terms of social resilience, pointing out some decisive factors for creating a common arena that functions as a tool in itself (Berglund 2010; Käll 2007).

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SWITZERLAND

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1. Introduction

1.1. Forests, forest ownership and forest management in Switzerland

In Switzerland, the forest plays several important roles. About one third of the whole area of Switzerland is covered by forest. That makes it a considerable part of the landscape and a vital habitat for many species. Another important function of the forest is the provision of wood. Timber is used for construction, commodities and energy production. The protective forests, most of all in mountainous areas, protect people, construction and infrastructure from impacts of natural hazards such as avalanches or floods. Finally, the Swiss population values the forest for recreational use such as jogging or horseback riding (Brändli, 2010: 32; 40).

The Swiss forest area currently covers about 1'280'000 hectares. Statistical data show that the forest area of Switzerland is growing. From 1985 to 1995 it increased by 3.3%, from 1995 to 2006 by 4.9%. In total this is an increase of about 98'000 ha (Brändli, 2010: 36). This increase is on the one hand due to the fact that increasingly agricultural land in the mountains that is hard to cultivate is abandoned and naturally converts to forest over the years. On the other hand, there is a strong protection of the forest area in Switzerland as deforestations are in general forbidden by the Federal Act on Forest.

The protection of forest area goes back to the nineteenth century, when the first national legal act on the forest was enacted. Back then, a main target was to preserve the forests as protection against natural hazards. The prohibition of deforestations has remained a central aspect of Swiss forest policy. Another important instrument for the maintenance of the forest areas and their functions are regulations of forest management, as stated in the Federal Act on Forest, which are therefore binding for all public and private forest owners.

There are two main categories of forest owners in Switzerland: public and private actors. About 70% of the forest area are owned by public actors. This share has not significantly changed in the last decades (FRA, 2010: 15).

1.2. Overview of the country report

After the introduction and an overview of the methods in section 2, section 3 of this country report consists of a literature review on forest ownership change in Switzerland. The first part aims is to give an overview of the existing literature, therefore it is solely based on the content of the cited literature. In addition to this summary of the literature, seven core publications are described in detail in the appendix.

The information from the literature review is supplemented by statistical data from the Federal Statistical Office, the Federal Office for the Environment and by expert knowledge in section 4. , which gives a detailed overview over the characteristics of the current forest owners in Switzerland.

Section 5 then focuses on forest management approaches. It provides insight into who typically manages forests in Switzerland, if there are new management approaches that are related to new ownership types, which are the main opportunities for innovative forest management and what the obstacles or challenges to these new approaches are.

Section 6 finally examines the influence of policies on the development of forest ownership and management. In addition, the relationship between policy instruments and different ownership types is addressed. Specifically the question of whether the instruments are designed to target new forest owners is answered.

2. Methods

2.1. General approach

To achieve the aim of the country report, which is to give a comprehensive overview of forest ownership issues in Switzerland, a mix of methods is applied. It includes a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Sources include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case studies will be accomplished in subsequent work packages in the COST Action.

2.2. Methods

A comprehensive literature review has been conducted. The information gathered in this first step provides a picture of the current ownership structures of the Swiss forests and new management approaches. The literature comprises of empirical studies based on surveys and case studies, but also on theoretical reflections, interpretations of data sets, and evaluations or essays by practitioners. Important sources for the literature include the publications by the Federal Office for the Environment, publications by the Department of Environmental Systems Sciences of the Federal Institute of Technology ETH Zurich and the online archive of the “Schweizerische Zeitschrift für Forstwesen” (the Swiss Forestry Journal).

For further insights, two national data sets have been consulted. They have been recorded by the Federal Statistical Office, by the Forest Division of the Federal Office for the Environment and by the Swiss Federal Institute for Forest, Snow and Landscape Research WSL.

Finally, the expert knowledge present at the Forest Division of the Federal Office for the Environment and at the Professorship of Environmental Policy and Economics of the ETH Zurich has been an important source for this report.

3. Literature review on changing forest ownership structures

3.1. Research framework and research approaches

Statistical data concerning forests in Switzerland, which are registered by the Federal Statistical Office and the Federal Office for the Environment, are collected at the national and subnational (cantonal, i.e. constituent-state) level. They contain, for example, economic data, the development of forest areas or the processing of timber. The share of public and private forest owners is also recorded.

There are not a lot of studies about forest ownership in Switzerland. Seven key publications are described in detail in the appendix. One major survey (Wild-Eck and Zimmermann, 2005a), funded by the Federal Office for the Environment and conducted by the Chair of Forest Policy and Economics at the Swiss Federal Institute of Technology Zurich (ETHZ), focused on private forest owners from all parts of Switzerland at the national level. The results of the survey led to important insights about the characteristics of private forest owners and their attitude towards forest-related policies. Although these results are representative of all private forest owners, it is not possible to distinguish the answers of the “new owners”.

Some case studies at the regional level analyse new management approaches. But also in these cases it is not possible to differentiate between developments of ownership structures and developments that are dependent on other basic circumstances like the economy or technology.

3.2. New forest ownership types

According to Wild-Eck and Zimmermann’s (2005a: 86) study, historically many private forest owners grew up in an agricultural environment and therefore they have had some knowledge and skills related to managing a forest. While in Switzerland there

is currently a decrease in the number of farms and of people who are active in agriculture, this type of forest owner might already have diminished prior to this trend. The projection is that the coming generations of private forest owners will have increasingly grown up in an urban setting and without any ties to agriculture. It remains to be seen how and to what extent these new owners without an agricultural background will manage their forests.

A major change of forest owners in the next years is predicted. According the Wild-Eck and Zimmermann's (2005a; 2007) study, 90% of all owners are older than 40 years, 40% are older than 60 years and 20% are older than 70 years. Therefore, in the next few decades, a large part of the private forest will be passed on or sold to new owners. This again leads to uncertainty about who these new owners will be and how they will manage their forest.

The results from the Zimmermann and Wild-Eck (2005a) study show that a relatively big part of private owners lack knowledge about their own forest. For example 13% of all owners have not been to their forest for more than a year, 23% do not know if someone is hunting in their forest and 40% do not know if someone is collecting berries or mushrooms in their forest. It seems reasonable to say that some of these owners with loose ties to their forests are the above mentioned new owners, coming from an urban setting. However, whether this conjecture holds true cannot be ascertained from the data provided in the Zimmermann and Wild-Eck (2005a) study.

3.3. Forest management approaches

The primary goal of private forest owners is not an economic one. Mainly because of the rather small areas that are owned by private actors, strong incentives for efficient wood production is generally lacking. Economic incentives are stronger among forest owners with larger parcels, which are mostly public actors. But again, the main aims of the public owners are political and ecological in nature rather than economic (Pudack, 2006: 76).

For the wood processing industries in the forests (e.g. timber harvesting), efficiency could be increased if decisions about wood production would be made for bigger areas. This would entail larger ownership structures. According to Pudack (2006), these economic goals could be met by the following organizational forms:

- Cooperations of private forest owners,
- Associations of public forest enterprises,
- Cooperations of both, private owners and public forest enterprises.

These organizational forms would entail that multiple (public and/or private) owners join together in a new structure through which they would jointly manage a given forest area. By becoming members in such joint organizational forms, the forest owners coordinate decision-making in the respective organization's decision-making bodies (e.g., general assembly, assembly of delegates from municipalities). Whether or not the ownership rights are transferred to the new organizational entity depends on the specific form of cooperation.

Beyond organizational forms, management approaches such as offering advisory services from wood processors for the owners or contracts which allow the harvesting enterprises to decide when they harvest in which forest area would enable a more effective forest economy than is currently the case (Pudack, 2006, 78ff.).

Similar propositions for a more efficient forest management are formulated by Hostettler (2003: 46ff.).

Another study (SHL, 2010: 3) names enlargement of forest enterprises, diversification and cooperation as possibilities for a better economic performance of Swiss forest enterprises. They identify the cooperation as the most promising, as the others are difficult to realise in the frame of today's Swiss forest industry.

The study by de Spindler (2008) proposes special purpose districts as an approach for a more efficient forest economy, both in private and public owned forests.

3.4. Policy change / policy instruments

The study of Zimmermann and Kissling (2012) analyses the effectiveness and

efficiency of national financial measures supporting the improvement of forest management entities. Small positive effects leading to the creation of new and bigger entities can be observed. Yet the measures are evaluated as being too detailed. Accordingly, Zimmermann and Kissling (2012) propose a new conceptualization of the measures to focus on the operating efficiency and the „management by objectives“.

4. Forest ownership

4.1. Forest ownership structure

4.1.1. National data set

National data concerning forestry in Switzerland are collected by the Federal Statistical Office FSO in cooperation with the Federal Office for the Environment FOEN. A second important data source is the National Forest Inventory. The aim of this inventory is to measure the condition and changes of Swiss forests. It is realized by the Swiss Federal Institute for Forest, Snow and Landscape Research WSL and the FOEN.

Concerning ownership structure, the national data sets distinguish between three main groups of owners: Public, private and others. Public forest owners consist of political municipalities (including all people living in the municipality; *politische Gemeinden*), citizen municipalities (including all people who have citizen rights to that municipality, regardless of whether they live there or not; *Bürgergemeinden;* historically these entities have had the competences for managing common resources such as forests or alps*),* cantons (constituent-states), the federal state as well as and corporations (*Korporation*). Private owners are defined as individuals and families, private organizations like nature protection organizations and private enterprises (Brändli, 2010: 255).

According to the FOEN and FSO statistics from 2013, over 70% (about 885’000 ha) of the total forest area is comprised of ca. 3200 public forest owners. The 27% of forest area owned by private actors (about 340’000 ha) is owned by roughly 240’000 different individuals. That means that the private actors own in general only small forest areas, whereas public actors own bigger plots. Additionally, in 2013 over 5700 owners which are classified as “mixed” have been recorded, which means that public and private actors share the ownership. The forest area of this ownership type sums up to narrowly 33’000 ha, which is approximately 2.5% of the whole forest area. This form is especially widespread in the canton of Lucerne, where most of these owners have been found (FOEN and FSO, 2014).

According to Ingold and Zimmermann (2011: 100) the three most important categories of forest owners are political municipalities, citizen municipalities) and corporations. All of them are public actors.

4.1.2. Critical comparison with national data in Forest Resource Assessment Programme reporting

In 2010, the Food and Agricultural Organization of the United Nations FAO published country reports about forestry that display a multitude of statistical data. Those have been written in the frame of the Forest Resource Assessment Programme FRA. Through this programme, the FAO monitors the world’s forests, their management and their uses (FRA, 2010: 2). FRA published a table in Switzerland’s country report, which displayed the development of forest ownership categories from 1990 to 2005 (FRA, 2010: 15). Similar to the national data sets, this indicates a main distinction between public, private and other owners. But in contrast to the Swiss data, the FRA-framework termed corporations as private *or* public owners, depending on the owner of the corporation (FRA, 2010:11). In the Swiss data corporations are only termed as public ownership types.

Table 1 shows a comparison of the FRA-data and the latest Swiss ownership data for the year 2013 (FOEN and FSO, 2014). In the FRA-table from 2010, there is a distinction of different private actors within the category of private owners displayed. As this distinction is not reported in the latest national data, we do not specify those categories in Table 1.

Table 1: Comparison of the 2013 Swiss national ownership data with the data from the FRA report 2010

Owner Categories according to FRA, 2010	Forest area (1000 hectares)			
	1990[1]	2000[1]	2005[1]	2013[2]
Public ownership	780	811	827	884
Private ownership	371	383	390	342
Other types of ownership	0	0	0	33
TOTAL	1151	1194	1217	1259

[1] *Data from FRA-report (FRA, 2010: 15)*

[2] *Latest data from the Federal Office for the Environment and the Federal Statistical Office (FOEN / FSO, 2014)*

The development of the total forest area clearly shows the increase of the forest area in the last decades. The area under private and public ownership has increased between 1990 and 2005 according to the increase of the area. However, this development is not shown in the last time period, as from 2005 to 2013, the area under private ownership decreased. This can partly be explained by the new ownership type, i.e., the above mentioned mixed ownership. But of course this decrease and also the strong increase of public owners from 2005 to 2013 is mainly due to the different classification of corporations in the two data sets. When these data are further analysed, it is crucial to pay attention to this inconsistency in the definitions.

4.2. Unclear or disputed forest ownership

In Switzerland, in general all ownership structures are clearly defined and legally binding, as specified in the related laws and ordinances.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

According to the Federal Act on Forest, municipalities and cooperatives can sell their forests only with approval from the cantonal administration. A precondition is also that no forest functions are affected by the sale. There are no further restrictions.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no specific inheritance rules concerning forests. The inheritance is regulated, like all other cases, by the Law of Succession in the frame of the Swiss Civil Code.

4.4. Changes of the forest ownership structure in the last three decades

4.4.1. Changes within public and private ownership

The data show that the number of private forest owners has decreased over the last 30 years: in the 1970s Switzerland had around 260'000 private forest owners. In 2013 the number of private forest owners reached approximately 240'000. The number of public forest owners decreased from nearly 3'900 in 1993 to 3'200 in 2013. Both decreases have not always been continuous (FOEN and FSO, 2014).

4.4.2. Changes within public forest ownership categories

There is no further literature about changes within public forest ownership.

4.4.3. Changes within private forest ownership

There is no further literature about changes within private forest ownership.

4.4.4. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes has been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)

- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

Table 2 shows the significance of these drivers for the forest ownership change in Switzerland. The significance has been estimated by the authors.

Table 2: Significance of trends in forest ownership in Switzerland

Trends in forest ownership: New forest ownership through	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	0
• New forest ownership through afforestation of formerly agricultural or waste lands	1
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	3

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

In Switzerland, the most important of these drivers is the changed lifestyle of new forest owners. Private forest is generally handed down to the children of the owner. As already discussed in section 3.2, new forest owners in general lack agricultural knowledge, as they typically have an urban lifestyle (Wild-Eck and Zimmermann, 2005a: 86). So far, there are no empirical data which illustrate how these changes may influence future forest management.

4.5. Gender issues in relation to forest ownership

There are almost no data or further information about gender issues in relation to Swiss forest owners. Only the 2005 survey revealed, that 80% of all private forest owners are male and 20% are female (Wild-Eck and Zimmermann, 2005a: 27). But the answers to the questionnaire have not been analysed separately.

4.6. Charitable, NGO or not-for-profit ownership of the forests

Table 3 gives an overview of the organizations forms that own forest areas in Switzerland.

Table 3: Organizations forms owning forest areas in Switzerland

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		x	
• NGO with environmental or social objectives	x		
• Self-organised local community groups		x	
• Cooperatives/forest owner associations	x		
• Social enterprises		x	
• Recognized charitable status for land-owners		x	
• Other forms of charitable ownerships		x	

The most important organization owning forest with environmental objectives is called *Pro Natura*. This environmental protection organization owns nature protection areas which also cover notable forest areas. Furthermore local environmental protection organizations like ornithology organizations own forests. However this type of ownership is negligible in Switzerland.

4.7. Common pool resources regimes

Forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective action and self-organization (of rules and decisions).

In Switzerland, the commons are a widespread form of natural resource management. 35% of the forest area is owned by common pool resource regimes. The two categories in Switzerland are the corporation and the citizen municipalities. Both categories are considered as public forest ownership types (see section 4.1.1).One well documented example is presented in the case study 4.

4.8. Case Study Examples

Forest cooperatives, forest owner associations and corporations are the most common form of new private forest owners (who increasingly come from an urban rather than agricultural setting) to manage their forests. Several examples of cooperatives and associations are presented in the literature cited in the appendix (e.g. Schmidhausen, several years; SHL, 2010) as well as in section 5. Three examples are illustrated in the following case study boxes.

CASE STUDY 1: CORPORATION ROMANSHORN-UTTWIL

In the canton of Thurgau, the forest corporation Romanshorn-Uttwil exists since 1784 and covers 260 ha of forest area. It is jointly owned by 159 associates. In the 1980s, the corporation had a financial deficit but managed to develop to a successful forest enterprise. This was possible due to the financial and personal commitment of the associates. This example shows that private forest owners can build a strong forest enterprise, when they join their properties and work together (Nussbaumer, 2011: 80).

CASE STUDY 2: COLLABORATION AMONG PRIVATE OWNERS IN KONOLFINGEN, CANTON OF BERNE

The Forestry Service of the Canton of Berne has created the concept “Auriga”, which provides funding for mechanization, mobilization and more professionalism: It should motivate forest owners to increase the use of their wood. In the region of Konolfingen, the processing of timber has been jointly organized by private forest owners since more than 70 years, as the regional association of forest owners has always promoted the collaboration among its members. After the initiation of “Auriga”, the forest owners in the region of Konolfingen founded a new enterprise for a professional marketing (Mohr, 2011: 71).

CASE STUDY 3: COOPERATIVE “WALDPFLEGEGENOSSENSCHAFT SCHWÄNDELIFLUE”

This example can be found in the Canton of Lucerne, where 70% of the forest area belongs to private owners. In 1996 a group of 36 private forest owners created a cooperative called “Waldpflegegenossenschaft Schwändeliflue”. They transferred their individual rights of disposal over their forest areas to the cooperative. This led to an amalgamated area of a total of 135 ha, which is now owned by the cooperative and managed by a forest professional. This new structure makes it possible to sustainably manage the forest, which is first of all a protection forest against natural hazards (Binding Stiftung, 2014).

CASE STUDY 4: CPR “OBERALLMEINDKORPORATION SCHWYZ”

In the canton of Schwyz a corporation named “Oberallmeindkorporation Schwyz OAK” exists since 1114. Today this corporation is an enterprise with over 16’500 members who is active in different areas, one of them is for example energy production out of wood. The main line of action of the OAK has always been the management of common natural resources. Today, the corporation owns more than 9’000ha forest. The corporation’s forestry enterprise manages the forest in a sustainable way and maintains eleven forest protection areas (OAK Schwyz, no date: 2ff.).

5. Forest management approaches for new forest owner types

5.1. Forest management in Switzerland

The public forest[88] is generally managed by a professional forester who is employed by the owner (Buser et al., 2006: 17).

According to the Wild-Eck and Zimmermann survey from 2005, 53% of the private forest owners manage their forest area on their own, 14% in a mixed form, 13% let someone else manage their forest and 17% answered that their forest is not managed at all. Most private forest owners who have someone else manage their forest assign this task to farmers or public foresters. How the collaboration occurs, i.e., whether the private forest owners and the managers make contracts and management plans, is not specified. About 5% of the private forest owners work with forestry enterprises (Wild-Eck and Zimmermann, 2005a: 23)

Both owner categories, private and public, highly trust the professional foresters and either let them manage their forest without intervening or if the owner manages the forest on his own, he is happy to gain advice from professionals (Buser et al., 2006: 41f.).

The Federal Act on Forest and the related Ordinance state that the cantons define who has to develop a management plan for their forests and what they have to include. In general, all forest owners, except those who own only very small plots, are obligated to have a forest management plan. A management plan typically consists of a description of the actual situation, the goals and concrete measures to be reached. The cantonal forest authority has to approve the plan. The management plan is one of several instruments at the forest enterprise level that fosters the sustainable management of Swiss forests.

5.2. New or innovative forest management approaches relevant for new forest owner types

In several regions, cooperatives or other forms of collaboration among private, public, or mixed owners have emerged in the last decades. These are specifically relevant for those new owners holding only very small forest areas due to splitting up of the properties when they are handed down from one generation to the next. For these owners a cooperation with the owners of neighbouring forest plots is important for a more efficient management. Another new owner group, i.e., those who lack an agricultural background and who do not live close to their forests, typically let their forest be managed by a professional forester.

Among public owners, especially municipalities, some new forms of collaborations have emerged in the last years. For example in the canton of Aargau, some communities have contracts for a joint forest management. Others work together with private forestry enterprises to reduce their own fixed costs (Häfner, 2003: 251f.). But these developments are more a reaction to the underlying changing conditions (e.g. economy, technology) than related to new ownership types.

5.3. Main opportunities for innovative forest management

New private owners are increasingly urban with little interest in timber production. They own only small forest areas and as the forest is not their main income source, these owners do not have an economic motivation for implementing effective forest management forms (e.g. cooperatives). But they can be motivated to engage in such new organizational forms with other foci which are in line with their values, for example the enhancement of biodiversity or the production of timber for energy production (Zimmermann and Kissling, 2012: 77ff.).

[88] For definitions of public and private forest owners, please see chapter 4.1.1

5.4. Obstacles for innovative forest management approaches

Cooperatives, such as the regional organizations in Lucerne, have proved to be economically profitable (Seeland et al., 2011: 357). However, many forest owners tend to be sceptical about joining such cooperatives. Interview partners from the study by Seeland et al. (2011: 355) stated the following reasons for not joining: reluctance to comply with the rules and obligations of the regional organization, lack of trust and conservative resentment against institutions, lack of economic interest due to small forest holdings, good economic conditions, no need of help and lack of information.

A study by Zimmermann and Kissling (2012: 66) also found that the willingness of forest owners, especially of private ones, to form joint ownership organizations such as cooperatives or corporations is quite low.

Other obstacles for innovative forest management might be:

- In the representative survey of 2005 about half of all private forest owners indicated that their knowledge about their rights and duties is limited. 75% never participated in any educational program about forest management. But the forest owners have clear preferences of what courses would be helpful (Wild-Eck and Zimmermann, 2005a: 37).
- Few private forest owners have contacts with other private owners. Only 10% state a willingness to jointly manage their forest with other owners. Private owners who manage their forest by themselves have a significantly lower willingness to collaborate than those who engage with a professional forester (Wild-Eck and Zimmermann, 2005a: 51; 62).

Based on the results of the 2005 private forest owner survey of , the authors of the study developed some advice for the formulation and implementation of (new) forest policies (Wild-Eck and Zimmermann, 2005a: 96ff.). The following list is a selection out of this advice:

- The people addressed by the policy instruments are heterogeneous, so it is to be expected that they react differently to these instruments.
- The social development (less farmers, more urban forest owners) has to be considered when developing new forest policies.
- The private forest owners have to have a say in the process of policy formulation. Additionally, it's important that the administration applies an active information and communication strategy and as well fosters education and research.
- The local forestry services can play an important role when implementing new instruments, as they are highly trusted by the private forest owners.
- When it comes to measures for biodiversity, it is important to apply a mix of different policy instruments, as the knowledge of the private forest owners in this field is limited.
- In the field of the value added chain of wood, a lot of information and persuasion is needed to successfully implement new policies.

5.5. Case example of innovative forest management approaches

The most important new organizational and management approach applied to overcome such obstacles are cooperatives among private, public or mixed forest owners. Some examples are mentioned in sections 3.3 and 4.6. The most important case study is presented here, as it comprises several cooperatives:

CASE STUDY 5: FOREST COOPERATIVES IN THE CANTON OF LUCERNE

When the forest cooperative initiative began in 2006, 70% of the forest area of the canton of Lucerne was in hands of private owners, which is the reverse of the general ownership proportion in Switzerland. The areas which one private owner holds is on average larger than in other regions. But still, the areas are too small to achieve the economic efficiency which theoretically would be possible (Röösli-Brun, 2007: 270). The cantonal administration thus started a program whereby "Regional Organizations" (RO) should be created, which private forest owners can join on a voluntary basis. Within these RO, the planning of the forest maintenance, the cutting of timber, and the marketing is done jointly. However, the ownership of the forest areas remains with the individual private owners. Additionally, each forest owner decides if management actions are performed and if he is performing them himself or not. The implementation and the first four years of the RO is supported financially by the federal and cantonal administration. The program has been more successful than expected, as the target of 6 RO within 3 years has been achieved after only one year (Röösli-Brun, 2007: 271f.). The RO have also achieved their economic goal, that means the net financial return from wood sales has improved, at least in the short term. Additionally, it seems that the RO in Lucerne facilitate innovation (Seeland et al., 2011, 358).

6. Policies influencing ownership development / Policy instruments for new forest owners

6.1. Influences of policies on the development of forest ownership

In Swiss forest policy, ownership has not been a target. In the Federal Act on Forest, no distinction is made between different owner types.

The inheritance right supports the splitting up of parcels, as when the forest areas are handed down to several children, each of them gets the same share. Today this factor no longer seems to play an important role, because the economic importance of forests has decreased and most of the potential future owners rely less on the products of their forests for commercial purposes than for their personal use (e.g. wood for household energy or construction purposes).

6.2. Influences of policies in forest management

The Federal Act on Forest states that a forest has to be managed in a way that it can fulfil all its functions over the long-term, or in other words, it has to be managed sustainably. The cantons are responsible for further management regulations, such as specifying how the principle of near-natural silviculture has to be implemented.

The Federal Act on Forest also mandates that any person who wishes to fell trees needs to have a permit issued by the cantonal forestry service. The cantons may grant exemptions. Furthermore, clear-cutting and forms of wood harvesting that have effects similar to clear-cutting are prohibited.

In addition, forest clearance is prohibited. Exceptions to this rule can be granted under the condition that a plot of the same area is reforested elsewhere.

The national Ordinance on Forest obligates the cantons to define who has to develop a management plan for the forest. Therefore these regulations differ among the cantons and are not the same for all private owners. However, most cantons obligate forest owners - except forest owners with a small forest area - to create forest management plans (see section 5.1).

Based on the Federal Act on Forest as well as the Ordinance, the federal state pays subsidies for different measures concerning the maintenance of the functions of forests. Examples include measures for the protection against natural hazards or for the maintenance of the biodiversity within the forests. Other instruments of the state and the cantons to influence forest management are the prohibition of measures that harm the forest's functions and information and education for the forest owners about appropriate management measures.

In the frame of the 2005 survey, the private forest owners were asked if payments from the state influence their forest management. 52% answered that they are not influenced , only 44% said "yes" (Zimmermann and Wild-Eck, 2007: 281).

A case study which focused on six public forest enterprises found that forest regulations are not the most influential factor on forest management decisions. More important factors are returns from timber

production, experience of the forest manager and advice from experts and suppliers (Ingold and Zimmermann, 2011: 101f.).

6.3. Policy instruments specifically addressing different ownership categories

The old forestry law specified some differences between the regulations for public and for private forests. With the new Federal Act of Forest, which is in force since 1993, all the regulations are true for all ownership types. Hence, no instruments addressing different ownership categories exist at the national level. This is true for all instrument types, both for "hard" instruments such as regulative or market-based ones as well as for "soft" instruments like persuasive ones.

A key focus of the Federal forest policy is the management of protective forests. These forest plots protect people and infrastructure from natural hazards such as avalanches or landslides. As Switzerland is a mountainous country, these protective forests play an important role. Only a small amount of private forests is defined as protective forests. Therefore the policy instruments concerning protective forests mainly address public owners. This is one reason why a large amount of the public financial incentives are allocated to public forests and less to private forests.

Generally it can be said that policy instruments in forestry have not specifically addressed different or new ownership categories in Switzerland. Reasons for the latter may be that new forest ownership categories still play a marginal role and that information about them is missing.

6.4. Factors affecting innovation in policies

As different studies have shown (Wild-Eck and Zimmermann, 2005a; Zimmermann and Wild-Eck, 2007) most of the 240'000 private forest owners in Switzerland lack an economic interest in forest management. The main factor of this lack of interest is the fragmented structure of private forest ownership, i.e., with small parcels. Policymakers would like to change this structure in the direction of having bigger forest entities which are arguably more appropriate for an economically efficient forest management. Such a shift would help to achieve the national forest policy goals (e.g. to harvest the sustainable harvestable wood potential; FOEN, 2013: 18). Experience indicates that a change towards larger private ownership structures is very difficult to achieve. This is mainly due to historical reasons (e.g. splitting up of parcels when the forest areas are handed down to several children) and psychological attitudes of the current private forest owners (e.g. low economic interest with rather low technical knowledge but emotionally bound to the forest). A possible way to trigger such change would be to encourage public forest owners to also manage some neighbouring private forests. Such additional management on the part of the public owners could be supported by forest policy, especially by measures of encouragement like information, counselling and financial incentives. At the national level a change of the Federal Law on Forest would be needed not for the persuasive but for the financial measures.

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8. Annexes

8.1. Forest ownership structure – detailed tables

Table 4: Forest area subdivided into ownership category and cantons in 2013

	Private		Public		Mixed	
	Number of owners	Total forest area in ha	Number of owners	Total forest area in ha	Number of owners	Total forest area in ha
Total	**238'871**	**341'070**	**3'228**	**884'252**	**5'781**	**32'888**
Waadt	26'966	41'094	372	85'547	.	.
Wallis	19'686	9'446	226	97'827	10	1'736
Genf	1'566	1'289	26	1'716	.	.
Bern	36'298	86'331	445	89'734	.	.
Freiburg	11'926	18'803	209	24'090	.	.
Solothurn	5'149	6'415	143	25'071	.	.
Neuenburg	2'886	13'130	99	17'426	.	.
Jura	4'114	8'633	62	30'497	.	.
Basel-Stadt	160	86	4	385	.	.
Basel-Landschaft	6'044	4'435	92	15'977	.	.
Aargau	14'017	10'939	235	38'428	.	.
Zürich	18'195	24'661	217	25'587	.	.
Glarus	1'457	2'655	12	18'350	.	.
Schaffhausen	1'852	2'068	28	10'702	.	.
Appenzell A. Rh.	4'240	5'412	24	1'571	2	208
Appenzell I. Rh.	2'996	2'782	28	2'087	.	.
St. Gallen	17'769	21'997	135	32'772	1	140
Graubünden	10'159	16'289	204	172'259	428	6'946
Thurgau	8'793	10'854	77	8'830	.	.
Luzern	6'334	9'719	74	6'543	5'340	23'858
Uri	1'489	2'980	25	17'636	.	.
Schwyz	3'375	5'838	87	21'274	.	.
Obwalden	1'800	1'635	14	17'024	.	.
Nidwalden	571	2'453	20	5'305	.	.
Zug	805	1'813	27	4'634	.	.
Tessin	30'224	29'313	343	112'980	.	.

Source: FOEN and FSO (2014)

Table 5: Forest area subdivided into ownership category and cantons in 2005

	Private		Public		Mixed	
	Number of owners	Total forest area in ha	Number of owners	Total forest area in ha	Number of owners	Total forest area in ha
Total	**245'390**	**351'466**	**3'722**	**884'567**	**408**	**6'477**
Waadt	26'948	40'405	400	85'415	-	-
Wallis	19'473	9'305	236	99'209	-	-
Genf	1'566	1'392	26	1'625	-	-
Bern	35'889	83'076	471	90'993	-	-
Freiburg	11'879	18'239	213	23'843	-	-
Solothurn	5'149	6'415	131	24'951	-	-
Neuenburg	3'206	13'104	107	17'564	-	-
Jura	4'513	7'268	95	31'765	-	-
Basel-Stadt	160	86	4	385	-	-
Basel-Landschaft	6'044	4'187	93	16'048	-	-
Aargau	14'266	10'789	288	38'283	-	-
Zürich	18'052	24'852	217	24'949	-	-
Glarus	1'455	1'823	37	16'626	-	-
Schaffhausen	2'089	2'081	32	10'573	-	-
Appenzell A. Rh.	4'242	5'693	25	1'507	-	-
Appenzell I. Rh.	2'996	2'782	24	2'068	-	-
St. Gallen	17'924	22'397	140	33'009	-	-
Graubünden	10'477	12'484	266	169'577	401	5'924
Thurgau	8'865	10'792	94	8'326	7	553
Luzern	11'491	28'539	305	11'081	-	-
Uri	1'489	2'970	25	17'620	-	-
Schwyz	3'354	6'840	86	20'447	-	-
Obwalden	1'800	1'635	14	16'750	-	-
Nidwalden	571	2'453	20	5'305	-	-
Zug	805	1'909	26	4'503	-	-
Tessin	30'687	29'950	347	112'145	-	-

Source: FOEN and FSO (2014)

TURKEY

Hamide Gubbuk, Senay Cetinay, Saime Basaran, Sadettin Guler, Tahsin Etli, Recep Balkic

1. Introduction

Turkey's forest area in 2012 was 21.7 million hectares (ha) and covers 27.6% percent of the total area of the country. Forest areas include seven geographical regions in the country: Black Sea 5.4 million ha, Mediterranean 4.2 million ha, Aegean 3.6 million ha, Marmara 3 million ha, Central Anatolia 2.6 million ha, South Eastern Anatolia 2.4 million ha and East Anatolia 462 thousand ha. Almost all forest lands in Turkey belong to the state and are managed by the General Directorate of Forestry. Private forest ownership is still below 0.1% (about 18 thousand ha) of total forest area. The statistical data related to forest areas were obtained from forest management plans. These plans are renewed every 10-year period (Anonymous 2012).

Sixty-one percent of Turkey's forest areas consist of broad leaves (oak, beech, alder, chestnut, hornbeam etc.) tree species and 39% of this area is covered with coniferous species (pine, larch, pine, fir, spruce, cedar, etc.) (Anonymous 2012). Forests are generally natural and semi-natural, the vegetation is located on mountains and having high biodiversity. The forests in Turkey contain 9000 plant species, of which 3000 are endemic to the country. Deciduous forests are common, almost uninterrupted and grown at average elevations in Northern Turkey. Depending on the species and locations, coniferous forests are found at varying altitudes. The forests include species belonging to different floristic regions such as Irano-Turanion, Mediterranean and Euro-Siberian. Approximately 800 woody taxa occure in the country's forest and the predominant species are Pinus brutia, Pinus nigra, Pinus silvestris, Abies spp. (A. cilicica, A. nordmannia, A. equi-trojani are unique), Picea orientalis, Cedrus libani, Juniperus spp., Pinus pinea, Cupressus sempervirens, Pinus halepensis, Fagus orientalis, Quercus spp., Alnus spp., Castanea sativa, Carpinus betulus (Anonymus 2014).

Almost all the forest areas of Turkey are under state ownership. According to the Constitution of the Republic of Turkey; ownership of state forests, albeit unregistered or registered with cadastral process cannot be transferred to any other owner. However, there are some exceptions: For instance, some areas of the state forests are leased out to local inhabitants for their use. This exception usually refers to natural areas which are harvested for non-wood forest products (NWFP) and include species like stone pine, carob, laurel, strawberry tree etc. Another example is private afforestation (in areas which belong to the state) approved by the Department of Water Affairs and Forestry regarding projects that are prepared for degraded forest lands, waste forest lands, state lands and areas in the ownership of real and legal persons. In this context, propagation materials, technical knowledge and financial support are provided by the Ministry.

Village legal entities, town-city-metropolitan municipalities, public offices and corporations, agricultural development cooperatives, associations providing services to villages, chambers, associations, foundations, any kind of commercial companies, and people can take advantage of the private afforestation projects. All the above have equal rights related to land use, choice of plant species, duration of land use etc. (Anonymous 2013). Another option is the utilization of qualified natural NWFP species in State forests by local people who pay a very low tariff to the Directorate General of Forest. The harvested plants are used in national and international industries. The above-mentioned options are expected to contribute to the private forestry sector (Anonymous 2012).

The minimum land size is 0.5 ha in forest areas or owned areas and 2.0 ha in state areas for private afforestation applications. Whereas the maximum land size for real and

legal entities in state and owned lands, and for village legal entities, municipalities, public offices and corporations, associations for providing services to villages in forest areas is 300 ha. In this context, the private forest ownership include: Marmara Region 23.7 ha, Aegean region 17 ha, Mediterranean region 14 ha, Central Anatolia region 4.9 ha, South Eastern Anatolia 2 ha, Black Sea region 1.5 ha and Eastern Anatolia region 0.6 ha (Anonymous 2013).

Established private forests contain qualified woody species (Eucalyptus, Poplar etc.) and NWP (Walnuts, Almonds, Carob, Bay, etc.). The specific area includes: Stone pine in 15.6 ha, Almond in 13.5 ha and Walnut tree in 10.5 ha has been planted since 1984 (Anonymous 2012).

NWFP in Turkey includes wild food plants (pine, walnut, almond, chestnut, locust, etc.), aromatic and medicinal plants (anise, sage, thyme, mint, goat grass, rosemary, etc.), flowering and colouring plants (saffron, east plane, hibiscus , spurge, etc.), bulbous plants (yogurt flowers, snowdrops, lake onion, black crocus, inverted tulip-crying bride, Adıyaman tulip etc.), edible mushrooms (cedar, blooded mushroom, bolete, morel etc.) lichens and mosses (Balcı 2013).

The 2010 yield of NWFP in Turkey was 56.300 tons with a monetary value of about 95 million dollars. The top species were: Thyme 28.1 million dollars; Laurel 25.6 million dollars and plants suitable for knitting 233.000 dollars (TUIK 2010).

2. Methods

2.1. General approach

According to the aims of the country report which is to give a comprehensive overview of forest ownership issues in the country, a mix of methods is applied. They include a literature review, secondary data, expert interviews as well as the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review explicates the state-of-knowledge in the countries and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. Detailed analyses of the collected data and case study analyses are done in subsequent work steps in the COST Action.

2.2. Methods used

The country report was prepared based on statistical data from the National Forest Department and other sources listed in literature.

3. Literature review on forest ownership in change

The COST Action national representatives aimed to review and compile information on changes in forest ownership in their countries based on scientific and grey scientific literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review is as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The literature review consists of the following three steps: collection of all literature as defined relevant, detailed description of 10 most relevant publications, and a 1-3 pages summary according to the structure given in the guidelines. The full list of literature includes grey literature, i.e. literature not easily accessible by regular literature search methods (unpublished study reports, articles in national languages, etc.). These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports).The literature review contains the following questions: Which research frameworks and research approaches are used by research? What

forms of new forest ownership types are identified? Which specific forest management approaches exist or are discussed? Which policies possibly influence ownership changes in the country and which policy instruments answer to the growing share of new forest owner types?

3.1. Research framework and research approaches

Private ownership of the forests is a new subject for Turkey and there is no study regarding this subject. .We are making the first steps in this subject and plan to study European approach and practices in order to assess their application in Turkey.

3.2. New forest ownership types

Almost all the forest areas of Turkey are under state ownership. Namely, 99,5% of the forest land is owned by the States. At present, degraded land, unused land, treasury and real-legal person's lands are subjected to private cultivation in accordance with the regulations of the Ministry of Forestry and Water Affairs project. Olive, almond, carob, walnut, laurel etc. are widely used in the private afforestration study.

3.3. Forest management approaches

Turkey forests are managed by General Directorate of Forestry. There is still no private forest ownerships. However, some exceptions do exist. For instance, in the rural areas some state owned forests are allocated to local inhabitants for their use and benefit and can be regarded as private forestry.

3.4. Policy change / policy instruments

We intend to increase our knowledge on various aspects of forest ownership changes at member countries and will share our knowledge with governmental authorities.

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the country. The most detailed information on national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. In order to make this information comparable still, the information is also collected in an international format which is used in the Forest Resources Assessments by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses in how far the national categories and definitions may be transformed into the international FRA data structure or in how far there are inconsistencies between them.

4.1. Forest ownership structure

4.1.1. National data set

In Turkey, 99,5% of forest land (21,59 million hectares) is owned by the state and 0,5% of forest land is owned by other types of ownerships (110 thousand hectares).

4.2. Unclear or disputed forest ownership

There are no unclear or disputed situations.

4.3. Legal provisions on buying or inheriting forests

4.3.1. Legal restrictions for buying or selling forests

Almost all of the forest areas of Turkey are under state ownership. According to the Constitution of the Republic of Turkey, ownership of state forests, albeit unregistered or registered with cadastral process cannot be transferred to another owner by time out or another ways.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no specific inheritance rules applied to forests.

4.4. Changes of the forest ownership structure in last three decades

There were no changes regarding ownership structure in the last three decades

4.4.1. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

- Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)
- Privatization of public forest management (introduction of private forms of management, e.g. state owned company)
- New private forest owners who have bought forests
- New forest ownership through afforestation of formerly agricultural or waste lands
- Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

Assessment for Turkey is following:

Trends in forest ownership: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	0
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	0
• New forest ownership through afforestation of formerly agricultural or waste lands	1**
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	0
• Other trend, namely:	

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

*** Afforestation according to regulations of the Department ofWater Affairs and Forestry projects*

4.5. Gender issues in relation to forest ownership

There is **no gender disaggregated data** for Turkey.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("Characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (services (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

There is **no any charitable, NGO or not-for-profit owners** of forest in Turkey.

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts		x	
• NGO with environmental or social objectives		x	
• Self-organised local community groups		x	
• Co-operatives/forest owner associations		x	
• Social enterprises		x	
• Recognized charitable status for land-owners		x	
• Other forms of charitable ownerships, namely:		x	

4.7. Common pool resources regimes

Commons - forest common property regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self-organization (of rules and decisions). Examples of traditional CPR regime are pastures, forest land communities in Sweden, Slovakia, Romania Italy and other European countries or irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is challenge of this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. Example of new CPR regime is community woodlands in UK, established in last 20 years mainly in Scotland, Wales. Our interest in" traditional" and "new" common pool resources regimes (CPRs) in European forest, is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users (without ownership share) leased use agreement may also be CPR regime if they have the rights to determine management rules typical for commons (e.g. self-organisation and shared rights and responsibilities). Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc) are key for sustainable use of CPR regimes.

There is **no forest common property regimes** of forest in Turkey.

5. Forest management approaches for new forest owner types

The Action is interested if there are any new forest management approaches that specifically address new forest owner types, or that could be particularly relevant for new forest owner types. We are aware that there is not much awareness for this and that there is not much literature available, however, we are convinced that this is an issue: if owners have different goals for their forests there must be new kinds of management, if they have not the skills any more to do it themselves then there must be new service offers, etc. There are assumingly implications in silviculture, technology, work organisation, business models, etc. Such new approaches may be discussed under the key word of new ownership types but often not.

5.1. Forest management in Turkey

General Directorate of Forest is managing state forest land. General Directorate of Forestry managed the forest land with 27 Regional Directorates, 218 sub-regional directorates and 1340 regional chieftaincy. The other 0,5% forest land is rented to other types of ownership category by General Directorate of Forest.

5.2. New or innovative forest management approaches relevant for new forest owner types

There are no new or innovative forest management approaches in our country. Some semi new approaches are listed below:

- Some areas of the state forests in the rural areas are allocated to local inhabitants for their use and benefit.
- Private afforestation according to regulations by the Department of Water Affairs and Forestry projects (the most popular one).

- Utilization of qualified non-wood forest product species in state forest by local people at a very low cost.

5.3. Main opportunities for innovative forest management

Presently, degraded land, unused treasury lands are leased to real-legal person's for private afforestations by the Ministry of Forestry and Water Affairs. Olive, almond, carob, walnut, laurel etc. are widely planted in these areas. Furthermore, in the frame of private afforestation, forests lands owned by the General Forest Directorate are leased to real and legal persons for 49 years. However, the state keeps the ownership of these areas. Plant species are determined on the basis of feasibility studies after which an afforestation Project is prepared and submitted for the approval of the Ministry of Forest and Water Affairs.

5.4. Obstacles for innovative forest management approaches

According to our opinion, the private ownership is not attractive for enterprisers in our country because, rotation of forest tree species takes a long time. For instance, Pinus brutia species needs around 70-80 years. In addition, the yield per hectare is very low. Thus, we assume that there shall be no demand for private ownership.

CASE STUDY 1: AFFORESTATION APPLICATION PROJECT (TOKAT, 2010).

The afforestation area is located within the boundaries of 58 no. compartment of Pamukkale circle management plan with 295 and 334 no. compartment of Çal circle management plan. Pamukkale and Çal are district of Denizli city in Turkey. Total amount of the allocated area for the purpose of private afforestation is 10.03 ha (100,338 m^2).

The private afforestation area consists of degraded forests according to the Pamukkale and Çal management plans. The area has been allocated as private afforestation area on behalf of CANAN TOKAT for 49 years with permission of Denizli Regional Forest Directorate according to article 57 of Forest Law No. 6831 in 12.05.2010.

The primary objective of the private afforestation project is Walnut growing as a non-wood forest product (NWFP) with industrial afforestation purposes and economic input in the early years. The secondary objective of the private afforestation project is production of building timber and fuel wood at the end of the rotation age. The third objective is to provide recreational, hydrologic, revegetation and erosion control functions.

The rotation of Walnut is 100 years. The private afforestation/ plantation will be operated as higher forests. A site of 2.44 hectares of the project area is an open space in the forest and a site of 7.59 hectares having the other deciduous forest type. Open space in the forest is covered with Quercus coccifera (90%) and Juniperus oxycedrus (10%) species.

The average altitude of the project area is 1240 m with an average annual rainfall 547 mm, lowest temperature -11.6°C, maximum temperature 41.2°C and average temperature 15.8°C. Grafted seedlings were used as planting material. Spaces were 8m between the plants and 8 m between the rows (156 plant per hectare). The total project cost was 36.897,05 TL by year 2010.

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6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways: Policies directly or indirectly influence ownership development or even encourage or create new forms of ownership; and policy instruments are emerging that answer to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

The management plans are prepared for operation by the General Forest Directorate according to Law No. 6831. Forest management committees were established for this purpose by the General Forest Directorate.

The size of a forest management plan varies between 5000 to 10,000 hectares. Different parts of the forest are divided into classes according to the administration's objectives, rotation age, forest type, tree species, site and more.

The size of the compartments varies between 50 to 100 hectares and sub-compartments are up to 1 ha. Compartment boundaries are usually limited according to natural lines such as forest roads, main and side ridges. Management plans are prepared for 10 years periods.

Commercial forests are divided to enterprise types:

A. High forest (seed forest)
   1) Evenaged and compartmental high forest
   2) Unevenaged high forest or selection high forest

B. Coppice forest
   1) Clear felling system coppice
   2) Selection coppice
   3) Pollard coppice

We are still at the beginning of considering various types of forest ownership. According to our opinion, industrial forest plantations should be developed.

6.2. Influences of policies in forest management

The forest management plan was prepared in order to take into consideration wood production (neo-classical European forestry school). However, today's forest management plan has already begun to change. The plan is starting to use ecosystem-based planning, functional planning and linear programming models in order to be more holistic and sustainable (Baskent et al., 2002).

6.3. Policy instruments specifically addressing different ownership categories

All of the forest areas of Turkey are under state ownership.

6.4. Factors affecting innovation in policies

All of the forest areas of Turkey are still under state ownership. First forest law no. 3537 was prepared on the 18.02.1937. Second forest law no. 6831 was prepared on the 31.08.1956. The task of managing forests is given to General Forest Directorate by article 6 of Forest Law No. 6831. This article states: "All the activities in state forests or other forest's owners which are executed by the General Forest Directorate are controlled by the General Forest Directorate" (Eraslan, 1971).

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UNITED KINGDOM

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1. Introduction

The United Kingdom (UK) is one of the least forested countries in Europe with 13% of the land area covered with forests larger than 2 ha in size. Within the UK, Scotland has 18% forest cover, Wales has 15% forest cover, England has 10% forest cover, and Northern Ireland has the least with only 8% forest cover.

Forest type and ownership are inextricably linked, with commercial forestry dominated by large plantations, mostly of non-native conifers mainly owned by the public sector, business and individuals. In contrast, smaller forests (woodlands[89]) are more varied, often native broadleaves in England and Wales, or shelterbelts of conifers in Scotland, and owned by a large number of diverse owners including farmers, local authorities, environmental non-governmental organisations (NGOs) and institutions such as the church and colleges.

There are no restrictions on who can own forest and there is a small, but active market for forest land which creates a fertile environment for change in ownership and innovation in forest management. At the same time, in some areas there is a growing movement for greater involvement of local communities in the ownership and management of forest assets and there have been periods of intense civil society interest in the management of the national forest estate.

2. Methods

2.1. General approach

The country report aims to give a comprehensive overview of forest ownership issues in the country, based on a mix of methods. These include a review of literature and secondary data and the expert knowledge of the authors.

Data include quantitative data (from official statistics and scientific studies) as well as qualitative data (own expert knowledge, expert interviews and results from studies). A literature review describes the state-of-knowledge in the constituent countries of the UK and contributes to a European scale state-of-art report. Case examples are used for illustration and to gain a better understanding of mechanisms of change and of new forest owner types. The data and case study analyses provided in the country reports will be analysed in subsequent stages of the COST Action.

2.2. Methods used

The preparation of this report was a team effort led by Anna Lawrence with Jenny Wong acting as the overall editor.

The first step was the collation of academic and grey literature known to each member of the team supplemented by a search for literature on topics relevant to FACESMAP. This resulted in a list of over 145 publications ranging from short case studies to extensive reports.

Each section was assigned to the member of the team with most experience of the topic and drafts were reviewed by all other members of the team. The information presented was derived from the collated literature supplemented by the personal knowledge and experience of the authors. No expert interviews were undertaken.

[89] Lay discourses and many researchers would distinguish between forests which are normally seen as extensive areas of normally productive trees and woodlands which are more varied, more likely to be broadleaved and less likely to be managed formally for timber.

3. Literature review on forest ownership in change

The COST Action national representatives undertook a review and compiled information on changes in forest ownership in their countries based on peer reviewed and grey academic literature, including reports and articles in national languages and official statistics, formal guidance or advisory notes from official websites, etc.

The scope of the literature review was as follows:

- Forest ownership change (with a specific focus on new forest ownership types), private forest owners' motives and behaviour, management approaches for new forest owner types, and related policies and policy instruments.

The ten most relevant publications were selected from the collected literature and described according to a pre-determined format. These detailed descriptions of publications can be found in the full single country report (website: http://facesmap.boku.ac.at/index.php/library2/cat_view/94-country-reports). All available literature was reviewed for this report but only those which are referenced in the text are listed in section 7.

The literature review considers the following questions:

- Which research frameworks and research approaches are used by researchers?
- What forms of new forest ownership types have been identified?
- Do any of these have specific forest management approaches?
- Which policies possibly influence ownership changes in the country and which policy instruments are directed at the needs of new forest owner types?

3.1. Research framework and research approaches

There are four distinct sets of studies that are available for the UK which can be considered relevant to FACESMAP:

- academic (peer reviewed) papers;
- policy orientated commissioned studies, associated reports and policy briefs;
- independent monitoring and reports; and
- peer-to-peer sharing of experience and case studies.

The literature therefore covers a wide range of approaches on the spectrum from etic (commissioned, dispassionate external studies) to emic (reflection by owners) perspectives. Within the body of UK literature there is one literature review (Lawrence & Dandy 2014) which focuses on 'Private landowners' approaches to planting and managing forests in the UK: what's the evidence?', which identifies 42 relevant studies. There are a few academic studies and peer reviewed papers (e.g. Urquhart 2006, Lawrence & Ambrose-Oji 2014). The majority of the available reports are grey literature and arise from studies commissioned to inform policy (e.g. Glynne et al. 2012, Evans 2010, Marsh 2013, Woodland Expansion Advisory Group 2012). In addition to this, there is a small set of private studies, some of which represent independent monitoring (notably Nicholls et al. 2013 and UPM & Savills 2013) or material prepared by NGOs (e.g. Woodland Trust 2011) and a series of reflective case studies and reports prepared by forest owners (notably community woodland groups) for peer to peer dissemination (e.g. Williams undated, Callander 1999).

Despite the disparities in the nature of the studies it is possible to discern some common themes as outlined below. Some themes are well studied and have a copious associated literature while others are represented by a small number of longitudinal studies.

3.1.1. Research themes

By grouping similar studies together it is possible to discern five main 'themes' which represent the preoccupations of the past decades. Each theme to a great extent stands alone and there is little cross-over as evidenced by low levels of literature cross-referencing between themes. Possibly the only study which bridges across these themes is that by the Independent Panel on

Forestry (2012) and this was mainly concerned with the situation in England. There are, however, strong policy (and conceptual) linkages between these themes which remain unexplored as forest ownership has not attracted much academic research in the UK. Pooling the literature arising from these studies facilitates the appreciation of a great many, but not all facets of forest ownership of interest to FACESMAP.

Theme 1: Disposal, management and use of public forest

Notwithstanding the occasional academic study (e.g. Milbourne et al. 2008) this theme has been dominated by reactive studies in response to civil society opposition to proposed disposal (sale or lease) of the public forest estate by the government. The most recent of these was the proposed sale of the public forest estate managed by FC England. This culminated in the publication of the report by the Independent Panel on Forestry (2012) which synthesised 42,000 responses to the 'Call for views' by the Panel and several specially commissioned reviews on specific topics including private forest ownership (Glynne et al. 2012), community forest governance (Lawrence & Molteno 2012) and woodland management (Quine et al. 2012). A proposal to lease the Scottish public forest estate a few years earlier aroused similarly high levels of controversy (Buttoud et al. 2010).

There has been a proliferation of case study material related to public engagement in forestry, especially experience related to peri-urban forests and the development of community woodlands (e.g. Lawrence et al. 2009) and the use of public forest by communities (e.g. Evans 2010 for Scotland). Present directions are for increasing interest in release of public forest for community use by sale or lease in Scotland (through the National Forest Land Scheme), through lease and community management agreements in Wales (through Woodlands and You programme). Local authorities (UK municipalities),for example, Swade et al. (2013, 2014), are also looking to engage local communities in woodland management both as a resource for community development and also to reduce management costs (Lawrence et al. 2014).

Theme 2: Perceptions and motives of private forest owners

There have been a number of studies focusing on the perceptions and motivations of private forest owners. A few of these are more academic in nature and are concerned with the provision of public goods by private forest owners (e.g. Urquhart 2009) or the development of typologies of private woodland owners (e.g. Urquhart & Courtney 2011 and Urquhart et al. 2011). Others have been commissioned by the government (through the FC) to enhance understanding of motivations of forest owners to inform the design of grant schemes to encourage greater uptake (e.g. Lawrence & Edwards 2013, Lawrence & Dandy 2014, Wavehill 2009, Blackstock&Binggeli 2000, Quick et al. 2013).

There have also been a number of studies commissioned by forest owner associations (notably Sylva Foundation). The objectives for these vary from monitoring change in forest management (e.g. Carter 1994, Nichols & Young 2005, Nichols et al. 2013) to a description of motivations within a group of people who purchased land from the same seller (Jeremy Leach Research 2011).

Work within this theme spans an interesting range of perspectives from top down to bottom up. There is evidence of some tension between these with the policy-orientated papers concluding that many private woodlands are largely 'unmanaged' while the majority of owners report managing their woodlands (Lawrence & Dandy 2014). The former opinion may derive from a presumption that management means active silviculture to favour timber while the owners themselves consider their woodland managed if they get what they want from it (which may be amenity, wildlife conservation, hunting etc). The former view is most evident in official statistics of active management produced by the National Forest Inventory which derive from visual inspection of the site for signs of thinning and tree cutting. The NFI concludes that 20% of private woodland in England and 23% in Wales have 'no obvious management' (Lawrence & Dandy 2014). Furthermore, another commonly used official indicator of active management is receipt of government grants or application for felling licences. Using these indicators,

Yeomans & Hemery (2010)estimate that 71% of private woodlands in England are not managed. There is obviously a need for indicators for woodland management which can account for owners' objectives which may not result in tree cutting or applications to agri-environment schemes. This is not just an academic point as the desire to address the perceived problem of 'under-managed' woods lies behind the design of many of the forest policy instruments including those now embedded in agri-environment schemes.

Theme 3: Development of community woodland groups

Community-owned and -managed woodlands have come to prominence as a new forest owner type in the UK over the past 20 years. These "woodland community groups" are very diverse and deliver a mix of desirable social as well as environmental public benefits which has attracted the interest of policy makers. This in turn has spawned a number of academic reviews of community woodland experience from an etic perspective (e.g. Owen et al. 2008, Evans 2010, Lawrence et al. 2011, Lawrence and Molteno, 2012, Marsh 2013). The most recent of these have gone beyond the description of the general phenomenon and case studies to a framework to describe community woodland experience (Lawrence & Ambrose-Oji 2013), impact analysis (Lawrence & Ambrose-Oji 2014) and a typology of community woodland social enterprises (Ambrose-Oji et al. 2015). Forestry NGOs such as Reforesting Scotland have been important influences on and supporters of community woodland development and a transfer of ideas from community forestry in developing countries to the UK setting has figured significantly in the development of thinking (Inglis and Guy 1996; Slee and Snowden 1999).

Other studies have been commissioned by policy makers with the intention of establishing baselines for monitoring activity levels in the community woodland sector (e.g. Wavehill 2010).

In the meantime, the community groups themselves have prepared advisory notes (e.g. Ellis undated), reports (e.g. Wilmot & Harris 2009) and case studies for peer-to-peer sharing of experience (e.g. the series of case studies (Williams undated) prepared by Llais y Goedwig for its' members) and the case studies prepared by the Community Woodland Association in Scotland (e.g. CWA 2012).

Theme 4: Attitudes to woodland creation

This theme is very closely linked to Theme 2 and several reports deal with both the creation and management of woodland (e.g. Lawrence et al. 2010). However, for FACESMAP, the creation of new forest owners through tree planting (so both the woodland and owners are new) should be distinguished from the consideration of existing forest owners. Forest policy in the UK has long supported forest expansion backed by various policy instruments (currently funded through the Rural Development Programmes (RDPs) of each country). Studies of the attitudes of land owners to tree planting have explored the impact of such instruments, and even since the 1980s these have tended to differentiate between geographical regions e.g. Scambler (1989) for Scotland and Bell (1999) for England. Since devolution, each administration has undertaken its own studies, e.g. Woodland Expansion Advisory Group (2012) and Lawrence & Edwards (2013) looked at Scotland, Lobley et al. (2012) surveyed attitudes in England while Wavehill (2009) did the same for Wales.

Unlike the other four themes these studies have all tended to be government- or researcher-led, focusing as they do on the perceived lack of owner initiative.

Theme 5: Private forest land sales and management

This theme is apparently the preserve of the private sector as there are very few academic or indeed economic studies of forest land values and markets. The only academic study is Lobley et al. (2012), which focuses on land availability for afforestation, and even this study is located in the grey literature.

The majority of the reports available on forest land prices and trends in private sales (and hence the creation of new owners by purchase) come from the private sector companies which act as sales (and management) agents for forest land. These studies take the form of annual market reports and the one prepared by UPM &

Savills covering forests over 20 ha in size started in 1998 and thus contains data on 15 years of forest land sales. This report is mostly concerned with larger commercial (conifer timber production) properties. Smaller forest properties are a distinct sector and have a quite different pricing structure, purchasers and motives for seeking forest ownership. For a few years in the early 2000s UPM & Savills also reported on this market (Tilhill & FPD Savills 2003, 2004, 2005) but this ceased when they withdrew in the face of an influx of competitors specialising in this market sector. These reporting structures emphasise the dualistic nature of the market between larger commercial woodlands and smaller non-commercial woodlands.

3.1.2. Organisations and funding

As shown in Table 1 the distinctive nature and plethora of studies in each theme have resulted in a complex array of active organisations with an interest in research on forest ownership. There are no organisations which work in every region of the UK and there is only one organisation (Forest Research) which works across Great Britain. There are no organisations which work on all themes even within a region.

Table 1: Organisations undertaking research studies by theme

Theme	Active organisations driving or undertaking research			
	Great Britain			Northern Ireland
	England	Wales	Scotland	
Disposal, management and use of state and local authority forest	Forest Research			
	DEFRA FC England Independent Panel on Forestry Environmental and land-owning NGOs Civil society (38 degrees, press etc.)	FC Wales Llais y Goedwig Shared Assets	Scottish Government FC Scotland Forestry and land reform NGOs	No research undertaken
Perceptions and motives of private forest owners	Forest Research			
	DEFRA FC England Sylva Foundation Cambridge University University of Exeter CCRI	FC Wales / NRW Wales Forest Business Partnership	FC Scotland James Hutton Institute Scottish Agricultural Organisation Society	Ulster Agricultural Organisation Society
Development of community woodland groups	Forest Research			
	Small Woods Association Woodland Trust FC England Mersey Forest Shared Assets	Llais y Goedwig Welsh Government Wavehill Consulting	Community Woodland Association Reforesting Scotland Scottish Government FC Scotland	None
Attitudes to woodland creation	Forest Research			
	DEFRA De Montfort University	FC Wales	Woodland Expansion Advisory Group	None
Private forest land values and sales	Private companies			
	University of Exeter			None

Table 2 reveals that funding for these studies is equally diverse. Some themes are the preserve of the private or public sector while others have very diverse funding including in-kind contributions from civil society. The active engagement of the private and third sectors in this work is striking, as is the lack of any significant use of EU funding. The upshot of all of this means that until the preparation of the UK country report for FACESMAP there has previously been no critical review of the entirety of the issues related to trends in forest ownership.

Table 2: Funding sources by theme

Theme	Private	Public	European
Disposal, management and use of state and local authority forest	NGOs In kind Private donations	Scotland, England and Wales government through FC, NRW and other government sponsored bodies and procured from private sector	Not used with the exception of one paper arising from a COST action (COST E51) (Buttoud et al. 2010)
Perceptions and motives of private forest owners	Royal Institution of Chartered Surveyors Research Trust Owners associations Sylva Foundation Woodland Trust?	DEFRA FC NRW ESRC	Currently funding SIMWOOD, previously funding for ForeStClim
Development of community woodland groups	Associations: e.g. Llais y Goedwig (in kind) Woodland Trust	Scotland, Wales & England government through FC, NRW, Forest Research and other government sponsored bodies and procured from private sector	Not used
Attitudes to woodland creation		Scotland, Wales & England government through DEFRA, FC, NRW, Forest Research and other government sponsored bodies and procured from private sector Economic and Social Research Council	Not used
Private forest land values and sales	Companies specialising in land and forest sales and management services	Not used	Not used

3.1.3. Theoretical and methodological approaches used

Table 3 presents an overview (not an exhaustive list) of theoretical approaches and methods used. Most studies are not strongly theoretically informed and are designed to answer policy or other practical questions. Most original studies are based on relatively straightforward synthesis of questionnaire - or case study-based data and few studies use quantitative sampling techniques (Quick et al. 2013 is an exception). There are a number of meta-analyses of existing studies (e.g. Lawrence and Dandy 2014; Lawrence and Ambrose-Oji 2014) and a few evidence reviews.

There are a small number of longitudinal studies all managed by private organisations (e.g. the UPM & Savills market reports and the Cambridge traditional estates surveys (Nicholls et al. 2013) funded by RICS). A small number of baseline surveys have been done for community woodland groups (e.g. Wavehill 2012), with the intention that these will be repeated in the future but with no general commitment to monitoring of the number or motives of forest owners.

Table 3: Theoretical and methodological approaches used

Theme	Theoretical approaches	Methods used	Regional scope
Disposal, management and use of state forest	Policy evaluation	Public consultation: free form and structured responses from institutions and individuals. Content analysis used to consolidate large numbers of responses. In some cases, quantitative analysis Questionnaire surveys and semi-structured interviews with local authorities.	Largest, most recent study for England. Work related to National Community Land Scheme a few years ago in Scotland. No published reports for Wales or Northern Ireland.
Perceptions and motives of private forest owners	Political science Policy evaluation	Quantitative attitude surveys Economic surveys Qualitative interviews Case studies Q method	Most studies at GB level though most work done in England.
Development of community woodland groups	Policy evaluation Common property regime	Quantitative attitude surveys Evaluations Qualitative interviews Case studies (including participatory)	Most work in Scotland and Wales, less in England, recent spate of work at GB level. Little evidence of similar work in NI.
Attitudes to woodland creation	Social science Classification	Questionnaire surveys Q method	All regions Typologies mostly for England
Private forest land values and sales	Market intelligence	Collation and analysis of private forest land transactions Questionnaire survey	GB

The principal gaps in research on forest ownership in the UK are, in our view:

- Management practices specific to 'new owners'
- Advisory systems and their efficacy and impact
- Holistic approaches leading to an understanding of the combined effect of grants and advice (and any other incentives) on forest owners
- Northern Ireland
- Forest management by community groups (literature on motives and benefits but not on silviculture)
- Impacts of forest management on different ecosystem services (although explored by Slee, Urqhuart and Taylor (2006))
- Business models which might support revitalisation of small woodlands for productive purposes.

Looking ahead, future research might focus on:

- Number and motives of distant (urban) woodland owners
- Impact of firewood demand on ownership and management of woodlands
- Evolution of innovative forms of management agreement between private and community-based groups on state and local authority forest land or between private owners and intermediaries such as machinery rings.

3.2. New forest ownership types

3.2.1. Contribution of the literature

In reflecting on what constitutes a new owner, we have considered both new owners within existing ownership types (such as farmers who establish new woodlands, thereby becoming woodland owners without changing ownership of the land), and new ownership categories (such as community woodland groups) which acquire the land for the first time. The literature covers those who are new owners but not new *types* of owners e.g. the objectives of those who have newly acquired land for the purposes of investment forestry (Lawrence and Edwards 2013); and those who are traditional landowners but have newly planted forestry (many studies of farmers' attitudes, synthesised in Lawrence and Dandy 2014). We find little attention has been given to *new types* of woodland ownership. The following are the exceptions which we have identified in the course of writing this report:

- Leach et al. (2012) on new owners of small woodlands.
- Lawrence and Edwards (2013) on new

'hands-on' owners.

- Lawrence and Molteno (2012) on community woodland groups, only a small proportion of which are owners rather than working in partnership with existing owners
- Lawrence et al. (2014) for leasehold arrangements with local authorities.

Over the past 30 years financial returns, incentives related to public policy, land reform and changing public attitudes and appreciation of forests have resulted in the emergence of several 'new' forms of land ownership. Many of these are based on pre-existing legal forms but these have been used in new ways or by new groups of people to serve non-traditional purposes.

When considering forest ownership change we therefore need to consider how we will define a new forest owner. This could be based on: the legal form of tenure; whether owners are absentee or not; prior ownership and management experience of forests; motives for ownership; nature of the forest; delivery of public benefits etc.. There is probably no ideal or 'right' way of creating a typology of forest owners, let alone new forest owners. The best that we can do is perhaps to think of designing a synthetic classification that can be adapted to particular research questions – which is itself a topic for further research.

3.2.2. UK team's working list of types of new forest owner

For the purposes of this report for FACESMAP we have defined nine types of owners, many categories of which are experiencing change – either as an emerging new type of owner or a type of owner which is experiencing change. Note that this is not a complete classification of forest owner types in the UK but a listing of types of ownership where from our experience and the available literature we have discerned change. Our list is based on examination of the literature, reflection on experience, discussion and iteration amongst ourselves.

1. Existing land owners, especially farmers, who have planted new woodland for multiple reasons
2. Private trusts[90] holding traditional estates on behalf of a family
3. Individuals and companies primarily seeking financial benefit or commercial advantage (e.g. by tax-efficient financial services (investment and inter-generational capital transfer, or carbon or biodiversity offsets etc.)
4. Community woodland groups (under a plethora of legal forms and tenurial arrangements)
5. Individuals (or families) purchasing small woodlands for household amenity and use (amenity, recreation, firewood etc.)
6. New woodlanders - individuals or groups acquiring woodlands as a basis for (part) of their livelihood
7. Environmental NGOs (usually in the form of charitable institutions with a focus on biodiversity or heritage conservation)
8. Devolved national governments
9. Local government.

3.2.3. 'Traditional owners'

In the literature referring to the UK, the term 'traditional owner' is not used. However, James (1981) distinguishes 'old' from 'modern' forestry with the change apparently occurring in the mid-19th century. The old, i.e. traditional forestry, took the form of woodlands on rather large and often aristocratic estates which were used both for hunting and as a source of timber in the context of an extensive holding in which farmland, parkland and forest were managed as a single enterprise. This interpretation is supported by the use of the term 'traditional estates' by Nicholls et al. (2013), Nicholls & Young (2005) and Wightman (2012) who describe them as large (average 600 ha), owned by a single individual (usually via primogeniture inheritance) or a private trust.

[90] The legal form for these is "interest in possession" trusts. These are trusts which control capital but pass on income to named beneficiary of the income from the capital (see www.hmrc.gov.uk/trusts/types/IIP.htm). So the Trust holds the land on behalf of future generations of the family, while the present incumbent enjoys the income from the estate This form of arrangement means the inheritor is not liable for capital gains tax but also often forfeits their right to determine the management of the estate which passes to the trustees. This is an established form of tenure but is increasingly being adopted by large private estates.

Generally, such estates have between 15-45% of their area as woodland which is usually managed according to long-standing traditions. Many are ancient holdings and have remained in the ownership of the same family for many hundreds of years – 80% of the estates in Nicholls et al. (2013) survey had been in the same family ownership since before 1900, three had been owned by the same patrilineage for more than 700 years and one for nearly a millennium. As shown by Cahill (2001) large proportions of land in the UK remain in the hands of the heirs of aristocratic families and thus in 'traditional' ownership. Agricultural land on these estates was usually tenanted but the management of the woodlands was retained 'in hand' and therefore the responsibility of the landlord rather than the tenant and managed "partly as a source of profit, partly as one of the amenities of their estates" emphasising the multiple objectives for woodland and landscape management (Stamp 1962). In opposition to this, non-traditional owners would be any owner who has recently acquired or created a forest (including the state) or any owner who is not a private individual (or family trust). Taking this longer view of forest ownership change, it is not possible to determine accurately the balance of forest ownership between traditional and non-traditional.

3.3. Forest management approaches

In the United Kingdom, there are no restrictions on who can own and/or manage a forest and there are many managers who have no formal forestry qualifications. Professional foresters are employed directly by owners of large forest properties (including the state forest management agencies) or can be contracted through private forest management companies and as self-employed forest agents. The alignment of forest management entities and forest types is indicated in Table 4

Table 4: Managers of forests in the UK

Management entity	Professional	Scale	Forest type	Main objective
FCE, FCS, NRW, DARDNI	Yes	National (NUTS1)	Public	Commercial + amenity
Local authorities	Yes	Unitary authority / Council etc. (NUTS3)	Public	Amenity
Forest management companies	Yes	Large forest holdings Traditional estates	Private	Commercial + hunting
Forestry agents	Yes	A wide range of clients including traditional estates, and farm woodlands	Private	Commercial/ private recreation (hunting)
Forestry contractors	Both	Local relationships between contractors and clients	Private	Mostly work under direction but may also be given quite a lot of discretion and will advise owners
Forest owners	No	Smaller holdings and farm woodlands	Private	Varied, often multi-purpose
NGO	Both	Very small to large (national holdings)	Private (Third sector)	Amenity, biodiversity conservation
Community woodland groups	Both *	Very small to large	Private (Third sector)	Amenity, recreation, productive, occasionally commercial

** often including professionals on a voluntary basis within the group*

Several studies focus on forest owners' objectives but they do not generally distinguish between "old" and "new" owners. A review of peer reviewed and grey literature found little difference between the objectives of woodland owners and woodland creators (Lawrence and Dandy 2014), and that, in order of declining popularity, they are:

1. Conservation, biodiversity and wildlife,

2. Maintaining woodlands as landscape features,
3. Providing shelter for stock or crops,
4. Habitat for sporting activities such as shooting,
5. Personal amenity and leisure activities,
6. Non-commercial fuel production and
7. Timber production and the provision of public access.

Agents are most often contracted to prepare management plans and apply for grants. Interestingly, harvesting is the second most common entry point for forest management contracts (Lawrence & Edwards, 2013). Small woodlands are seldom managed for timber, but Urquhart et al. (2010) report that owners often say they would like to manage their woodland if they had more time and money.

Most new forest owners do not have previous forestry experience and are often confused about where to find advice and management services. Urquhart (2006) found that new owners (individuals/families) get advice from a range of sources including FC, consultants and contractors; they also take courses on forest management, talk to other owners, read books, spend time in the woods, or search the internet and get advice from support organisations such as the Small Woods Association. Community woodland groups are one of the few types of new owner who always prepare structured forest management plans. In both Scotland and Wales, community woodland associations provide advice and signpost training opportunities for these groups.

Innovation has also taken place in the development of new business models for woodland management, particularly in the community and voluntary sector. There is much confusion in the language of 'social enterprise', with little consistency in the use of the terminology (Stewart, 2011). New work which seeks to disentangle the range of business models from the focus of the enterprise is presented by Ambrose-Oji et al. (2015) and identifies five types of business model used by social and community woodland enterprises:

1. Trading of products from a community owned woodland by the community
2. Community group providing contracted services on woodland belong to others
3. Forestry enterprise owned by community group which does not have its own land
4. Collaboration with business on community owned woodland
5. Subsistence trading with income only to meet immediate management needs

Though there are several drivers of change (climate change, tree health, social and cultural benefits, community engagement), the sparse existing evidence points to a reluctance to change current practice, and / or a trust in nature to do the adapting (Lawrence and Marzano 2013). Nevertheless, changing forest ownership and introduction of new objectives bring the possibility of change in woodland management approaches. The growing woodfuel market is also likely to result in changes in silvicultural systems towards coppice or shortened rotations. Machinery rings have undertaken initiatives in Scotland to group manage large numbers of private woodlands primarily for the woodfuel market. There is evidence that changes in policy favouring broadleaf species is leading to diversification of species choice.

No research has been yet conducted to identify obstacles to innovative forest management approaches as current research tends to focus on constraints to implementation of pro-active forest management and woodland creation.

3.4. Policy change / policy instruments

Forest policy has been a key driver for change in forest ownership in the UK over the past 100 years. The main considerations are:

1) Nationalisation: The Forestry Commission (FC) was established in Great Britain (England, Scotland and Wales) in 1919. The main objective was to develop and maintain a strategic timber reserve for Britain. This involved extensive afforestation programmes on state-purchased and leased land, alongside the provision of financial incentives to encourage private landowners to plant trees; today small amounts of land acquisition by the FC continue through normal land markets.

2) Devolution: Since 2002 forest policy and institutions in the UK have been devolved. England, Scotland, Wales and Northern Ireland each has its own forest strategy, which set objectives for state and private forests and frame policies within their RDPs;
3) Privatisation: there are extant policies for small scale disposal of public / national forest land to take place, with the proceeds to be used to purchase land for afforestation. Recent (in last five years) larger-scale proposals to sell or lease public forest land have met with public opposition and been retracted.
4) Inheritance tax relief: on forest land facilitates the retention of forests by land owning families and acts as an incentive for purchase of forest land as a means for inheritance tax free intergenerational transfer of capital. According to UPM Tilhill& Savills (2013) inheritance tax relief has been and remains a significant incentive for woodland ownership.
5) Land reform: in Scotland this gives tenants (and in some parts of Scotland resident communities) the ability to acquire land whether or not the owner wishes to sell. In practice, it has not been used to acquire forests, but the FCS National Forest Land Scheme which was developed in support of the Land Reform Act has supported a significant number of such opportunities, though most relate to quite small areas (See Section 4.3.1 for more details).
6) Woodland creation and management incentives: RDP-funded agri-environment schemes are expressions of policies aimed at landowners targeted at the creation of new woodland or enhancement of the provision of public benefits from existing woodland. These policies are now differentiated across the devolved RDPs. Evidence suggests that different types of woodland owner respond differently to these policy instruments (Urquhart et al., 2011).

4. Forest ownership

The aim of this chapter is to give a detailed overview of forest ownership in the UK. The most detailed information at national level is often structured in different ways in different countries. In order to show the most accurate information, it was decided to use the national data sets in the country reports. To make this information more comparable still, the information is also collected in an international format that is used in the Forest Resources Assessments (FRA) by FAO. The transfer from national data sets to international definitions is, however, not always easy. This report therefore critically assesses how far the national categories and definitions may be transformed into the international FRA data structure and the extent to which there are inconsistencies between them.

4.1. Forest ownership structure

A forest is made up of the land and the trees which grow on it. To be able to confidently assert who owns a forest we have to be able to determine who owns the land and trees. However, in the UK this information can be exceedingly difficult to obtain for historic reasons.

In the UK there is no current complete record of land ownership and there are only two historical records. The 1086 *Domesday Book* (covering England) and the 1872 *Return of Owners of Land* known as the 'second' or 'new' Domesday. Until the 1925 Land Registration Act[91] the only official record of land ownership other than the deeds themselves were the Tithe maps administered and kept at Parish level (the smallest unit of administration centred around the church) and these are no longer maintained and many are lost. The 1925 Act created the Land Registry and required that any ownership of land is registered by the purchasers of land. Registration of land not offered for sale is voluntary and is not required for land acquired by inheritance. By 2001 the Land Registry covered about 65% of land in England and Wales(Cahill 2001). The large proportion of unregistered land arises from the fact that there are still very large

[91] UK (Land Registration Act 1925), registry devolved to Northern Ireland in 1970. Remaining Act amended in 1971 and registry devolved to Scotland in 1979 and amended in 2012. Amendments to residual Act now covering only England and Wales in 1986 and 2002.

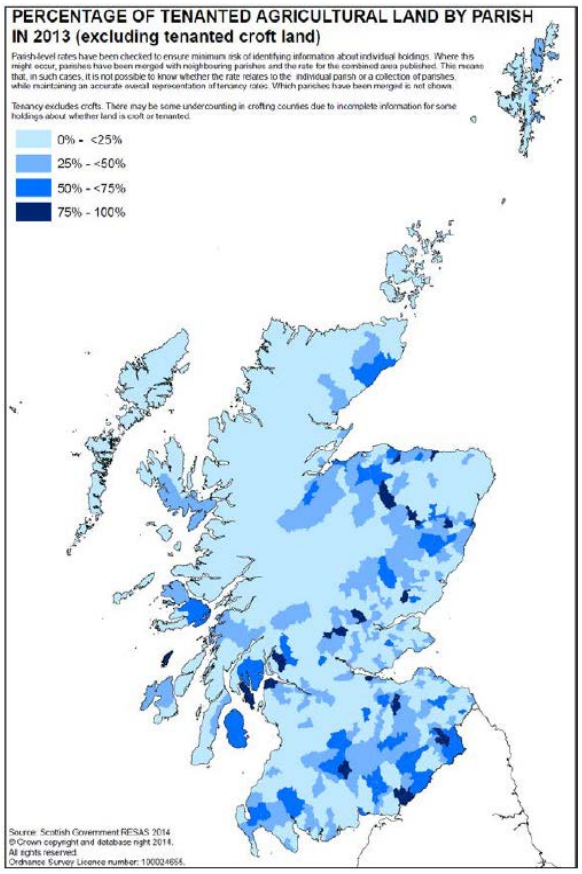
family estates which have not been sold and are inherited and therefore do not need to be registered. Furthermore, the Registry only requires the submission of a cadastral map of the registered land and contains no information of land use so it is not possible to use this source alone to identify forest ownership. Thus it can be problematic determining the freeholder of the land.

Trees on freehold land undisputedly belong to the freeholder. However, rights to trees on tenanted land are vested in the landlord under the Waste Act 1267[92]. This act makes it an offence for a tenant to 'make waste, sale or exile of … woods' i.e. fell or sell trees without the express written permission of the landowner. This permission can be written into the terms of the lease agreement or may need to be obtained on a case by case basis. Proof of the landlord's agreement is a requirement for granting a felling licence across the UK (Highland Birchwoods, undated). The express permission of the landlord is also required to plant new woodland though more because the change in use to woodland may change the valuation of the landlord's property (DEFRA 2004). The reservation of the rights to own and manage trees by the landlord compounds the problem of determining who owns forest land as an estimated 40% of farmland in England and Wales is tenanted (Tenant Farmers Association 2010) and information on who farms the land in a significant number of cases will not indicate who owns the land and thus the right to cut the trees. In Scotland there are relatively good statistics with the form of farm tenancy reported on an annual basis (Scottish Government 2014) but other forms of tenure such as contract farmed land are not indicated in official data.There are no tenancy figures for Northern Ireland as, in common with the Republic of Ireland, farm rentals are rare (in Ireland only 3% of farms are rented) (Cahill 2001).The alienation of tenants from the farm woodlands on their land is such that the policy document prepared by the Tenant Farmers Association does not even mention trees or woodland (However, a significant proportion of tenancies arise where a family member is tenant to a family trust. In such circumstances, there may be stronger engagement of the 'tenant' with trees as a crop).

[92] "Also Fermors, during their Terms, shall not make Waste, Sale, nor Exile of House, Woods, Men, nor of any Thing belonging to the Tenements that they have to ferm, without special Licence had by Writing of Covenant, making mention that they may do it; which thing if they do, and thereof be convict, they shall yield full Damage, and shall be punished by Amerciament grievously." Agreed translation of Waste Act 1267, Statute of Marlborough (this is the oldest active piece of legislation in the UK).

CASE STUDY 1: AGRICULTURAL LAND TENANCY IN SCOTLAND

In Scotland in 2013 24% of agricultural land (1.37 million ha) was rented on a full tenancy or croft with a further 14% seasonally let (0.8 million ha). The distribution of tenanted land in Scotland (below) shows a concentration in the Southern Uplands, Deeside and Speyside but tends to be lower in the areas of highest quality farmland. The impact of farm tenancies on forest ownership statistics is relatively small as most tenanted farms do not contain forest in the sense of an extensive area of wooded land but will have a significant impact on the ability of farmers to manage and extend woodlands on their farms (Scottish Government 2014).



Source: Scottish Government 2014

4.1.1. National data set

As a consequence of the situation regarding land registration, the UK does not have wholly reliable statistics on forest ownership. Researchers / policy advisers must therefore rely on sample data from surveys and forest inventory.

The Forestry Commission undertook periodic inventories at 10-15 years intervals from 1924 to 1999. The latest National Forest Inventory (NFI) (formerly known as the National Inventory of Woods and Trees, NIWT) commenced in 2009 as a continuous inventory and is due to complete a first cycle of data in 2015. These sample-based inventories include a voluntary question on the type of ownership. It is from this data source that more nuanced GB ownership data is derived, as shown in Table 5. Although the Forest Service in Northern Ireland maintains a woodland register in which ownership is reported as 'Forest Service' or 'Not Forest Service', no disaggregated forest ownership data is apparently readily available to the public. Nevertheless, these inventories provide very high quality data of the types of forest in the UK (i.e. woodland type by age class and species).

A sample survey of ownership was included in for the first time in the latest NFI although the data are not yet available. This includes a voluntary question on type of ownership and it is from this data source that national ownership data derives. The previous NIWT collected ownership data at a much broader resolution. Because the NIWT only collected data on woods larger than 2 ha, much local authority and community woodland was omitted, and data on these categories of ownership are likely to be unreliable. Among others, Wightman (2012) has been critical of this weak information and in a study of a number of sample squares in Scotland has indicated just how difficult it is to ascertain forest ownership.

Table 5: GB forest ownership structure c 2000

Type of ownership	Percentage of forest land			
	England	Wales	Scotland	GB
Personal	47.1	42.6	35.4	43.6
Other private business	14.3	8.0	9.7	1.6
Private forestry or timber business	0.7	2.2	2.2	1.6
Charitable organisation	6.7	1.1	2.9	3.5
Local authority	6.0	0.9	2.9	3.0
Other public (not FC)	2.7	1.1	1.7	1.7
Forestry Commission	21.8	43.1	44.4	34.7
Community ownership or common land	0.4	0.0	0.2	0.2
Unidentified	0.4	1.0	0.5	0.7
Total area (ha) in woodland >= 2 ha	1,021,822	270,035	1,252,774	2,544,631
Total area of small woods < 2 ha	75,063	16,734	28,697	120,494

Definition of ownership categories:

Personal- types of private occupation e.g. individuals, private family trusts and family partnerships

Other private business- occupiers, e.g. companies, partnerships, syndicates and pension funds.

Private forestry or timber business- owned by wood processing industry. This category does not include forest management companies.

Charitable organisation-Organisations funded by voluntary public subscriptions, e.g. National Trust, churches and colleges

Local authority- region, county, district or other council

Other public (not FC)-Government department/agency, nationalised industry, etc.

Forestry Commission- land owned or leased to the Forestry Commission (or its successor)

Community ownership or common land- the common property of all members of the community

Source: UK National Inventory of Woodland and Trees (FC 2001 Scotland, FC 2001 England, FC 2002 Wales, FC 2003 Great Britain

There are some large differences in the extent of forest cover in different parts of the UK. The UK as a whole has about 13% forest cover. England has about 9.9 % forest cover. Scotland has nearly 18% forest cover and Wales has around 14.3%. The north and west of the UK, characterised by hills and uplands and a wetter climate, are generally more heavily afforested. However, the NFI also shows some heavily forested counties (municipalities) in the south and south east of England.

The mix of forest type is summarised in Table 6.

The Forestry Commission estate is composed primarily of commercial conifers, but in England the Forestry Commission also acquired (at the time of their formation in 1919) a number of ancient state owned forests such as the Forest of Dean with a significant deciduous component. In contrast, almost 90% of private and other woodland in England comprises broadleaved species. The Welsh and Scottish forests are predominantly coniferous, but there are pockets of native species including birch, ash, oak and Scots pine of high conservation value within the forest mix in the north and west of the UK.

Table 6: Area of woodland > 2 ha by forest type and ownership for GB c. 2000

Forest type	England (ha)		Wales (ha)		Scotland (ha)	
	FC	Other	FC	Other	FC	Other
Conifer	133,867	139,400	88,287	45,957	437,696	441,780
Broadleaved	42,644	470,124	10,365	83,603	19,866	145,132
Mixed	21,225	106,752	8,089	13,416	10.059	36,435
Coppice	1,010	10,664	0	489	76	477
Coppice with standards	50	10,129	0	0	42	587
Windblow*	569	571	0	48	3,099	1,220
Felled	10,043	5,056	6,305	2,656	12,139	10,841
Open space	13,255	56,434	6,933	3,888	55,176	78,150
Total	**222,694**	**799,128**	**119,979**	**150,056**	**538,154**	**714,621**

** Areas where trees have been blown down in storms.*

Source: UK National Inventory of Woodland and Trees (FC 2001 Scotland, FC 2001 England, FC 2002 Wales

There have been other attempts to classify woodland owners in the UK using categories very different to those of the FAO approach. Such classifications indicate the legal status

or some kind of loose socio-economic descriptor of the forest owner but they tell us very little about the style of management of the owner. In the last two years, Defra has been funding a research project conducted by URS and partners to explore the different types of private woodland owner in the UK. Using segmentation approaches, they (Quick et al. 2013) have identified five categories of farmer in relation to their likelihood to plant trees. These are: Pragmatic planters; Willing woodland owners; Casual farmers; Business-oriented farmers; and Farmers first. In order to encourage different types of owner to plant more trees, it was seen as important that each segment should be targeted with relevant support and advice that was connected to their motivations.

Other research work, notably by Urquhart et al. (2012) (and based on the Q method[93]) has identified four groups of woodland owners including multifunctional forest owners, individualists, hobby conservationists and custodians. What both the Defra study and Urquhart's work reveal is the complex and heterogeneous set of motivations of different types of private owners. It is their values and motivations that will frame both whether they plant more trees, the type of trees they choose and the style of management they undertake. A legalistic categorisation of forest ownership structures is thus far from illuminating when considering the types and styles of management of privately owned forest and woodland in the UK.

4.1.2. Critical comparison with national data in FRA reporting

Given the situation where the Forestry Commission has to rely on public records and voluntary submissions, there are significant weaknesses in UK data on forest ownership. The same dataset as that used in Table 5 is transcribed into the FAO categories by the FC and hedged with cautions regarding its accuracy. As shown in Table 7, there are minor difficulties in collapsing larger categories of UK data into the categories used in the FRA but these are not deemed significant.

Table 7: Comparison of publically available statistics and FRA 2005 return for UK

FRA 2010 categories	Forest area (1000 ha)			
	FRA 2005	FC figures for GB c 2000	FS figures for NI c 2013	Total UK
Public ownership	983	927	62	989
Private ownership	1 862	1 519	49	1 578
...of which owned by individuals	1 416	1 109	-	1 109
...of which owned by private business entities and institutions	441	405	-	
...of which owned by local communities	5	5	-	5
...of which owned by indigenous / tribal communities	0	0	-	0
Other types of ownership	0	0	-	0
Total	**2 845**	**2 446**	**111**	**2 567**

[93] The Q Method is a research method used in social sciences and psychology to study people's perspectives, meanings and opinions. In Q Method participants are asked to rank a pool of qualitative statements onto a ranked grid indicating their level of agreement or disagreement with the statements. The sorted responses are factor analysed to reveal the underlying discourses.

4.2. Unclear or disputed forest ownership

There are few active disputes of forest ownership with a rare example being that between a community woodland activist and landowners in the Forest of Birse, Aberdeenshire (Callander 1999). The legal basis for the re-establishment of the common (commonty in Scotland) dated back to the 17th century. In essence, the former common rights had apparently never been annulled but the land had been expropriated by and absorbed into large private estates. As a result of Callander's work, a community group was able to reassert effective ownership over several thousand hectares of forest (see CASE STUDY 9 below). It is not at all improbable that this process of illegal privatisation of commons was much more widespread. Most communities lack the level of expertise to pursue the issue.

Where land is tenanted (i.e. rented), trees are the landlord's property. However, there are unresolved ambiguities in small hedgerow trees and saplings. When do these become trees? On common land there were historic rights to woodland products such as firewood but the trees belong to the landowner which leaves the commoner unable to manage the resource that they have the rights to use.

4.3. Legal provisions on buying or inheriting forests

There are no legal restrictions as to who can buy forest land in the UK, there are, however, some restrictions on the sale of forest land.

4.3.1. Legal restrictions for buying or selling forests

Under the Land Reform (Scotland) Act of 2003, rural communities in Scotland have the opportunity to register an interest in buying land which arises for sale locally, under the 'community right to buy' legislation. In practice, Crossgates Community Woodland is the only exclusively forested site bought under these provisions although other land purchased also contains some woodland. The National Forest Land Scheme is a programme offered by the Forestry Commission Scotland, which extends the framework of this legislation to provide opportunities for community groups to purchase or lease public forest land, whether or not it is for sale. Currently around 40 schemes have been approved, covering around 4000 hectares, including many approvals for very small areas of land for release for housing. There are only 5 schemes covering more than 500 hectares and 23 (of 40) are less than ten hectares in extent (http://scotland.forestry.gov.uk/images/corporate/pdf/NFLS-applications-status.pdf).

In the UK there are several non-governmental organisations which own significant amounts of woodland. There are restrictions on the sale of assets owned by many of these organisations which arise from specific statute (e.g. National Trust), the constitution of the organisation (e.g. Woodland Trust) or are governed by the Charities Act for registered Charities.

The recommendation from the Independent Panel on Forests is that state forest in England should become inalienable (Independent Panel on Forests 2012).

There are restrictions on the sale of state forest as explained in Chapter 4.4.2.

4.3.2. Specific inheritance (or marriage) rules applied to forests

There are no specific inheritance laws applying to forests. However, until 2000 when entail was abolished in Scotland, it was possible to ensure that an estate always passed intact to the next generation. A similar law has existed in England (which with Wales has an entirely different legal system to Scotland) but this was abolished in the 1920s.

For the traditional estates and other long term land owners in the UK the customary practice is male-preference cognatic primogeniture inheritance. However, the rules of intestate inheritance make no gender distinctions. Nevertheless, owners are free to make whatever inheritance arrangements they wish in the form of a will. This often means the eldest male is still more likely to inherit than younger sons or daughters. In the special case of the Crown, the Succession to the Crown Act (2013) has eliminated male-preference for inheritance of the Crown and

this presumably applies to associated land holdings.

4.4. Changes of the forest ownership structure in last three decades

There have been a number of changes in ownership of forests, resulting from both change of owner, and also change of land use. The most significant contribution to new forest ownership both by the state and the private sector is the increase in forest cover from 5% to 13% over the last century, meaning that existing landowners also become woodland owners or have become owners of newly planted forests. The most significant change in woodland ownership is on farms, where the area of woodland has tripled since 1981 (Forest Statistics 2014). Most new farm woodland has been planted since 1987 when advantageous new grants were introduced.

4.4.1. New owners through woodland creation

The Forestry Commission was established in 1919 to promote afforestation at a time when woodland cover in the UK was less than 5%, due to the decline in interest in forestry (to a large degree because of timber imports) accompanied by clearance of woodland for agriculture in the previous century and the deprivations of the First World War. The new Forestry Commission purchased freehold and leasehold of private land using Treasury Funds and set about an intensive programme of afforestation and (later) grant aid for private afforestation. The growth in forest cover over the 20th century (see Table 8) was primarily driven by the state, with plantings of exotic conifers for commercial forestry on mostly upland ground, with some low-lying and infertile areas also planted. From the 1970s the increased awareness of tax regimes dating from the 1950s (see Chapter 6) acted as an incentive for commercial private planting (managed by private forestry companies such as Fountain Forestry and Tilhill) which, to some extent, compensated for the reduction in planting by the state. State planting slowed down considerably during the 1980s, as major cuts were made in public expenditure that affected the Forestry Commission while the loss of favourable fiscal arrangements in the late 1980s meant that private planting also slowed (Figure 1).

However, farm woodland planting received a boost from 1987 when new EU arrangements made it possible to compensate farmers for loss of income on planted land (Figure 2). Since that time what had been separate forestry planting grants managed by the Forestry Commission have now been wrapped into the suite of measures in RRP.

Table 8: Woodland area in the United Kingdom

Year	England		Wales		Scotland		Northern Ireland		UK	
	Area (000 ha)	%	Area (000 ha)	%	Area (000 ha)	%	Area (000 ha)	%	Area (000 ha)	%
1905	681	5.2	88	4.2	351	4.5	15	1.1	1 140	4.7
1924	660	5.1	103	5.0	435	5.6	13	1.0	1 211	5.0
1947	755	5.8	128	6.2	513	6.6	23	1.7	1 419	5.9
1965	886	6.8	201	9.7	656	8.4	42	3.1	1 784	7.4
1980	948	7.3	241	11.6	920	11.8	67	4.9	2 175	9.0
1995-99	1 097	8.4	287	13.8	1 281	16.4	81	6.0	2 746	11.3
2013	1 300	10.0	305	14.7	1 410	18.1	111	8.2	3 127	12.9

Source: Forest Statistics 2013, Forestry Commission, Forest Service. www.forestry.gov.uk/statistics

The relatively recent changes incentivised a significant proportion of farmers to plant up some of their poorer ground with trees, but overall aggregate planting rates continued to decline from the high levels of the 1970s and 1980s. Nevertheless, much of this planting is now on farms as the area of farm woodland continues to increase, at least in Scotland (Figure 2).

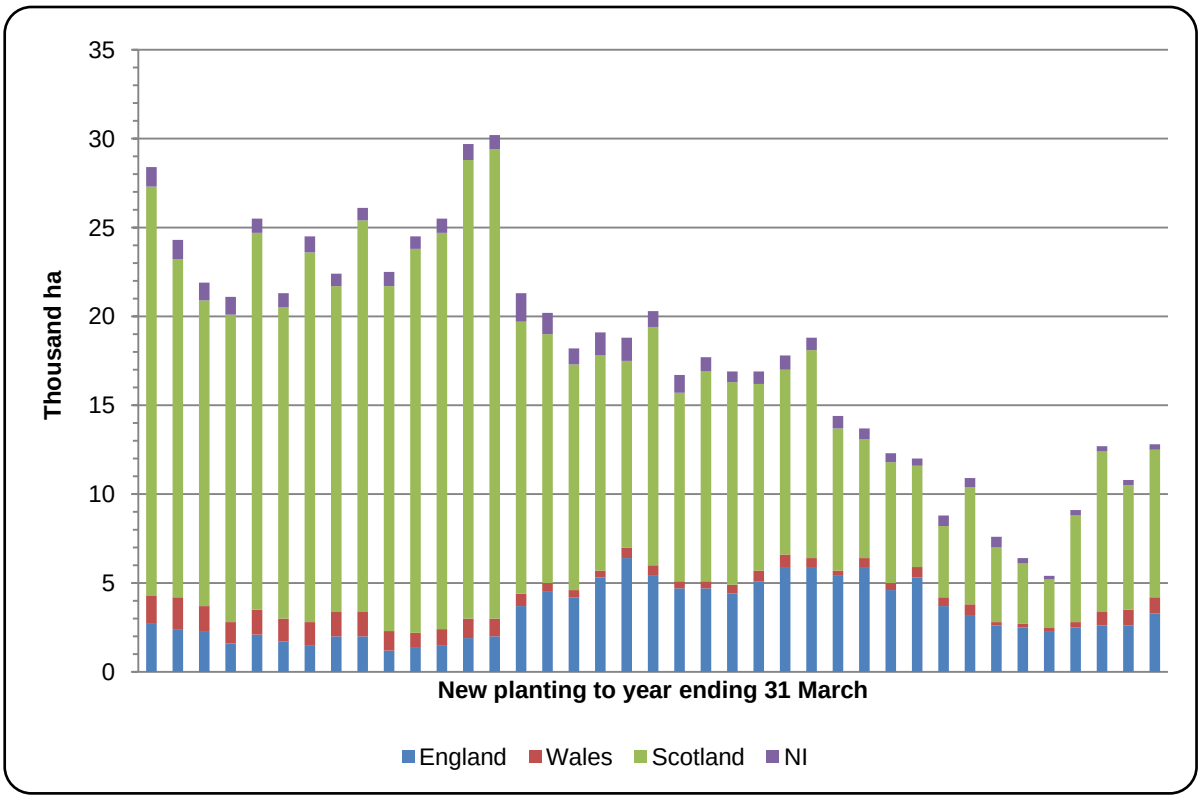


Figure 1: Rates of new forest planting in UK 1976 to 2014

Source: Forestry Commission woodland statistics 2014 (www.forestry.gov.uk/forestry/INFD-8W3LV3)

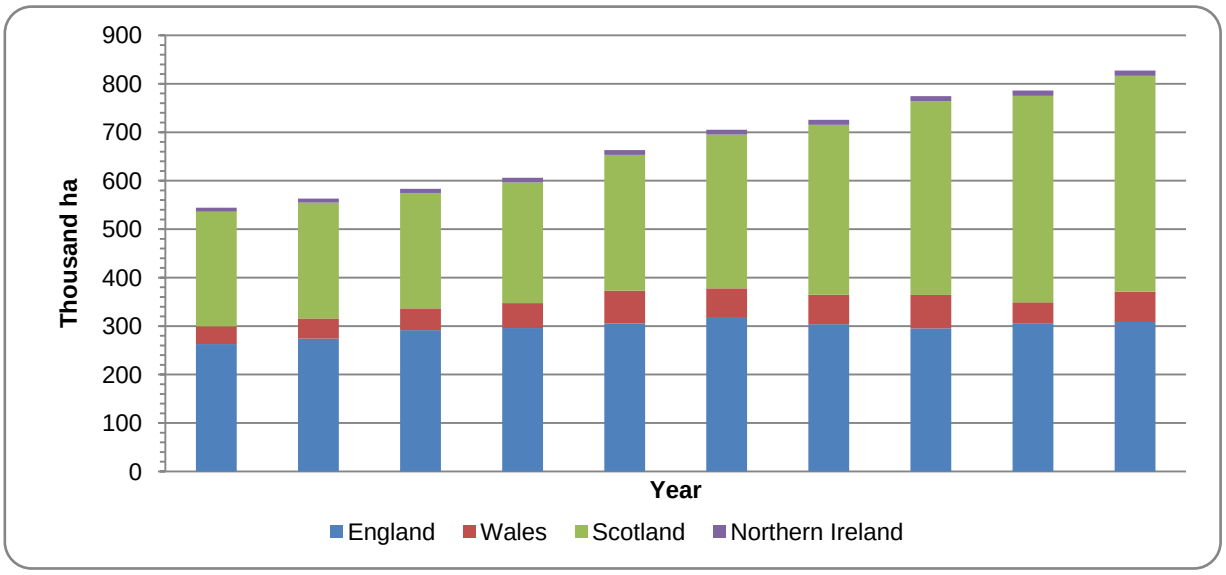


Figure 2: Area of farm woodland in UK since 2003

Source: Forestry statistics 2013 (www.forestry.gov.uk/forestry/INFD-8W3LV3)

CASE STUDY 2: FARM FORESTRY: ROGER POLSON: ABERDEENSHIRE FARMER

Roger Polson has farmed Knock Farm Aberdeenshire for more than 20 years. The farm had some amenity woodland and some production woodland but since the late 1990s about 30 hectares of farmland has been planted with commercial conifers and another area of wetland planted with broadleaved native species. Under a regional challenge scheme, the planting of woodland proved commercially very attractive and the grant paid for the forestry. In addition under the farm forestry grants the farmer received annual payments for 10-15 years. The proposal fits in well with a change in farm strategy to organic farming, lower stocking rates, carbon neutrality and the development of an equestrian enterprise.

Most new plantings are small in size and mainly composed of broadleaved species (Table 9). This manifests itself in the creation of new farm woodlands and also in new urban and peri-urban woodlands and forests. Much of the land planted in these urban forestry projects belongs to local authorities but there are also private and some corporate owners (e.g. United Utilities). Although the schemes are mostly operated through provision of publicly funded incentives they have also drawn in private funding (e.g. through the Community Forest Trust[94]as well as direct funding of projects and in-kind contributions). Although the planting in these schemes is often relatively small scale[95] they can deliver very significant public benefits and represent co-operation between multiple land owners.

Table 9: New planting by forest type in the UK 2008-2013

Year ending 31 March	New planting (000 ha)		
	Conifers	Broadleaves	Total
2008-09	1.2	5.2	6.4
2009-10	0.5	4.9	5.4
2010-11	1.5	6.6	8.2
2011-12	3.5	9.2	12.7
2012-13	1.9	8.9	10.8

Source: Forest Statistics 2013, Forestry Commission, Forest Service

A shift to broadleaved planting started in the late 1980s as grants to private individuals to plant trees shifted decisively in favour of broadleaves compared to the previous support regime which placed greater emphasis on supporting productive timber, which in the UK meant primarily coniferous trees. The emphasis shifted to environmental forestry from production forestry. Industrial commercial conifer production had been heavily criticised in the 1980s for habitat destruction (particularly of semi-natural moorland habitats) and other forms of environmental damage (such as drainage of deep peat). These criticisms were directed primarily against the private forestry companies that had exploited the tax loophole to give tax relief to the super-rich. A powerful and effective environmental campaign led to policy changes.

4.4.2. Changes between public and private ownership

There is an active programme of "re-positioning" of state forest land in Scotland. This is a "rolling land acquisitions fund, financed by the sale of parts of the estate which have relatively low public benefits, in order to raise the social and environmental value of its estate"[96].After public consultation in 2003 the policy was implemented in 2004. The disposals mostly take the form of sales of difficult-to-manage forests and smaller areas of woodland that are sold to a range of buyers from commercial forestry companies, to private individuals, to community groups. Sometimes the threat of sale has led to a period of active animation of communities, such as at Laggan, Inverness-shire, and Abriachan near Inverness (see CASE STUDY 3). The income from disposals is placed into a fund which is used to purchase land for afforestation and some regional offices of Forestry Commission Scotland have been looking to buy farms and afforest these. Table 10 gives the status of sales and purchases under the Re-positioning policy. Note that acquisitions are at a much higher cost per ha than disposals, mostly because sales are of remote, low value forest/land while purchases are in peri-urban areas where there is perceived to be a deficit of woodland (as identified by the Woods In and Around Towns – WIAT initiative) and where land values are much higher. A modest number of purchases of upland farms have taken place, which has alarmed farmers who fear that they may not be able to compete with public sector buyers; and who have a collective memory of significant land acquisition from the farm sector after the Second World War. FC Scotland is also offering to lease land from farmers and other landowners for afforestation[97].

[94]http://www.cf-trust.org/

[95] Though the Mersey Forest alone planted more than 8 million trees in the last 30 years over the project area of 500 square miles.

[96] www.forestry.gov.uk/forestry/INFD-8F8EL5

[97]http://scotland.forestry.gov.uk/supporting/grants-and-regulations/land-leasing

Table 10: Sales and purchases of land by Forestry Commission Scotland from 1999

Year (April – March)	Acquisitions (ha)		Disposals (ha)	
	Forest	Bare land	Plantations	Other land
1999-2000	1,066	0	2,945	258
2000-2001	0	0	2,126	990
2001-2002	0	271	1,751	305
2002-2003	0	792	1,005	511
2003-2004	311	98	1,493	19
2004-2005	402	248	734	171
2005-2006	0	9,745	1,598	9
2006-2007	246	1,218	1,076	47
2007-2008	32	2,847	2,955	67
2008-2009	0	2,112	2,917	32
2009-2010	219	202	5,321	66
2010-2011	65	3,034	6,877	297
2011-2012	73	1,972	5,912	40
2012-2013	304	2,500	3,574	36
Total area	27,779		43,890	
Total value	£61,491,421		£94,709,317	

Source: www.forestry.gov.uk/pdf/AcquisitionsAndDisposals.pdf/$FILE/AcquisitionsAndDisposals.pdf

CASE STUDY 3: ABRIACHAN COMMUNITY WOODLAND

Abriachan near Inverness was a Forestry Commission Scotland disposal sale. The small rural community of Abriachan a mixture of traditional rural households and incomers was alarmed at the prospect of sales of production forest to a private buyer and animated by two key local residents. They acquired the forest with support from public funds and established Abriachan Forest Trust (www.abriachan.org.uk). Their website notes: In 1998 the community purchased 534 hectares of forest and open hill ground from Forest Enterprise. Since then, as a social enterprise, the Abriachan Forest Trust has managed this land to create local employment, improve the environment and encourage it's enjoyment by the public through a network of spectacular paths, family suited mountain bike trails and innovative education opportunities.

In England, a similar policy saw sales of 7,800 ha of the public forest estate and purchase of 5,400 ha between 1997 and 2009. Over half of the purchased land (3,000 ha) were former coalfield sites and peri-urban areas for tree planting to create more green space (FC England 2009).

In Wales there is a similar policy (FC Wales National Committee 2006). However, with one exception (a sale to a community woodland group) no forest land has been offered for sale for several years. Under the Woodlands and You programme leases of state forestland in Wales are available and there are several social enterprises which currently hold management agreements who are considering taking out leases. Lease of state forest land to community groups is possible in Scotland but at the present time is not available in England. The lack of any information on disposal or leases on the DARNI website would suggest that neither is it possible in NI.

4.4.3. Changes within public ownership categories (devolution)

Devolution (See Chapter 6) represents the single biggest change in the past 30 years with the creation of three new state forest owners each of which developed independent policies, instruments and modes of working despite the Forestry Commission retaining some oversight at GB level. In 2013 the Welsh Government used its powers under the Public Bodies Act (2012) to amalgamate Forestry Commission Wales, the Environment Agency Wales and the Countryside Council for Wales into Natural Resources Wales, a new government sponsored body with responsibility for managing the Welsh Government forest estate and implementation of the Woodlands for Wales strategy. This again is a significant change which represents the emergence of a new forest owner. It is likely that the gradual, break-up of

the Forestry Commission will continue and that Scotland and England will also have completely independent state forest agencies within the next few years.

4.4.4. Changes in private ownership categories

Large scale forest land owners

It is estimated that around 3% of forests are sold on the open market every year. These sales are conducted by a small number of specialist land and woodland agents and is sub-divided (UPM Tilhill & Savills 2005) into two fairly distinct sectors – a small woodland sector roughly comprising properties under 20 ha and a commercial forestry sector which are mainly planted with conifers in blocks of more than 20 ha of stocked land (non-forest land being considered incidental to the commercial planting).

For the past 15 years UPM Tilhill & Savills (two of the larger forest agents) have produced an annual evaluation of their own and other public sales of forest. Figure 3 shows the number of properties and area of land sold on the open market since 1998. This reveals a small but stable market with around 100 properties and a cumulative area of 12,000 ha per year changing hands. The report also indicates a growth in the IPD UK Forestry Index of 17.7% over the past five years and 16.3% over the past decade. This was initially driven by investors looking for a secure asset in a time of economic crisis in which to shelter cash with interest maintained by tax relief and long term optimism for timber prices buoyed by interest in renewable energy opportunities (as sites for wind turbines or hydro-electricity production). The properties were mostly purchased by existing investors looking to increase their forest holding, new investors and large forestry investment funds acting for pools of investors. However, the liquidity of this market is such that UPM Tilhill & Savills anticipate investors leaving forestry (selling their property) now that there is some financial recovery in favour of better short term returns than can be delivered by forestry. The prominence of fiscal incentives for forest ownership is highlighted in the report which concludes "significant tax advantages derived from commercial forestry, including the potential to benefit from significant IHT savings and Capital Gains Tax exemption, continues to point to a bright long term future for forestry" (UPM Tilhill & Savills 2013).

Figure 3: Sales of commercial (conifer) forest properties greater than 20 ha in size
Source: (UPM Tilhill & Savills 2013)

Interestingly, agents report that the average duration of ownership of these commercial forests is between 12-15 years (UPM Tilhill & Savills 2007) which further supports the use of forest as a financial asset. In common with house ownership, there are significant capital gains to be made in forest speculation.

CASE STUDY 4: THE CASE FOR FOREST AS AN INVESTMENT

In the introduction to the market report for 2008 the value of forest in an investment portfolio was touted as having the following benefits:

"Forestry remains robust amongst the turmoil of the investment markets of the last year. Land based assets have outperformed alternative assets over the past five years and have been comparable to alternative assets over the past 15 years. In contrast, the performance of equities and commercial property has been negative over the past three years and relatively muted over the past five to ten years.

The investment performance of forestry has recorded an annualised total return of almost 20% over the past three years and has outperformed investment farmland which recorded an annualised total return of just under 15%. Forestry is an important element of an investment portfolio.

Forestry is a real alternative to investing in traditional assets and can be used to spread the mix in an investment portfolio. In addition to having performed well in recent years, owning forestry has tax benefits. There is potentially 100% relief on inheritance tax, no income tax on the income derived from timber and gains attributable to standing or felled timber are exempt from capital gains tax.

We expect forestry to remain an important alternative to other assets due to its significance in capturing carbon to offset emissions and also as the focus on biomass fuels and timber, as a sustainable building material, intensifies." UPM Tilhill & Savills (2009)

Small scale forest land owners

A further strand in the development of forest ownership throughout the UK has been the tendency for small areas of woodland and forest to be acquired by individuals seeking amenity woodlands. These individuals are primarily interested in the environmental qualities of woodland. In Scotland these owners are required by law to allow access, but elsewhere, some, but by no means all of this type of owner, are willing to allow public access. Many actively manage their woods to minimise public access.

Demand for small woodlands is strongly associated with proximity to centres of population and this is most easily seen as variation in per hectare forest land prices across the country (Table 11). Small amenity woodlands sell at a much higher price per hectare than larger woods because they are valued by the purchaser for intangible, personal reasons rather than the timber production potential of the land, which explains how one property fetched £28,800 per ha in 2003 and also the volatility of price. As shown in Table 11 location is the biggest determinant of price followed by the attractiveness of the woodland and affordability – i.e. the overall price for the property.

Table 11: Price for small forest blocks (< 25 ha) in England and Wales for 2002 to 2004

Location	Average price per ha (£)		
	2002	2003	2004
South East England	6.674	8,670	10,300
Central England	5,584	5,791	11,300
South West England	4,698	4,783	13,900
East Anglia	2,847	3,068	15,300
South Wales	2,327	2,220	8,200
North Wales	2,946	2,529	
Northern England	3,128	3,246	7,600
Average price for woodland over 25 ha	N/A	1,400	1,817

Source: Tilhill& FPD Savills Small market report

Tilhill & FPD Savills report that the reasons given for the purchases included in their market report were:

- Quiet recreation, with amenity and conservation
- Investment performance and, possibly, tax benefits
- Sporting rights benefits
- "I have always wanted to own woodland"
- For the extras – water and, very occasionally, building and/or camping
- Ownership of a nearby property.

CASE STUDY 5: NEW SMALL SCALE WOODLAND OWNERS, MOSTLY 'URBAN'

Leach et al (2012) analysed data from 200 questionnaires completed by buyers of small woodlands; in depth interviews with 10 buyers; and 150 questionnaires with existing owners of small woodlands. They concluded that the 'new breed of owner' differs from [presumably foresters'] preconceptions. They found that in general these new owners spend a lot of time visiting their woodlands, are not looking for profit from timber, and do most of the management themselves. They are motivated and knowledgeable about recreation and wildlife, and keen to learn and keep fit.

Peri-urban forest initiatives

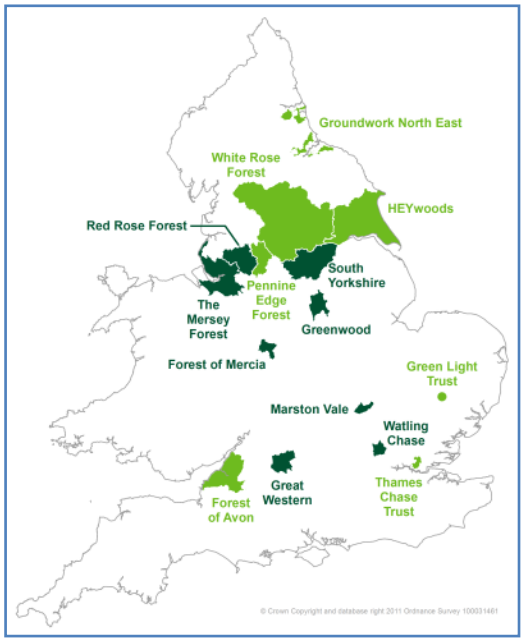
A new model of forestry was launched in the UK in 1990 to create green infrastructure and environmental enhancement focussing on damaged and blighted landscapes, usually close to large urban centres. In England these are collectively known as "Community Forests" and are state-sponsored initiatives mostly operating on Council land (see CASE STUDY 7). After an initial period of public sector support, these state-funded projects were transformed into charitable trusts or drawn into partnership arrangement with municipal authorities and the most successful have thrived and continue to pursue tree planting and pro-active woodland management by mobilising individual, municipal and corporate landowners to plant and manage trees. Funding is increasingly a mix of EU, national, municipal, corporate and in kind contributions (www.cf-trust.org/).

CASE STUDY 6: COMMUNITY FORESTS IN ENGLAND

This peri-urban regeneration programme represents the largest environmental regeneration initiative in England covering extensive tracts of the country and collectively has:

- Planted 10,000 ha of new woodland
- Brought more than 27,000 ha of existing woodland under management
- Created or improved 1,200 ha of other habitats
- Planted or restored 1,200 km of hedgerows
- Opened up 16,000 ha of woods and green-space for recreation and leisure
- Restored or created more than 4,000 kilometres of footpaths and cycle routes
- Engaged and involved hundreds of thousands of people in finding out about and improving their local areas
- Secured investment of over £175 million to improve people's quality of life

www.communityforest.org.uk/aboutenglandsforests.htm

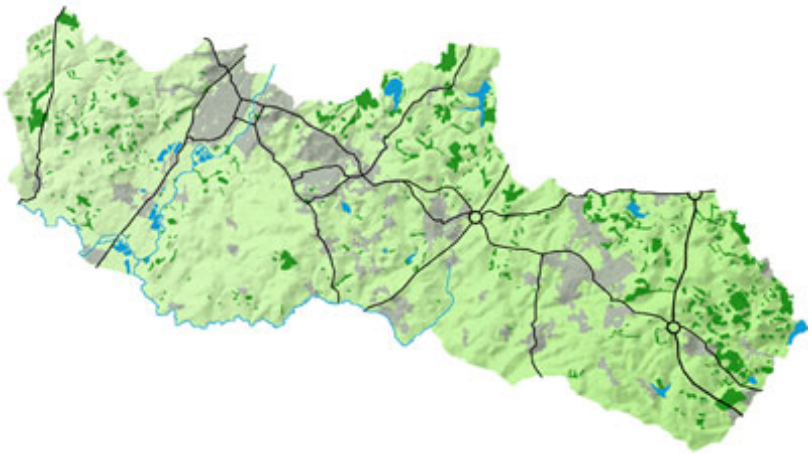


Community Forests
Similar local authority sponsored 'community forestry' initiatives

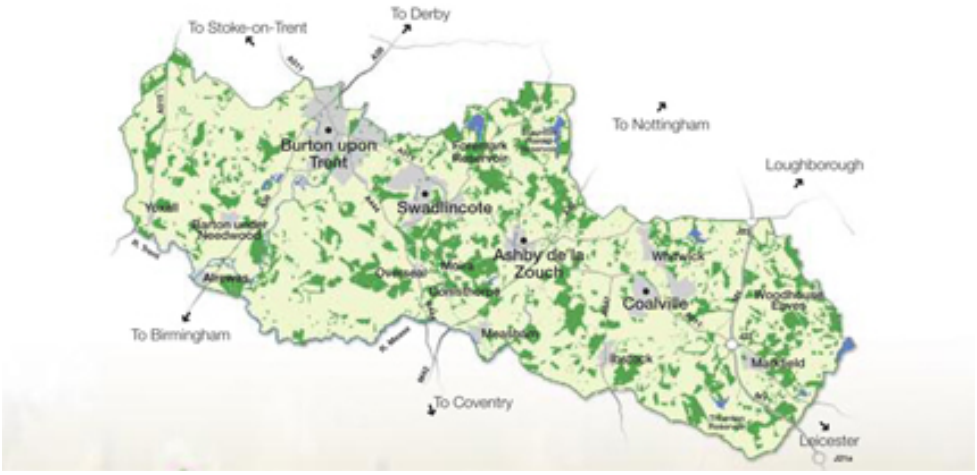
Working on a different business model the National Forest initiative was established in 1995 in the East Midlands of England (www.nationalforest.org). This initiative is administered by The National Forest Company which was established by Government as a non-departmental public body sponsored by the Department for Environment, Food and Rural Affairs (Defra) to deliver the government-approved National Forest Strategy. It is therefore more directly an instrument of national policy than the Community Forests which operate at the level of amalgamations of adjacent municipalities. The motivation for the National Forest was similar to that of the community forests but more focused on afforestation and with grant aid has planted 6,700 ha of new woodland in an area of the North Midlands. Most of the woodland created remains privately owned, with locational supplements used to enhance the normal financial incentives for planting.

CASE STUDY 7: THE NATIONAL FOREST

Located in an area with modest woodland cover and significant regional socio-economic decline the National Forest project was set up as a non-departmental public body sponsored by the Department for Environment, Food and Rural Affairs (Defra). Its' website notes that: 'The National Forest Company:
Attracts and uses resources for ambitious and imaginative Forest creation that is sensitive to the landscape and environment.
Provides the setting for new businesses, recreation, tourism and an improved quality of life
Enhances wildlife and biodiversity.
Over the past 20 years the National Forest Company has facilitated planting of 6,931 ha of new woodland which has increased woodland cover in the National Forest from 6% to 19.8%. Of this 1,040 ha have been purchased by the Company with the remainder being grant aided planting on private land.



Woodland cover 1995



Woodland cover 2014

The National Forest Company uses a mix of incentives and leads through working partnerships with landowners, businesses, public, private and voluntary organisations and local communities to fulfil the shared vision for the Forest. Funding is also shared and includes:
Since 1995 – ~ £ 170.5 million invested in Forest-related and regeneration projects and programmes
Since 1997 – 28,000 volunteer work days by The Conservation Volunteers
Since 2003 – £ 1.2 million of corporate and individual donations

www.nationalforest.org/about_us/

There have been a number of peri-urban regeneration projects in the other countries. The first was in Northern Ireland in the shape of the Forest of Belfast scheme established in 1992 along similar lines to the Community Forests of England but using EU funding for Peace and Reconciliation with the additional objective of promoting post-conflict reconciliation and focusing on urban rather than peri-urban regeneration[98]. In Scotland a

[98] http://www.bbcwildlife.org.uk/sites/birmingham.live.wt.precedenthost.co.uk/files/CS%2018%20-%20City%20Wide%20partners.pdf

partnership-based initiative was launched in 1994 as the Central Scotland Forest[99] which has been equally successful and was recently subsumed into the Central Scotland Green Network Trust[100].

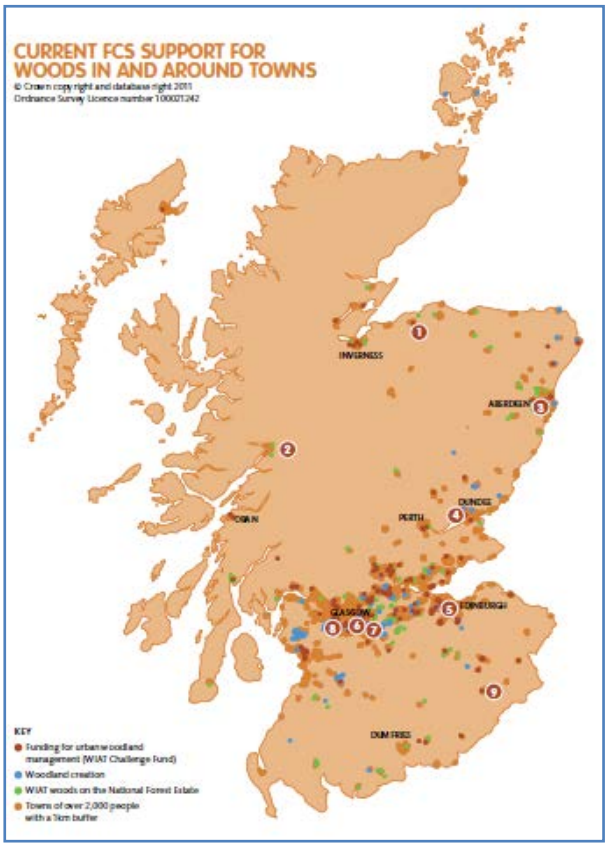


Figure 4: Woods In and Around Towns project areas in Scotland

Source:http://scotland.forestry.gov.uk/images/corporate/pdf/WIATProgressReportstorysofar.pdf

There are also peri-urban afforestation initiatives led by the Forestry Commission in the form of the Woods In and Around Towns (WIAT)[101]initiative in Scotland and the Heads of the Valleys Woodland Plan[102] in Wales. WIAT was launched in 2005 and is mostly funded through FC Scotland who invested £50 million in the project in the first six years with the acquisition of 4,000 ha through partnership agreements for existing woods and by purchasing land for the creation of new urban woods through the re-positioning programme. In total 1,400 of new woodland has been planted and 11,000 ha of existing woodland brought into management[103](see Figure 4).

The equivalent scheme to WIAT in Wales is by contrast severely under-funded and has made relatively little progress with objectives which include the creation of 2,500 ha of woodland as the pro rata contribution to Welsh government's target to create 100,000 ha of new woodland before 2025[104].

Charitable trusts

The UK has a long history of charitable trusts with bodies such as the National Trust and the Royal Society for the Protection of Birds being formed in the late 19th century. New charitable trusts, in particular the Woodland Trust have acquired a substantial area of woodland, especially in England. The extent of woodland ownership by charitable trusts has moved upwards in recent decades.

A significant trend since the late 1990s has been the emergence of regional partnerships to promote forestry activity amongst private owners. Often primed with regional and Forestry Commission support, such bodies have become influential in supporting woodland management and in developing wood energy initiatives. Cumbria Woodlands has been in existence for 21 years and provides a wide range of advisory support to private woodland owners. They have drawn down a range of public funds to enable a continuous and broad-ranging support service to the small woodland sector in Cumbria, North West England. These are less important in terms of new afforestation but may be very significant in getting forest owners to use their trees. Wood energy systems have often been a good entry point.

Traditional estates

Since 1963 there have been a series of surveys of traditional estates with forest which was repeated in 2012 and reported in Nicholls et al. (2013). Table 12 presents the results of these surveys in terms of the form of ownership reported by the surveyed estates.

[99]http://www.csft.org.uk/
[100]http://www.csgnt.org.uk/
[101]http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/communities/woods-in-and-around-towns-wiat
[102]http://www.forestry.gov.uk/forestry/INFD-8J2GRS
[103]http://scotland.forestry.gov.uk/images/corporate/pdf/WIATProgressReportstorysofar.pdf
[104]http://www.forestry.gov.uk/pdf/HeadsoftheValleysWoodlandPlanExecutiveSummary2010a.pdf/$FILE/HeadsoftheValleysWoodlandPlanExecutiveSummary2010a.pdf

It is clear that although the estates themselves remained intact and often continued to be managed by the heir of the same family that the form of ownership had changed – mostly into that of a private trust.

Table 12: Ownership of traditional estates

Type of owner	Year			
	1963 (%)	1996 (%)	2005 (%)	2012 (%)
Private individual	69	40	40	32
Private company	14	8	0	0
Private trust	10	38	43	32
Charity	7	6	14	12
Other / Declined to answer	-	8	3	24
Number in sample	72	50	36	25

Source: Nicholls et al 2013

The private trusts are legal entities set up by large family estate owners and to which they transfer ownership of their estate. This provides additional security for the land and a means of avoiding inheritance tax while the income from the estate can still be returned to the owner (Cahill 2001). The family trust may also provide a robust tax shelter and a useful means of perpetuating family succession at a time when higher rates of divorce can threaten to break up landholdings.

Community-led woodland groups

There is no tradition of communal ownership of land in the UK, although local authorities (usually larger than the equivalent municipalities in continental Europe) do own significant but poorly documented areas of land (Britt and Johnston 2008; van der Jagt& Lawrence 2014).

Community woodlands are generally thought of as a new phenomenon but there are antecedents which pre-date current interest which often take the form of gifts to the local community.

Data on new community woodland groups has improved greatly in the last three years (summarised in Lawrence and Ambrose-Oji, 2013). The first of the new community groups acquiring woodland was Wooplaw in the Scottish Borders, in 1987 (Lawrence et al 2009). There are many different organisational models for community woodland groups with the most common one being a ‘company limited by guarantee’ which represents the community group.

Some facts and figures for community ownership of woodland are:

- In Scotland progress against The Scottish Forestry Strategy (SFS) is measured using a suite of indicators, one of which is *Number of community groups involved in owning or managing woodland*. The indicator measured in 2012 showed an increase of 67% in the number of community woodland groups over the last five years, to a total of 204. Of these, tenurial information was acquired for 184, of which one third owned their woodlands (Stewart and Edwards 2012).
- In Wales a systematic survey of community woodland groups found that 27% own their woodlands (Wavehill Consulting 2010).
- In another study, based on a review of all available evidence of impact of community woodlands across the UK, 681 cases were identified, of which 22% were classified as 'community resources' which were usually owned by the community (but also included secure tenure such as leasehold) (Lawrence and Ambrose-Oji, 2014).

These data confirm the overall impression that community ownership is lower in England than in Scotland.

In Scotland more qualitative evidence is available, where the emergence of community ownership from the late 1990s has begun to establish new ownership models. Pioneered by bodies such as Reforesting Scotland, community forestry became a prominent movement in the first decade of the new millennium. In practice, the total area covered by leases or ownership by community bodies remains relatively small but growing. In Scotland this is actively

supported by schemes associated with the Land Reform (Scotland) Act of 2003, such as the National Forest Land Scheme, and the Scottish Land Fund. Ownership is seen as symbolically significant in Scotland (Lawrence 2009).

Slee & Snowdon (1998) examined community groups and argued that most generate recreational opportunity rather than significant economic development opportunities. However, increasing difficulty securing grants and interest in the provision of woodland-based employment, at least in Wales, has led to a recent growth of woodland social enterprises and economic development in Wales and Scotland (e.g. North West Mull Community Woodland Company; Kilfinan Forest Trust; Stronafian Forest Trust).

Regardless of policy drivers, changes to community ownership have often been motivated by the communities themselves, and a wide range of ownership models is arising, including for example share purchase, long lease and partnership[105].

Some accessible case studies are published in Lawrence and Ambrose-Oji (2013) and include:

- from Scotland: North West Mull Community Woodland Company Ltd – Langamull and West Ardhu Woodland, Mull
- from England: Friends of Oakfrith Wood (FoW)
- from Wales: Blaen Bran Community Woodland Group
- Others can be found in the reports referenced in that publication, and also available at www.forestry.gov.uk/fr/INFD-7TSD7Eincluding CWA 2012 and Hughes 2012.

4.4.5. Main trends of forest ownership change

Across Europe, the following drivers for ownership changes had been identified in the COST Action:

Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)

Privatization of public forest management (introduction of private forms of management, e.g. state owned company)

New private forest owners who have bought forests

New forest ownership through afforestation of formerly agricultural or waste lands

Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)

The relevance of these drivers in the UK context is presented in Table 13.

Table 13: Significance of trends in new forest ownership in the UK

Trends in forest ownership in the United Kingdom: New forest ownership through…	Significance*
• Privatization, or restitution, of forest land (giving or selling state forest land to private people or bodies)	1
• Privatization of public forest management (introduction of private forms of management, e.g. state owned company)	0
• New private forest owners who have bought forests	2
• New forest ownership through afforestation of formerly agricultural or waste lands	2
• Changing life style, motivations and attitudes of forest owners (e.g. when farms are given up or heirs are not farmers any more)	2
• Other trend, namely: purchase of land by community-led groups	1

** 0 (not relevant); 1 (to some extent); 2 (rather important); 3 (highly important)*

[105] http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/communities/national-forest-land-scheme-nfls

4.5. Gender issues in relation to forest ownership

There are few gender-disaggregated data on forest ownership in the UK and no explicit studies of gender in forest ownership and management.

Urquhart (2009) undertook a survey of private woodland owners where 83% of the respondents were male. Furthermore, there were distinct differences in the representation of women in the conservationist and amenity owner types as shown in Table 14.

Table 14: Association between gender and owner groups

Owner Group	Gender	
	Male %	Female %
Individualist	83.2	16.8
Multifunctional	82.1	17.9
Private Consumer	93.6	6.4
Conservationist	73.7	26.3
Investor	92.1	7.9
Amenity Owner	71.4	28.6

Source: Urquhart 2009, n=399

A later survey of 129 woodland owners for woodlands.co.uk showed a similar picture with 73% of respondents being male (Jeremey Leach Research 2011). This same study also found that there were proportionately more women in the 'Nature lovers' and 'Family foresters' than in the 'Creatives' and 'Bush crafters' owner types. See Section 4.3.2 for gender preferences in inheritance of land.

4.6. Charitable, NGO or not-for-profit ownership of the forests

This section is concerned with forests owned by organisations such as conservation and heritage NGOs, self-organised community-based institutions and other philanthropic ("characterized or motivated by philanthropy; benevolent; humane" OED) organisations. The management objective for these forests is usually to deliver social or environmental aims with maximisation of financial or timber returns as a secondary concern. Most owners are corporate and may invoke at least an element of group or participatory decision-making on management objectives and high ethical standards. It is possible for such ownership to be entirely private. However, the provision of public benefits (e.g. biodiversity, amenity, recreation etc.) which are free for everyone to enjoy or provide benefits to local communities (employment for disadvantaged people etc.) are sometimes recognised in the form of charitable registration. This in turn puts restrictions on the rights of the owners to use profits and to dispose of assets in exchange for tax exemptions and access to charitable funding.

The UK team found examples of seven types of charitable forests listed in Table 15 and described in the following sections.

Table 15: Charitable forest owner types in UK

Forests owned by …	Yes	No	Uncertain
• Foundations or trusts	X		
• NGO with environmental or social objectives	X		
• Self-organised local community groups	X		
• Co-operatives/forest owner associations	X		
• Social enterprises	X		
• Recognized charitable status for land-owners	X		
• Other forms of charitable ownerships, namely: Church, universities and schools	X		

4.6.1. Foundations or trusts

There are several examples of trusts including the Woodland Trust which owns and manages forest land. The National Trust and its Scottish counterpart own and manage forests and woodland within a complex portfolio of natural and historic heritage resources, and forestry development trusts. Some of these Trusts own significant areas of land – Cahill (2001) lists the National Trust for England and Wales as the third largest landowner in the UK with 222,600 ha of land. There are other trusts which rarely own land but advise on its use. Reforesting Scotland is a trust which advocates more community involvement in woodland creation and restoration. There are also local trusts, many of which have been in existence for some time, but are largely unknown even to the local populace. Gifts of woodland to communities have often been seamlessly absorbed into municipal management. More recently local trusts have been the vehicle for community woodland initiatives, especially where community leases or acquisitions have been agreed.

A third type of trust is charitable trusts with a specific focus that have a single location and a sub-regional/regional reach (e.g. The Greenwood Centre in Telford).A further type of trust (similar to the Greenwood Centre) but more focussed on environmental enhancement rather than timber use is that created by municipalities to further partnership based woodland management such as the Greensand Trust in Mid Bedfordshire in the East of England region which is an independent environmental charity that works with local communities and landowners to conserve and promote the distinctive landscape, wildlife and history of the Greensand Ridge and the wider surrounding area. Cumbria Woodlands is a further example of trust which supports woodland owners.

CASE STUDY 8: THE WOODLAND TRUST: GLENFINGLAS

The Woodland Trust has acquired 80 woods in Scotland covering 8,500 hectares, stretching from the far southwest to the far North of Scotland. Its website notes that its 'woods include nationally and internationally important woodland sites as well as urban and community woodland. Its largest property is Glen Finglas in the Loch Lomond and Trossachs National Park and extends to 4,863 hectares. The Woodland Trust Scotland acquired the estate in 1996 along with neighbouring Milton Glen, the Lendrick Plantation and Bochastle field. According to its website, The Woodland Trust Scotland hopes to restore wood pasture across the estate, creating a mosaic of woodland, scattered trees and open ground. It has sought to significantly reduce the deer population to allow woodland regeneration.

www.woodlandtrust.org.uk/learn/estate/glen-finglas/the-great-trossachs-forest/

4.6.2. NGOs with environmental or social objectives

Many of these are also trusts such as The National Trust and the Woodland Trust. There are also a number of conservation NGOs such as the RSPB and the Wildlife Trusts which own land, some of which is forested. Some of these NGOs can own significant areas of land and Cahill (2001) lists the RSPB as the 7th largest landowner in the UK with 155,400 ha.

There are also many local forestry NGOs such as the Cheshire Landscape Trust with its volunteer tree wardens (http://cheshirelandscapetrust.org.uk/tree-wardens) and some of the 'Friends of' groups can also own land. For example, the Friends of the Lake District own and manage three woodlands and manage three other woodlands (http://www.fld.org.uk/our-land.html).

NGOs with primarily social objectives might also find themselves the custodians of woodland most often as part of a property purchased primarily for other purposes.

4.6.3. Self-organised local community groups

There is a growing community woodland movement across the UK. This started in Scotland as an off-shoot of the Land Rights movement and was facilitated by the Land Reform Act. There was also significant public support for the acquisition and collective ownership of land by local communities who are represented and supported at national level by the Community Woodland Association (CWA).

In Wales the community woodland movement has a somewhat different form and is represented by Llais y Goedwig (LlyG). LlyG's work in Wales is less concerned with the acquisition of land than the CWA and is working on facilitating local community access to forest land and co-production of forest policy and instruments with the Welsh Government.

In England the existence of the state-initiated community woodlands (see above) means that much of the activity is centred around the Community Forests and often take the form of 'Friends of…' groups which are more concerned with sharing management activities than owning forest land. There is as yet no grassroots community woodland network to along the lines of the CWA and LlyG for England.

See section 4.7 below for further details and case studies.

4.6.4. Co-operatives/forest owner associations

There are no forest owner associations in the UK, in the sense that they exist in many EU countries. Under the Rural Development Programme England (RDPE) a number of woodland initiatives were established which provide support to small woodland owners, but they are not generally membership organisations. An exception is the Ward Forester scheme developed by Devon County Council which connects owners who are interested in having their woodlands managed, with consultants ('Ward Foresters') who are willing to take on a group of clients and offer their services at a group rate making use of the economies of scale that the situation presents. These initiatives are reviewed in Molteno and Lawrence (2013).

In addition, the body which promotes farm co-operation in Scotland (SAOS) has actively promoted collaborative action by farm woodland owners through a 'machinery ring' to enable more cost-effective management of woodland, with the increased management of small woodlands for biomass the primary intention.

In addition there are a few nascent associations of forest owners which are national in scope e.g. Small Woods Association and the looser Sylva Foundation, both of which provide services to forest owners and seek to represent their interests. There are also emerging associations of people who have purchased woods through the same agent e.g. the Small Woodland Owners Group (http://www.swog.org.uk/) sponsored by Woodland Investment Management Limited trading as woodlands.co.uk.

In the 1950s there were a few co-operatives of forest owners in a locality e.g. Flintshire Woodlands but these have apparently disbanded though the concept persists through initiatives such as Elwy Working Woods. Other enterprises such as Coed Marros are mechanisms for collective ownership where the co-op owns a single land holding and these are sometimes called 'workers co-operatives'.

There are several legal forms available which can collectively be termed 'co-operatives'. One of these the Industrial and Provident Society (IPS)[106] is proving popular as a mechanism to raise funds for group purchase of woodland which is then used as basis for a social enterprise.

4.6.5. Social enterprises

In the UK the government defines a social enterprise as "a business with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than being driven by the need to maximise profit for shareholders and owners" (Department for Business Innovation and Skills 2011). It can take several legal forms and the term describes the purpose of a business not its' legal form nor the type of products or services it produces.

There are a number of forestry social enterprises. This work is summarised in Stewart (2011), who highlights the different ways in which social enterprise has been understood. Swade et al (2013 and 2014) and Lawrence et al (2014) highlight the scarcity in practice of woodland social enterprises, and

[106] An industrial and provident society is an organisation conducting an industry, business or trade, either as a co-operative or for the benefit of the community, and is registered under the Industrial and Provident Societies Act 1965. http://www.fca.org.uk/firms/firm-types/mutual-societies/industrial

constraints to developing them. A new paper proposes two descriptive typologies based on iterative analysis of 33 case studies: one typology identifies five different business models (see section 5.2.3) and one deals with governance and enterprise ethos which finds four different enterprise types (Ambrose-Oji et al. 2015) based on governance and enterprise ethos:

i. *Social enterprises* which are for social benefit but are not driven by the local community,
ii. *Community benefit enterprises* which involve the community in governance,
iii. *Community groups* which involve a specific user group (a community of interest),
iv. Community governed concessions where community owned forest is given over to a third party to manage to maximise profit for community group use.

Testing detailed financial data against the typologies demonstrates the limitations of current definitions of social and community enterprise in the forestry sector. It also identifies three main barriers to enterprise development: start-up costs, woodland and business management skills, bureaucracy. It concludes that policy responses should recognise a broad spectrum of woodland enterprise types rather than social enterprise alone, and support mechanisms enabling communities to find innovative solutions to raise capital, as well as providing the technical and legal advice they require.

4.6.6. Charitable status for land-owners

Nicholls et al. (2013) provide some insight into the use of charitable status by traditional estates. Between 1963 and 1996 around 6-7% of the estates responding to their survey were owned by a charity but by 2005 this has doubled with 12-14%.

Some landowners have created charitable trusts to manage recreational access to woodlands (e.g. the Glen Tanar Charitable Trust). This may have been motivated by the desire to obtain tax relief on 'heritage assets'.

4.6.7. Church, universities and schools

These are grouped together because they have similar origins and functions. Most are ancient institutions where the land formed part of the income either directly or as rental income. They are counted as charities because profits are used to support the institution and they have religious or educational purposes which are viewed as social benefits.

The church is a significant landowner which Cahill (2001) lists as the 13th largest landowner in the UK owning 54,600 ha. Cahill also noted that much of the medieval glebes (land within an ecclesiastical parish used to support the parish priest)are apparently 'missing' from modern records with no account of who now owns them.

The constituent colleges of older universities (e.g. Oxford, Cambridge etc.) and schools are endowed with extensive lands which include forests.

4.7. Common pool resource regimes

Commons - forest common pool resource regimes (CPR) are resource regimes where property is shared among users and management rules are derived and operated on self-management, collective actions and self- organisation (of rules and decisions). Examples of traditional CPR regime are pastures, forestland communities in Sweden, Slovakia, Romania, Italy and other European countries and irrigation systems in Africa or Asia. The number of new common property regimes is growing and it is a challenge for this Action to transfer knowledge and skills of traditional CPRs to new CPRs and vice versa. An example of a new (quasi-) CPR regime is the community woodlands in UK, established in last 20 years mainly in Scotland and Wales. Our interest in "traditional" and "new" common pool resources regimes (CPRs) in European forest is based on the understanding that robust resource regimes are critical for sustainable forest management regardless of the property rights. Ongoing practice shows that local land users may also be CPR regime if they have the rights to determine management rules even though they may not own the land itself. Thus proper rules on management (harvesting, decision making and conflict resolution mechanism, cost/benefit sharing, sanctioning etc.) are key

for sustainable use of CPR regimes.

The term 'commons' in England, Scotland and Wales refers to land where use rights, not ownership, is shared. This is a function of feudal land tenure, although current ownership may be present as at Birse (see CASE STUDY 9), historic appropriation of commons which were collectively owned was commonplace. There is no recent tradition of community-led management of woodland owned by municipalities in the UK, although local authorities do own significant but poorly documented areas of land (Britt and Johnston 2008; van der Jagt and Lawrence 2014). Many of the community woodland groups (also described above) could be considered as a UK-specific variation of a broad conceptualisation of commons, where the woodland is owned by a community-owned company.

On UK commons designated local people have prescribed rights to use land which usually belongs to a private (estate) landowner for which they do not pay rents. These commons are traditionally open pasture and much of this is now land of interest to conservation. However, loss of graziers means some commons are reverting to woodland and there may be increasing numbers of 'new' woodlands on commons. The ownership and management rights associated with trees on common land resides with the landowner and not with the commoners who usually only have rights to graze a specified number of animals, a turbary right to cut peat (and sometimes firewood rights). The conservation interest means that the management objectives of many commons will be the maintenance of open conditions and removal of trees. There has been recent successful facilitation of graziers associations to regulate use and provide a mechanism to include common in agri-environment schemes in Wales (see Brakenbury et al 2012). There are also several papers examining governance of commons – e.g. Short (2008) and Edwards & Steins (1998) for the New Forest.

CASE STUDY 9: BIRSE COMMUNITY TRUST

Birse Community Trust manages nearly 1,000 hectares (2,500 acres) of forests and woodlands on behalf of the community in Birse parish. This includes the Commonty Pinewoods in the Forest of Birse (c. 550 ha), Balfour Forest (241 ha), Slewdrum Forest (169 ha), Finzean Community Woods (17 ha) and several small areas such as the Finzean School Wood.

BCT holds ancient rights of Common over three of these forests (Birse Commonty, Balfour and Slewdrum Forests) one in each of the Birse parish's three communities. These are managed to promote the common good of the inhabitants of Birse parish and deliver wider public benefits.

Slewdrum and Balfour Forests, are former Forestry Commission plantations. Initially BCT became involve with these forests through management agreements and an informal partnership with the FC. BCT then played a pioneering role in the development of the Scottish Government's National Forest Land Scheme through which BCT was able to buy each of the forests.

While BCT is managing Slewdrum and Balfour to improve their environmental value as native forests, an important part of BCT management is to ensure that the forests also produce a long term sustainable supply of timber that contributes financially to other activities carried out by BCT on behalf of the local community.

http://www.birsecommunitytrust.org.uk/Community%20Woodlands/communitywood.html

5. Forest management approaches for new forest owner types

5.1. Forest management in the United Kingdom

The public forests are managed by the public forest enterprise sector: in Scotland by Forest Enterprise Scotland, in England by Forest Enterprise England, and in Wales by Natural Resource Wales. The current government intends to reorganise Forest Enterprise England into a private trust but this has now been deferred until the next government. Private commercial forests are usually managed by forest management companies, of which two prominent examples are UPM Tilhill and Scottish Woodlands. These are international companies which also manage commercial forests in e.g. Scandinavia.

There are no forest owner associations (see Chapter 6) so other private non-commercial forest owners mainly contract forest agents (known elsewhere in Europe as 'consultants');

very rarely they employ a forester directly (on the larger traditional estates). Small scale woodlands may be managed by the owner him / herself, or more usually, not managed at all – in the sense of making explicit interventions for an explicit purpose.

5.1.1. Management objectives

Lawrence and Dandy (2014) have summarised a review of studies on woodland owner objectives. Conservation, biodiversity and wildlife are the most common and/or primary owner objectives associated with woodlands (e.g. Blackstock et al., 2007; Glynn et al., 2012; Leach et al., 2012; Wavehill Consulting, 2009). Maintaining woodlands as landscape features also rates highly (Church and Ravenscroft, 2008; Glynn et al., 2012; Nicholls and Young, 2005). Other frequently identified objectives include providing shelter for stock or crops (Burgess et al., 1998; Stubbs, 2011; Wavehill Consulting, 2009), a venue for sporting activities such as shooting (Blackstock and Binggeli, 2000; John Clegg and Co. et al., 2002; Nicholls and Young, 2005; Sharpe et al., 2001), and personal amenity and leisure activities (Glynn et al., 2012; Land Use Consultants, 2007; Stubbs, 2011).

Timber production and the provision of public access are consistently low priorities in woodland management. Timber and fuel production was a management priority for only 17% of woodland-owning farmers in the Grampian region of Scotland, 13% of 'wood-lotters' in Kent (a category of new owner), and the principal objective of 5.6% of surveyed woodland owners in Bedfordshire (Burgess et al., 1998; Land Use Consultants, 2007; Stubbs et al., 2010). However, owners of larger areas of woodland are more likely to have timber production as a management objective (Render, 2004), and it is a significant objective for some estate owners (Nicholls and Young, 2005) and larger landowners in Scotland (WEAG, 2012). Although the commercial production of woodfuel is also rated low, many studies report non-commercial fuel production as important (Leach et al., 2012; Secker Walker, 2009).For example, 48% of farmers surveyed across Wales and 61% in the Blackdown Hills reported collecting firewood for their personal use (Greenshields, 2009; Wavehill Consulting, 2009).A recent survey of farm woodland owners in Scotland by Slee et al. (2014) reinforced the value of woodlands for domestic fuel.

These studies do not separate 'old' and 'new' owners, but we can infer that new woodland owners are less likely to prioritise timber production (but possibly not domestic woodfuel), because observation suggests that new owners have smaller areas, and are not estate owners. This conclusion is reinforced by the finding (again in Lawrence and Dandy 2014) that studies find the objectives for woodland creation are broadly similar to those for existing woodland. Wildlife conservation and landscape amenity are again at the top of owners' lists (Bell, 1999; Crabtree et al., 2001; Cunningham, 2009; Glynn et al., 2012). Further reasons include 'future income' generation (Glynn et al., 2012), provision of sporting (shooting) opportunities (Bell, 1999; Ward and Manley, 2002a,b), and provision of shelter (Bell, 1999; Crabtree et al., 2001). Carbon storage is a more recent reason for tree planting (Cunningham, 2009; Glynn et al., 2012). Reasons for planting woodland also often relate to the objectives of particular grant schemes, which are commonly the focus of studies (see Crabtree &Appleton, 1992). A number of reasons are given for not planting woodland including that the 'land is too good' or 'unsuitable', aesthetic factors, a lack of interest, unfavourable economics, and that forestry operates (and benefits are obtained) over too long a timeframe (e.g. Bell, 1999).

5.1.2. Contracts for forest management

Very little has been documented about the contractual basis of forest management arrangements in the UK. From Lawrence and Edwards (2013) we can infer that;

- agents are most commonly contracted to prepare management plans and apply for grants;
- harvesting is the second most common entry point for such contracts
- a few traditional estates employ their own foresters but this is becoming rare
- large commercial forests are usually managed by inter/national forest

management companies such as UPM Tilhill, or Scottish Woodlands

- small woodlands are often not managed; where they are managed the owner may buy in services from large forest management companies or smaller independent consultants.

Urquhart et al. (2010) suggest that owners often would like to manage their woodland more but there are barriers, such as time and money.

Direct employment of foresters by estates is becoming less common. Environmental NGOs are increasingly finding a niche as providers of woodland management (Lawrence and Edwards 2013); for example:

- Borders Forest Trust which is contracted to manage new native woodland in the Ettrick Valley
- The Soil Association which is contracted to provide training seminars on woodland management to farmers in Scotland.
- Machinery rings (a form of farmer co-operative which is common in Europe), have also taken on woodland management.

5.1.3. New forest ownership types and forest management services

Most new forest owners do not arrange forest management services, and the scarce research on this suggests that new owners, or landowners who create new forests are often confused about where to find advice and management services. Lawrence and Edwards (2013) document examples where the owners have found that the forest management companies are unsuited to their needs. Most farmers rely on private agricultural advisory services, and have found that forest grant advice supplied through them is also sometimes inadequate. Lawrence and Dandy (2014) document problems with advisory services, experienced by a wide range of woodland owners, particularly farmers. For example, Urquhart (2006) found that new owners (the individuals/families) get advice from a range of sources including FC, consultants, contractors, they take courses on management, talk to other owners, read books or search the internet, or seek advice from organisations such as the Smallwoods Association or by spending time in the woodland and seeing what works.

The only type of new owners who could be described as 'organising' is the community woodland groups. As noted in Chapter 4, the majority of these are not owners, but many have management agreements or leaseholds. In both Scotland and Wales, community woodland associations help community woodland groups to share experiences, provide advice to each other and access training. Some of the training on offer is relevant to woodland management, or business management.

See www.communitywoodlandassociation.org and www.llaisygoedwig.org.uk.

5.2. New or innovative forest management approaches relevant for new forest owner types

5.2.1. Overview

Over many parts of the UK, private forests are a residual land use, managed with a light silvicultural touch, where motives such as game management or the preservation of woodlands as landscape elements are more important than timber production. In some regions, such as South West England, Regional Woodland and Forest Framework, 2005[107] it is suggested that the majority of private woodlands are unmanaged for either environmental or timber purposes, though the term unmanaged tends to mean not under active silvicultural management. This pattern of neglect is likely to be the norm for many small woodlands throughout the UK.

[107] South West England Regional Development Agency (2005), Woodland and Forest Framework for South West England, Forestry Commission and SWRDA.

Table 16: Summary of management objectives by new owner type

New owner type	Management objectives	Management services	Source of evidence
1. Existing land owners, especially farmers, who have planted new woodland for multiple reasons	Often unmanaged Conservation, landscape, shelter Sometimes (and perhaps increasingly) woodfuel production Rarely timber production	Agricultural advisors – who know little about woodland management Many seek advice from the Forestry Commission, NGOs and local farmers, but not the standard agricultural advisory services. Sometimes, contracted forest management agents Rarely, environmental NGOs	Lawrence & Edwards, 2013 Lawrence &Dandy, 2014 Sleeet al., 2014
2. Private trusts (holding traditional estates on behalf of the family, sometimes replacing personal / family ownership with a form of corporate ownership)	No separate information		
3. Individuals and companies primarily seeking financial benefit or commercial advantage (e.g. by tax efficient financial services (investment and intergenerational capital transfer, or carbon or biodiversity offsets etc.))	Timber production Grant eligibility High return on capital	National or international forest management companies	Lawrence and Edwards 2013
4. Community woodland groups (in a plethora of legal forms and tenurial arrangements)	Community benefit: recreation, amenity, biodiversity; sometimes timber and woodfuel production, local employment; occasionally public safety is a motivation	Community Woodland Association (Scotland); Llais y Goedwig (Wales) Volunteers (i.e. community woodland group members) More rarely, forestry agents (consultants) or Forest Commission woodland officers	Lawrence and Ambrose-Oji, 2013, 2014 Urquhart 2006
5. Individuals (or families) purchasing small woodlands for household use (amenity, recreation, firewood etc.)	Income is a low priority Custodianship, personal enjoyment, experience of woodland management, firewood. Wildlife conservation is also important.	98% were found to have received advice in the most detailed study (Leach et al, 2012) Sources include Forestry Commission, consultants and contractors as well as own knowledge	Leach et al. 2012 Urquhart 2006 Urquhart et al. 2011
6. New woodlanders - individuals or groups acquiring woodlands as a basis for their livelihood	Will depend on what woodland is being managed for – e.g. wood fuel, wood products, recreational access such as walking, cycling, camping, bush craft, paintballing, quad biking.	Contractors, own staff, themselves	
7. Environmental NGOs (usually in the form of charitable institutions with a focus on biodiversity or heritage conservation)	Conservation and enhancement of biodiversity and landscape, public access and education	Internal (e.g. Borders Forest Trust, Woodland Trust, John Muir Trust), volunteers	Unpublished; personal knowledge of the organisations concerned

New owner type	Management objectives	Management services	Source of evidence
8. Devolved national governments	Multi-objective management of national / public forest estate including recreation and biodiversity Fulfilment of commitments to timber industry	Internal (Forest Enterprise Scotland, Forest Enterprise England, Natural Resources Wales, Northern Ireland Forest Services	Publicly available information (websites of the agencies concerned)
9. Local government	Much is neglected, or seen as a liability and managed to minimise risk	Internal; specific tasks such as pruning or felling may be contracted in	Britt and Johnston 2008; Swade et al 2013; van der Jagt and Lawrence, 2014

5.2.2. New silvicultural or technical approaches

The following is based on current knowledge of the situation rather than literature, which is almost non-existent.

Continuous cover forestry (CCF) / low impact silvicultural systems (LISS)

Currently policy drivers in England, Scotland and Wales aim to diversify forest structure. Private owners (particularly traditional estate owners) and enthusiasts in the Forestry Commission have for several decades experimented with CCF on land which they manage. Whilst there is an extensive scientific literature on this, and possibly 10% of public forests (managed by FE England, FE Scotland or Natural Resources Wales) are using this approach[108], we can identify no literature on the adoption of CCF. Experience suggests that among the new owner types, community groups are particularly interested.

Diversification of species choice

Again this is encouraged by current policy drivers in England, Scotland and Wales. Environmental NGOs and community woodland groups are particularly focused on expanding native woodland; individual small owners are also enthusiastic about native species and often plant a wider range of native and exotic species for food production and ornamental purposes.

Short rotation forestry (SRF)

This has been supported by government incentives within the last decade, but markets have not yet proven reliable and trial areas are sometimes being 'harvested to waste' (i.e. written off as a loss). As a result this approach is not currently popular with farmers. The recent Renewable Heat Incentive Scheme may revitalise this type of management for fuelwood.

Coppicing as both retro-innovation and return to traditional modes of broadleaved woodland management

This approach is particularly popular among environmental NGOs (e.g. RSPB, Butterfly Conservation, Wildlife Trusts), community woodland groups and new individual (family) owners. There is a lot of interest in SE England (see CASE STUDY 13) to bring coppice woodland back into management, particularly to produce firewood for own use.

A recent survey by Reforesting Scotland found that in Scotland (Radical Rowan, June 2014, published by Reforesting Scotland):

- 16 people make most or part of their living from coppicing
- a further 19 people coppice as a hobby
- 25 people grow coppice materials for coppicing, in the order hazel, willow and other species
- 31 people make products out of coppice materials
- 85% of the people surveyed would like to network with other coppicers.

The main species that are coppiced in the UK are sweet chestnut, hazel and hornbeam, as well as willow and (in Scotland, Wales, and western England) oak as a source of tan bark. Chestnut coppicing has traditionally been popular in the South East of England, particular Kent and Sussex which has around 60% of the UK's chestnut coppice[109]

[108] www.forestry.gov.uk/fr/INFD-63CCQB

[109] www.woodlands.co.uk/blog/practical-guides/the-importance-of-coppice-workers-a-family-tradition-worth-supporting

(see CASE STUDY 13). Kent is one of the few areas where coppicing is still done commercially with coppiced chestnut being used for fencing. Hazel, often coppiced in the Midlands and Devon, has traditionally been used for thatching, hurdles, walking sticks, bean poles, and wattle (walls of traditional houses). Hornbeam coppice was used for charcoal making.

Some woodland owners carry out coppicing works themselves and there is an increasing number of courses and information available for training in coppicing and other traditional modes of management. Alternatively, owners will hire the services of a professional coppice worker. Coppicing used to be a traditional activity that often passed on from father to son and cutters would often have in-depth knowledge about particular woodlands, but is now learnt through courses.

Agroforestry

There is currently an active renewal of interest in agroforestry systems; to date this is expressed more among an interest group and researchers (for example, the on-line Farm Woodland Forum) than among landowners themselves. Forthcoming changes to the Common Agricultural Policy, and hence to the Rural Development Programmes, will make this more feasible, and potentially more attractive to farmers.

Table 17: Summary of silvicultural approaches by new owner type

New owner type	New silvicultural approaches	Source of evidence
1. Existing land owners, especially farmers, who have planted new woodland for multiple reasons	New interest in managing for woodfuel	Molteno and Lawrence 2013
2. Private trusts (holding traditional estates on behalf of the family)	No separate evidence	
3. Individuals and companies primarily seeking financial benefit or commercial advantage (e.g. by tax efficient financial services (investment and intergenerational capital transfer, or carbon or biodiversity offsets etc.))	Potential interest in alternative conifer species	Current research, unpublished data (contact Anna Lawrence)
4. Community woodland groups (in a plethora of legal forms and tenurial arrangements)	Increased cultivation of native tree species To a lesser degree: CCF / LISS Coppicing	Current research, unpublished data (contact Anna Lawrence) Hughes 2012 Community Woodland Association 2012
5. Individuals (or families) purchasing small woodlands for household use (amenity, recreation, firewood etc.)	Coppicing	Urquhart 2006
6. New woodlanders - individuals or groups acquiring woodlands as a (part) basis for their livelihood	Increased cultivation of native tree species To a lesser degree: CCF / LISS Coppicing	Hughes 2012
7. Environmental NGOs (usually in the form of charitable institutions with a focus on biodiversity or heritage conservation)	Increased cultivation of native tree species To a lesser degree: CCF / LISS Coppicing	Observation, unpublished data
8. Devolved national governments	Cultivation of alternative conifers LISS Restoration of PAWS (plantations on ancient woodland sites)	Published policy documents and delivery plans
9. Local government	Very little management or innovation except where managed by community groups	Swade et al 2013; van der Jagt and Lawrence, 2014

5.2.3. Innovative business models

In this discussion, we consider business models as not just the operation of a forest-based commercial enterprise but also the organisation of forest ownership and forest-related supply chains. There is considerable innovation of business models in many of the new forest owner types as shown in Table 18. Widespread discourses assume that community woodlands are social enterprises, but recent work highlights the multiple understandings and applications of this term (Ambrose-Oji et al. 2015, Stewart 2011). Recent work finds five different business models and four different enterprise types. Most are heavily reliant on grants and local government contracts. Barriers to enterprise development are start-up costs, lack of woodland and business management skills, and bureaucracy. Ambrose-Oji et al. (2015) conclude that policy responses should recognise a broad spectrum of woodland enterprise types rather than social enterprise alone, and support mechanism which enable communities to find innovative solutions to raising capital, as well as providing the technical and legal advice they require.

Table 18: Summary of innovative business models by new owner type

New owner type	New business models	Source of evidence
1. Existing land owners, especially farmers, who have planted new woodland for multiple reasons	Open invitation to lease farmland or sporting land for afforestation to FC Scotland	http://scotland.forestry.gov.uk/supporting/grants-and-regulations/land-leasing
	Co-operation between neighbouring farmers to develop farm woodlands	E.g. Pont Bren (www.assemblywales.org/en/bus-home/committees/sustainable-land-management/Pages/pontbren-farmers.aspx)
2. Private trusts (holding traditional estates on behalf of the family)	Increasing use of 'interest in possession' trusts by large scale family owners	Nicholls et al. 2013
3. Individuals and companies primarily seeking financial benefit or commercial advantage (e.g. by tax efficient financial services (investment and intergenerational capital transfer, or carbon or biodiversity offsets etc.))	Corporate social responsibility in peri-urban or other forests	www.cf-trust.org/corporate.htm
	Carbon offsets (certified under UK Woodland Carbon Code)	E.g. Cwm Fagor – woodland creation by Thorlux lighting company (http://www.assemblywales.org/en/bus-home/committees/sustainable-land-management/Pages/cwm-fagor.aspx)
4. Community woodland groups (in a plethora of legal forms and tenurial arrangements)	Enterprise	Stewart 2011
	Social enterprise	Ambrose-Oji et al. 2015
	Various leasehold arrangements with public and private woodland owners	
	Woodlands as part of community-led green energy initiatives	http://www.thegreenvalleys.org/ (a CIC)
	Woodlands as part of community owned farms (co-operatives often in form of IPS)	Examples from Wales: Moelyci (www.moelyci.org.uk) Felin Uchaf (www.felinuchaf.org/1/about.htm)
5. Individuals (or families) purchasing small woodlands for household use (amenity, recreation, firewood etc.)	Woodlotting (rental of small plots of forest by private owners)	www.scottishwoodlotassociation.co.uk

New owner type	New business models	Source of evidence
6. New woodlanders - individuals or groups acquiring woodlands as a basis for (part)of their livelihood	Small woodland based enterprises	Observation Documented examples e.g. www.wildernesswood.org
	Joint ownership by self-organised (small) groups of people who pool finances to purchase woodland for timber and income (using a range of legal forms)	Observation E.g. Coed Marros (Petty et al. undated)
	Woodland crofts (Scotland)	http://woodlandcrofts.org.cp-27.webhostbox.net/?page_id=4
7. Environmental NGOs (usually in the form of charitable institutions with a focus on biodiversity or heritage conservation)	Leases to people/groups local to specific woodlands (Woodland Trust) Corporate partnerships (Woodland Trust) Corporate Social Responsibility bonds	www.woodlandtrust.org.uk/mediafile/100032545/corporate-partnerships-opportunities-1013.pdf?cb=e143ac8a387a4ec3b954ae8535330e25 www.cf-trust.org/corporate_g.htm
8. Devolved national governments	Woodlands and You (Wales) facility for management agreements and leases on public forest Management agreements and partnerships with communities in Scotland	www.forestry.gov.uk/website/forestry.nsf/byunique/infd-8ywcf6
9. Local government	New leasing arrangements with Forestry Commission New leasing arrangements and management agreements with community groups	Examples are described in Ambrose-Oji et al 2013 (WIAT evaluation); van der Jagt and Lawrence 2014
	Partnerships with business in peri-urban forests (as corporate social responsibility)	E.g. Mersey Forest & United Utilities (www.merseyforest.org.uk/work-with-us/partnerships-with-businesses/)

On a slightly different interpretation of business model we might note the increasing interest in triple bottom line accounting for corporate social responsibility. United Utilities which owns a considerable forest estate inherited from Victorian planting in the catchment of water supply reservoirs uses the government-led (Cabinet Office) methodology 'social return on investment' for its social accounts[110]. Some of United Utilities corporate social responsibility took the form of a £250,000 community fund administered by the Mersey Forest to enhance green infrastructure and tree planting in a community impacted by water pipeline construction[111]. The Mersey Forest now offers corporate investors the opportunity to buy fixed term CSR bonds[112] though they do not report on the level of uptake of this opportunity.

In Scotland, the body which promotes agricultural co-operation (SAOS) has been active in establishing pooled management of small woodlands under the aegis of machinery rings, which are long-established mechanisms to pool machinery for use on farming enterprises. The large number of under-managed small woodlands (many planted since the introduction of farm woodland grants in the 1980s) now require management. Expanding wood energy markets create a potential market, but individual owners lack the knowledge, the business networks and the technology to exploit the opportunity. This has created

[110] http://corporateresponsibility2013.unitedutilities.com/Assessingoursocialimpact.aspx

[111] http://corporateresponsibility2013.unitedutilities.com/pipingincommunityinvestmentinsthelens.aspx

[112] http://www.cf-trust.org/corporate_g.htm

space for machinery rings to deliver woodland management services.

The Crown Estate takes a different approach and uses an accounting technique called 'Total contribution' to value the contribution of Crown Estates to the UK (Crown Estate 2013). This is a self-proclaimed innovative approach to extend the 'triple bottom line' of economic, social and environmental values to include indirect impacts through the supply chain and from activities which take place on the estate (NEF Consulting 2013).

Carbon accounts and off-sets are another way in which the investment and return from forestry can be accounted for in terms other than money. Carbon trading as an incentive for forest investment is provided for in the Woodland Carbon Code[113] administered by the Forestry Commission and set up in 2009. To date this has been most attractive to corporate investors e.g. Thorlux Lighting who purchased and planted 80 ha of new woodland under the Carbon Code to offset CO_2 emissions from making and operating its line of low energy lighting fittings[114].

In sum, the main new business models are:

- New forms of collective organisation to purchase woodlands or acquire management rights over woodland, often for multiple use
- New forms of collaboration e.g. Machinery Rings and partnership working
- New forms of accounting which embrace environmental; and non-market values

5.3. Main opportunities for innovative forest management

5.3.1. Adaptation

Current drivers for change in forest management include:

- perceptions of climate change
- fears and experiences of tree health crises
- changing expectations of social and cultural benefits from forests
- new modes of community engagement
- demand for woodfuel.

All of these drivers point towards two main areas of innovation:

- diversification of forest structure
- diversification of species choice.

These trends are combined with a strong and vocal timber processing sector which is concerned about forecast declines in timber production. These concerns are likely to be aggravated in view of the trends towards more diverse forests.

There is little published evidence for these changes and motivations – the situation is summarised in the previous section. The only published evidence on woodland owners' attitudes to adaptation in the UK, is based on interviews with forest managers in North Wales, and indicates a widespread reluctance to change current practice, and / or a trust in nature to do the adapting (Lawrence and Molteno, 2013).

5.3.2. Changing woodland ownership

Community woodland groups, private individuals and environmental NGOs are all showing interest in increasing the proportion of native species in woodland, and in some cases increasing the management intensity through, for example, coppicing. As these forms of ownership are all increasing (albeit slowly) they bring the possibility of a gradual shift in woodland management approaches.

5.3.3. Growing woodfuel markets

Woodfuel prices have more than doubled in the last five years, and markets for woodchips and pellets are also growing, making it now economically viable for farmers and others with small woodlands to increase management intervention and remove firewood. While this does not lead to particularly novel modes of silviculture, it could lead to increase in coppicing of suitable species e.g. oak, sycamore etc. Optimal sized logs for firewood are smaller than for timber which will over time lead to shorter rotations. Also we may see an increase in sour felling

[113] http://www.forestry.gov.uk/carboncode
[114] http://www.forestry.gov.uk/forestry/INFD-8UHHEK

(ring barking trees so they die standing and dry before felling) etc.

5.3.4. Public expectations of multiple ecosystem services

In general, awareness of and appreciation for the recreational and environmental benefits of forests has influenced forest management in the UK for some time but has gained prominence in recent years.

Public expectations for more diverse forests have risen sharply and challenge the prevailing industrial monoculture plantations. Change in the composition of forests is necessarily slow but there are some signs that diversification of species choice and silvicultural system is accompanying this change. However, other drivers related to climate change and tree health problems are stronger, and make it difficult to separate out these effects.

5.4. Obstacles for innovative forest management approaches

5.4.1. Lack of evidence

No research has been conducted in this area, to our knowledge. Current research is focusing on constraints to adaptive forest management, and to use of a wider range of productive conifer species (unpublished data, Forest Research).

Table 19: Summary of opportunities and obstacles to innovation, by new owner type

New owner type	Opportunities	Obstacles to innovation	Source of evidence
1. Existing land owners, especially farmers, who have planted new woodland for multiple reasons	New policy openings including agroforestry incentives New markets for firewood	Culture split between farming and forestry	WEAG 2012; Lawrence and Dandy 2014 [in turn summarising many others] Slee et al. 2014
2. Private trusts (holding traditional estates on behalf of the family)	Some are 'hobby owners' who want to make a mark by restoring landscape and are potentially some of the most innovative	Possibly, absenteeism	Lawrence and Edwards 2013
3. Individuals and companies primarily seeking financial benefit or commercial advantage (e.g. by tax efficient financial services (investment and intergenerational capital transfer, or carbon or biodiversity offsets etc.))	Some forest management agents feel more able to experiment with less familiar species because they are not constrained by the bureaucracy of public forestry	Some resistance to innovation with silviculture Sitka spruce is widely known as a very reliable and profitable species. Climate change is perceived as unlikely to affect Sitka spruce production at least for another rotation.	Lawrence and Marzano (2013) Lawrence and Edwards (2013)
4. Community woodland groups (in a plethora of legal forms and tenurial arrangements)	New forest management objectives, particularly supporting increased native tree species and diversification of stand structure	(Sometimes) lack of forest management knowledge Lack of resources (time and money)	Current research Urquhart 2006
5. Individuals (or families) purchasing small woodlands for household use (amenity, recreation, firewood etc.)	New forest management objectives, particularly supporting increased native tree species and diversification of stand structure	(Sometimes) lack of forest management knowledge Lack of resources (time and money)	Unpublished data Urquhart 2006
6. New woodlanders - individuals or groups acquiring woodlands as a basis for (part) of their livelihood	Diversification of woodland products	Strict planning controls on new buildings and structures in woodlands	

New owner type	Opportunities	Obstacles to innovation	Source of evidence
7. Environmental NGOs (usually in the form of charitable institutions with a focus on biodiversity or heritage conservation)	Demand for restoration of native woodland on sites of conifer plantation	Objectives seldom focus on productive forestry	Unpublished data
8. Devolved national governments	Considerable flexibility within forest districts Move from economic imperative to multi-purpose forest management Large scale felling of larch as a result of *Phytophthora*infection	Commitment to produce timber volume for industry	Current research
9. Local government		Perception of woodland as liability	Van der Jagt and Lawrence, 2014

CASE STUDY 10: ARBUTHNOTT WOOD PELLETS, ARBUTHNOTT, KINCARDINESHIRE

Arbuthnott Wood Pellets (AWP) is a family company located on the Arbuthnott estate in Kincardineshire just south of Aberdeen in north-east Scotland. The Arbuthnott estate comprises about 800 hectares of mixed farming, forestry and sporting (commercial shooting) estate with diversification into tourism in the North East of Scotland. AWP was established in 2007 independently of the other estate enterprises.

The AWP director decided to implement a wood fuel plant in order to add value to the timber growing in the estate. This implied a management change to sustainable forest management since 100% of the virgin wood is sourced from sustainable managed conifers (mainly pine, spruce and larch). The raw material for the woodpellets is sourced from woodlands on the estate, and from off-cuts from a nearby sawmill. The key innovation is finding the right raw material for making the pellets, i.e. to choose the right type of trees and then transforming the product to make the right sort of fibre (without bark). There have been continuous attempts to reduce the variability in this regard.

The director picked up the idea while serving on the board of the Scottish Rural Property and Business Association. Although most woodfuel businesses in Scotland were producing woodchips, the AWP director decided to produce woodpellets because he recognised they were more easily handled for domestic use. The main objective was production for woodfuel, but once he found out that a nearby distributer was selling pellets for the horse bedding market, he decided to start producing and supplying pellets for this market. This “spontaneous innovation” was discovered by chance later on in the process. The wood pellets are sold to domestic and commercial woodfuel markets *via* wholesalers.According to the AWP director, the Forestry Commission and the Biomass Development Officer have been very helpful promoting the enterprise outside and inside the council. They are the core actors in the public sector.

The development of the UK woodfuel market started in 1999 with the assistance of an EU funded project named “Introducing Wood Pellet Fuel to the UK”. The project supported the establishment of wood pellets manufactures and the promotion of the installation of first wood pellet-fired appliances. A report on the demand and usage of woodfuel in Scotland shows an increase of approximately a 312% increase in woodfuel usage between 2005 and 2010 (FCS, 2011). According to this same report large-scale plants are the biggest users of wood fuel, but the fastest growing sector is small to medium scale heat use. Barriers to the uptake of woodfuel heating systems are the high capital investment needed to install wood pellet boilers. The success of the business is also threatened by big competitors (e.g. Balcas; electricity competitors), product lower margins and the reliance on a single supplier of sawmill chips. *Forestry Commission Scotland (2011). Woodfuel. Demand and usage in Scotland. Hudson Consulting.*

CASE STUDY 11: DIVERSIFICATION OF SILVICULTURAL SYSTEM THROUGH OPPORTUNISTIC EXPERIMENTATION, THETFORD FOREST, ENGLAND

Thetford Forest is a part of the public forest estate managed by Forest Enterprise England. Until recently 90% of the forest consisted of Corsican pine (*Pinusnigra*) with some Scots pine (*Pinussylvestris*) but following a serious outbreak of Dothistroma Needle Blight which has infected every stand in the forest, the forest managers have been looking for alternative species. In doing so, opportunities have presented themselves for experimentation. Technical advice to heavily thin younger Corsican pine (at 17 years instead of 30 years) led to a new environment with space on the forest floor, and dappled shade. On a whim, one of the forest management team underplanted the now widely spaced Corsican pine with a few hundred surplus seedlings of Douglas fir, Serbian spruce, European silver fir and Cryptomeria. Three years later, survival, condition and growth of the seedlings greatly exceeds plantings of the same age in open (restock) sites. These shade tolerant species are performing much better in a different silvicultural system, and the Forest District is considering permanent conversion to continuous cover forestry using these so-called ”alternative species“. The site is constrained by designations which require clearfelling, in order to maintain habitat for nightjars and wood lark, but the opportunities provided by major disease outbreak, and the need to find suitable silvicultural systems for alternative species, challenge these regulations. The sites have been visited by foresters from both the public and private sector, and land managers from other government departments. Policy is changing as a result of innovative practice, rather than what is usually assumed to happen – practice following policy. *Source: Lawrence, A. (2015). "Real life experiments." Chartered Forester April 2015: 26-28.*

CASE STUDY 12: WEEKEND WOODLAND OWNERS IN SOUTH-EAST ENGLAND

Weekend (or absentee) new woodland owners in South-East England often live in an urban area (e.g. London) and purchase woodland as their own private piece of the countryside. These owners may link their desire for owning woodland to their childhood experience of woodlands and may have purchased their own woodland for weekend visits with the family for picnics and camping. It provides a contrast from city life and enables them to 'get close to nature' and instils a 'warm glow' of owning woodland.

In general, absentee new woodland owners have smaller woodland holdings than resident new woodland owners. They often purchase their woodland through land agents, where larger plots are divided into smaller plots and sold to separate purchasers. Current prices for woodland in South-East England are between £17,000-£28,000 per hectare for plots of 12-22 ha (www.woodlands.co.uk). However, small plots of 4-5 ha are not unusual for absentee owners. The absentee new woodland owner may have chosen woodland, as opposed to other types of land, since it presents less work to maintain than agricultural land.

Absentee owners carry out very little woodland management, but when they do they usually use a contractor. They are less concerned than resident owners about having a productive wood, even for their own consumption (as the distance to transport wood logs is not feasible). They may carry out light tasks themselves but their time is limited as they live and work some distance from their woodland. Their motivations for management are for personal enjoyment (both to improve the woodlands for their own amenity and they enjoy carrying out light maintenance tasks themselves), wildlife conservation and to improve the health of the woodland. Some may also anticipate a financial return from the timber value of their woodland in the future, although this is generally not their primary motivation, but a welcome bonus. As their main motivation for ownership is privacy and personal amenity they are generally not in favour of public access as this would have a negative impact on their perceived 'private place' in the countryside.

An example described in Urquhart 2006 is a new woodland owner who lived in London and bought his woodland to have somewhere to go with his children in the countryside at weekends. They would visit the woodlands perhaps twice a month. However, after he moved out of London to a small village near to his woodland he does not visit the woodland as much, commenting that the need to go there has diminished since there is now plenty of countryside and woods right on his doorstep.

Summarised from Urquhart 2006; Urquhart et al 2010

CASE STUDY 13: MERROW DOWNS COPPICE WORKER

Rob Stringer who trained at Merrist Wood College (a Further and Higher Education establishment offering course in arboriculture and forestry) and has been working restoring woodland for the last four years in Surrey. He and a colleague are working in a woodland Merrow Downs which has been abandoned since the Second World War and are densely packed with old, poor quality wood, that until recently has not been worth touching. Using a grant from Leader to purchase a trailer and winch he is now producing and marketing coppice wood products from the woodland. This includes charcoal, plant support wigwams, beanpoles and pea sticks, hazel hurdles, stakes and binders for hedgelaying, thumb sticks, chestnut post and rail fencing and logs for fuel. Rob also offers a coppicing, coppice restoration, woodland management and hedge-laying service.

http://www.swog.org.uk/news/grant-funding-helps-coppice-workers/

6. Policies influencing ownership development / Policy instruments for new forest owners

Policy and ownership are related in various ways. Firstly, policies directly or indirectly influence ownership development or even encourage or create new forms of ownership. Secondly, policy instruments are emerging in response to ownership changes, including instruments addressed to support new types of owners e.g. through advisory services, cooperative or joint forest management, etc.

6.1. Influences of policies on the development of forest ownership

6.1.1. Nationalisation

Forest policy has been a key driver for change in forest ownership in the UK over the past 100 years. As a result of the Forest Act of 1919, the Forestry Commission came into force in England, Scotland, Wales and Ireland with the remit to develop and maintain a strategic timber reserve for Britain. This involved extensive afforestation programmes on state-purchased or leased land alongside the provision of grants and tax incentives to

encourage private landowners to plant woodland. Much of the new planting was fast growing conifer plantations. The state purchased low value land from private estate owners by offering them relatively high prices as an incentive to sell. This resulted in significant displacement of tenant farmers and long-lasting resentment of 'the forestry' (Spence 2013; Linnard 2000).

The 1950s to 1970s saw rapid industrialisation and mechanisation of forestry, with grants, tax concessions and technical support provided to encourage new planting and growth of the timber industry. Private landowners were given financial incentives to convert their land to forest under the Dedication Scheme (which became the Forestry Grant Scheme in 1981).

Taxation of land and forests is a complex issue in the UK with debates about the use of taxation as a forestry incentive dating back to 1909 with the latest rules set out in 1988. There are two basic forms of taxation relief for forestry: relief on forestry investment which was intended as an incentive for new private forestry to complement the expansion of state forest; and inheritance tax relief on forests which mirrors taxation arrangements on agricultural land and serves to perpetuate long-term family based forest ownership. Prior to 1988, exemption from income tax on commercial forests led to top rate tax payers investing in commercial forests as a way of offsetting other income against expenditure on forestry. Thus, in 1988 significant changes were made which included the cessation of income tax relief for investments in commercial woodland and the introduction of new rules on the inheritance tax relief on forestland (Hansard HC 1988). At the time the reduction in investment relief had a significant impact on the market for private commercial forests as it became a less attractive option for investment trusts. Rates of planting fell dramatically in the 1990s.

6.1.2. Devolution

The UK is made up of the union of what were historically four separate states and is presently in the process of devolving powers from Westminster to Belfast, Edinburgh and Cardiff. Northern Ireland obtained Home Rule in 1921 which explains why it has a Forest Service with no formal links to the Forestry Commission. Devolution in Scotland and Wales commenced following wins for 'yes' in referendums in 1998. At the time the state was the single largest forest owner in Britain. In 2003 along with a suite of powers, state forest land was devolved along with FC staff who become answerable to their respective governments.

Since 2005 Forest policy in the UK is devolved such that there are independent policies for England, Scotland, Wales and Northern Ireland. All four policies set objectives for forestry that apply equally to state and private forests.

6.1.3. Privatisation

Before 1980 the state acquired and did not sell any capital assets (buildings or land). Following a review of forest policy in 1980 the government decided that the FC should sell a proportion of the public estate to meet government objectives to expand the private forestry sector and reduce the cost to the exchequer (Ministry of Finance) of maintaining the forest estate. Since powers to effect disposals had not been included in the 1967 Forestry Act the Act was revised (Forestry Act 1981). This provided forestry Ministers with "the powers to dispose, for any purpose, of land acquired for purposes connected with forestry". The proposals for large scale sales for any purpose proved unpopular and after a civil protest a curb of sales of not more than 15% of the total area could be sold in any 4 year accounting period. Subsequent sales in the 1980s and early 1990s amounted to 18,000 ha of state-owned forest land in Wales (Spence 2013) and 73,000 ha of land and forests in Scotland[115]. There was considerable public disquiet about this erosion of the forest estate and a further proposal to sell a large portion of the estate in 1993 was met with protests from many conservation groups. In 1994, the government backed down and announced that the FC woodland would remain in the public sector. In 1997 the 1981 policy was

[115]http://scotland.forestry.gov.uk/managing/work-on-scotlands-national-forest-estate/land-and-building-management/re-positioning-programme

rescinded and replaced with two directions which stated that:

"The Commission may only sell agricultural land, land associated with houses and other buildings, unplantable land and relatively small and isolated blocks of forest land which do not make a significant contribution to its objectives and which are surplus to its requirements."

"The Commission may also sell areas for development where this is in the public interest. Areas of forest land which are important for public access will not be sold unless an access agreement is in place."[116]

In 2009 the Scottish Government proposed to lease the most productive 25% of the public forest estate to private companies. This was intended to be a contribution to the Scottish Government target to reduce greenhouse gas emissions by 80% by 2050. The money raised by selling the 75 year leases was to be used to fund tree planting to sequester carbon. A public protest citing the damage this proposal would have on public access, wildlife and the integrity of the estate provoked a retraction of this proposal[117] (see also Buttoud et al. 2010)

In 2011 the government proposed to sell off at least 15% of England's public forest estate, raising around £100 million for the Treasury. However, as a result of significant public outcry and the recommendations from the Independent Panel on Forestry (set up following mass criticism of the public consultation on the sell-off) the decision was rescinded and a new public body is to be established to hold the nation's forests in trust.

Each country region inherited a land disposal policy from the FC. These allow the sale of land considered of low public benefit on the open market with the proceeds retained in a special fund to be used to purchase or lease land for afforestation in locations where new woodland could deliver high public benefits. This is a formal 'Re-positioning programme' in Scotland (Table 10) but is less active in Wales and England.

[116]http://hansard.millbanksystems.com/written_answers/2000/jul/10/forestry-commission#column_387w

[117]http://news.bbc.co.uk/1/hi/scotland/south_of_scotland/7941645.stm

Forestry Commission Scotland land leasing scheme is intended to facilitate planting on third party land. The leases are for bare land and for a period of ten years after which the young forest and land is returned to the owners. The planting can be done either by FCS in which case no rental is paid to the landowner or by agents, estates or landowners with the capacity to undertake afforestation when the costs will be paid in full by Forestry Commission Scotland. Interestingly the woodland created should be primarily for timber production (rather than amenity as for Woods In and Around Towns (WIAT)) and have a plantable area of not less than 30 ha and on land that is part of an on-going farm business[118].

Changes to legislation resulting from the Public Bodies Act (2011) in England mean that leases of the forest estate can now be made to third parties. The 'Woodlands and You' programme in Wales is an instrument designed to facilitate uptake of this new opportunity. Proposed changes to the RDP may allow funding to be used by third parties working in state forests and could also facilitate a change in the types of activities and actors who could establish activities and enterprises in state forests.

6.1.4. Inheritance rights

The main policy instrument which influences the inheritance of forest land in the UK is inheritance tax relief (see below). Moxey (2008) points out that the use of fiscal instruments is "to encourage establishment and retention of an appropriate stock of forestry capital in the face of perceived market imperfections and failures, including comparability with agriculture." The inheritance tax relief portion of this is part of levelling the playing field with agriculture so both are treated as heritable business assets. This has two consequences: first it facilitates the retention of forests by land owning families which provides for long term continuity and integrity for established estates and second, and perhaps perversely, it acts as an incentive for purchase of forest land as a means of transferring capital between

[118]http://scotland.forestry.gov.uk/supporting/grants-and-regulations/land-leasing

generations without incurring inheritance tax. According to UPM Tilhill& Savills (2013) inheritance tax relief has been and remains a significant incentive for woodland ownership. These owners often do not interfere with the actual management practices or plans in the forest so continuity is ensured by the agents employed by the owners. There are a number of these and all adhere to the UKWAS standard even if the forests are not certified.

There are three types of inheritance tax (IHT) relief that may apply to woodland/forest holdings. These are: deferral relief for the standard investment holding, agricultural property relief (APR) and business property relief (BPR).

Deferral relief is the least attractive, as it merely defers the tax obligation, rather than removing it. Deferral relief operates by delaying the obligation to pay inheritance tax until the timber is felled or sold. At this point, the proceeds of the sale are taxed at the rate of 40%.

For woodland to qualify for APR it must be registered as an agricultural property in accordance with the Inheritance Tax Act 1984 (IHTA 1984) or be owned as an ancillary to farmland. Woodland used for production of timber or when new planting has occurred on previously agricultural land cannot be considered as agricultural land. However, woodland used as game coverts and coppiced woodland used for farm timber qualify as they are ancillary to the farmland. Qualifying woodlands receive 100% IHT relief.

In order to qualify for BPR the woodlands must be managed commercially as part of a business or as advised by UPM Tilhill (2013): “The fundamental criteria for commercial woodlands is that they should be in the UK, or EEA, and ‘managed on a commercial basis and with a view to the realisation of profits.’” These profits can be derived from commercial timber production, as well as other business activities such as tourism (holiday cabins), shooting, coppicing, fishing ponds in woodland, firewood, nature trails, paintballing etc. The value of commercial woodlands, including both the land and the trees, comes under Business Property Relief at 100% once it has been owned for at least two years immediately preceding a transfer (which can be made as a gift before death though the giftee has to then continue to own the property for seven years after the date of the gift) or between spouses, so there would be no inheritance tax liability (IHTA 1984 s. 104-106 and 115). There is also a special provision for the deferment of tax on the value of growing timber until it is sold (the ‘Woodland Relief’) which does not quality for any other inheritance tax relief (IHTA 1984 s. 125-130).

In addition, woodlands of outstanding scenic, historic or scientific interest may qualify for Heritage Relief.

6.1.5. Community forest policies

In the UK there are two quite different models of community forestry. The first, such as the National Forest and Community Forests policy in England (discussed in section 4.4.4.), represents top down community forestry where community forests are designated over large tracts of mixed use peri-urban land, seeking to increase forest cover, access and manage existing woodland and promote forestry on derelict or lightly managed land. Under the National Forest policy, a new form of owner, the National Forest Company was established to lead the initiative. The focus of funding is for the creation of woodland through tree planting and the creation of wildlife habitats (e.g. The Changing Landscapes Scheme, Firewoods Scheme, Programme Development Fund, Parkland and Wood Pasture Scheme) and, therefore, impacts on the management behaviour of existing woodland owners, but also encourages other landowners to plant woodland. In both the National Forest and Community forests the dominant type of ownership is by private landowners but also includes local authorities, schools, hospitals, Forestry Commission, Woodland Trust, businesses, golf courses, private estates, farmers and community groups. Similar initiatives were established in Northern Ireland (Forest of Belfast scheme in 1992), Scotland (Woods In and Around Towns) and Wales (Heads of the Valleys Woodland Plan).

The second type of community forests are those enabled by new legislation which are bottom up initiatives by communities of place seeking to assert collectively-determined management regimes over woodland that was previously in state or private ownership.

6.1.6. New legal forms of ownership

In response to the recommendations of the Independent Panel on Forestry regarding England's public forest estate, the UK government set out its plan to create a new body to hold the public forest in trust for the nation. This operationally-independent Public Forest Estate management body will be established via legislation and will generate the majority of its income through commercial activity but will have the goal of enhancing the social, environmental and economic benefits of the woodlands (Defra 2013).

Government policies related to facilitation of social enterprise activity resulted in the emergence of two new legal entities in the UK that can own land. There are examples of the use of both of these for community forest ownership (Woodland Trust 2011). These forms are:

- *Community interest companies* (CIC): A new form of private company (since 2005) that can take any form of a private company but in addition must pass a community interest test and all assets belonging to a CIC are locked and there is a cap on dividend payments. CICs can have a broad range of purposes, provides limited liability, allows directors to be salaried (not possible in charities) and are regulated by Companies House and the Office of the Regulator of CICs.
- *Charitable incorporated organisations* (CIO): CIOs combine the protection of a company with charity registration in one registration with the Charity Commission (previously registration had to be with both Companies House and the Charity Commission). This legal form only became available in 2012 and to date it is only possible to register new CIOs but not to change an existing company into a CIO. The main benefit of a CIO is that the organisation can enter into contracts (and own land) in its own right and its trustees will normally have limited or no liability for the debts of the CIO[119] In Scotland, Scottish Charitable Incorporated Organisations (SCIO) have similar powers, limited liability as a company limited by guarantee but with charitable status built in and regulated by one organisation – the office of the Scottish Charity Regulator.

6.2. Influences of policies on forest management

There is a long history of policy instruments that attempt to influence and change behaviour in the UK, including the forest sector. The obligations associated with subsidies reflect the strategic objectives of current policy. Incentives and grants now largely encourage woodland management that enhances public good provision, such as biodiversity and public access, including a strong emphasis on the health benefits of woodland recreation and investing in new woodlands to deliver additional public benefits. New commercial planting in Scotland is dependent on grants (which are more generous than in England); particularly the native woodland grant scheme is highly profitable to landowners (Lawrence and Edwards 2013). But that is not necessarily the case in England and Wales (Lawrence and Dandy 2014).

The single most important change in framing new forest planting has been the introduction of farm woodland grants since 1987. These (they have been modified since that time) compensate farmers for loss of agricultural income for 10-15 years as well as providing grant aid for the afforestation. They are the primary cause of the increase in woodland planting by farmers. Few farmers undertook this work themselves. Most was undertaken by contractors.

Regulatory measures, such as felling licences, ensure good practice in forest management and the maintenance of UK forest cover. Advisory and guidance services support woodland owners and managers in meeting the required standards for woodland management and also offer advice for new approaches to management. In addition, market-based policies can stimulate owners to manage their forests in particular ways.

[119] https://www.charitycommission.gov.uk/frequently-asked-questions/faqs-about-charitable-incorporated-organisations-(cios)/cios-general-information/what-is-a-cio/

6.2.1. Forest management planning

Forest management planning in UK private forests is voluntary for owners who are not in receipt of any grants or subsidies. Since the 1990s there has been increasing requirements for management plans for private owners wishing to access public funding for forest management. Some (but not all) of these schemes provide grant support for the preparation of management plans to meet UKWAS standards which is itself a voluntary standard which forms the basis for UK forest certification. Relevant economic instruments affecting forest management planning in the UK include the Woodland Management Grant under the English Woodland Grant Scheme (now closed); the Glastir Woodland Management Grant in Wales; Woodland Improvement Grants in Scotland and the Woodland Grant Scheme in Northern Ireland.

In England, in order to be eligible for funding for woodland management under the English Woodland Grant Scheme, woodland over 100 ha has to be certified to the UK Woodland Assurance Standard (UKWAS) and have a management plan in place. Woodland under 100 ha has to either be certified or have a management plan in place.

In Scotland, the Forestry Commission administers a number of Woodland Improvement Grants, including assistance with preparing a 10-20 year woodland management plan, a management plan for work that will benefit UK Biodiversity Action Plan priority habitats or species, restructuring and regeneration of even-aged woodlands (http://www.forestry.gov.uk/forestry/INFD-8J9H8A).

Under the Glastir Woodland Management Grant in Wales, woodland advisers work with landowners to devise a management plan that meets the objectives of the grant scheme, taking into consideration landowner aspirations.

In Northern Ireland, grants are available to assist private woodland owners to undertake forest management activities that enhance ecosystems and prevent damage by wild and domestic animals (e.g. removal of invasive species). In order to qualify for the grant, applicants must submit a 5-year management plan (Forest Service 2007).

6.2.2. Compensation for state-imposed restrictions in harvesting

No compensation is available to forest owners for restrictions in harvesting imposed by the state in England, Wales and Scotland. Landowners can, however, appeal the decision to the appropriate Forestry Minister if they have been refused twice for the same area and work providing three years have elapsed between the first and subsequent refusal (Forestry Commission 2007). In Northern Ireland landowners are entitled to compensation for any depreciation in the quality (and hence value) of the timber as a consequence of a refusal to issue a felling licence (Forestry Act 2010).

6.2.3. Environmental and land use policies affecting forest management

In addition, there is a range of other environmental and land use policies that have an impact of forest management in the UK. These include:

Nature designations

Many nature designations include woodland sites. The following outlines relevant nature designations that may affect woodland in the UK (Urquhart 2009).

Site of Special Scientific Interest (SSSI): SSSI designation gives sites some legal protection to ensure that sites are well managed. The owner of the land has certain responsibilities alongside the local authority and other public bodies.

National Nature Reserve (NNR): NNRs are sites designated for wildlife conservation because of their importance for a particular habitat. NNRs are either owned or managed by English Nature, a Wildlife Trust, the Woodland Trust or a local authority.

Local Nature Reserve (LNR): LNRs are established by local authorities under the National Parks and Access to the Countryside Act (1949) on land in which the authority has a legal interest.

Biodiversity Action Plan (BAPs): The UK's Biodiversity Action Plan is the government's response to the Convention on Biological Diversity (CBD) signed in 1992 and provides

a framework for the protection of vulnerable species and habitats. There are 45 Habitat Action Plans (HAPs) that include woodland habitats. In addition, there are around 135 Species Action Plans (SAPs) linked to woodland.

Tree Preservation Orders (TPOs): TPOs can apply to single trees, a group of trees or woodland. They are issued by the planning authority to protect trees with amenity or environmental value.

Ancient Woodlands: Ancient woodland is land that has had continuous woodland cover since at least 1600 AD and it may be either (1) Ancient semi-natural woodland (ASNW) – ancient woodland sites that have a native tree and shrub cover; or (2) Plantations on ancient woodland sites (PAWS) – ancient woodland sites where the native trees have been felled and replaced by plantations, often of conifer species. Ancient woodland is not a statutory designation and so gives no legal protection to the woodlands. While some ancient woods are designated, as SSSIs for example, 85% of all ancient woodlands (including 5 of the 12 largest woods in England) have no designation (WT 2009). The category is however used to target woodland grants on private land and project interventions on state land. Designation will also increase the level of scrutiny of applications for felling licenses and in many instances trigger pro-active intervention.

International designations

Special Protection Areas (SPAs): SPAs are strictly protected sites under the EC Birds Directive. They are classified for rare and vulnerable birds listed in Annex I of the Birds Directive and for migratory species. In the UK the Joint Nature Conservation Committee (JNCC) is responsible for selecting and monitoring SPAs.

Special Areas of Conservation (SACs): SACs are sites strictly protected under the EC Habitats Directive which requires the establishment of a network of important conservation sites that will make a significant contribution to conserving the 189 habitats and 788 species identified in Annexes I and II of the Directive. 78 of these habitats occur in the UK, and 43 of the species are native to the UK. All NNRs and SSSI's are designated as SACs.

Biosphere Reserve: Biosphere reserves are internationally designated by UNESCO under the Man and Biosphere Programme. Private forest owners within such areas will be encouraged to manage their woods in a way that complements the objectives of the Biosphere designation. This may or may not be backed by special grant incentives or payments or may simply be served by targeting of existing woodland grant schemes. There are only nine biosphere reserves in the UK, four of which have woodland as part of the site.

Rights of Way

Access to woodlands in England and Wales, including woodland, is regulated under the National Parks and Access to the Countryside Act (1949). Woodlands and forest remain outside the legislation of the Countryside and Rights of Way Act (2000) except for the special case of dedication. Public rights of way are access routes on which the public is legally permitted to pass and includes public footpaths (pedestrian use only), public bridleways (on foot or on horseback – and by extension bicycles) and public byways (all traffic). In addition, landowners may establish concessionary footpaths and bridleways, as permissive rights of way.

In Scotland, access is regulated under the Land Reform Act (2003), granting public non-motorized access to all land and inland water throughout Scotland subject to compliance with a code of good behaviour.

Water Framework Directive

The main instrument for achieving good woodland management practice for the protection of inland water in woodlands is the Forests and Water Guidelines produced in association with the revised UK Forestry Standard, which are obligatory on public forest land and private land in receipt of grant support (Forestry Commission 2011). Landowners are obliged to manage their land in a way that does not give rise to diffuse pollution and must consider aspects such as appropriate site selection for woodland planting, maintenance of open stream sides, ground disturbance, species mix, use of fertilizers and herbicides and felling operations.

6.3. Policy instruments specifically addressing different ownership categories

Forest policy in the UK, with its emphasis on enhancing the social and environmental benefits of existing woodlands and planting new woodlands, impacts on the various types of forest owners in different ways. There is evidence to suggest that different types of woodland owner will respond differently to policy instruments. For example, Urquhart et al. (2011) identified six distinct types of woodland owners in their study in England – individualists, multifunctional owners, private consumers, conservationists, investors and amenity owners. Four of these owner types, multifunctional owners, amenity owners, conservationists and investors, are likely to be influenced by grant incentive schemes. However, each of these may be motivated by differing management goals with amenity owners more likely to be willing to provide recreational access, while conservationists are more likely to respond to incentives for biodiversity enhancement and investors are likely to seek incentives that enhance economic profitability. Private consumers and individualists were the least likely to be influenced by grant schemes that incentivized public good provision. The study also suggested that multifunctional owners, private consumers and investors are more likely to be influenced to manage their woodlands by market mechanisms that stimulate the market for timber products and wood fuel.

Thus, forest policy objectives are potentially well aligned to the objectives and motivations of new owners. Increasingly woodland is purchased for its social and positional value with new owners placing less importance on maintaining productive woodland, but rather aim to enhance the environmental and amenity value. Financial support and advice for habitat enhancement and management planning can be beneficial to many types of new woodland owner. Existing landowners, especially farmers, may also benefit by receiving grant aid to plant trees on unproductive agricultural land.

Where policy and owner objectives may deviate is when it comes to the provision of access and recreation. For some new owner types, such as community woodland groups, local authorities and NGOs, recreation and public access will be central to their management planning. However, for others, such as individuals (or families) that purchase woodlands for their own use, public access can conflict with their personal motivations. This is especially the case for absentee new owners who often purchase woodland as their own private place of escape to the countryside (Urquhart et al. 2010).

Other work, such as Dandy (2012), suggests that the pre-existing management 'trajectory' of landowners strongly restricts their willingness to change their behaviour. When change does occur, it tends to be during periods of ownership change (including inheritance), during periods of crisis or through increased innovation, with risk being a very prominent factor in decision-making. Dandy suggests that land-manager decision-making is influenced by economic, social and environmental factors. Economic factors influencing landowner decisions include market security, infrastructure, scale, price and margin. Dandy asserts that market forces are stronger in influencing decisions than economic incentives, such as grants, tax reliefs and preferential finance. Although it should be noted that inheritance tax relief it still a significant incentive for woodland ownership (UPM Tilhill & Savills 2013). Social influences include concerns and perceptions of bureaucracy in regulation, pressures from society such as levels of acceptability of felling, social networks and social norms in land management culture, and the personal attitudes and pre-existing objectives of land managers (contracted by some new owners to advise/implement forest management), including their perceptions of risk. Environmental factors include the particularities of physical and environmental characteristics of different land parcels that influence productivity and environmental quality of the land. In addition, landowners are influenced by pragmatic decisions relating to ease of access to the land for planting and harvesting, as well as the availability of labour.

6.3.1. Policy instruments aimed at farmers

England

The Farm Woodland Premium Scheme (England) 1992-2005 (part-funded by the EU) administered by the Forestry Commission England encouraged farmers to convert productive agricultural land to woodland by providing annual incentives. Farmers were paid for 10 years for mainly conifer woodlands and for 15 years for mainly broadleaved woodlands to compensate for lost farming income. These payments were in addition to any payment received under the Woodland Grant Scheme.

The Farm Woodland Premium Scheme was replaced by Farm Woodland Payments (FWP) under the English Woodland Grant Scheme (EWGS) in 2005. Alongside receiving a grant towards the costs of establishing new woodland, farmers can also receive compensation payments under the Single Payment Scheme for agricultural income foregone when woodlands are planted on agricultural land. From 2009 the rates were £300 per ha per year on arable land in the lowlands, £200 per ha per year on other improved land in the lowlands, and £60 per ha per year on unimproved land and/or land in the uplands[120]. The FWP scheme has now closed.

Wales

The Glastir Woodland Creation (GWC) grant is available to landowners with over 0.25 ha of land to plant woodland. As well as a grant towards the costs of planting and establishing woodland, the Glastir Woodland Creation Premium provides an income foregone payment for land taken out of agricultural production and a lower payment for non-agricultural land. The grant is administered by the Rural Payments Division directly from the Welsh Government.

Scotland

Prior to 2006 Scottish farmers were able to receive payments for foregone income for land taken out of agriculture under the Scottish Forestry Grants Scheme Farmland Premium as part of the Forestry Commission Scotland's Forestry Grant Scheme (SFGS). Woodland grants are now administered under "woodland creation" as Rural Priorities of the Scottish Rural Development Programme (SRDP). The current SRDP closed on 31st December 2013 with the new programme covering the period 2014-2020 expected to open late 2014 or early 2015. The new programme includes an agroforestry option.

Northern Ireland

The Department of Agriculture and Rural Development (DARDNI) administers the Farm Woodland Premium Scheme which encourages the creation of new woodlands on farms through annual payments which offset the foregone income for land taken out of agriculture. Payments can be made for 10 or 15 years. (www.dardni.gov.uk/index/grants-and-funding/forestry-grants/farm-woodland-premium-scheme.htm).

6.3.2. Advisory services for new woodland owners

There is no formal state institution that provides advice to woodland owners but grants for forest extension/advisory services are included in the post-2013RDP so it is likely that provision will increase dramatically over the next few years. There is some discussion in Wales about whether such advice should be delivered by a government agency or by strengthening existing providers. At the time of writing the preferred option is to strengthen existing provision but it remains to be seen what will actually happen.

However, for community woodlands there are several organisations that provide advice, networking and support. For example, in Scotland there is the Community Woodland Association and in Wales there is Llais y Goedwig.

The Community Forests and their ilk in England provide advisory services for woodland owners within their area e.g. the Mersey Forest. Many county councils also provide advice through their woodland officers and programmes. In Wales woodland advice is provided by CoedCymru (woodland NGO) officers seconded to the County council to serve as council woodland officers. This latter arrangement is a novel use of local

[120] http://www.forestry.gov.uk/website/forestry.nsf/byunique/infd-7s2fr5

authority and NGO partnership on woodland advice which extends to co-funding of posts including, formerly, funding from Forestry Commission Wales.

There are also new or re-purposed organisations who offer support to new forest owners regardless of whether they are individually or community owned such as the Sylva Foundation and the Smallwoods Association in England. Sylva offer a free online service, called myForest, for woodland owners, forestry businesses and wood users to help woodland management planning and marketing of forest products (http://sylva.org.uk/myforest/). Generally the advice offered by third sector and private advisory organisations is closely aligned with public sector policies that are most relevant to their members. Of course this may not include all public sector policies and occasionally detailed advice will vary.

6.3.3. Campaigns targeted at new forest owners

To date there have been no concerted 'campaigns'[121] targeted at new forest owners but there has been information and advice specifically packaged to address the needs of new woodland owners such as that prepared by the FC England (see Case study 14). There have also been advocacy brochures such as 'New farm woodlands – How planting trees can contribute to your farm business' prepared for use in Wales[122]and Scotland (see Case study 15).

These one-off publications hardly add up to a coherent "campaign" however, a recent report by Moseley & Valatin (2014) takes a rather more structured approach and lays out a series of 'nudges' which could be employed to influence people's choice to plant new woodland to meet government targets for climate change mitigation. Nudges are ways of influencing choices without limiting options or changing their cost and arise from the study of behavioural economics. In effect they offer an alternative to the more conventional 'sticks' and 'carrots'. Nudge type approaches proposed for woodland creation are: addressing perceived barriers to woodland creation, encouraging private woodland creation by highlighting successes to create new social norms for planting (for an example of this see Case study 16) and by the public sector leading by example. To be effective, Moseley & Valatin (2014) note that nudges should be adapted to different types of landowners who may vary in their attitudes, motivations and willingness to plant trees. The use of nudge type interventions is a very recent innovation and has yet to be tested in the field.

In addition to official publications there is a large volume of popular articles on the internet and using social media describing the benefits of personal ownership of woodland. These range from promotional campaigns by those selling woodlands to blogs, articles in the popular press and even a TV reality programme. A sample of this type of material is:

- *http://jorgandolif.com/consume/how-to-buy-a-private-woodland/*
- *http://www.thisismoney.co.uk/money/mortgageshome/article-2216781/I-paid-21k-wood-love-How-buy-woodland.html*

'Tales from the Wild Wood' was a reality TV programme aired in 2012 which followed a year in the life of a woodland through the eyes of a new woodland owner.

- *http://www.bbc.co.uk/programmes/b01ng5lr/episodes/guide*
- *http://www.robpenn.net/?page_id=22*

Note that much of this material dates from 2012, nevertheless, there is a steady stream of material focussed on new woodland owners much of it associated with the forest agents who sell woodlands e.g. *www.woodlands.co.uk; www.woods4sale.co.uk/information-pages/managing-a-woodland.htm*.

Running through this diversity of material and activity we can discern two currents. Firstly, informal communication channels through which private owners share information and experience of woodland management (often relating to the purchase of woodlands as private assets for personal benefit). Secondly, advocacy by government in response to public policy for woodland creation which is targeted, largely, at farmers.

[121] "Any organised course of action analogous to a military campaign; *esp.* one designed to arouse public support for a party in an election, a cause, etc." Oxford English Dictionary

[122] http://www.forestry.gov.uk/pdf/New-farm-woodlands-English.pdf/$file/New-farm-woodlands-English.pdf

CASE STUDY 14: SO YOU OWN A WOODLAND?

In 2002 Forestry Commission England published a booklet titled "So you own a woodland?" focussed on providing information for new woodland owners in South East England (where a lot of new purchases of small plots of amenity woodland were occurring). The booklet covers basic information on woodland biodiversity and management of lowland, broadleaf woodlands and signposts other sources of information and advice on grants and incentives available. It was aimed at those who have never owned woodland before and have no experience of woodland management. The first edition proved popular with woodland owners and a second edition was published in 2003 for wider dissemination. The third edition came out in 2009 with additions to reflect new legislation, includes information on wood fuel and is designed for woodland owners across the whole of England.

There has not been any official impact assessment of this campaign but the fact that it has been through three editions is a measure of demand for advice of this type.

Interestingly the Forestry Commission does not have a specific publicity campaign for this booklet and it is not prominent on the FC England or FC publications webpages. However, it is available as a pdf from the FC website and is widely referenced and used by third party woodland advisors e.g. *http://gabrielhemery.com/2011/10/10/so-you-want-to-own-and-manage-a-woodland/.*

www.forestry.gov.uk/pdf/so-you-own-a-woodland.pdf/$file/so-you-own-a-woodland.pdf

6.4. Factors affecting innovation in policies

There are no specific statements in the devolved UK forest policies that relate directly to the nature or extent of private forest ownership. There have, however, been government policies that proposed radical changes in state ownership of forests. These initiatives were made in response to non-forestry policies and principally as actions to realise carbon policies (which are partially devolved[123]). For example, the Welsh Government adopted the recommendations of the Land Use and Climate Change Group report (2010) and proposed a large-scale expansion of woodland in order to create a carbon sink for future use as a renewable heat source. There have been significant difficulties implementing this as a consequence of the approach taken to avoid afforestation of land of conservation or heritage value and the interregnum in RDP funding which is a primary source of funding for the grant scheme. Agricultural land prices in Wales are such that the state is not able to purchase land to plant so the implementation of this policy rests with incentivising private sector planting. It is also clear (UPM Tilhill& Savills 2012) that land prices are too high for private purchase of land for planting so most schemes are brought forward by owners wishing to plant on their own land. The largest group of people with land to plant are farmers and so the policy seeks to change owners' objectives for land rather than a change in ownership.

In addition, there are no policies to stimulate associations for small forest owners. Indeed, membership of forest owner associations in the UK is perhaps less dominant than in other European countries. For example, in Scotland the Timber Growers Association (TGA), representing forest owners' interests, has been subsumed into the Confederation of Forest Industries (ConFor), a body which represents large forest corporations and forest management companies more broadly (Wightman 2012).

In the 1950s a number of regional forest owner's co-operatives were established to promote forestry in Wales (Linnard 2000). However, it is not clear whether these were spontaneous or the result of a specific policy or popular movement but have all now either disbanded or been privatised and become private companies acting as woodland agents.

NGOs such as Sylva and the Smallwoods Association obtain at least part of their funding from the state though all except Sylva are formally constituted networks of woodland owners. They represent the interests of small woodland owners by responding to policy documents, contributing to policy groups and engaging with government agencies such as Defra, the Forestry Commission and Natural England on issues relating to small woodland owners.

[123] UK Climate Change Act is UK wide. The Climate Change Committee set up by CCA has UK-wide reach. It is a confused area as Scotland also has CCSA 2009.

The main emphasis on ownership matters in policy agenda relates to advisory services. There is increasing attention paid to developing appropriate advisory and information services that cater for the wide range of new owner types, many of which have no prior experience of forest or land management.

CASE STUDY 15: "BOOST YOUR FARM BUSINESS WITH WELL MANAGED WOODLAND"

In order to encourage farm woodland planting, Forestry Commission Scotland have tailored their advisory service to the specific objectives of farmers. They focus their advice how well managed woodlands can work alongside other agricultural activities to generate income and save money. They cite examples from farmers who have used woodland for livestock shelter and wood fuel. The emphasis is on the added value of farm woodlands as a win-win situation, rather than a loss in land productivity. This is an example of advisory services being tailored for a particular land ownership type.

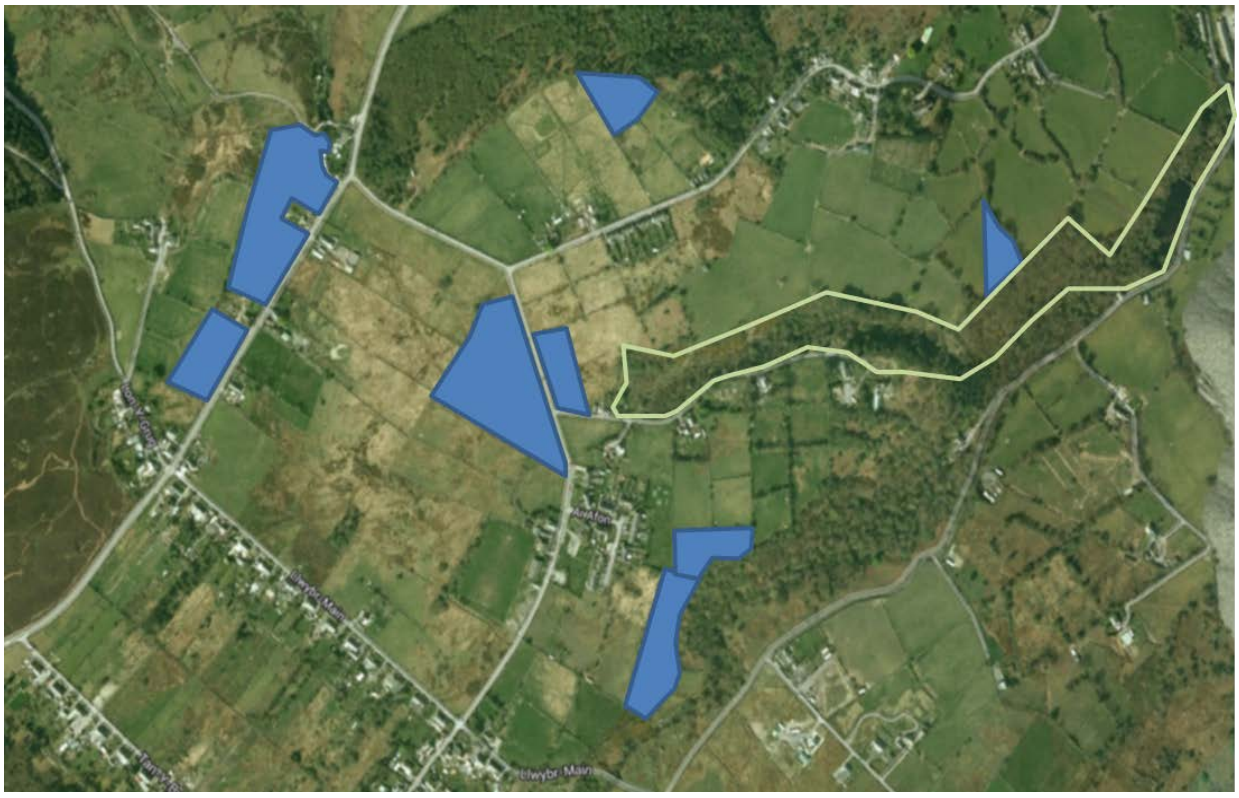
www.forestry.gov.uk/pdf/benefitsofwellmanagedwoods.pdf/$FILE/benefitsofwellmanagedwoods.pdf

CASE STUDY 16: USE OF GLASTIR WOODLAND CREATION GRANTS BY SMALLHOLDERS

The Glastir Woodland Creation scheme is marketed at farmers as an incentive for trees planitng on agricultural land. However, the scheme is open to any landowner and is not restricted to registered agricultural holdings. The minimum size for a scheme is 0.25 ha and has proved to be attractive to smallholders (cottages with small parcels of land (~1-4 ha) originally intended for subsistence farming alongside employment in the quarry). Where one smallholder takes up the grant this is often followed by neighbours also taking up the scheme leading to the emergence of new wooded landscapes. An example of this is Mynydd Llandygai which is a quarry village at 300 m in North Wales where every cottage has a smallholding.

In the satellite image below, the blue polygons indicates land where six different landowners have planted trees since 1990 using the Glastir Woodland Creation scheme or its predecessors the Better Woodlands for Wales and Woodland Grant Scheme. In this exposed location shelter is an important service but owners are also concerned about biodiversity and fuelwood production. The table gives details of the schemes approved since 2010.

The pale green edged polygon indciates woodland which has belonged to the Coetir Mynydd community woodland group (a private company limited by guarantee with charitable objects) since 2004. All of the smallholders who have planted new woodland are members of Coetir Mynydd.



Scheme	Name	Ha	Planting stock	Owners objectives (from management plan)
BWW	Bodorgan	2.11	Native broadleaves, local provenance (rowan, downy birch, common alder, ash, willow, hazel, sessile oak)	The owner intends to establish a new native woodland on the site to provide shelter, amenity and conservation benefits as well as woodfuel production in the longer term.
GWC	Pen y Llyn	0.35	Woody shrubs, willow, rowan, ash, common alder, Stika spruce, mixed native broadleaves, downy birch	The woodlands will provide shelter for adjacent grazing land and farm buildings whilst making a positive contribution to the biodiversity and landscape of the holding and its surroundings.
GWC	Ynys Uchaf	0.45	Sessile oak, common alder, hazel, birch, scots pine, sycamore	The new woodland will create an extension to existing broadleaved woodland. It will also sequester carbon, provide a source of fuelwood and timber, and enhance biodiversity and landscape of the holding.
GWC	CaeEmyr	0.33	Birch, common alder, woody shrubs, mixed native broadleaves, ash, wild cherry, sessile oak	Establish a native woodland for biodiversity, landscape and small scale fuelwood production for own use.

Source: Public register of grant aided woodland creation
www.eforestry.gov.uk/glade/public_register_publicRegisterMap.do

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