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Forest Land Ownership Change in Portugal

COST Action FP1201 FACESMAP Country Report



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

Forest Land Ownership Change in Portugal

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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.

Overall, COST Actions help coordinate nationally funded research activities throughout Europe. COST ensures that less research-intensive countries gain better access to European knowledge hubs, which also allows for their integration in the European Research Area.

By promoting trans-disciplinary, original approaches and topics, addressing societal questions, COST enables breakthrough scientific and technological developments leading to new concepts and products. It thereby contributes to strengthening Europe's research and innovation capacities.

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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 woodland 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 (outputs: literature survey, meta-analyses and maps).
- (2) To explore innovative management approaches for new forest owner types (outputs: case studies, critical assessment).
- (3) To study effective policy instruments with a comparative analysis approach (outputs: literature survey, case studies, policy analyses).
- (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 to a 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 of a collection of quantitative data as well as qualitative description of relevant issues. The COUNTRY REPORTS of the COST Action 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.

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Acronyms and abbreviations

CAP	Common Agricultural Policy
CEF	Forest Research Centre (Centro de Estudos Florestais)
CESE	Council for Cooperation between University and Businesses
EFFE	Evaluating Financing of Forestry in Europe
FCT	Portuguese Agency for Science and Technology (Fundacaopara a Ciencia e Tecnologia)
FOA	Forest Owners' Association
ICNF	Institute of Forests and Nature Conservation
INIAV	National Institute for Agrarian and Veterinary Research (Instituto Nacional de Investigacao Agraria e Veterinaria)
PGF	Forest Management Plan
PRODER	Portuguese Rural Development Plan
ZIF	Forest Intervention Zones
PROFs	Regional Forest Plans
PROTs	Regional plans to regulate all land uses
PEOTs	Plans to regulate land use allocation in protected areas
PMOTs	Mandatory local level plans for private and communal property
PDM	Municipal master plan
PU	Urbanization plan
PP	Specific plans
PMDFCI	Municipal plan for defence of forests against fire
ITI	Integrated Territorial Intervention

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 the studies analysed are presented in Annex 1.

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. 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 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

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).

3.2. New forest ownership types

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 (*entidade gestora*) 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 Planning¹, 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 (*Bursaphelenchus xylophilus*). 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).

¹Ministerio da Agricultura, do Mar, do Ambiente e do Ordenamento do Território.

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 Azeiteiro², 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

² P. Azeiteiro is a forestry engineer working in a forest owners association in the west of Portugal (*zona oeste*).

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 (*Zona Oeste*), 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 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: <i>Changes in managing entities of community forestlands (commons)</i> ³	2

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

³ 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 but carry out harvesting themselves
NE	Do not carry out bush cleaning and outsource harvesting
IN	Carry out bush cleaning but do 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 Protection - 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 Misericórdia 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 Misericórdia 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 (<i>Ligaparaa proteccao da natureza</i> – LPN is a Portuguese NGO for Nature Protection)	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: <i>Santa Casa da Misericordia</i> , 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	0	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 (*Pinus pinaster*) 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 (Cidade 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 at 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 nº 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.

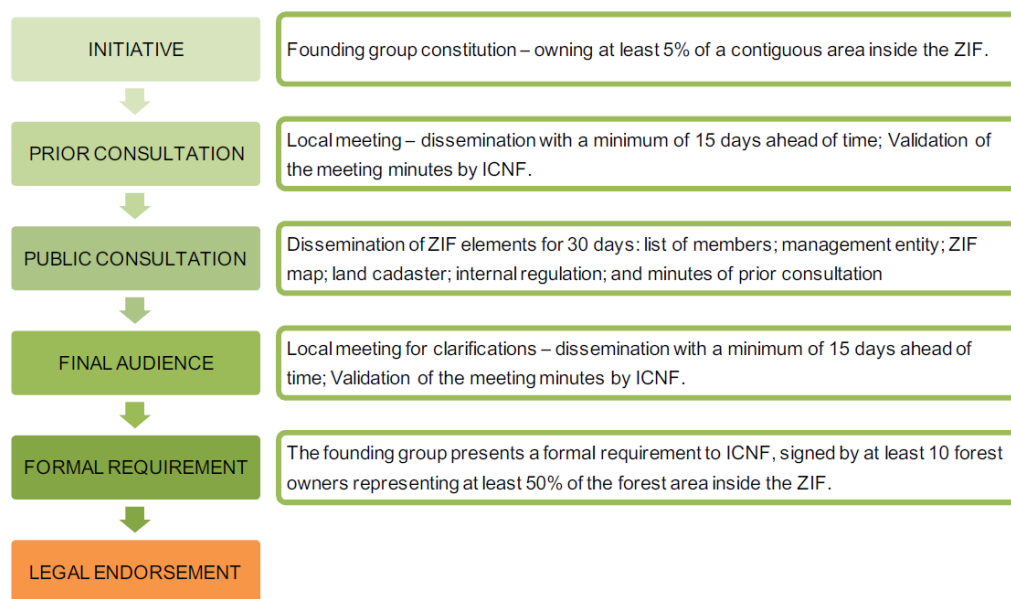


Figure 1: Steps required to establish a Forest Intervention Zone (ZIF)
 Extracted from: Valente et al., 2013

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 200,000 ha (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 Championship⁴. 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 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. *Bursaphelenchus xylophilus*). 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.

⁴ http://orienteering.org/events/?event_id=409

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 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 *Bursaphelenchus xylophilus*, 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 m³ 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 ("*Bolsa Nacional 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)⁵.

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 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.

⁵ www.publico.pt/portugal/jornal/zonas-de-intervencao-florestal-arderam-mais-do-que-o-resto-do-pais-em-2007-2010-e-2012-27004110

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/cadastré 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 (cadastré). 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.

7. Literature

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8. Annexes

8.1. Tables with detailed description of 10 most important publications

SELECTED REPORTS/PUBLICATIONS 1	
Full reference of study/publication	Mendes (2004). The Portuguese Forests. Working Papers de Economia (Economics Working Papers) 13, Faculdade de Economia e Gestão, Universidade Católica Portuguesa. (Porto). Pp. 271
English language summary/abstract	This report built on work from a previous report on Portuguese Forests – CESE (1996, 1998) which filled on some data gaps since it put together a lot 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 understand better the reasons behind the forest programmes evaluated in the EFFE project (Investigate forestry-related funding programmes in Europe with special to their relation to CAP measures. The report shows that there is not one, but, at least, three or four Portuguese forest sub-sectors, very different from each other in terms of the main tree species (maritime pine, eucalyptus, and cork oak), the socioeconomic characteristics of forestry and the structure and dynamics of the markets and related industries.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input type="checkbox"/> policy instruments addressing ownership <input checked="" type="checkbox"/> new management approaches <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input checked="" type="checkbox"/> Public EU/cross-national Europe <input checked="" type="checkbox"/> Public Sub-National
Regional scope	<input type="checkbox"/> National <input type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Economics, sociology, political sciences
Methodical approach	Literature review; Secondary data on forest economics (e.g. GDP, employment), data on wood production, data on markets and non-wood forest products; forest fires data, public taxation, forest incentives.

Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University
Main results should be given here if not yet included in the summary.	
Weblink	www.porto.ucp.pt/feg/repec/WP/132007%20-%20Mendes%20-%20The%20Portuguese%20Forests.pdf

SELECTED REPORTS/PUBLICATIONS 2	
Full reference of study/publication	Baptista, F., Santos, R., 2005. Os Proprietários Florestais: Resultados de um Inquérito. Pp Celta, Oeiras. Pp. 94. (Forest Owners: Results of a survey)
English language summary/abstract	Private forest owners are holders of three-quarters of the forest area in Portugal, which mean they are extremely relevant when in the discussion about "forest issues". Two questionnaires were conducted, covering 2406 individual forest owners. A typology of forest owners was built, highlighting the most important differences between forest owners.
Language of the study/publication	Portuguese
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> policy instruments addressing ownership <input type="checkbox"/> new management approaches <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National
Regional scope	<input type="checkbox"/> National <input checked="" type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Sociology, political sciences
Methodical approach	Questionnaire survey
Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University
Main results should be given here if not yet included in the summary.	Five types of forest owners were defined: investment - reserve; owned - reserve; work – reserve; reserve - holding; forestry-company. A set of variables intended for validation were also selected for validation of the types of forest owners, with the aim of showing the differences between the five types considered. Apart from the differences in tree species composition and ownership structure, forest owners are differentiated by its economic logic, a subject that will occupy the reference position in terms of forest policy.
Weblink	n.a. It is a book.

SELECTED REPORTS/PUBLICATIONS 3	
Full reference of study/publication	Carvalho-Ribeiro, S., Lovett, A., O' Riordan, T. 2010. Multifunctional forest management in Northern Portugal: Moving from scenarios to governance for sustainable development. Land Use Policy 27, 1111–1122
English language summary/abstract	<p>If there is a strong argument in favour of multifunctional forest management, there is also controversy regarding the types of multifunctionality able to instill virtuous circles across landscapes. Managing forests in such a way that user groups, sustainability practitioners and forestry institutions all agree to, is not easy. For any reliable consensus to occur, via viable landscape design procedures, through which multiple functions (production, environmental protection and recreation) may be coordinated by means of innovative planning, there is a need to negotiate a set of common objectives and shared responsibilities. This paper examines the policy dimensions of multifunctional forest management, and, through an exploratory case study, proposes an approach for cooperative planning and institutional design. The case study involved two parishes in the Minho region of Portugal (Gavieira and Entre Ambos-os-Rios) combining the local communities, the National Park, and local forestry officers. The case study created, developed and validated two scenario storylines through a series of participatory processes (two focus group meetings, one comprehensive workshop, and one expert meeting). One scenario focussed on continuity of the traditional management patterns, with an emphasis on direct goods such as timber and livestock grazing (traditional multifunctionality). The other concentrated on indirect ecological services, such as soil and water protection, as well as carbon sequestration (new multifunctionality). An attempt was also made to implement the scenario storylines through initiating a pilot project in both of the case study areas. However, there were neither robust planning mechanisms nor adaptive governance systems with the capacity to put into place forest management "futures" likely to deliver more sustainable landscape-scale uses in these areas.</p>
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> policy instruments addressing ownership <input type="checkbox"/> new management approaches <input checked="" type="checkbox"/> motives and behaviour of ownership types ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National

Regional scope	<input checked="" type="checkbox"/> National <input type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Political sciences
Methodical approach	Exploratory case study, scenarios, focus groups
Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input checked="" type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University
Main results should be given here if not yet included in the summary.	This paper illustrates the difficulties in forging governance systems that have the capacity and the vision to be able to put sustainable development concepts into practice, even when a coherent package of planning measures are tried out, given a policy setting that is confused, contradictory, and where the "status quo" tends to be given prominence.
Weblink	doi:10.1016/j.landusepol.2010.02.008

SELECTED REPORTS/PUBLICATIONS 4	
Full reference of study/publication	Feliciano, D. & Carvalho Mendes, A. M. (2011) Forest Owners' Organizations in North and Central Portugal – Assessment of Success. SEEFOR - South-East European Forestry, 2, pp. 1-12.
English language summary/abstract	The emergence of forest owners' organizations (FOOs) in Portugal occurred in the 1990s. Fifteen years later there were 173 FOOs providing services to the private forest owners and also to the whole of society. This study aims to evaluate the success of FOOs in increasing their membership and the quantity of services provided. Eight FOOs from the North and Central Portugal were chosen as case studies. Quantitative data on membership numbers and number of services provided by the eight case studies were collected from the archives of FORESTIS or directly at the FOOs headquarters. Qualitative data from newsletters, annual reports, local newspapers and letters were also collected to be further analysed. Secondary data collected cover a period of ten years (1994-2005). In addition, eight interviews to members of staff or FOOs directors were conducted in 2005. It was hypothesised that the number of members and the quantity of services provided may be interrelated and that the turnover of staff and their productivity influence the success of FOOs in increasing their membership and providing technical advice services.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input type="checkbox"/> policy instruments addressing ownership <input checked="" type="checkbox"/> new management approaches <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National
Regional scope	<input type="checkbox"/> National <input checked="" type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Economics, political sciences
Methodical approach	Case studies and qualitative interviews

Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University
Main results should be given here if not yet included in the summary.	The study showed that although most FOOs were successful in making their membership grow, there were big differences in the number of members, in the forest area covered by them and in the quantity of services provided. It was concluded that human capital, financial capital and path dependence were the factors that most constrained the success FOOs in North and Central Portugal.
Weblink	http://hrcak.srce.hr/76590

SELECTED REPORTS/PUBLICATIONS 5	
Full reference of study/publication	Novais, A. & Canadas, M. J. (2010) Understanding the management logic of private forest owners: A new approach. Forest Policy and Economics. 12. Pp. 173-180.
English language summary/abstract	Recently, several typologies of non-industrial private forest owners were established in order to assess their objectives and attitudes toward forests. However, current management practices and work organization have usually not been explicitly addressed in these empirically based typologies. In a context of increasing outsourcing and decreasing family work in forests, it is important to know the forest practices, who carries them out, and with whose labour and equipment. The interrelated knowledge of these variables sheds light on the constraints faced by different forest owners and about the agents caring for their forests. Such knowledge can also improve the understanding of forest owners' behaviour and, therefore, be useful for the design and implementation of forest policies. The work models of Portuguese non-industrial private forest were identified with these goals in mind. A cluster analysis, using a representative nationwide sample and an empirically based set of variables, was instrumental in identifying six work models. The interrelation amongst these models and other variables such as landholding attributes (e.g. forest size and dominant species), owners' social profile, and their economic goals was also assessed. Finally, the main dynamics of private owners' forest management are outlined.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> policy instruments addressing ownership <input checked="" type="checkbox"/> new management approaches <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National
Regional scope	<input type="checkbox"/> National <input checked="" type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Economics, political sciences
Methodical approach	Two questionnaires. One questionnaire aimed at identifying the socioeconomic characterization of the Portuguese forests and the forest owners. the other questionnaire aimed at identifying the forest management practices undertaken by forest owners, according to tree species (maritime pine, oak, eucalyptus, other oaks, walnut tree and holm oak). Interviews with 2406 owners, in the Portuguese Mainland. The data were gathered during

	<p>1999 and 2000 in 26 civil parishes ('freguesias') carefully selected in order to encompass the diversity of Portuguese forest, concerning dominant forest cover, size of forest properties, and the relationship of rural populations to the forest. Only 901 forest owners responded the questionnaire.</p>
<p>Thematic focus</p>	<p> <input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University </p>
<p>Main results should be given here if not yet included in the summary.</p>	<p>Applying the work model notion to the object of this study has proved useful for the identification of six types of NIPF owners showing a balanced sample distribution: 16% NI, 18% NE, 20% IN, 8% II, 18% IE, and 20% EE. In an articulated manner, the models inform us about the constraints on forest owners, the practices, and the agents performing them. These work models differentiate mainly according to the way forest owners are internalizing, externalizing, or non-executing two operations: bush cleaning and harvesting.</p>
<p>Weblink</p>	<p>http://www.sciencedirect.com/science/article/pii/S1389934109001397</p>

SELECTED REPORTS/PUBLICATIONS 6	
Full reference of study/publication	Marques, M. A. G. N. (2011) Cooperation in forest management. The case of Zones of Forest Intervention. Instituto Superior de Agronomia. MSc thesis. Lisboa, 2011. Pp. 107.
English language summary/abstract	The Forest Intervention Zones (ZIF) appeared in 2005 as a proposal for the organization 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. This work discusses, firstly, the structural context of the Portuguese forest, which allows for the implementation of management models based on the cooperation of non-industrial forest owners: property structure and management objectives of the owners. This first part includes a historical portrait of the Portuguese forest history from the XIXth century until the present times. The purpose of this historical portrait is to observe the relations between the State policy and the non-industrial private forest owners along this period of time. Secondly, a diversity of types of cooperation that can be applied in this context is presented. This management types' presentation consists in a global review about the different types of management models that can be found in the temperate zones of the globe, and, with a forest context similar to the Portuguese, their advantages and constrains. Finally, this work demonstrates the territorial and socio demographic variety of the ZIF zones, concluding that the capacity of application of these management models must attend to this diversity. In this part this study analyses a variety of indicators related to the socio demographic characteristics of the territories where the ZIF are present. This analysis is focused on the municipal regions. These characteristics are then related to each other after a Burt table in order to understand the relations between all the variables analyzed.
Language of the study/publication	Portuguese
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input type="checkbox"/> policy instruments addressing ownership <input checked="" type="checkbox"/> new management approaches <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input checked="" type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National
Regional scope	<input checked="" type="checkbox"/> National <input type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Political sciences
Methodical approach	Literature review. Analysis of case studies.

Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University
Main results should be given here if not yet included in the summary.	
Weblink	https://www.repository.utl.pt/handle/10400.5/4143

SELECTED REPORTS/PUBLICATIONS 7	
Full reference of study/publication	Marques, J. A. G. (2011). Forest certification as a promotion tool for sustainable forest management in Portugal. 2011. MSc thesis. Faculdade de Ciências da Universidade de Lisboa. Pp. 81.
English language summary/abstract	Sustainable Forest Management (SFM) intends to balance all interests pending on forests, whether they are social, economic or environmental. SFM can be implemented and verified through certification schemes, with a set of Principles, Criteria and Indicators. The Forest Stewardship Council (FSC) and the Program for Endorsement of Forest Certification (PEFC) schemes have been implemented in Portugal since 2003 and still hasn't been done an evaluation of its progress in Portuguese forestry. With this study were assessed what type of companies have joined certification, and their perceptions on the process. For this, surveys were applied to 71 certified companies in Portugal. Relationships were sought between the opinions presented and the standards adopted. Additionally, through the analysis of surveillance reports, was verified if certification had real impacts on forest practices, and which were the most common causes for non-compliance with standards. At last, the hypothesis of developing a new national forestry certification standard in compliance with several international schemes was evaluated, and four standards were compared and analysed for similarities.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input type="checkbox"/> policy instruments addressing ownership <input checked="" type="checkbox"/> new management approaches <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input type="checkbox"/> National <input checked="" type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National
Regional scope	<input type="checkbox"/> National <input checked="" type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Economics, silviculture
Methodical approach	Surveys, surveillance studies, A'WOT analysis,
Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University

Main results should be given here if not yet included in the summary.	Certification has contributed to enhance forest management and environmental practices. The impacts found were similar to both the FSC and the PEFC standards. The strategic analysis has shown that positive aspects weight more than negatives, and therefore the development of a national standard would be desirable to the Portuguese forestry sector.
Weblink	http://repositorio.ul.pt/bitstream/10451/5565/1/ulfc092729_tm_joana_marques.pdf

SELECTED REPORTS/PUBLICATIONS 8	
Full reference of study/publication	Valente, S. (2013). Stakeholder participation in sustainable forest management: design and practice of a participatory methodology. CESAM Centre for environmental and marine studies. University of Aveiro. 2013
English language summary/abstract	<p>This study hypothesises that forest management can be improved by changing decision-making framework to a participatory approach. The study develops a participatory methodology, able to integrate key-stakeholders and local communities in the definition of local Sustainable Forest Management strategies. The study assumes that stakeholder participation in forestry decision-making in Portugal is needed because:</p> <p>1) The failures of centralized and top-down decision-making processes, unable to deal with the characteristics of forestry decisions (dynamic, multi-dimensional, complex, uncertain, long term and affects multiple stakeholders); 2) The public demand in what concerns more democratic and participatory processes and the need to enhance active citizenship and capacity building in Portugal.</p>
Language of the study/publication	Portuguese/English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input type="checkbox"/> policy instruments addressing ownership <input checked="" type="checkbox"/> new management approaches <input type="checkbox"/> motives and behaviour of ownership types <input type="checkbox"/> ownership change (incl. on changes in quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National
Regional scope	<input checked="" type="checkbox"/> National <input type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Political sciences, sociology
Methodical approach	Stakeholder perception survey, key-stakeholder workshop, community workshop
Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input checked="" type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University

Main results should be given here if not yet included in the summary.	In the last decade, the Portuguese State developed a political, legal and institutional framework to the forest sector, in order to facilitate the organisation and cooperation of forest owners towards sustainable forest management. This study found that the State's knowledge about forest stakeholders is very limited. Forest management objectives have been far from National objectives, not because of lack of policy instruments, but because of lack of implementation of those instruments. Most of policy instruments were developed by public services in a centralised way and these "centralisations" keep happening both in the ministries and public forest institutions, slowing down the implementation of forest management and planning.
Weblink	

SELECTED REPORTS/PUBLICATIONS 9	
Full reference of study/publication	Fernandes, L. 2008. The Portuguese Forest Services since the creation up to the laws of the Forest Regime. MSC Dissertation submitted to the Portuguese Catholic University.
English language summary/abstract	The present work is a study of one of the most significant events in history of Portuguese forest policy and the activities of the Forest Services in Portugal, since their creation, in the beginning of the 19th century until the present day. Although Portugal is a country where private forest ownership is dominant, public forest policies have not yet paid sufficient attention to this reality.
Language of the study/publication	Portuguese
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input type="checkbox"/> policy instruments addressing ownership <input type="checkbox"/> new management approaches <input checked="" type="checkbox"/> motives and behaviour of ownership types ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National
Regional scope	<input checked="" type="checkbox"/> National <input type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Political sciences
Methodical approach	Testing explanatory hypothesis on secondary historical data
Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input checked="" type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University
Main results should be given here if not yet included in the summary.	There is a case of path dependency in forest policy in Portugal and this study found the following reasons for that: -Policy instruments that support direct intervention of the State in forest management are favoured instead of incentives to private initiative; -Intervention in large scale forestry is favoured instead of the promotion of grouped management of small-scale forestry; - State intervention is concentrated in public forests or in the commons managed as if they were public forests.
Weblink	

SELECTED REPORTS/PUBLICATIONS 10	
Full reference of study/publication	Valente, S., Coelho, C., Ribeiro, C., Soares, J. (2013). Forest Intervention Areas (ZIF): A New Approach for Non-Industrial Private Forest Management in Portugal. Silva Lusitana, 21(2): 137 – 161.
English language summary/abstract	This research contributes to the discussion regarding Forest Intervention Areas (ZIF) in Portugal, analyzing the technical and social perspectives on the potential and constraints of this approach. The size of forestry holdings, the constraints of individual management, the abandonment of rural areas and the frequency and intensity of forest fires in Portugal have stressed the need to strengthen cooperation and organization of small-scale forest owners and producers into a joint strategy for rural resources management. ZIF approach is recognized by technical and political stakeholders as a promising approach for the management of small-scale forest holdings. At local level, ZIF approach was already disseminated, gaining the trust and cooperation of forest owners. However, the absence of effective results is leading to an increasing distrust amongst forest owners and ZIF members.
Language of the study/publication	English
Type of organization conducting the study (in case of multi-institutional studies multiple answers allowed)	<input checked="" type="checkbox"/> policy instruments addressing ownership <input type="checkbox"/> new management approaches <input checked="" type="checkbox"/> motives and behaviour of ownership types ownership change (incl. on changes in <input type="checkbox"/> quantitative terms, emerging new ownership types, etc.) <input type="checkbox"/> International beyond Europe
Type of funding used (multiple answers allowed)	<input type="checkbox"/> Cross-national Europe <input checked="" type="checkbox"/> National <input type="checkbox"/> Sub-national <input type="checkbox"/> Public other <input type="checkbox"/> Public International beyond Europe <input type="checkbox"/> Public EU/cross-national Europe <input type="checkbox"/> Public Sub-National
Regional scope	<input type="checkbox"/> National <input checked="" type="checkbox"/> Private other <input type="checkbox"/> Private Industry <input type="text"/>
Theoretical approach	Sociology, political sciences
Methodical approach	Case study selection, Questionnaire & semi-structured interviews
Thematic focus	<input type="checkbox"/> Other (please name below) <input type="checkbox"/> Private Research Institute <input type="checkbox"/> Public Research Insitiute <input checked="" type="checkbox"/> University

<p>Main results should be given here if not yet included in the summary.</p>	<p>NIPF owners have to be actively involved in all stages of ZIF, namely discussing and negotiating ZIF plans and contributing to the implementation of all activities. Transparency, trust and investment are key-ingredients and will only be possible if forest owners are engaged throughout the whole process. To get ZIF out of this deadlock, interventions and actions foreseen on the ZIF plans need to be implemented. For that, the plans need to be submitted and approved, the public funds should reach on time to priority areas and forest owners need to be involved in the whole process, as a way of getting all type of support (financial, labour, know-how, etc.). If this does not work, ZIF will be just another lost opportunity, with misuse of public funds and discredit about forest owners' cooperation.</p>
<p>Weblink</p>	<p>http://www.scielo.gpeari.mctes.pt/scielo.php?pid=S0870-63522013000300001&script=sci_arttext</p>



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