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Motivations of farmers to participate in collective agri-environmental schemes: the case of Dutch agricultural collectives

Rena Barghusen^a, Claudia Sattler ^a, Lisa Deijl^b, Carleen Weebers^b and Bettina Matzdorf ^{a,c}

^aLeibniz Centre for Agricultural Landscape Research (ZALF), Governance of Ecosystem Services Working Group, Müncheberg, Germany;

^bBoerenNatuur, Utrecht, The Netherlands; ^cInstitute of Environmental Planning, Leibniz Universität Hannover, Hannover, Germany

ABSTRACT

Collective agri-environmental schemes are designed to improve the spatial coordination and targeting of agri-environmental measures. However, policymakers must craft these programs carefully to motivate farmers to participate. This of course requires knowing what factors actually influence farmers, since they relate to ecosystems in different ways. In the Netherlands, agricultural collectives appear to play an important role in motivating farmers, since they facilitate contracting and help farmers maintain communication with one another. The aim of this study is to explore the various motivations farmers have to participate in collective agri-environmental schemes, which can in turn provide insight on how to approach farmers and recruit them for such programs, taking Dutch agricultural collectives as a case study. To do so, we first developed a literature-based framework on motivational categories, which were reviewed and discussed in a workshop setting; these categories were then ranked and quantified in a survey among representatives of the Dutch agricultural collectives. Results showed that economic and environmentally-based motivations of farmers are perceived as equally important. The relevance of socially-based motivations is perceived less uniformly, although the agricultural collectives may profit from their farmers' social commitment to cooperate. This implies that there is a need for greater exchange among agricultural collectives, to help disseminate previously applied strategies designed to maintain high levels of personal communication and to establish long-term relationships.

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1. Introduction

Agri-environmental schemes (AES) are a key policy instrument to motivate farmers to implement more environmentally friendly farming practices to promote biodiversity and ecosystem services in agricultural landscapes. Entering into such governmental contracts is voluntary for farmers, often as an additional component on top of mandatory legal requirements. In the European Union (EU), the effectiveness of AES for biodiversity conservation is debatable. One criticism has been the lack of spatial coordination and the targeting of measures at the scale of the farm – or even the field – and neglecting the landscape scale, where ecological processes operate (Kleijn et al. 2006; Pe'er et al. 2019). In response to this, Dutch policymakers substantially changed how agri-environmental measures were implemented, to increase ecological effectiveness, reduce governmental transaction costs and create some level of local ownership. The Netherlands is also the only EU Member State so far to have introduced a collective AES on a national level. Due to the more participatory nature of the scheme, it differs from other schemes which use an agglomeration bonus to address the lack of spatial coordination and targeting of measures, e.g. the Swiss network bonus scheme (Krämer

and Wätzold 2018). In the collective AES, Dutch farmers no longer enter into contracts with the government directly. Instead, if they want to participate in the scheme, a farmer must now become a member of an agricultural collective, which is responsible for the individual contracting, and coordinates measures on a landscape scale. This should improve the impact on biodiversity and ecosystem services (McKenzie et al. 2013; Terwan et al. 2016).

The agricultural collectives¹ in the Netherlands are legal entities that are responsible for carrying out the AES, as the ultimate beneficiaries of the subsidy. They are local, farmer-based associations; members comprise farmers and other private persons who own land. Each of the 40 certified collectives in the Netherlands is responsible for implementing the AES in its own territory; the borders of these areas were laid down when the collective AES was set up in 2016 so that each farm has a single collective as a reference point (Terwan et al. 2016). The collectives redistribute the government's payments by administering voluntary private contracts with their members and coordinating the contractual provisions to achieve spatial connectivity and fulfill the terms of

CONTACT Rena Barghusen  rena.barghusen@zalf.de

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the joint contract with the government, which stipulates regional priorities and target corridors. The fine-tuning of individual contracts as a self-governing component of the scheme is designed to have fewer transaction costs at the local level, since the collectives know the specific natural environment and the farmers in their region (Franks 2011; Terwan et al. 2016). Besides executing the AES, many collectives carry out other tasks and projects as well, ranging from knowledge exchange among their members to collaboration with other actors, e.g. water authorities, nature conservation groups, or companies (Terwan et al. 2016). The collectives are interesting partners for many stakeholders who focus on sustainability goals in the agricultural sector, because they are knowledgeable about local contexts and can reach many farmers easily. In this way, the collective AES supports collaborative agri-environmental governance in the long term.

Collaborative agri-environmental governance can be broadly defined as the structures and processes of collective action different actors in the areas of nature conservation, land use, and the agriculture and food sector use to interact on a regular basis in an effort to achieve common sustainability goals. Such extensive coordination among multiple actors and on multiple levels is necessary for effective agricultural landscape management, due to the diverse land-use interests of farmers, nature conservation organizations, public authorities, and residents; it occurs in formal as well as informal networks and partnerships (see Prager 2015b; Westerink et al. 2017a). AES can be one component of collaborative governance that can be combined with arrangements that integrate and build support among a broader spectrum of stakeholders beyond farmers and the government. Examples include additional financial support from a dairy company for farmers who participate in the Dutch AES (De Vries et al. 2019); the establishment of participatory processes to set priorities and design AES policies, as occurred in Italy (Toderi et al. 2017); and landscape management projects with farmer groups in Belgium that are coordinated by a non-profit organization using AES payments plus other funding in complex financial arrangements (Westerink et al. 2017a). On a countrywide scale, however, the Netherlands is the only country in the EU to have paved the way for more systematic collaboration by establishing the collective AES. This is why its design is interesting for both governments, who wish to increase effectiveness of AES, and local collaborative initiatives, who seek ways to secure permanent funding. However, the effectiveness of the Dutch AES is still under evaluation (Westerink et al. 2020). Moreover, the Dutch scheme historically evolved in a unique way.

Studies have recognized that the effectiveness of collective AES and collaborative agri-environmental governance depends on the specific design, and how well it fits to local conditions (e.g. Prager 2015b; Westerink et al. 2017a). Social interaction mechanisms that support effectiveness, such as mutual learning, conflict resolution, and the development of trust, have all been subjects of investigation (e.g. Prager 2015a; De Vries et al. 2019). To date, research has yet to systematically investigate what motivates individual farmers to participate. In the Netherlands, motivating the right farmers has two important influences on AES effectiveness. First, it is crucial to get buy-in from farmers who manage lands in focus areas (as determined by the regional authority) (see Runhaar et al. 2016). Second, convincing farmers who have local knowledge (e.g. those who have always lived in the region) to exchange information with others improves the fine-tuning of contracts (see De Vries et al. 2019). The agricultural collectives have a key role in motivating participants, since they mediate between government and farmers; as agents, they have some flexibility to organize themselves, but at the same time they need to ensure that they fulfill the terms of the collective contract (Runhaar et al. 2016; Westerink et al. 2017a).

In light of these thoughts, we first argue that the motivations Dutch collectives expect farmers to have are important for the way they approach and recruit them. Such influencing could happen actively or passively, through communication or concessions. For example, in areas where implementation of measures would lead to higher income loss, it would make sense to also stress the economic benefits, while highlighting the need for farmers' local knowledge or their identification with the landscape would be more suitable for situations where social or personal motivation is expected to play a role. Second, we argue that there are differences in farmer motivations among the collectives due to their heterogeneity concerning age, size, the natural environment, the farm types of their members, the structure of the organization, and the mix of people involved who bring in different forms of knowledge. Often, volunteers, self-employed people, or retired farmers work for the collectives, in addition to regular employees. Such structural components influence, for example, the type of environmental measures and their opportunity costs, or the experience people working for the collectives have and how well connected they are.

We expect that various motivations are interrelated, following Siebert et al. (2006, p. 319), who published a review of studies dealing with different aspects of farmers' motivation for individual AES to argue that there was often an interaction of agronomic, cultural, social, and psychological factors, all of which were affected by location and specific

context. For the Netherlands, farmers' motivation to participate in the former individual AES was found to be not only influenced by monetary rewards, but also by attitude towards conservation (Lokhorst et al. 2011). Nonetheless, Runhaar et al. (2016) found that farmers had low motivation to implement measures that were expected to have a large ecological impact but also required substantial effort. Through collectives that facilitate AES participation, there is some evidence that social psychological determinants such as group norms now play a larger role in motivating farmers (van Dijk et al. 2015).

It is against this backdrop that we aim to explore what motivations farmers have in the context of the Dutch collective AES, and therefore how to best approach and recruit them. We also discuss various motivational factors other countries or regions should consider when designing collective AES specifically, and when working to increase collaborative agri-environmental governance generally. In particular we pose the following research questions:

What motivates farmers to participate in collective agri-environmental schemes? (RQ1)

How do employees, volunteers, and board members of Dutch collectives assess the importance of various motivations of participating farmers, and is there any evidence of differences among collectives? (RQ2)

Before focusing on this empirical example, we reviewed various bodies of literature on motivation and collective action in the context of environmental measures in agriculture. This built the foundation for a framework to analyze motivational factors in collective AES.

2. Analytical framework

2.1. Motivation categories considered in the analytical framework

Motivation is often classified into 'intrinsic motivation', when an activity is done for its inherent satisfaction, and 'extrinsic motivation', when an activity is done for its instrumental value (Ryan and Deci 2000). While economics tends to focus on external rewards to influence human behavior, psychology-oriented studies focus on intrinsic motives instead (e.g. Frey and Jegen 2001). Sociologically oriented studies have focused on the influences of other people on individuals' motivation, e.g. reciprocity (e.g. Fehr and Fischbacher 2002). Increasingly integrated approaches to motivation that go beyond monetary incentives have also emerged when investigating farmers' motivations to conserve biodiversity and ecosystems (Siebert et al. 2006; Herzfeld and Jongeneel 2012). However, literature that focuses on farmers' motivation in collective AES is lacking, so we reviewed literature on motivation and

collective action in the context of environmental measures in agriculture, including some on payments for ecosystem services in a developing-country context (e.g. Kerr et al. 2014; Kaczan et al. 2019). After screening the literature, we adapted a framework that broadly corresponds to the economic, psychological and sociological foci that we found. In the second step, we corroborated different motivational categories of the framework with our findings from literature.

The original framework of environmental psychology by Hamann et al. (2016) built on a model of pro-environmental behavior by Matthies (2005). Their framework set out three categories of factors that influenced the intentions individuals had to behave a certain way vis-à-vis the environment. (1) 'Costs and benefits' reflect the fact that every decision is an attempt to reduce or avoid assumed costs of the behavior (such as stress or monetary costs), while trying to enhance benefits. (2) The 'personal ecological norm' is the perceived obligation to behave in an environmentally friendly way; it is activated by problem-awareness, perceived responsibility, and self-efficacy or group efficacy (defined as trust in one's own or a group's ability to achieve goals). (3) 'Social norms' are rules and standards of society or a group an individual feels attached to that guide individual behavior. These are further classified into 'injunctive norms', which are moral guidelines indicating if a group approved or disapproved of an action, and 'descriptive norms' that mirror the actual and popular conduct of people, e.g. a well-trodden path (Hamann et al. 2016).

These categories and related sub-categories can be understood as motivational inputs for a cognitive weighing process that leads to an intended behavior. For example, someone may have a tendency to buy regional food due to a personal ecological norm, but also observes friends buying products with long transit routes, while regional products may be less expensive, but going to the local market requires more time (Hamann et al. 2016). Assigning weights to each category is subjective, and a single motivational input may activate different categories at the same time. For example, a farmer may benefit economically from a label, but at the same time it may reinforce his or her self-identity. For the purpose of this study, the behavioral goal is understood as an individual farmer's participation in collective decision-making, knowledge and capacity-building, and AES implementation. We adopted all sub-categories with a focus on group efficacy, which we assumed to be most suitable in a collective action context. For the 'costs and benefits' category, we developed our own sub-categories, since the original framework only broadly introduces rewards and sanctions, while the literature we review distinguished among 'monetary rewards', 'indirect rewards', and 'cost savings' (e.g. Kerr et al. 2014; Westerink et al. 2017a). The resulting framework is presented in Figure 1.

A) Costs and benefits	A1) Direct monetary rewards A2) Indirect rewards A3) Cost savings
B) Personal norms	B1) Problem awareness B2) Perceived responsibility B3) Group efficacy
C) Social norms	C1) Injunctive norms C2) Descriptive norms

Figure 1. Categories of farmer motivations to participate in collective agri-environmental schemes (adapted from Hamann et al. 2016).

2.2 Corroboration of each motivational category with findings from literature

2.2.1. Costs and benefits (Category A)

Direct monetary rewards (Sub-category A1). Farmers might be motivated to participate in collective AES due to governmental *compensation payments*, which are the most important economic benefit (Dedeurwaerdere et al. 2016; Runhaar et al. 2016). However, Kolinjivadi et al. (2019a) highlighted the fact that financial rewards alone do not explain motivation. In a study of Dutch farmers, van Dijk et al. (2015) found that perceived profitability had no significant influence on their intention to participate. Conditionality is also discussed in the context of payments. Groeneveld et al. (2019) stated that, in a system with a participation threshold but no additional incentive, there is a risk that if participation levels fail to reach the threshold, initially motivated participants may drop out. The high risk of entering a scheme with a threshold can be offset by trust-building among participants (Kaczan et al. 2017; Kishioka et al. 2017; Ito et al. 2018).

One sort of additional incentive that has been discussed for collective AES is a *payment to account for higher coordination costs and higher risk* compared to individual settings. Several studies have suggested compensating for additional transaction costs, which may be a significant hurdle to participation (Sutherland et al. 2012; Tacconi et al. 2013; Prager 2015b). Villanueva et al. (2015) found that the current bonus set by the EU of up to 30% is still not

sufficient for farmers to participate in collective AES in most cases. Other results show that transaction costs were not the most important factor for a farmer's decision to participate (Villamayor-Tomas et al. 2019).

Another sort of incentive that has been discussed for collective AES is to pay a *collective bonus* or an *agglomeration bonus*. The idea is that farmers receive a supplement to their payment when neighbors also participate, which requires communication about each other's intentions (Banerjee et al., 2014; Parkhurst et al. 2002). Thereby, a minimum-participation rule is needed to prevent freeriding: paying the bonus if a certain threshold is reached in terms of the number of participating farmers (Villanueva et al. 2015; Zavalloni et al. 2019) or the amount of enrolled acreage (Kuhfuss et al. 2016). An example, where such a collective AES has been implemented is the Swiss network bonus scheme (Krämer and Wätzold 2018).

One concern discussed in relation to direct rewards is the effect of *motivational crowding*. Rewards can maintain or raise intrinsic motivation when they are perceived to have discursive value as well as monetary value (Frey 1997), which may often be the case for agri-environmental measures with high compliance costs. In a collective action setting, monetary incentives might, however, undermine intrinsic motivation and social expectations by reducing the sense of guilt (Muradian 2013) and

developing a social norm that conservation is not worth doing simply for its own sake (Kerr et al. 2017). Some evidence for this crowding-out effect has been observed for payments to farmer groups (Narloch et al. 2017) or rural communities (Kaczan et al. 2017). By contrast, Ito et al. 2016 found no evidence of crowding out due to existing cooperative structures in the agricultural sector (see also Salk et al. 2017). Kerr et al. (2017) explained that, in cases with a non-cooperative norm, people return to low conservation levels after the incentive is removed, while in cases with strong cooperative norms, higher conservation levels might persist. If trust between participants is well-established, it can outweigh crowding out resulting from the risk of freeriding in collective payment settings (Kerr et al. 2014; Kaczan et al. 2019).

Indirect rewards (Sub-category A2). Besides direct monetary rewards, farmers might also be motivated when they receive in-kind payments such as *infrastructure or services* (Kerr et al. 2014). This often comes in the form of additional extension services, assistance with applications and registration, or communication and financial management carried out by professionals or non-profit organizations (Emery and Franks 2012; Prager 2015b; Dedeurwaerdere et al. 2016). Other forms, though more applied in a developing-country context, have included payments to a collective fund or community investments, although these can be problematic if not everyone benefits (Tacconi et al. 2013; Kolinjivadi et al. 2019a). Narloch et al. (2017) observed that easily dividable rewards, such as seeds, may work better than group rewards such as equipment or machinery. Another difficulty may occur with graduated sanctions, if the in-kind payment is not combined with a financial reward (Kerr et al. 2014).

Farmers might be more motivated if participation in collective AES improves their market position through *labeling*. Cases include joint marketing by a group of farmers (Mills et al. 2011) or governmental promotion of a group's products (Kishioka et al. 2017). In the Netherlands, initiatives focusing on supply chain governance reward participation in AES, e.g. farmers of collectives can get additional support from dairy companies that sell milk under a special label, and collectives have established direct regional marketing of milk (Runhaar et al. 2016; De Vries et al. 2019; Vermunt et al. 2020). Such a label may shift farmers' motivation from extrinsic rewards towards the intrinsic reward of self-identity. This would improve the effectiveness of AES because self-identity plays a role in motivating compliance with measures that require more effort (van Dijk et al. 2015, 2016).

Maintenance of agricultural land and a production system that is in accordance with ecosystem functioning is another indirect benefit that might motivate farmers. This motivation is driven by a combination of economic pressure in the agricultural sector and the opportunity to invest in landscape management as a source of income (Prager 2015a; Wynne-Jones 2017); fears of losing reputation and agricultural land due to increasing demand for the conservation of biodiversity and ecosystems (Prager 2015a, 2015b; Yoder 2019); and a sense of value attached to family farming and sometimes even to traditional management (which is more aligned with ecosystem functioning) (Mills et al. 2011).

Farmers might also be motivated to participate in collective AES through indirect benefits for their farm system resulting from *regulating ecosystem services*. Prager (2015b) has provided examples of joint deer management or common grazing, where shared private benefits encouraged collaboration. Villamayor-Tomas et al. (2019) stated that conservation goals with a low ratio of private to public benefits faced more resistance, and that framing could affect this resistance depending on the emphasis put on the environmental benefits that farmers themselves obtain from a given scheme. Conversely, collective action of farmers and other stakeholders emerges when environmental problems become severe and costly, e.g. water pollution (Lubell et al. 2002; Prager 2015b).

Cost savings (Sub-category A3). Another motivation farmers might have regarding collective AES concerns the *sharing of costs and resources*. By operating as a group, farmers may benefit from joint investments, access to additional funding, sharing of machinery and labor, and the pooling of existing as well as newly generated knowledge (Mills et al. 2011; Westerink et al. 2017a; Nilsson et al. 2019).

2.2.2. Personal norms (Category B)²

Problem awareness (Sub-category B1). Farmers might be motivated due to problem awareness, which subsequently contributes to a personal norm that promotes participation in collective AES. Problem awareness is less of a driver as such, but instead a base to understand the need for behavioral change. It comprises *problem knowledge* and *action knowledge* (see Hamann et al. 2016). This ideally integrates knowledge about the relationship of agricultural management with biodiversity and ecosystems at a landscape scale. Riley et al. (2018) observed that, although farmers were parties to the contract, they didn't know about the impact of their management on the wider landscape (see also Franks and Emery 2013). Strategies to increase problem knowledge may include communicating local

monitoring data (Yoder 2019) or framing the issue in terms of personal relevance of biodiversity decline and ecosystem degradation (Blackstock et al. 2010). Extension services can play an important role in enhancing awareness for collective action vis-à-vis conservation; farmers often perceive agricultural organizations or people with farming backgrounds as credible (Blackstock et al. 2010; Villamayor-Tomas et al. 2019; Yoder 2019).

Perceived responsibility (Sub-category B2). Farmers might be motivated to participate in collective AES due to personal *valuation of biodiversity and ecosystems* which can, combined with problem awareness, lead to feelings of responsibility (see Hamann et al. 2016). According to Stobbelaar et al. (2009), intrinsically motivated farmers who value nature highly are more likely to internalize policies. Increasing the environmental values of farmers can be triggered through communication among farmers as well as between farmers and other stakeholders, and feedback loops that could spark enthusiasm for conservation (Prager 2015a, 2015b).

Farmers' perception of responsibility further depends on their *self-identity* (see Hamann et al. 2016). They are experts on the specific needs of management for their lands and thus value their autonomy (Wynne-Jones 2017; Riley et al. 2018). Collective AES might be associated with increased control by public agencies or other farmers, which could result in reluctance (Villanueva et al. 2015; Nilsson et al. 2019). To create ownership in collective AES, several authors have highlighted the involvement of farmers in the program's design and the chance to implement the regulations flexibly (Emery and Franks 2012; Prager et al. 2012; Prager 2015a). Advisors should facilitate knowledge exchange rather than top-down knowledge transmission (Blackstock et al. 2010; Mills et al. 2011). Other authors have highlighted the importance of identification with the landscape (Westerink et al. 2017a) or the region (Prager 2015a), and a sense of responsibility and service to the community to maintain the landscape (Wynne-Jones 2017) as additional facets of farmers' self-identity. Supporting an identity as landscape managers by means of framing and labeling was observed to increase the participation of Dutch farmers in measures that required more effort, such as bird protection (van Dijk et al. 2015, 2016).

Group efficacy (Sub-category B3). Farmers might be motivated to join collective AES when they expect group efficacy in achieving environmental targets. This is determined by *perceived ability*, which is strongly linked to action-knowledge (see Hamann et al. 2016). Flexibility and sensitivity to local conditions likely increase ecological effectiveness and the

visibility of farmers' efforts, and thus support farmers' confidence (Emery and Franks 2012; McKenzie et al. 2013; Westerink et al. 2017a). Perceived ability and confidence are further supported by a culture of knowledge sharing and learning in collective AES, where farmers exchange experiences, uncertainties, and opportunities (van Dijk et al. 2015; Prager 2015b; Josefsson et al. 2017; De Vries et al. 2019). Additionally, a feeling of collective efficacy through lobbying power as a group can also be a motivating factor (Mills et al. 2011; Westerink et al. 2017a).

Farmers might also expect group efficacy if they *trust* in the behavior of their peers. There can be skepticism about the willingness of other farmers to participate or the degree to which others carry out measures, resulting in higher perceived costs of a farmer's own participation (Prager 2015b; Villamayor-Tomas et al. 2019). Communication and benchmarking can increase expectations about other farmers' participation (Emery and Franks 2012; Kuhfuss et al. 2016). Trust among farmers is often based on their image as 'good farmers', which is often demonstrated through the productivity and tidiness of lands (Sutherland et al. 2012; Riley et al. 2018), or on pre-existing social networks that foster reciprocity (Mills et al. 2011; Wynne-Jones 2017). The concept of social capital can be referred to in this context since it encompasses the social attributes and relationships that enhance the predictability of behavior among group members and facilitate collective action (Pretty 2003; Davies et al. 2004). Initial uncertainties with the Dutch program were overcome by fostering interaction among actors; the program delegated responsibilities to farmers who were involved in self-monitoring, for example (De Vries et al. 2019). Westerink et al. (2020) have stressed that the identity of a self-governing organization is the most important resource of the Dutch collectives, and should prevail over focusing on the relationship between farmers and government.

2.2.3. Social norms (Category C)

Injunctive norms (Sub-category C1). Farmers might be more motivated to participate in collective AES if they feel it is *appreciated by the social group* they identify with, which is in most cases a formal or informal network of peer farmers (see Hamann et al. 2016; Kerr et al. 2017). Hence, it can be important to enhance group norms that build toward a collective goal, and that emphasize duty, fairness, and the enjoyment of action for nature (Dedeurwaerdere et al. 2016; Kerr et al. 2017). Increased social interaction would also enhance farmers' affinity to the group (Prager 2015b). Wynne-Jones (2017) has observed that group identity develops through day-to-day interaction, such as being cheered up or having fun. As a consequence of

these positive emotions, a sense of camaraderie and pride of being a group member can develop (van Dijk et al. 2016; Wynne-Jones 2017) and contribute to a norm of reciprocity and trust (Salk et al. 2017; Ito et al. 2018). Riley et al. (2018) noted that it may be difficult to establish group norms supporting collaboration where existing norms of farmers strongly build on the value of autonomy. Enhancing inter-farm communication about conservation activities, demonstrating benefits through monitoring, and framing farmers as ‘guardians of the landscape’ could support participation in collective AES being associated with a ‘good’ farmer (Emery and Franks 2012; Riley et al. 2018; De Vries et al. 2019).

Another motivational factor concerns the presence of *cooperative traditions* contributing to social norms of solidarity, reciprocity, and trust. Historically, social capital developed, for instance, through necessary coordination, such as for irrigation or flood prevention within an area (Yoder 2019), the sharing of machinery or labor related to ditch and road maintenance (Nilsson et al. 2019), or the use of sales cooperatives as networks where information dissemination took place (Banerjee et al., 2014; Kolinjivadi et al. 2019b). Consequently, scholars have recommended building on such existing structures rather than starting completely new groups (Sutherland et al. 2012; Tacconi et al. 2013; Taylor and Van Grieken 2015; Ito et al. 2018). However, Mills et al. (2011) emphasized that farmers who have worked together for business reasons may not necessarily have a common interest in achieving environmental targets. The development of farm management as an individual activity in intensively farmed regions with increased competition and rural fragmentation has changed formerly reciprocal structures to temporary cooperation systems that do not necessarily occur between neighbors anymore (Wynne-Jones 2017; Riley et al. 2018).

Descriptive norms (Sub-category C2). Apart from existing or evolving group norms of duty to engage in collective AES, farmers might also be motivated through others’ actual engagement, e.g. neighboring farmers acting as social role models (see Hamann et al. 2016). The *peer pressure* a farmer perceives can, however, encourage or hinder participation, depending on the local context (Blackstock et al. 2010; Emery and Franks 2012; Taylor and Van Grieken 2015; Josefsson et al. 2017). The desire for social approval, respect, and a good reputation can motivate individual farmers to behave like the peers they perceive as ‘good’ farmers (Sutherland et al. 2012; Kolinjivadi et al. 2019a). Maintaining their own reputation is another attribute referring to the concept of social capital and related to trust and reciprocity (Ahn and Ostrom 2002). The

communication of detailed monitoring data that relays others’ contributions (Yoder and Chowdhury 2018), peer monitoring, and events of peer-to-peer learning (Taylor and Van Grieken 2015; Dedeurwaerdere et al. 2016) can also maintain a positive peer pressure.

3. Methods

3.1. Case introduction

The empirical material for this study to assess what motivations of farmers in collective AES are considered important was obtained from the Netherlands. The country’s revised AES from 2016 is valuable for academics and policymakers alike since it shifts some governance tasks to farmer-based organizations to undertake spatial coordination of measures. It is the only fully collective AES in Europe to exercise the option in the Common Agricultural Policy (Regulation (EU) No 1305/2013, Article 28) to allocate AES payments to groups instead of individuals. Like other countries in Western Europe, the continuous trend of intensification of agriculture alongside urbanization poses a challenge to the governance of biodiversity and ecosystem conservation in the Netherlands (Runhaar et al. 2016). There is often a perceived boundary between ‘agriculture’ and ‘nature’ that hinders farmer participation in AES (Franks 2010; Westerink et al. 2017b). Against this background and in response to top-down governance, some farmers began organizing themselves in local groups in the 1990s to gain freedom in implementing conservation measures and coordinating landscape restoration activities (Runhaar et al. 2016). A growing number of farmer groups exerted their influence on the Dutch government to initiate the shift to a fully collective AES.

By the start of the new scheme in 2016, 40 certified agricultural collectives were established, sometimes as mergers of the old groups. They usually have an elected board and an executive unit with employees for administration, consultation, and coordination (Terwan et al. 2016). Board members of the collectives are usually farmers, landowners, or representatives of landowning organizations. Employees of the collectives have various professional backgrounds, ranging from administration to ecology. Many collectives also work together with local citizens or other volunteers or self-employed people. The collectives are also supported by an umbrella organization, BoerenNatuur. Since many collectives have developed independently, they vary in size, experience, organizational structure, and workflow processes (Runhaar et al. 2016; Westerink et al. 2017b). They also cover different landscape types and farm types (see Table I in the Appendix).

The certification of the collectives ensures that they implement the AES to certain common standards. All collectives are contracted by their respective province to reach negotiated ecological targets within focus areas for specific habitats that are determined by the provinces. According to this frame contract of the group, the collectives can contract their members, comprising individual farmers and other land managers. The collectives can keep 15% of the payment they receive from the government to finance administrative work. Next to membership in the collective, a farmer also needs to have lands in the focus areas in order to be contracted. Farmers and employees of the collectives negotiate on the choice and exact location of the measure. There is a national catalogue proposing packages and measures to choose from, but collectives may adapt this to their own circumstances, e.g. determine the exact date for delayed mowing or the specific width of buffer strips. Another self-governing component of the scheme is the oversight and monitoring carried out by the collectives and their volunteers, in addition to governmental controls.

3.2. Data collection and analysis

To assess what motivations for farmers to participate are considered important by Dutch collectives, we collected empirical data through a workshop and a survey. Both were integrated into a networking event in March 2020, organized by the umbrella organization of the collectives. Nearly two-thirds of the 300 attendants were members or employees of the collectives, whereas the rest were generally advisors and government officials.

3.2.1. Workshop

We employed a participatory format to increase participant discussion about the motivation categories we found in literature, investigating to what extent these categories corresponded to the Dutch context. The format helped reveal whether factors were irrelevant or missing (Slocum 2003). We had no direct influence on the composition of the 25 participants, but we assumed it was acceptable, because we explicitly targeted representatives of the collectives. The participatory format also integrated elements of capacity building, e.g. by making people think about the topic of motivation (see Slocum 2003). The workshop format was inspired by focus group methods, offering a setting for individuals to exchange viewpoints and ideas, but providing only as much guidance as necessary to stimulate discussion (Bryman 2016).

The workshop was conducted by the primary author and a partner working for a collective so it was possible to conduct it in Dutch and emphasize its practical orientation. The workshop length was

40 minutes. First, participants were asked to write down their ideas about farmers' motivations on cards, and match their ideas to either the categories from the literature that were presented on posters or to a new category. Two categories were operationalized as follows: *injunctive norms* (C1) as 'tradition in collective agri-environmental management'³ and *descriptive norms* (C2) as 'engagement of colleagues'. Afterwards, we proceeded with a discussion on strategies to motivate farmers. In the final step, workshop participants were asked to indicate the two most important categories with stickers. The workshop was documented in the form of photos and an audio recording.

We used triangulation, combining methods for quantitative and qualitative analysis, to analyze the workshop (see Bryman 2016). The analysis addressed the usefulness of the categories provided (by tabulating the number of cards attached to each category), whether some categories were used less, or whether a new category was introduced. The analysis also covered participants' understanding of the categories, by focusing on the content of the ideas they matched to categories, and whether mistakes occurred. For the ranking, we counted the amount of stickers per category. Finally, we summarized the transcribed record of the discussion round according to the key themes that participants identified.

3.2.2. Combined written and online survey

The structured survey targeted employees and board members of the collectives and attempted to reveal how they assessed farmers' motivations to get involved with their collective. For each motivational category from our framework, we asked them to rank how much they agreed that the respective factor was important according to a 4-point Likert scale, e.g. for Category A1:

Statement: Farmers participate because they are rewarded with money.

Options: totally disagree, somewhat disagree, somewhat agree, strongly agree

The statements for the other categories, plus explanations, and their original version in Dutch can be found in the Appendix. Keeping the questionnaire short (eight statements plus a request to indicate the name of the respondent's collective) was designed to increase the response rate (Bryman 2016). Therefore, we were content with targeting a rough estimation about broad categories. We preferred the 'forced choice approach', eliminating the opportunity to give a neutral answer (Bryman 2016). Due to the joint development of the questionnaire by our transdisciplinary team of authors, we decided to forego pretesting.

We first distributed a printed version of the questionnaire during the networking event. However, initial levels of response (36 returned questionnaires) did not meet expectations, so we sent a link to an online version to all 40 collectives in April 2020. In this second round, we received 20 additional responses. The total of 56 responses covered 27 out of the 40 collectives, which was considered sufficient for a basic analysis, given that all Dutch provinces were represented and nearly all collectives covering larger areas and having more than 300 scheme participants were included.

The responses were analyzed with statistic tools in Excel. For preparation, answers were coded as ‘strongly disagree’ = 1; ‘somewhat disagree’ = 2; ‘somewhat agree’ = 3; and ‘strongly agree’ = 4. In the first step, we compared all 56 responses per category to detect the general assessment of the categories’ importance. We also created a correlation matrix in Excel to test for interdependency of our categories. Simultaneously, we performed a sparse Principal Component Analysis (PCA) using the ‘prcomp’ command in the R statistical software (Jolliffe 2002) for comparison with the correlation matrix in Excel.

In the second step, we distinguished among collectives due to our assumption of differences resulting from their structural heterogeneity. We considered the mean of responses according to category for each collective and compared the 27 resulting values. Since there were only one or two individuals who filled in the questionnaire for the majority of collectives, we then focused on seven collectives where a minimum of three representatives had filled in the questionnaire so the mean was more robust. For those seven collectives, we also reconfirmed what we knew about their characteristics, e.g. history and farm types. We used our method triangulation approach to avoid contradicting data, cross-checking the data from the survey and the workshop (Bryman 2016).

4. Results

4.1. Motivations of farmers to participate in the Dutch AES (RQ1)

Results from the workshop confirmed that the framework derived from the literature largely corresponded to farmer motivations in the Dutch context. The first category, *monetary rewards* (A1), was among the highest ranked categories. During the discussion, participants stressed that agri-environmental measures were an important source of income for farmers. Strategically framing the issue in a way that appeals to farmers’ identities as business owners was a key part of the discussion: staff from the collectives could refer to a product to deliver (e.g. cornflowers) and

emphasize product quality in the form of a ‘good state of nature’. Compared to direct monetary rewards, the category of *indirect rewards* (A2) was ranked less important and was often associated with additional income through support within the value chain. The category of *cost savings* (A3) was the only category that was not used by workshop participants.

Categories of *problem awareness* (B1) and *perceived responsibility* (B2) were ranked as important as monetary rewards were. ‘High regard for meadow birds’ and ‘societal pressure’ were often associated with these categories. Some workshop participants proposed distinguishing between awareness and responsibility based on their own individual evaluation of nature and based on society’s evaluation of nature. With regard to the measures for bird protection, the problem of predators harming birds as prey was claimed as demotivating during the workshop. Participants suggested that collectives better communicate the overall goal of improving the ecological quality of landscapes, rather than focusing too much on certain species. The category of *group efficacy* (B3) was ranked as less important, and associations made to it fit better in other categories.

The categories of *injunctive norms* (C1) and *descriptive norms* (C2) were also ranked as less important, but expressions like ‘the history of the respective area’, ‘a tradition of landscape maintenance’, and ‘the sympathy factor’ matched well compared to the category of group efficacy. Participants mentioned that social norms were communicated indirectly, e.g. when a village with gardens and flowers motivates the owner of an adjacent farm to create a flower strip next to it, or when a farmer who likes partridges talks to another farmer about them enthusiastically. They also pointed out that communication among farmers about conservation of biodiversity and ecosystems could arise from the topic of soil quality, since it is traditionally a topic that farmers like to discuss.

4.2. Assessment and ranking of motivations by representatives of collectives (RQ2)

The survey of collectives’ representatives concerning what motivates farmers to get involved revealed that *monetary rewards* (A1), *indirect rewards* (A2), *problem awareness* (B1), and *perceived responsibility* (B2) were the most important. For each of those categories, the mean of all responses (N = 56) was above 3 (= ‘somewhat agree’) (see Table 1). Aggregating responses 3 and 4 (= ‘somewhat agree’ + ‘strongly agree’), there was about 90% agreement that these motivations played a role or even a major one, for participating farmers (see Figure 2). By contrast, only about 40% regarded the category of *cost savings* (A3) as a motive for farmer participation.

Table 1. Descriptive statistical analysis for the relevance of motivational categories (N = 56).

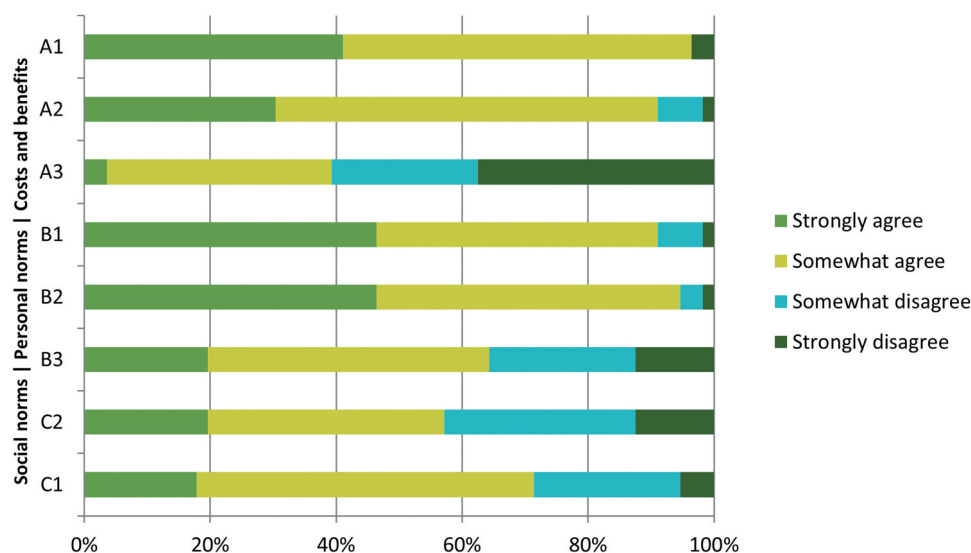
Category	Min. value	Max. value	Mean	Standard deviation	Relevance
A1) Monetary rewards	1	4	3.34	0.67	high
A2) Indirect rewards	1	4	3.20	0.64	high
A3) Cost savings	1	4	2.05	0.94	none
B1) Problem awareness	1	4	3.36	0.70	high
B2) Perceived responsibility	1	4	3.39	0.65	high
B3) Group efficacy	1	4	2.71	0.93	low
C1) Injunctive norms	1	4	2.64	0.94	low
C2) Descriptive norms	1	4	2.84	0.78	low

Regarding interdependency of our categories, the correlation matrix created in Excel indicated that problem awareness (B1) and perceived responsibility (B2) were related (correlation coefficient of $r = 0.76$, see Table 2). Such a high correlation was not identified for any other categories.

By contrast, the PCA revealed highest correlation with the categories injunctive norms (C1) and descriptive norms (C2) (Figure 3). Categories B1 and B2 seemed to be related in accordance with our analysis in Excel. Another contrast, however, appears with group efficacy (B3) which seemed to correlate with Categories C1 and C2. The first two principle

components displayed in the variable correlation plot account for 38% and 17% of the total variation in the dataset (68% of total variability is reached with three principle components, see Appendix).

Concerning our assumption of differences among collectives due to their structural heterogeneity, some evidence occurred when we observed the responses by collective ($n = 27$). For most categories, the collectives' mean responses ranged from 1 to 4, apart from Categories B1 and B2 where the range was only between 2 and 4. The greatest differences among each collectives' mean responses occurred for the category of *injunctive norms* (C1), showing a relatively symmetric distribution over the four response options. When comparing the collectives at the extremes, (i.e. collectives that indicated injunctive norms as unimportant (1 = 'strongly disagree') and collectives that indicated them as highly important (4 = 'strongly agree')), however, we were unable to find clear patterns in the ranking of the other categories. Focusing on collectives where multiple respondents filled in the questionnaire ($n = 7$), we found some evidence of a pattern. Collectives that gave lower rankings to injunctive norms indicated a higher importance of *monetary rewards* (A1) and *indirect rewards* (A2) than collectives with higher support for injunctive norms. Collectives that ranked

**Figure 2.** Distribution of responses per motivational category (N = 56).**Table 2.** Correlation matrix for motivational categories.

	A1)	A2)	A3)	B1)	B2)	B3)	C1)	C2)
A1)	1							
A2)	0.1802	1						
A3)	0.0572	0.1919	1					
B1)	-0.3811	-0.1990	0.0533	1				
B2)	-0.3117	-0.1438	0.2316	0.7643	1			
B3)	-0.2512	-0.0868	0.3087	0.5244	0.5494	1		
C1)	-0.1505	0.0877	0.1857	0.4456	0.4102	0.4422	1	
C2)	-0.0678	-0.0806	0.0613	0.2736	0.1620	0.3617	0.4393	1

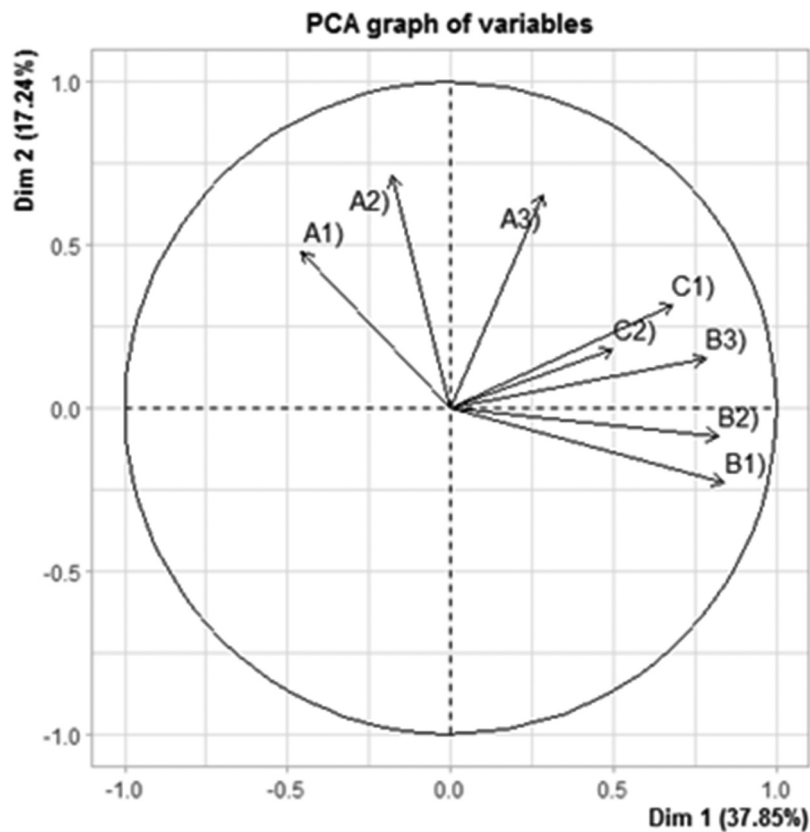


Figure 3. Variable correlation plot showing the relationships between motivational categories.

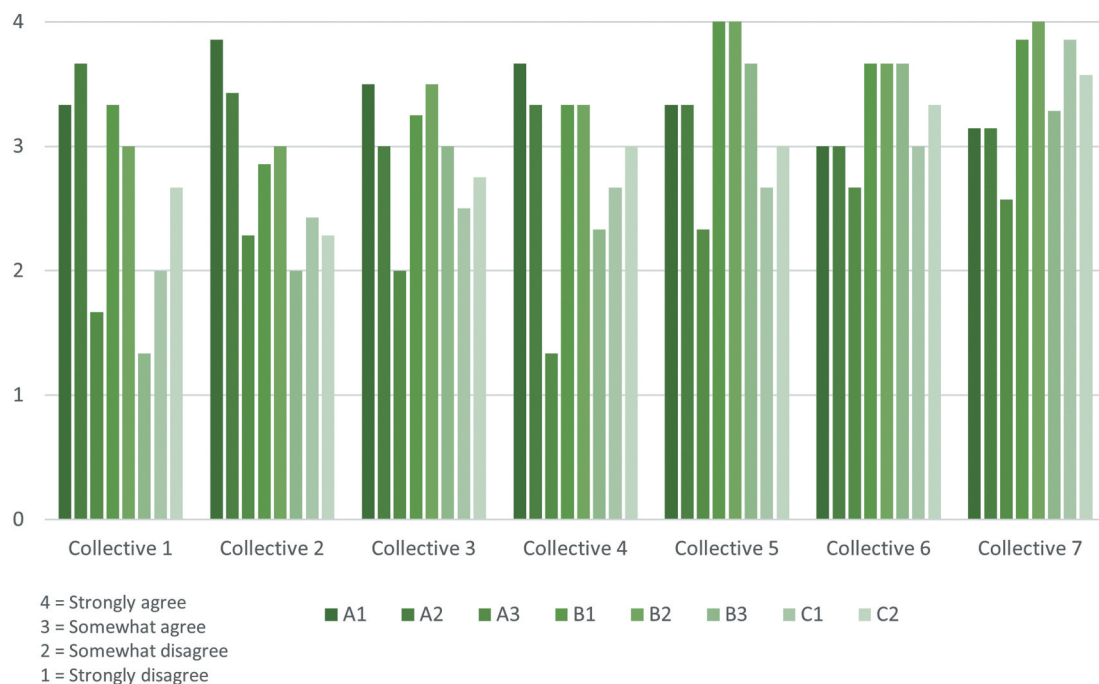


Figure 4. Collectives' ($n = 7$) mean responses by motivational category (A1 to C2).

injunctive norms higher also indicated higher importance of *problem awareness* (B1), *perceived responsibility* (B2), *group efficacy* (B3), and *descriptive norms* (C2) than of rewards (see Figure 4). The other characteristics of the seven collectives (e.g. age or farm types) provided no clear links to reasons behind this pattern.

5. Discussion

5.1. Implications on the framework for farmers' motivations in collective agri-environmental schemes (RQ1)

This study was designed to determine what motivations were important for farmers to participate in collective

AES. Previous literature has shown that motivations such as social norms and a feeling of collective efficacy are influenced by trust and reciprocity. These types of motivations play greater roles in participation in collective AES compared to individual AES (e.g. Wynne-Jones 2017). This also accords with Mills et al. (2011), who stated that the motivations to participate in collective programs may be broader than in individual schemes. Although a comparison of collective and individual schemes was outside the scope of this paper, we elaborated relevant categories of motivations in a collective context; most of these categories were empirically confirmed during the workshop for the Dutch AES.

The only category that was rejected by workshop participants, in line with the survey results, was cost savings. In the Dutch program, it is the state that primarily benefits from savings of transaction costs, by contracting the agricultural collectives instead of the individual farmers (Terwan et al. 2016). Although some studies on collective AES have also pointed out cost savings from shared resources (e.g. Mills et al. 2011; Westerink et al. 2017a), this did not seem relevant in the Dutch context. Some cost savings for farmers may occur through the dissemination of information and facilitation of applications carried out by the collectives, but this assistance may rather be seen as part of the deal or as belonging to the category of indirect rewards. The addition of a cost savings category should be reconsidered, e.g. by questioning farmers themselves or by investigating it in other countries.

Regarding the other categories, workshop participants confirmed the importance of economic motivations as well as problem awareness and perceived responsibility. However, the survey data showed that problem awareness and perceived responsibility are related, which was detected for both the correlation function in Excel and the PCA in R. This is not surprising, since awareness of a problem is in most cases a precondition for the perceived responsibility to react to that problem (see Section 2.1). What may be an important distinction in the field of psychology should be reconsidered as *de facto* related motivational influences in the context of collective AES.

Some difficulties among workshop participants to distinguish between 'group efficacy' and 'social norms' may be due to the relative lack of explanation that the workshop facilitators provided; explanation was explicitly avoided to minimize bias and maximize discussion time. In reviewing the literature, it also became clear that these categories intertwine and represent less directly observable motivations. This corresponds to the correlations found through the PCA of the survey data: the social norm categories were clearly related and they showed correlation to the category of group efficacy. The fact that workshop participants ranked these

categories as less important should be interpreted carefully, since it is also possible that they are simply less conscious of them. Again, investigating the perspective of farmers is important for future research. It would also be fruitful to conduct further work on refining and operationalizing the framework by applying it in another country or region.

5.2. Implications of the assessment by the representatives of Dutch collectives on farmer motivation (RQ2)

The second question in this study concerned the perspective of Dutch collectives on which motivations were important for their members. One finding from the survey, in line with the workshop findings, was that monetary rewards were an important influence on farmer motivation. This is not surprising, considering that financial compensation for environmentally friendly farming practices is the main purpose of AES, creating additional income opportunities for farmers. In this regard, our results are similar to what has been found for the former individual AES (Lokhorst et al. 2011; Runhaar et al. 2016). The importance of farmers' economic considerations is acknowledged by the collectives, especially by the umbrella organization and those collectives that engage in the development of additional incentives through partnerships along the value chain (see Runhaar et al. 2016). A second finding from the survey, again in line with the workshop, was the assessment that farmers' problem awareness and perceived responsibility for environmental measures are as important as economic considerations. Many studies have confirmed that farmers' decisions to adopt environmental measures can also be driven by an appreciation of nature or a sense of duty, in addition to economic benefit (e.g. van Dijk et al. 2015, 2016; Runhaar et al. 2016; Groeneveld et al. 2019). A possible respondent bias in collectives describing their members as environmentally conscious, e.g. to acquire project partners, is less likely, considering that monetary rewards were still ranked as equally important.

An interesting finding is the lower ranking of social norms, as well as group efficacy compared to the other motivations. Similar to the workshop, respondents may have had difficulties distinguishing between these categories, and since there was no option of a neutral answer, they may have decided that a factor plays some role rather than rejecting it. There may indeed be some collectives with less social interaction than others. Most likely, representatives of the collectives are less aware of these motivational factors, which was also noted during the workshop. Surprisingly, this seems to contrast with the perception of farmers. In a recent study by Westerink et al.

(2019), farmers from different collectives confirmed the importance of social norms, and indicated that a cultural change of what farmers perceive as a ‘good’ farmer has occurred within the collectives. Farmers’ social reference groups have shifted from neighboring farmers who are not necessarily involved in the AES to their colleagues within the collective. As a result, showing responsibility for nature, biodiversity, as well as being socially conscious, were named as additional features of a ‘good’ farmer.

Another interesting finding is the difference between the collectives’ assessments regarding the importance of tradition in collective environmental management (operationalization of injunctive norms). The fact that some collectives indicated the traditional aspect as important is plausible, because a number of long-term participants from the ‘old’ farmer groups are relatively prominent, and they identify with their landscape and are driven by their self-image of landscape providers or stewards (see van Dijk et al. 2015, 2016; Westerink et al. 2017a). However, since collective environmental management for grasslands was established earlier than for arable lands, it may be difficult to assess the role of tradition in case of a collective with equal shares of dairy farmers *and* arable farmers. It is also possible that some representatives of collectives underrated the role of experience in cooperation, because most collectives have ‘old’ farmer groups integrated into their structures and simply regard it as normal. The traditional aspect may also be underrated for a cultural reason concerning the word ‘tradition’ itself, which may be perceived as something that hinders openness to new things.

Some collectives stressed the importance of tradition in collective management; these collectives also ranked environmental motivations as well as peer pressure and group efficacy as more important than economic considerations. It is important to note that this finding is only based on the few collectives that returned more than two questionnaires. Nevertheless, although we were unable to clearly detect this pattern for all collectives from the survey, the link between group efficacy and peer pressure to traditions of cooperation is well supported by literature on social capital. According to Ostrom (2007), the level of cooperation in a group is influenced by how much individuals trust others, which depends on their reputation as reciprocators in past collective action situations. Each individual that trusts others can reciprocate at low risk, and build up a reputation to be reliable oneself. These positively reinforcing factors contribute to long-term cooperation (Ahn and Ostrom 2002; Pretty 2003). Hence, collectives with long experience in working together may profit from the trust cultivated among individuals and in their collective effort (De Vries et al. 2019), as well as their members’ desire for social approval within a group

where reciprocity and a commitment to ‘nature’ have developed into a norm (Westerink et al. 2019). The self-monitoring component of the program is important in this regard. Although we were unable to directly relate an emphasis on group efficacy and social norms to differences in the collectives’ age, location, or farm type, we still regard it as an interesting link to investigate in further research, using more detailed information on the structural characteristics of the collectives. For example, the age of a collective alone may be misleading when assessing experience in cooperation if arable farmers joined the collective much later. Also, details on the type of environmental measures and the degree to which they can easily be integrated into farming systems may be important. Detailed structural characteristics combined with a bigger sample could enable clustering of the collectives.

Increasing farmers’ motivation through social interaction is an important part of the umbrella organization’s strategy, as well as of some of the collectives themselves. This entails the facilitation of learning through regular personal exchange, information distribution, and the use of frames that support social cohesion and identification with local landscapes. Surprisingly, some collectives seem less aware of this opportunity and underestimate their role in supporting cultural change. This may not only be a question of experience among collectives but of their human resources and ‘having the right people in the right place’. According to this line of argument, collectives with a longer history may have an advantage, but are not necessarily more effective in motivating farmers and achieving good environmental outcomes. Future research should analyze collectives that differ in their structural characteristics to better understand the role of actors, their relationships, and the ways they influence farmers’ motivation. Further work is required to expand the target group that was surveyed in this study, from representatives of the collectives to other stakeholders, especially farmers, to develop a full picture.

6. Conclusion

This study reveals the different motivations that are important for farmers to participate in collective agri-environmental schemes. These findings were based on an analysis of perspectives of Dutch agricultural collectives concerning their members’ motivations; these findings in turn will help raise awareness about how collectives can better approach and recruit farmers to improve the quality of AES participation. The applicability of our literature-based analytical framework was first validated in a workshop with stakeholders from the Dutch collectives. This was followed by having representatives of these collectives

rank and quantify the importance of the different motivational categories in this framework.

Farmer motivation to participate in collective AES has been found to be only partly driven by economic considerations. An equally important factor is positive personal norms concerning environmental measures; these norms are influenced by problem awareness, perceived responsibility, and a feeling of collective efficacy. Social norms also appeared to play a role, although it remained rather unclear to what extent; mechanisms of peer pressure and cooperative norms may be more difficult to assess, and their presence may depend on the degree of interaction between actors.

The investigation of the Dutch case supports our argument that it is important for the collectives to understand the heterogeneity of farmers and their motivations in their respective regions. The findings suggest that collectives differ in the awareness of their important role in further development of the program by maintaining communication, distributing knowledge, and cultivating long-term relationships among farmers and between farmers and other stakeholders. Some collectives have already made considerable efforts in organizing social interaction. One practical implication of this is the need for collectives themselves to further engage in learning and exchange, mutually working to motivate many farmers at the same time by considering the economic, personal, and especially social ways in which farmers relate to biodiversity and ecosystem preservation.

Investigating and comparing relationships in collectives that have a long vs. short history seems a worthwhile avenue for future research, particularly in regard to the question of whether the development of long-lasting relationships through the agricultural collectives makes collective AES more resilient and future-proof. Further work to refine the framework and operationalization of motivational categories by its application in another context or by asking farmers directly would also increase knowledge on the role of social motivations.

Notes

1. The English publication by the Dutch government at the outset of the new scheme refers to these organizations as 'cooperatives' (Terwan et al. 2016). In Dutch, however, they are called 'agrарische collectieven'. Recently, the term 'collectives' has also become more common in English publications (e.g. studies by De Vries et al. 2019; Westerink et al. 2020).
2. This section is not about personal norms as such, but various factors that are likely to reinforce them.
3. We decided to focus only on this influence on injunctive norms because it is relevant for our context: Since most collectives integrated older landscape management groups

into the new structures, we assumed that many farmers had long-term experience in collective agri-environmental management, identified with these organizations, trusted them, and were committed to the common goals of these groups.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Ethics declaration

In accordance with ethical guidelines and good scientific practice, we obtained consent from participants of our survey and workshop in the following way: For both the brief written and online surveys, we included a declaration of consent and informed respondents about confidential data usage, the purpose of the survey, and a contact address in case of questions and remarks. For the workshop, we also explained the aim, provided contact addresses, and orally asked for consent to record the discussion beforehand. All collected data was anonymized to ensure privacy. The original data is and will be stored on a secured server at the Leibniz Centre for Agricultural Landscape Research (ZALF) until it is deleted according to the Centre's data policy regulations.

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ORCID

Claudia Sattler  <http://orcid.org/0000-0002-5588-5075>

Bettina Matzdorf  <http://orcid.org/0000-0002-6244-6724>

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