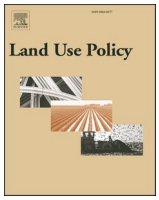
Land Use Policy 119 (2022) 106182

Contents lists available at ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol



# Implementing policy interventions to support farmer cooperation for environmental benefits

Katrin Prager

*University of Aberdeen, Geography & Environment, School of Geosciences, St Mary's, Elphinstone Road, Aberdeen AB24 3UF, Scotland, UK*

ARTICLE INFO

*Keywords:*
Farmer collaboration
Farmer cluster
Facilitation groups
Environmental land management
Agri-environment schemes
Landscape-scale

ABSTRACT

In policy and academic literature, landscape-scale agri-environment schemes (AES) are discussed in conjunction with farmer collaboration, reflecting the assumption that the two concepts are synergistic. However, farmers cooperate in different ways and for different purposes, with agri-environmental collaboration representing a different, more unique, case in relation to cooperation. Collective action among farmers may occur as cooperation (often facilitated by a third party) or as direct collaboration between farmers. Farmers' general willingness to cooperate should not be conflated with collaboration under the demands and constraints of a landscape-scale AES. This paper investigated the Countryside Stewardship Facilitation Fund (CSFF) in England as a policy intervention to develop cooperation amongst farmers and agree the agri-environmental management priorities that they plan to take forward across their holdings. Data from empirical research on the actual operation of six CSFF-funded groups in Cumbria and East Anglia was analysed from a social capital and collective action perspective. We found that key elements of social capital (connectedness, trust, norms) differed between cases, leading to different starting points for establishing groups. The resulting cooperation in agri-environmental management also varied depending on pre-existing networks. The CSFF supported steps to increase the capacity of individuals (and in some cases groups) to deliver agri-environmental outcomes via a facilitator, but struggled to create self-sustaining groups of farmers collaborating on agri-environmental management. The design of similar policy interventions needs to be explicit what kind of farmer cooperation is aimed for. It also needs to take into account the time required for building the prerequisite social capital, tensions between priorities of farmer-led groups and state-funded AES, and trade-offs between group cohesion and landscape-scale working.

## 1. Introduction

Previous research supports the idea of collaborative agri-environmental schemes (AES) involving farmers working in groups to coordinate their management activities and incentivising cooperation among farmers as a promising way to achieve landscape-scale management (Franks, 2019; Emery and Franks, 2012; Prager et al., 2012; Westerink et al., 2020; Runhaar and Polman, 2018). For example, Franks and Emery (2013, p857) suggest encouraging "the development of farmer led, bottom-up (…), environmentally-oriented groups of farmers who are willing to coordinate the selection and management of environmental management options" as a 'collaborative strand' in order to improve landscape-scale environmental management in formal AES. There is also support for this approach from a landscape ecology perspective: Macfarlane (1998) advocates for inter-farm cooperation of spatially adjacent farms to enhance agri-environmental policy objectives. By operating at a landscape scale, the spatial distribution, patterns and types of environmental features (species, habitats etc.) can be taken into account, and overcome current limitations in the effectiveness of AES (Kleijn and Sutherland, 2003; Batáry et al., 2015; Fuentes-Montemayor et al., 2011). In addition to spatial coordination, the expectation is that these farmer groups will strengthen the social capital which in turn impacts positively on their environmental management, as farmers are exposed to agri-environmental measures, acceptability increases, and positive peer-pressure can further incentivise farmers (Mills et al., 2021, 2011).

Cooperation among farmers is not new; helping neighbouring farmers out and engaging in machinery rings and labour sharing arrangements has been commonplace for a long time (Flanigan and Sutherland, 2016; Ajates Gonzalez, 2018; Bijman et al., 2014). However, there are also limits to cooperation: cooperative relations are not equal or consistent between all farmers; cooperation in one aspect of farming

*E-mail address:* katrin.prager@abdn.ac.uk.

https://doi.org/10.1016/j.landusepol.2022.106182
Received 4 November 2020; Received in revised form 27 April 2022; Accepted 29 April 2022
Available online 6 May 2022

does not necessarily translate to cooperation in another aspect, and farmer cooperation has a history which is shaping farmer interactions in the present (Riley et al., 2018; Mills et al., 2011).

In addition, Riley et al. (2018) argue that our limited understanding of farmers' willingness and ability to cooperate in relation to conservation and agri-environmental management may, in part, be born out of the tendency of previous research to focus on cooperation in relation to themes of collective buying or selling and from this assume similar relations for cooperative land management and conservation. However, land management represents a different, more unique, case in relation to cooperation. Cooperation is not uniform and static, and hence collective AES cannot be overlaid onto pre-existing examples of good farming relations.

A further challenge is that farmers are more motivated to collaborate on issues that are important to them, such as a particular management problem, the protection of certain species or habitat. Therefore, 'farmer-led' groups where farmers have discussed and agreed on the group's objective are likely more motivated, active and resilient than groups where objectives are set externally (Thompson et al., 2015). However, a state-funded AES sets out particular objectives for each of its options (measures) that may or may not align with farmer objectives. In addition, AES tend to focus on achieving environmental outcomes by prescribing specific management activities, and have not been designed to enable or develop social outcomes such as building trust and social capital between farmers and other stakeholders to allow social learning and shared management objectives (Mills et al., 2021).

Therefore, a knowledge gap remains how to design and implement policy interventions to develop farmer collaboration for environmental benefits, and which support mechanisms are needed to create farmer groups that become effective at working at a landscape scale. Such insights could help to broaden the implementation of collective approaches in agri-environment-climate schemes under the Common Agricultural Policy beyond pioneer countries such as The Netherlands (Westerink et al., 2020). They could also support the design of Environmental Land Management (ELM) schemes in England, which will replace direct payments and AES in 2024 as a result of the UK leaving the EU. Findings from this study are important for informing the ongoing test and trials (in particular those under the collaboration theme) currently underway in order to design and pilot the Landscape Recovery and Local Nature Recovery schemes.

This paper investigates the Countryside Stewardship Facilitation Fund (CSFF), a policy intervention to integrate a landscape-scale approach in England's current AES, the Countryside Stewardship (CS) programme. CS provides financial incentives for farmers, woodland owners, foresters and land managers to improve the environment via individual agreements. The study aims to analyse the mechanisms employed by the CSFF to develop farmer cooperation and landscape-scale management, using a social capital and collective action perspective, and derive implications for policy interventions to develop cooperation.

## 2. The CSFF as a policy intervention

In England, ideas for reshaping AES to include 'cooperative action' among farmers emerged over the last decade. The Lawton report reflects the notion of a larger, more inter-connected network of sites for wildlife conservation, with a recognition of the need for improved collaboration and ideas for "rewarding farmers who act cooperatively" (Lawton et al., 2010). The Department for Environment, Food and Rural Affairs (DEFRA) accepted many of the Lawton report's recommendations in their Natural Choice White Paper (DEFRA, 2011b) and Biodiversity Action 2020 Strategy (DEFRA, 2011a). The latter alludes to a vision of "encouraging more collaborative working to achieve landscape-scale action".

The recent policy document 'A Green Future: Our 25 Year Plan to Improve the Environment' (DEFRA, 2018) sets out various strategies and actions with an expectation on "farmers collectively delivering greater benefits for soil, water and wildlife at a landscape scale". Groups called 'farmer clusters' are promoted as an example to learn from, in order to create the new Nature Recovery Network (DEFRA, 2018, p60).

The Countryside Stewardship Facilitation Fund (CSFF) forms a part of CS and was launched in 2015. The CSFF is an instrument that provides funding for facilitators to develop cooperation amongst a new or existing group of land managers (e.g. farmers, foresters) and agree the agri-environmental management priorities that they plan to take forward across their holdings. The aim is to "improve the local natural environment at a landscape scale" (DEFRA, 2019) in other words, to deliver the priorities set out in CS at the landscape scale.

The design of the CSFF built on experiences with previous pilots and initiatives such as Nature Improvement Areas (large nature conservation area projects)[1] and so-called farmer clusters. The Game and Wildlife Conservation Trust developed the concept of farmer clusters as part of the Marlborough Downs Nature Improvement Area (Dent, 2014). The farmer cluster model was then piloted in association with Natural England (the nature conservation authority in England) providing funding. The pilot was evaluated as a success (Thompson et al., 2015), and the CSFF devised as a scheme that could support farmer clusters (or any group of farmers) by providing funding for a facilitator (Table 1). Since 2015, £ 10.3 million of funding has been committed to 136 facilitation groups across England through four national rounds and one flood-focused round of the fund (DEFRA, 2020) with funding invested via the Rural Development Programme for England, utilising Measure 16 (Cooperation). More than 3000 members make up the groups, covering an area of 670,000 ha (Breyer et al., 2021). A fifth round of funding in October 2019 was utilised by some existing groups to arrange a (no-cost) extension to allow them to make use of underspent funds. The sixth round was announced in September 2021 with £ 2.5 million, demonstrating the government's ongoing commitment to the approach, likely supported by the generally positive evaluations of the CSFF (Breyer et al., 2021).

**Table 1**
Key arrangements of the CSFF (DEFRA, 2017b; DEFRA, 2019).

| | |
|---|---|
| Submission of funding application | Facilitator (consultant, organisation) |
| Requirements to qualify | A group has to undertake activities that are new to them as a result of cooperating, including the alignment of management across holdings |
| Use of funding | Facilitator time and cost associated with organising meetings, events with expert speakers; to help group members to interpret CS requirements so that members submit individual but complementary applications. Not for one-to-one advice, capital investments, management activities or monitoring. |
| Duration of funding | Initially 5 years, later rounds 3 years |
| Group size | At least 4 farmers who manage a minimum area of 2000 ha between them, with holdings (largely) adjoining |
| Funding amount | £ 500 per holding (of farmers signed up) and up to £ 10,000 for costs of delivering the cooperation; with a cap at 80 members; managed by facilitator |
| Incentive component | Farmers who signed up receive extra points (a 20% uplift) when their individual CS application is scored |

[1] Nature Improvement Areas were introduced in England in 2012 as a key Natural White Paper commitment. Their primary aim was to develop ecological networks within defined areas. Only one of the 12 NIA was primarily led by farmers. (https://www.gov.uk/government/publications/nature-improvement-areas-improved-ecological-networks)

## 3. Conceptualising farmer cooperation and collaboration

The CSFF has the dual aim of coordinating the CS options that farmers enrol in, as well as developing cooperation by creating and supporting farmer groups via a facilitator. To understand why farmers cooperate, and how a public intervention like the CSFF can develop farmer collaboration and lead to landscape-scale management, we draw on two strands of literature; social capital and collective action. Cooperation and collaboration are forms of collective action that require social capital. When considered as a group-level characteristic, social capital can be conceptualised as consisting of the elements trust, norms and connections, with successive rounds of collaboration over time reinforcing these elements and becoming self-perpetuating (Putnam, 1993). Bourdieu (1986) stresses that these elements are relational and for social capital to successfully develop, continuous social relations are needed.

Trust is highlighted as particularly important for successful collaboration. According to Stern and Coleman (2015) "the importance of trust as an essential ingredient for effective natural resource management, and especially for collaborative efforts, has been recognised for more than two decades" (p118). De Vries et al. (2019) distinguish between interpersonal and institutional trust for the successful operation of AES, i.e. the trust between actors involved, and trust in institutions that govern these schemes. Trust is also based on the success of past interactions, where people reciprocated favours or help. Reciprocity as a norm is closely linked with trustworthiness, it builds trust and strengthens relationships. Trust takes time to develop, and there must be the possibility of repeated interaction, the latter often supported by geographical proximity and shared interests.

The configuration of social interactions in a network is referred to as connectedness. Three types of connectedness are identified (Pretty, 2003): 1) ties between similar individuals in a network (bonding social capital), ties between networks that have different views (bridging social capital), and ties between networks at different hierarchical levels (linking social capital). This study focusses on the bonding social capital between farmers in a group, but recognises that linking social capital, in particular the trust and relationships with a facilitator, are also important.

Trust, reciprocity and repeated interaction (connectedness) are easier achieved in smaller groups. According to Pretty and Ward (2001), effective community groups for natural resource management that have developed effective and operational social capital tend to be of smaller size with typically 20–30 active members. More recent evidence confirmed that groups between 20 and 25 members communicate more effectively, and permit agreement of common goals, norms and rules (Pretty et al., 2020). Ostrom (1990) warns of the risk of losing bonding social capital when groups become too big, with ties between group members weakening because they know each other less well and can no longer review and correct each other's behaviour, a problem recently faced by agri-environmental collectives in the Netherlands (Westerink et al., 2020).

In this paper, cooperation and collaboration are understood as forms of collective action. Collaboration in an agri-environmental context means that land managers (including farmers) meet, work together and maintain a dialogue, while cooperation is a less involved, less direct way of working together and often involves coordination by a third party (Prager, 2015b; Franks, 2019). Where management activities are prescribed by AES, the associated actions are more cooperative than collaborative in nature (Mills et al., 2011). It is important to note that farmer cooperation is conceptualised differently in the context of AES, ranging from collective or collaborative agri-environment schemes (van Dijk et al., 2015; Emery and Franks, 2012; McKenzie et al., 2013), collective action at landscape level (De Vries et al., 2019), boundary-spanning management options and incentivising collaborative conservation (Franks and Emery, 2013), to cross-holding agri-environment schemes (Franks et al., 2016). Although some authors refer to collaboration (e.g. Franks, 2019), what they describe is closer to the use of cooperation in this paper.

Depending on context, it may be preferable not to pursue the development of farmer collaboration but instead coordinate the management activities of individual farmers (Prager, 2015b; Bodin, 2017). Riley et al., (2018, p645) consider this more appropriate where "the maintenance of the status quo of seeking to increase individual agreements, in the hope of collective landscape benefit, is likely to remain most palatable to farmers." Here, coordinating individual agreements and incentivising neighbouring farmers to enrol in the same scheme via an agglomeration bonus is the most compatible with a farmer mindset. Dutton et al. (2008) showed in the Chichester Plains Project how landscape-scale management can be achieved without the need for farmer collaboration. A total of 42 holdings covering 70% of the 10,000 ha area aligned their management activities to benefit selected mammal species. External advisors worked on a one-to-one basis with individual farmers, in this way coordinating individual agreements and the associated management.

Farmers have different attitudes to collective schemes. Evidence from research in England suggests that the majority of farmers are not opposed outright to the idea of a hypothetical collaborative AES (Emery and Franks, 2012). However, this varied by scheme option and the specifics of the collaboration required. The more restrictions are imposed on individual decision making with regard to farming operations and management, the less willing farmers are to sign up. Riley et al. (2018) found that very few of the 74 farmers interviewed across the UK proved willing to engage in collective AES agreements although they had cooperative relationships relating to some farming tasks. This reinforces the point that farmers may be happy to cooperate on one aspect of farming but not another, and shared objectives and clear benefits are crucial.

Therefore, the motivations of farmers for engaging in cooperation or collaboration need to be considered. On a general level, most farmers are likely to agree that cooperation has benefits. This, however, is different from how much benefit they expect would accrue to their own business as a result of cooperation (Jarratt et al., 2016). In addition, every farmer is in a different situation with regard to the costs (including transaction costs) they would incur as a result of cooperation. The individual combination of benefits and cost leads to their varying assessments. At the least, farmers require that cooperation does not incur additional costs, or that the payment associated with the collaborative AES would cover their costs and lost profits (Franks et al., 2016). When it comes to particular scheme options, the specifics (management activities, objectives, implementation, restrictions, level of dependence on others) will play an important role. Respondents surveyed by Franks et al. (2016) were more supportive of coordinated cooperation (farmer-third party) options than collaborative (farmer-farmer) options. Coordinated options may include creating a network of hedges, ditches, or water features (ponds), expand woodland, and locate trees in designated sites. In contrast, collaborative options are e.g. the coordination of timing of hay cutting with neighbours or the creation of wetland areas to allow the water table to rise.

In addition to economic benefits, there are also social, cultural and psychological factors that motivate farmers to join collective action for environmental outcomes (Mills et al., 2011). They can include opportunities for learning, mobilising resources, increased visibility and lobbying power. Social status and the respective peer group may make AES more or less culturally acceptable for the individual farmer, which means that "structuring subsidy schemes to encourage farmers to co-operate is insufficient to address this issue" (Sutherland and Burton, 2011, p252). Social norms have an influence on social capital and farmers choices in the context of agri-environmental cooperation.

Farmers' preference for autonomy and independent working poses a barrier to joining cross-holding schemes (Franks et al., 2016; Stock et al., 2014). Advisors and other third-party support can have positive impacts to address this barrier to cooperation for environmental management

(Davies et al., 2004; van Dijk et al., 2015; Franks, 2016). A study in England found that "45% of farm businesses [out of a total of 567 surveyed] were working with others to deliver environmental benefits" and that over half of respondents delivered environmental benefits through "passive engagement through third-party bodies" (DEFRA, 2013). Third-party facilitators can also help align interests, further group development and access to resources.

This review has outlined the complex and heterogeneous settings that face a policy intervention targeted at developing farmer cooperation, or even collaboration. How cooperation is understood by farmers has implications for how farmers are willing to engage and what mechanisms a policy intervention can successfully mobilise. The level of social capital, motivations, history of cooperating and farmer relationships will be different in every case but determine whether cooperation will develop successfully. Group characteristics such as connectedness, group size, levels of trust, shared norms and interests shape social capital.

## 4. Methods

The study aimed to analyse the mechanisms employed by the CSFF to develop farmer cooperation and landscape-scale management by investigating the cases of different CSFF-funded groups. Data was collected through semi-structured interviews with group members and facilitators in Cumbria (Northwest) and East Anglia (East) in 2018–2019. These regions (Fig. 1) were chosen in order to explore any effects that the type of farming and size of holdings might have on farmer cooperation. Cumbria has mainly upland sheep and beef farming, nestled between mountain ranges, lakes and rivers. There are two National Parks, the Yorkshire Dales and the Lakes District National Park. Farm sizes are smaller than in East Anglia. While lower land adjacent to the farm holding is farmed individually, the higher ground is under common usage with grazing rights shared by many neighbouring farmers. The lower land near the water courses is more fertile and supports some arable cropping and dairy farming. Seasons are shorter and the climate is wetter. East Anglia is a flat, predominantly arable region in the lowlands with fertile soils and larger farm sizes. A wide range of crops are grown including potatoes, vegetables, and different cereals. Some of the slightly undulating ground is sandy and better suited to livestock grazing. Pressure on water resources is high due to demands for crop irrigation and potential diffuse pollution.

The specific locations within the regions were determined by where groups had been established, and which of these groups were accessible through their facilitator. The farmer groups were chosen based on the profile description of Facilitation Fund groups provided by DEFRA (2017a). Due to data protection regulations, facilitators could not pass on farmer contact details, therefore a different strategy was applied. In the case of two East Anglian groups, the facilitator asked interested group members to provide their contact details to the researcher. For the other four groups, the researcher attended one of the group meetings, and personally invited farmers to take part in the study. Interviews were scheduled with those farmers who agreed for the days following the meeting. Participants were self-selected and limited to those farmers who happened to attend the specific meeting.

The sample of farmers interviewed included 28 farmers who were group members (Table 2). Four non-group members were interviewed in Cumbria to elicit views of those not willing to join a group. Although the number of interviews in East Anglia was lower, the groups covered larger areas there, hence the research covered a similar scale of groups in a spatial sense in both regions (Table 2). The facilitators of all 6 groups were interviewed. In addition, 6 interviews were conducted with other key informants from relevant organisations, including a private farm

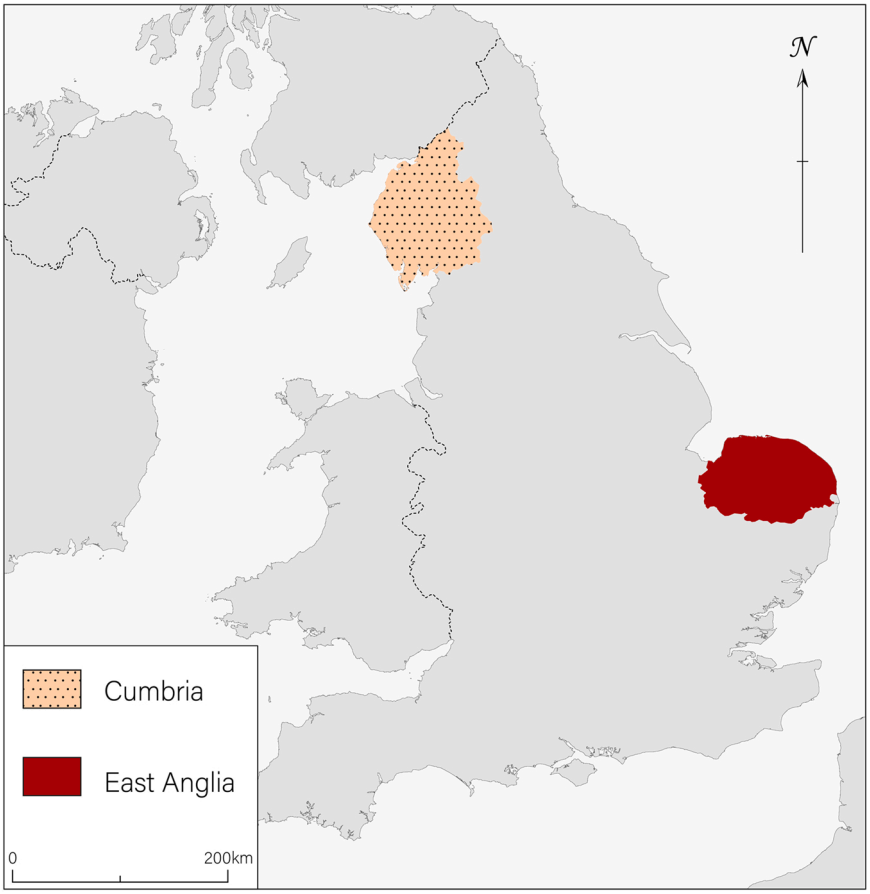



**Fig. 1.** Location of case study areas.

**Table 2**
Overview of groups.

| Case study region | Established | Members* | Members interviewed | Area (ha) * * | Steering Group |
|---|---|---|---|---|---|
| **Cumbria** | | | | | |
| *Group C1* | *2017* | 4 (20) | 5 | 2499 | no |
| *Group C2* | *2015/16* | 12 | 5 | 1908 | no |
| *Group C3* | *2017* | 23 | 8 | 4950 | yes |
| **East Anglia** | | | | | |
| *Group E1* | *2016/17* | 8 (14) | 5 | 8580 | No, but chairman |
| *Group E2* | *2016* | 9 | 4 | 3375 | No, but lead farmer |
| *Group E3* | *2015* | 13 (20) | 1 | 5596 | yes |

Note: * member numbers as stated at time of funding application, and numbers at time of interview in brackets, where available. **Area at time of application.

conservation consultant, RSPB (Royal Society for the Protection of Birds), a farmer network, another rivers trust, and a local conservation group. Participant observation was carried out at a total of four farmer meetings (C1, C2, C3, E1).

Interviews were conducted in-person or over the phone, lasting between 45 and 75 min. The material was audio-recorded and subsequently transcribed. Nvivo12 Pro was used to support coding of the transcripts. Coding followed an iterative process of deductive coding based on the initial research questions, and inductive coding based on topics emerging from the data (Brinkmann, 2013; Miles and Huberman, 1994). Codes were then assembled under themes incorporating issues relating to farmer collaboration and landscape-scale management identified in the literature. Sub-themes, for example 'trust', 'motivation' and 'benefits', were clustered under the relevant overarching themes.

## 5. Findings

The analysis contrasts how the CSFF requirements and funding arrangements resonate with the elements of social capital and insights on farmer collective action, and focus on 1) farmers' views on cooperation and changes to perception of cooperation over time, 2) group characteristics including size, connectedness, trust, and 3) motivations, benefits, and joint agri-environmental activities. The role of third-party facilitators is reflected on as a cross-cutting issue for group establishment and operation.

### 5.1. Views on cooperation

Given that the aim of the CSFF is to develop cooperation amongst a group of land managers, this study explored farmer views on cooperation, what farmers associated with 'cooperation' and whether they thought cooperation had changed over time. This allows to contextualise where the CSFF started with regards to pre-existing levels of cooperation.

Against a background of farms getting bigger to achieve economies of scale, increasing use of contractors, and government agencies reducing their staff on the ground with less farmer interaction, most interviewees perceived cooperation amongst farmers had reduced over the last 2–3 decades.

> "I think what's happened is units have got bigger so there's been less of an imperative. I think when units were smaller, people had a financial incentive to, whereas now I think units have become bigger and people can justify [not to cooperate]" (E2F18)

Some interviewees pinned a loss of cooperation on the fears associated with disease outbreaks, in particular foot and mouth in the late 90s and early 2000s "*So, getting people to cooperate again.something like that is quite difficult*" (E2F18). Some were more optimistic and felt the level of cooperation was slowly returning to what it previously was, and one interviewee stated it had remained the same (*C2F24)*.

About half of the interviewees stated that cooperation was not common and they did not cooperate with other farmers. "*Farmers are renowned for not cooperating – well here they are, they're not particularly cooperative*" (C3F15). However, some of these respondents went on to clarify that they do not lend machinery but they help out the neighbour (C3F06), help a cousin silaging (C2F25), or would help a farmer if their harvester broke (E1F19). One farmer responded their only form of cooperation was contract farming for others (E2F27). However, many of these interviewees were members of farmer groups (Cumbria Farmer Network, Anglian Farmers, both examples of buying cooperatives), and several were actively involved in the Facilitation Fund group and even conservation groups (e.g. one worked with different farmers doing farmland bird counts for them).

Amongst Cumbrian farmers who said they cooperate, this mostly meant lending or borrowing a piece of equipment (such as a trailer for silaging, C3F16), informally lending a tractor (often with a driver) (C2F24, C2F31), or to 'swap about a bit' (C2F32) such as 'giving a hand concreting' (C2F24). Helping out referred to giving a neighbour a quick hand when their livestock had escaped or needed to be shifted across the road into another field. Sheep farmers worked together in gathering their flocks off the hills. Arable farmers in East Anglia also shared equipment (such as a harvester, tractor, drill) with direct neighbours or friends, stored potatoes together, or helped cutting and baling hay or silage (E2F28, E1F22, E1F26, E3F29). One interviewee even mentioned he bought a herbicide applicator based on a handshake agreement with another farmer (E2F20). Interviewees made it clear that they had these collaborative arrangements only with a select few trusted people. They were often people they had known for a long time, they were located in geographical proximity, and trust had developed based on reciprocal exchanges, so even informal lending and borrowing of expensive machinery was possible in such a relationship.

This is consistent with findings by Riley et al. (2018), confirming that cooperative relationships are not equal or consistent between all farmers, and that cooperation in one aspect of farming does not necessarily translate to cooperation in another aspect. In our sample, there were farmers who did not want to join a (Facilitation Fund) group even if they had good farming relations and were happy to help out others and work together informally, and others who collaborated in a conservation context but not in a farm production context. Therefore, the assumption that willingness and ability of farmers to collaborate can be overlaid onto pre-existing examples of cooperative farming relations is indeed only correct for a subset of farmers. There was also evidence in our data that supports what Riley et al. (2018) have identified as a move toward a prioritisation of more local trust: farmers routinely helped out a specific trusted neighbour or shared machinery with farmers they consider friends. The majority of respondent statements pointed towards fewer reciprocal exchanges, and that well-functioning, informal cooperation in land management or production activities had become rarer over time. Monetary exchange seems to gradually become part the concept of cooperation, illustrated by several respondents mentioning contract farming when asked about cooperation, and confirmed in the literature on farmer cooperatives and social capital among farmers (Flanigan and Sutherland, 2016; Sutherland and Burton, 2011).

### 5.2. Group characteristics

#### 5.2.1. Establishing groups

In general, the initiative to put together an application to the Facilitation Fund came from the respective facilitators (except Group E1; Table 2). In Cumbria more widely, the National Park Authority, rivers trusts and the farmer network played an important role in facilitating groups for the Facilitation Fund. Working with groups of farmers is integral to these organisations' activities, be they with a focus on the environment or on production. The groups in East Anglia were

facilitated by independent consultants and FWAG (Farming and Wildlife Advisory Group).

Some facilitators had worked for their organisations for several years, thus having built relationships and trust with the farmers in the area, while others were junior in their role. The facilitators came from a farming background or had some exposure to farming so they were aware of farming issues, as well as farmers' seasonal and daily time availability. All facilitators were successful in mobilising interpersonal trust, by contacting mainly farmers that their organisation had already been in touch with previously. Farmers recognised the importance of a facilitator: "*a good coordinator's critical to the outcome (…) a good example is the Catchment Sensitive Farming Coordinators*" (C3F10). This quote also illustrates the importance of previous relationships and schemes, where the previous facilitators laid the foundations for farmers' willingness to engage.

Most contacted farmers agreed to sign up to the group. Farmers did not require much information for this decision once the facilitator assured them that no binding obligations would arise from it. In the case of Group E1, one of the local farm managers was instrumental in getting an application off the ground, and group members trusted his view that group action would most likely help secure funding for farm conservation measures in the future. Overall, facilitators were the key driver in setting up groups with the aim of generating monetary resources from the Facilitation Fund.

#### 5.2.2. Group size and connectedness

Facilitators decided the group size: some started with the minimum number of farmer members (4) or minimum area, and then signed up more farmers in the following years. Of the groups interviewed, three reported an increase in membership since they had been established (Table 2). To determine actual number of members was not always straightforward for the facilitator, not least because of the difference between signing up, attending meetings and ensuing level of engagement. Several facilitators mentioned cases of farmers who signed up originally and then never attended a single meeting.

Although on paper, groups were set up and running, there were diverging views amongst farmers of what that group was. Farmers interviewed in Cumbria did not realise or feel like they were members of a group. There was no strong identity of a group, not even in group C2 which had been established longest. This suggests a low level of connectedness within the groups. About half of the 18 interviewees said the group did not have a name, the other half connected the meetings to the organiser (the rivers trust, the National Park) or, after prompting, to the local river. The way farmers referred to their group was in part explained by the way the facilitators promoted mainly the events organised by their organisation with the Facilitation Fund money, rather than a farmer group as such. One interviewee questioned there even was a group because in their mind, to be member of a 'club' you needed to pay a membership fee:

*INTERVIEWER: So do you feel like a proper member of the group?*

*RESPONDENT: Not really, no. A member is when you pay isn't it normally? Pay a subscription fee?*

In contrast, in East Anglia interviewees referred to the (official) group name with only slight variations, half of them picking up on the fact that it was a group supported by the Facilitation Fund.

There was a further key difference between the groups regarding the level of social relations and connectedness among members: farmers in Cumbrian groups knew most people in the group prior to joining, although often not by name and only superficially from seeing them in the area, at farmer events or at auctions. They had weaker ties and social relations prior to the facilitators setting up Facilitation Fund groups and two of the interviewed groups had only been meeting for approximately a year (Table 2). In East Anglian groups, almost all members knew each other personally because they had been involved in similar group-based initiatives before, and some were even long-time friends. These groups had been going for longer than groups in Cumbria (except C2) because they had been successful in earlier rounds of funding.

In all groups except C1 in Cumbria, the facilitator who had initially put the application together and convinced farmers to sign up had moved on, and another staff member of the organisation had taken on the role. This may have slowed down social capital development as trust needed to be built between group members and the new facilitator, but it also suggests there was institutional trust in the facilitator's organisation to carry on supporting the group (de Vries et al., 2019).

The groups in East Anglia had a steering group, a chairman or lead farmer, respectively (Table 2), who were actively making suggestions and probing members, making groups appear more farmer-led. In Cumbria, the facilitator was more influential for the activities of the group. Even though group C3 had a steering group, not all interviewees were aware of it.

The CSFF allowed facilitators to bring farmers together so they could get to know each other, learn about each other's environmental interests and build trust which was especially important in Cumbria. Meetings were typically structured as an on-farm event with an interesting expert speaker delivering information that was relevant to current issues faced by farmers in the area, or a site visit. These events helped create opportunities to exchange views and knowledge of agri-environmental management, and build shared norms. This confirmed the point noted by Franks et al. (2016) that the CSFF can help to address the handicap faced by farmers farming in areas which lack existing support networks. In East Anglia, this step was less important because farmers already had established relationships and trusted each other. They also knew the other members' interests and had similar attitudes. One farmer who had recently joined the group expressed a sense of having found like-minded people:

> "farmers with a similar sort of outlook to what we've got, which is about promoting the sustainability of the farm. So I think it's almost as much about getting on with those other farmers in the group as it is about, you know, where the group is I suppose" (E2F20).

The groups in this study were well below the maximum membership allowed in CSFF rules, and as such group size did not impact on group cohesion. However, some commented on issues of disparate interests:

> "we're finding we're such a disparate group, we are all sorts of people, we've got toffs with plums in their mouth who are interested in their partridge shooting and we've got people like [group member] who is very focused on earning his living from growing crops, and everything in between." (E1F21)

Another expressed an awareness that larger groups may become too diverse, putting group cohesion and connectedness at risk. One farmer illustrated this with a group he knew of:

> "Well, I think they took on too much. There is an Area of Outstanding Natural Beauty and they wanted to use that […] for the scheme, but the trouble is the scheme was thirty miles long, something like that, there was too many farmers, it was too disparate, too vast an exercise" (E2F27).

### 5.3. Motivations, benefits and joint agri-environmental activities

#### 5.3.1. Motivation for joining

The motivation for joining a group, as well as the benefits members can derive, depends both on the funding arrangements and the activities that are undertaken as a group. In Cumbrian groups, the motivation and benefits of joining a group could not be assessed as most interviewees did not perceive themselves as a member of a group. Instead, they were asked for their reasons to attend the meetings with presentations from an expert speaker. Up to 12 meetings were planned per year. Groups in East Anglia also held events with expert speakers on member's farms, and went on joint trips e.g. to an RSPB reserve. Meeting frequency was lower, between 2 and 4 meetings per year. Facilitators in both regions

tried to identify farmers' interests and preferences for topics, but there was less engagement in topic setting from groups in Cumbria.

Interviewees motivations for attending meetings included learning something new or refreshing knowledge, seeing how someone else tackles a problem on their farm, getting current information about grant opportunities and to hear how others fared with particular scheme options. Other reasons referred to "putting in a stake for young farmers", to "keep up numbers" so that such events continue to be funded, and wanting to be seen to mingle with other farmers (e.g. if they are small scale or organic). Similar knowledge and learning-related benefits, access to funding and lobbying power were also identified in previous studies (Mills et al., 2011). Generally, the opportunity to socialise with local farmers was welcome by respondents. This was also observed in a study by Hall and O'Neill (2019), where respondents ranked the social benefits before environmental benefits in the main reasons for farmers to join a CSFF group.

Non-group members cited the following reasons for not engaging with a CSFF group: "I'm not a meeting person" and "I don't want to go in a scheme". Some non-group members supported the ideas the group stood for, but they did not think that the group approach was the best way to address environmental issues; in fact, they felt they could do more for the environment by not being a member. These interviewees valued their flexibility in decision making and felt time in meetings was wasted. The notion of restrictions, e.g. too much red tape, was linked to the perception of the government funding that groups received. These arguments resonate with Nye (2018, p31) who also reports examples where some land managers had refused to sign up for group membership but were still known to actively conserve nature on their land. Lastly, some farmers were not interested in a group or meetings simply because they had other priorities; in one case linked to age and retiring from farming.

Farmer interviewees from both regions acknowledged the monetary aspect that drives farmers to consider cooperation, e.g.

> "I can see us being in it while the money's there, but what happens then, I'm not sure" (E1F19) and

> "That's a farmer development group really. That is purely for farmers and it's all basically money-led (…) if there's money in it, we'll prepare to work together. So if you want to know why farmers work together, it's usually to access funds" (C1F04).

This reflects other studies, e.g. a facilitator respondent in Hall and O'Neill's study (2019) stated that the main motivation for farmers to join a group was to preserve their funding, and to continue to have access to agri-environment funding.

#### 5.3.2. Perceived benefits

In terms of economic benefits, there was no cost associated with farmers joining a group, and also no obligation to attend meetings or undertake specific management actions. Farmers attended events they were interested in, and essentially benefitted from free training. This made groups attractive to farmers. In addition, farmers knew that they would receive extra points (a 20% uplift) when their individual CS application was scored, as an incentive for joining a group. However, this incentive only applied to those farmers whose existing agreement was due to end or who were not in an agreement. Farmers in existing Environmental Stewardship Scheme agreements were not able to apply to CS mid tier until their existing contract expired. While the facilitator dealt with all the paperwork associated with CSFF funding, any support for a farmer's individual CS application was not covered by this funding as it did not allow for one-to-one advice (Table 1). Although Franks et al., (2016, p90) surmise that "The Facilitation Fund meets one of the farmers' key requirements for participation in landscape-scale AES, provision of financial support to pay for meetings, advice and completion of paperwork", this study showed that CFSS funding only catered partially for these requirements.

A benefit was also seen to arise from having a dedicated facilitator. Not only were facilitators crucial in setting up the groups, but also in maintaining momentum. A common theme was that a lead, 'somebody to run it', a third party was needed to keep the momentum going, keep the group focused and organise meetings, coupled with a doubt that any farmer in the group would be able to take this on (Franks et al., 2016). Having a facilitator "*means it makes it happen, and otherwise it just doesn't*" (E2F18). The intensity of facilitator involvement differed depending on how connected and motivated the group was, and ranged from some support to organise meetings and making suggestions (but otherwise letting the farmers get on with things), to being the key person in shaping meeting topics and content, scheduling and inviting, catering and coordinating. However, the amount of funding allowed facilitators only limited time to spend supporting a group (typically about 2 days a month). Two groups had set up steering groups (Table 2) as a mechanism to engage the farmers more formally, and to extend the facilitator support.

The benefits and importance of a facilitator became particularly apparent when interviewees were asked whether the group would continue once the funding for the facilitator post ended. Over half of interviewees said they did not know or were not sure. A similar number stated that the group will fall apart and meetings will stop: "*without funding our group might disband*" (E3F29). Others had not given it much thought. One group had a strong core group of friends, and interviewees agreed "*we'll probably still keep chatting, the closer ones amongst us, but we won't be getting the training*" (E2F28).

#### 5.3.3. Joint agri-environmental management activities

Generating environmental benefits was not the main motivation for any farmer joining a group. The wider environmental benefits from being involved in a group depended on the kinds of management activities carried out. In particular the alignment of management activities across holdings was an aim of the CSFF funding. In all groups, it was the facilitator who kept this alignment of management in view by having an overview of which scheme option(s) each of the group members are enroled in. Evidence from a CSFF evaluation report (Jones et al., 2020) indicates that coordination of CS options is taking place where farmers are looking to sign up to new options, as well as coordination with the wider activities of facilitators' organisations. However, farmer members who were already in a scheme were constrained by their current contract, and group membership does not oblige a farmer to enrol in CS.

There was some evidence of farmers discussing the stated goals of their CSFF groups and management activities amongst the group members, but very little on collaborating directly in agri-environmental management in terms of implementing aligned or joint management. Interviewees struggled to attribute specific activities to their CSFF group. Those farmers who had signed up to a CS option had implemented the required measures as a result of their agreement, rather than as a result of being member of the group. They often referred to agri-environmental measures or capital grants received before the group was set up. Similar results are reported by Nye (2018, p23) who found some confusion among farmers about the specific purpose of their group or the CSFF, with a "poor understanding of the primary purpose of the landscape-scale agenda.".

Other interviewees were undertaking environmental management outside of CS agreements but arguably linked to their involvement in the group. Two farmers from a group in East Anglia mentioned they were undertaking bat recording and comparing the results from each other's counts. Members of this group had also implemented a new mowing regime along ditches in order to maintain more habitat for water voles, set up nest boxes for tree sparrows, made double-drilled patches in their wheat fields available to make it more attractive to corn buntings to nest, or were observing the effects of wild bird mixes sown on their land on the abundance of farmland bird species (the bird seed mix is a CS option). Members of another group had restored approximately 15 ponds on their farms, paid for by a supermarket local community

scheme. Due to an established relationship with an ecologist at a nearby university, this group also had monitoring undertaken on the species diversity and abundance. None of these activities required direct farmer-farmer collaboration, although the pond creation arguably demonstrated cooperation, with coordination undertaken by the facilitator. However, farmers were motivated to undertake these activities as a result of the exchanges in the group, a desire to benefit the environment, sometimes spurred by curiosity and the social norms that had developed in the group (e.g. enhancing habitat was seen as an accepted and desirable objective in farm management). This kind of cooperation for environmental benefit did not occur in Cumbrian groups, linked to the lacking sense of operating as a group.

## 6. Implications for policy interventions to develop cooperation

Academic discussions and evaluation reports more broadly reflect the idea that collaborative AES with an increased number of farmer-group applications in AES would increase scheme effectiveness, suggesting that landscape scale and collaborative group working are mutually supportive (Boulton et al., 2013; Nye, 2018). The introduction of the CSFF support was seen to significantly enhance the potential of the mid tier option in CS to deliver landscape-scale benefits and described as incentivising 'collaborative collective action' (Franks, 2019). The CSFF pursues the dual aims of coordinating the CS options that farmers adopt to achieve landscape-scale improvements, as well as creating and supporting farmer groups via a facilitator to 'develop cooperation'. This research shows that based on a loose definition of cooperation as farmers working with others, through passive engagement with third party bodies (DEFRA, 2013), the CSFF succeeded in developing cooperation. On paper, farmer groups have been established and they are working together. However, in practice this results in a range of activities, from limited farmer interaction at an occasional event to joint decisions about which topics to cover in meetings, farm walks, some alignment of management and even monitoring.

Key to understanding the different effects of the CSFF in different locations is that the scheme design relied on preconditions that were not prevalent in each location to the same extent, i.e. including networks, social capital, and trust in the people and the system (De Vries et al., 2019). Earlier studies recognise the importance of context for the success of CSFF projects (Bennett et al., 2015). In cases with limited pre-existing social capital such as the Cumbrian groups, the relatively frequent meetings helped farmers to get to know neighbouring farmers and their environmental interests; important, as engagement in farmland conservation is rarely obvious (Riley et al., 2018). Thematically focussed meetings provided an opportunity to have 'organic' discussions with other farmers about their conservation practices, build trust and start considering collective activities. The CSFF thus supported steps to increase the capacity of individuals (and in some cases groups) to deliver agri-environmental outcomes.

However, even in cases with pre-existing social capital such as the East Anglian groups, the CSFF instrument struggled to create self-sustaining groups of farmers cooperating on agri-environmental management, as evidenced by the comments about the high likelihood that most groups will dissolve once the facilitator post ends. Although self-sustaining groups are not an explicit aim of the CSFF, it could be questioned whether the investment of public money is justified when farmer cooperation is developed only for the duration of the project. While this study found limited evidence of farmer groups engaging in collaborative agri-environmental activities at landscape scape, there are also reports of more active groups (Jenkins, 2019; Jones et al., 2020).

### 6.1. Social capital and funding timelines

If a policy intervention aims to support farmer cooperation (or even collaboration), timelines need to accommodate time for building trust and relationships. A period of 3–5 years – the funding duration for CSFF groups – is a short timeframe to build social capital and trust (Riley et al., 2018), in particular given the limited resource (staff time) that facilitators were able to invest in the group. Depending on levels of connectedness in existing networks, there may be a considerable mismatch between the time it takes to build social capital and the current design of policy interventions. This could be addressed with an option that allows existing groups to apply for funding from further rounds.

### 6.2. Farmer-led vs scheme-led groups

If the aim of the intervention is to develop self-sustaining groups (beyond the funded period), farmers need to be encouraged to engage in joint goal setting, planning activities and implementing them were achievable. Farmers are more likely to collaborate on something they are interested in, and implement activities that fit with their perception of environmental priorities and benefit their business. This is recognised in the farmer cluster model (Dent, 2014; Thompson et al., 2015) that emphasises farmer priorities and the key role of a lead farmer, and it is supported by current policy rhetoric expressing the desire to devolve more responsibility to farmers. However, farmer priorities may not always align with the priority options set out in the CS, or not always result in delivering landscape-scale management. These issues were identified previously with Hejnowicz et al. (2016) noting that there are tensions between "farmer selection of management options versus Natural England's target environmental objectives." This illustrates the inherent trade-off between a policy intervention for developing farmer cooperation and coordinating the enrolment in pre-set agri-environment options.

### 6.3. Group cohesion vs landscape scale

Smaller groups allow for effective communication, reciprocal relationships and the agreement of common goals and norms (Pretty et al., 2020; Mills et al., 2011), but depending on the size of members' farms, this may not be sufficient for landscape-scale management. If a policy intervention incentivises larger groups (up to 80 members with CSFF) to achieve landscape-scale management, the spectrum of opinions and views becomes wider. Increasing diversity in environmental conditions, farming systems and associated challenges make it harder to identify a shared basis and interests to build collaboration. Care must be taken to avoid losing bonding social capital, group cohesion and identity (Westerink et al., 2020; Ostrom, 1990), possibly by encouraging the establishment of an effective sub-structure such as committees and a steering group.

There is a further potential trade-off between landscape-scale management and farmer collaboration. Farmers prefer to collaborate with like-minded people who have a similar approach to farming and environmental management. However, these individuals may not necessarily manage land in geographical proximity. With the CSFF requiring largely adjoining holdings, this may run counter to existing networks and not necessarily include those farmers who get along well, or disregard any reservations or longstanding conflicts that exist between neighbours. For example, Riley et al. (2018, p642) cautions that "where the strongest and most active levels of cooperation currently exist, this may not be in areas of adjoining nature types."

### 6.4. Facilitator support vs over-reliance

The CSFF funding for a facilitator served two important purposes; to align the CS options that farmers enrol in (where CS rules allowed this, Jones et al., 2020), and to assemble and work with a group. Funding the facilitator role is an appropriate mechanism to support the early stages of setting up a group, or making information and expertise available when a farmer-led group is looking for advice (Franks, 2016; Thompson et al., 2015; Prager, 2015a; Schomers et al., 2015). However, it can also

create expectations among group members and over-reliance on the facilitator, so in the long term the aim should be to reduce the reliance on the (state-funded) facilitator. Only one group in East Anglia had a strong lead farmer (both in terms of conservation interest and resources) which incentivised group members to self-fund additional facilitator time. This group was by far the most active of those studied, in terms of implementing projects, management activities and monitoring of results, with the facilitator dedicating four days per week to supporting the group.

### 6.5. Incentives vs broader benefits

Using a policy intervention to encourage farmer collaboration is a two-edged sword. If access to agri-environment funding is made dependent on cooperation, farmers will cooperate (e.g. submit a group application). On the other hand, if the participation in a farmer group is coupled with a financial incentive, it may crowd out other motivations for collaborating (Mills et al., 2018) and thus collaborative activities relating to the agri-environment are likely to stop as soon as the funding ceases. Providing longer-term motivation for groups can be achieved by generating a sense of ownership, contribution to shared objectives and making progress. This is helped by monitoring whether a new or changed management activity had the intended results, as demonstrated in the farmer cluster approach where monitoring is an integral component (Thompson et al., 2015). A policy intervention such as the CSFF should consider supporting such additional activities that are required to improve group coherence and motivation, in order to ensure long-term impact of the public money invested.

## 7. Conclusion

This paper explored how a policy intervention like the Countryside Stewardship Facilitation Fund (CSFF) works towards developing farmer cooperation to achieve the benefits associated with a landscape-scale AES. The data represented the views of farmer members from 6 groups in two regions and their facilitators. The CSFF helped with some of the groundwork for establishing farmer cooperation for agri-environmental benefits, i.e. building social capital. Especially in areas with low social capital and lack of pre-existing networks, it takes time to establish connections and trust, and there is no guarantee that viable groups will be formed. Facilitator support may be necessary for many years before groups become farmer-led and self-sustaining. Even if groups operate successfully, they may not align all their management activities with the desired AES options, but instead decide to follow the interests of their members as setting appropriate goals for the group and achieving them is an important motivation for membership and ongoing engagement. The presence of social capital and networks may not overlap with or reach the size of the optimal geographical area for delivering agri-environmental priorities: farmers with valuable habitat may not be interested to join the group or not get along with other group members.

The research points to several requirements for the design and implementation of a policy intervention to develop farmer cooperation. It is crucial to define what kind of farmer cooperation is aimed for: a loose grouping or genuine farmer-to-farmer collaboration. Building sufficient social capital for a self-sustaining group will take longer and cost more, but may ultimately achieve farmers' commitment to pursue agri-environmental outcomes without ongoing state funding. It remains a political decision whether a policy intervention is tailored to the aim of developing farmer collaboration, and there needs to be more awareness that landscape-scale agri-environmental management is a possible, but not a definite outcome of farmer cooperation. More work is needed to develop robust social indicators for AES (Mills et al., 2021), and there is no conclusive evidence yet whether the investment in developing farmer collaboration for agri-environmental benefits is more cost-effective to achieving landscape-scale benefits. On the contrary, landscape-scale management – meaning the targeted implementation of the same or at least mutually supportive management activities across several holdings – may be easier and less costly to achieve via other mechanisms such as targeting schemes (Franks et al., 2016), an agglomeration bonus or co-ordination of individual applications via an advisor (Franks, 2019; Dutton et al., 2008).

## Declarations of interest

None.

## Acknowledgements

The empirical research conducted for this study was financially supported with funding from the European Union's Horizon 2020 research and innovation programme in the project AgriLink (grant agreement no. 727577), and the write up and revision in the project 'Contracts2.0' (grant agreement no. 818190). Many thanks to Lee-Ann Sutherland and Jennifer Dodsworth for helpful feedback on earlier drafts of the manuscript.

## References

Ajates Gonzalez, R., 2018. Farmers' Cooperatives and Sustainable Food Systems in Europe. Routledge.
Batáry, P., Dicks, L.V., Kleijn, D., Sutherland, W.J., 2015. The role of agri-environment schemes in conservation and environmental management. Conserv. Biol. 29 (4), 1006–1016. https://doi.org/10.1111/cobi.12536.
Bennett, T., P. Phillips, W. Sheate, R. Eales, and J. Baker 2015. Countryside Stewardship Facilitation Fund Monitoring and Evaluation Scoping Study – Final Report WC 1061. Department for Environment, Food and Rural Affairs (Defra).
Bijman, J., Hanisch, M., van der Sangen, G., 2014. Shifting control? The changes of internal governance in agricultural cooperatives in the EU. Ann. Public Coop. Econ. 85, 641–661.
Bodin, Ö., 2017. Collaborative environmental governance: achieving collective action in social-ecological systems. Science 357, 6352. https://doi.org/10.1126/science.aan1114.
Boulton, A., Lockett, R., Seymour, T., 2013. A Review and Evaluation of Collaborative Landscape-Scale Management Initiatives. Scottish Natural Heritage, Scotland. Commissioned Report 598.
Bourdieu, P., 1986. The forms of capital. In: Richardson, J. (Ed.), Handbook of Theory and Research for the Sociology of Education. Greenwood, Westport, CT, pp. 241–258.
Breyer, J., Medcalf, K., Nolan, T., Mills, J., Morse, A., Gaskell, P., Underwood, S. and Kaczor, K., 2021. Countryside Facilitation Fund Phase 3 Evaluation Report. ⟨http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=20367&FromSearch=Y&Publisher=1&SearchText=Countryside⟩ Stewardship Facilitation Fund&SortString=ProjectCode&SortOrder=Asc&Paging=10.
Brinkmann, S., 2013. Qualitative Interviewing. Oxford University Press, New York.
Davies, B., Blackstock, K.L., Brown, K.M., Shannon, P., 2004. Challenges in Creating Local Agri-environmental Cooperation Action Amongst Farmers and other Stakeholders. The Macaulay Institute, Aberdeen.
De Vries, J.R., Van der Zee, E., Beunen, R., Kat, R., Feindt, P.H., 2019. Trusting the people and the System. The interrelation between interpersonal and institutional trust in collective action for agri-environmental management. Sustainability 11 (24), 7022. https://doi.org/10.3390/su11247022.
DEFRA, 2011a. Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services. London.
DEFRA, 2011b. The Natural Choice: Securing the Value of Nature. White Paper on the Environment. London, CM 8082.
DEFRA, 2013. Business Management Practices on Farm 2011/12, England. A National Statistics Publication,.
DEFRA, 2017a. Facilitation fund: successful applications in 2017 national round [Online]. Available: ⟨https://www.gov.uk/government/publications/facilitation-fund-successful-applications-in-2017-national-round⟩.
DEFRA, 2017b. Guide to Countryside Stewardship: Facilitation fund 2017 [Online]. Available: ⟨https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/641188/cs-guide-to-facilitation-fund.pdf⟩.
DEFRA, 2018. A Green Future: Our 25 Year Plan to Improve the Environment.
DEFRA, 2019. Facilitation Fund Guide for 2019 [Online]. Available: ⟨https://www.gov.uk/guidance/facilitation-fund-2019-countryside-stewardship/introduction⟩.
DEFRA, 2020. Government fund creates collaborative farming communities. Press release: ⟨https://www.gov.uk/government/news/government-fund-creates-collaborative-farming-communities⟩.
Dent, T., 2014. The Game & Wildlife Trust's (GWCT) Farmer Clusters Pilot Project: Interim Report for Natural England.
Dutton, A., Edwards-Jones, G., Strachan, R., MacDonald, D.W., 2008. Ecological and social challenges to biodiversity conservation on farmland: reconnecting habitats on

a landscape scale. Mammal. Rev. 38 (2–3), 205–219. https://doi.org/10.1111/j.1365-2907.2008.00125.x.
Emery, S.B., Franks, J.R., 2012. The potential for collaborative agri-environment schemes in England: Can a well-designed collaborative approach address farmers' concerns with current schemes? J. Rural Stud. 28 (3), 218–231. https://doi.org/10.1016/j.jrurstud.2012.02.004.
Flanigan, S., Sutherland, L.-A., 2016. Buying access to social capital? From collaboration to service provision in an agricultural co-operative. Sociol. Rural. 56 (4), 471–490. https://doi.org/10.1111/soru.12092.
Franks, J.R., 2016. An application of boundary organisation theory to develop landscape-scale conservation in formal agri-environment schemes. Sociol. Rural. 56 (1), 48–73. https://doi.org/10.1111/soru.12059.
Franks, J.R., 2019. An assessment of the landscape-scale dimensions of land based environmental management schemes offered to farmers in England. Land Use Policy 83, 147–159. https://doi.org/10.1016/j.landusepol.2019.01.044.
Franks, J.R., Emery, S.B., 2013. Incentivising collaborative conservation: lessons from existing environmental Stewardship Scheme options. Land Use Policy 30 (1), 847–862. https://doi.org/10.1016/j.landusepol.2012.06.005.
Franks, J.R., Emery, S.B., Whittingham, M.J., Mckenzie, A.J., 2016. Farmer attitudes to cross-holding agri-environment schemes and their implications for countryside stewardship. Int. J. Agric. Manag. 5 (4), 78–95. https://doi.org/10.5836/ijam/2016-05-78.
Fuentes-Montemayor, E., Goulson, D., Park, K.J., 2011. Pipistrelle bats and their prey do not benefit from four widely applied agri-environment management prescriptions. Biol. Conserv. 144 (9), 2233–2246.
Hall, J., and R. O'Neill 2019. Improving Landscape-scale Delivery through Farmer Collaboration: a pilot study on Farmer Clusters exploring how farmer collaboration affects social and environmental outcomes at a landscape scale. Natural England.
Hejnowicz, A.P., Rudd, M.A., White, P.C.L., 2016. A survey exploring private farm advisor perspectives of agri-environment schemes: the case of England's Environmental Stewardship programme. Land Use Policy 55, 240–256. https://doi.org/10.1016/j.landusepol.2016.04.005.
Jarratt, S., Morris, C., Wheeler, R., Winter, M., Collins, A., 2016. Literature Review on Farming Collaboration. Report for Defra project LM0302 Sustainable Intensification Research Platform Project 2 (2.3A): Opportunities and Risks for Farming and the Environment at Landscape Scales. DEFRA.
Jenkins, M., 2019. Everything farmers need to know about the Countryside Stewardship Facilitation Fund. Farmers Guardian, 2 October 2019.
Jones, N., Y. Cao, H. Adamson, L. Lewis-Reddy, A. Crowe, and B. Hockridge, 2020. Countryside Stewardship Facilitation Fund - Evaluation of Phase 2 Facilitation Fund.
Kleijn, D., Sutherland, W.J., 2003. How effective are European agri-environment schemes in conserving and promoting biodiversity? J. Appl. Ecol. 40 (6), 947–969. https://doi.org/10.1111/j.1365-2664.2003.00868.x.
Lawton, J.H., P.N. M. Brotherton, V.K. Brown, C. Elphick, A.H. Fitter, J. Forshaw, R.W. Haddow, S. Hilborne, R.N. Leafe, G.M. Mace, M.P. Southgate, W.J. Sutherland, T.E. Tew, J. Varley, and G.R. Wynne 2010. Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra.
Macfarlane, R., 1998. Implementing agri-environment policy: a landscape ecology perspective. J. Environ. Plan. Manag. 41 (5), 575–596. https://doi.org/10.1080/09640569811461.
McKenzie, A.J., Emery, S.B., Franks, J.R., Whittingham, M.J., 2013. FORUM: landscape-scale conservation: collaborative agri-environment schemes could benefit both biodiversity and ecosystem services, but will farmers be willing to participate? J. Appl. Ecol. 50 (5), 1274–1280. https://doi.org/10.1111/1365-2664.12122.
Miles, M.B., Huberman, A.M., 1994. Qualitative Data Analysis: An Expanded Sourcebook. Sage, Thousand Oaks.
Mills, J., Chiswell, H., Gaskell, P., Courtney, P., Brockett, B., Cusworth, G., Lobley, M., 2021. Developing farm-level social indicators for agri-environment schemes: a focus on the agents of change. Sustainability 13 (14), 7820. https://doi.org/10.3390/su13147820.
Mills, J., Gaskell, P., Ingram, J., Chaplin, S., 2018. Understanding farmers' motivations for providing unsubsidised environmental benefits. Land Use Policy 76, 697–707. https://doi.org/10.1016/j.landusepol.2018.02.053.
Mills, J., Gibbon, D., Ingram, J., Reed, M., Short, C., Dwyer, J., 2011. Organising collective action for effective environmental management and social learning in Wales. J. Agric. Educ. Ext. 17 (1), 69–83. https://doi.org/10.1080/1389224X.2011.536356.
Nye, C., 2018. Report on Landscape-Scale Farmer Groups. Understanding the Motivations for, Benefits of, and Barriers to Stakeholder Participation and Delivery of Objectives to Improve the Environment. Ernest Cook Trust and GWCT.
Ostrom, E., 1990. Governing the Commons. The Evolution of Institutions for Collective Action. Cambridge University Press, Cambridge.
Prager, K., Reed, M., Scott, A., 2012. Encouraging collaboration for the provision of ecosystem services at a landscape scale–Rethinking agri-environmental payments. Land Use Policy 29 (1), 244–249. https://doi.org/10.1016/j.landusepol.2011.06.012.
Prager, K., 2015a. Agri-environmental collaboratives as bridging organisations in landscape management. J. Environ. Manag. 161, 375–384. https://doi.org/10.1016/j.jenvman.2015.07.027.
Prager, K., 2015b. Agri-environmental collaboratives for landscape management in Europe. Curr. Opin. Environ. Sustain. 12, 59–66. https://doi.org/10.1016/j.cosust.2014.10.009.
Pretty, J., Attwood, S., Bawden, R., van den Berg, H., Bharucha, Z.P., Dixon, J., Flora, C. B., Gallagher, K., Genskow, K., Hartley, S.E., Ketelaar, J.W., Kiara, J.K., Kumar, V., Lu, Y., MacMillan, T., Maréchal, A., Morales-Abubakar, A.L., Noble, A., Prasad, P.V. V., Rametsteiner, E., Reganold, J., Ricks, J.I., Rockström, J., Saito, O., Thorne, P., Wang, S., Wittman, H., Winter, M., Yang, P., 2020. Assessment of the growth in social groups for sustainable agriculture and land management. Glob. Sustain. 3, e23 https://doi.org/10.1017/sus.2020.19.
Pretty, J., Ward, H., 2001. Social capital and the environment. World Dev. 29 (2), 209–227. https://doi.org/10.1016/S0305-750X(00)00098-X.
Pretty, J., 2003. Social capital and the collective management of resources. Science 302 (5652), 1912–1914. https://doi.org/10.1126/science.1090847.
Putnam, R., 1993. The prosperous community: social capital and public life. Am. Prospect 13, 35–42.
Riley, M., Sangster, H., Smith, H., Chiverrell, R., Boyle, J., 2018. Will farmers work together for conservation? The potential limits of farmers' cooperation in agri-environment measures. Land Use Policy 70 (Supplement C), 635–646. https://doi.org/10.1016/j.landusepol.2017.10.049.
Runhaar, H., Polman, N., 2018. Partnering for nature conservation: NGO-farmer collaboration for meadow bird protection in the Netherlands. Land Use Policy 73, 11–19. https://doi.org/10.1016/j.landusepol.2018.01.033.
Schomers, S., Matzdorf, B., Meyer, C., Sattler, C., 2015. How local intermediaries improve the effectiveness of public payment for ecosystem services programs: the role of networks and agri-environmental assistance. Sustainability 7 (10), 13856–13886. https://doi.org/10.3390/su71013856.
Stern, M.J., Coleman, K.J., 2015. The multidimensionality of trust: applications in collaborative natural resource management. Soc. Nat. Resour. 28 (2), 117–132. https://doi.org/10.1080/08941920.2014.945062.
Stock, P.V., Forney, J., Emery, S.B., Wittman, H., 2014. Neoliberal natures on the farm: farmer autonomy and cooperation in comparative perspective. J. Rural Stud. 36, 411–422. https://doi.org/10.1016/j.jrurstud.2014.06.001.
Sutherland, L.-A., Burton, R.J.F., 2011. Good farmers, good neighbours? The role of cultural capital in social capital development in a scottish farming community. Sociol. Rural. 238–255. https://doi.org/10.1111/j.1467-9523.2011.00536.x.
Thompson, P., T. Dent, and S. Watts, 2015. The Game & Wildlife Conservation Trust Farmer Cluster Pilot Project. Final Report to Natural England.
van Dijk, W.F.A., Lokhorst, A.M., Berendse, F., de Snoo, G.R., 2015. Collective agri-environment schemes: How can regional environmental cooperatives enhance farmers' intentions for agri-environment schemes? Land Use Policy 42, 759–766. https://doi.org/10.1016/j.landusepol.2014.10.005.
Westerink, J., Termeer, C., Manhoudt, A., 2020. Identity conflict? AgriEnvironmental collectives as self-governing groups of farmers or as boundary organisations. Int. J. Commons 14 (1), 388–403. https://doi.org/10.5334/ijc.997.