Social learning and land lease to stimulate the delivery of ecosystem services in intensive arable farming

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Highlights

- In intensive arable farming there is underprovision of regulating and cultural ecosystem services.
- Private governance arrangements are promising for achieving behavioural change in intensive arable farming.
- The case of the private Skylark initiative is analysed because of its approach of social learning.
- Land can be a more convincing incentive for farmers than subsidies.
- The Skylark approach is expected to be effective because it addresses a range of factors that influence decisions of farmers.
- Private and public governance arrangements can be complementary, but private arrangements are more likely to influence the image of the ‘good farmer’.

Social learning and land lease to stimulate the delivery of ecosystem services in intensive arable farming

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Keywords:

Farmer groups, ecosystem services, social learning, behaviour, private, governance arrangements

Abstract

Current intensive arable production systems tend to favour food production at the cost of the provision of other ecosystem services. In order to decrease the environmental impact and increase the variety and level of ecosystem services delivery, arable farmers would need to change their current practices. Governance arrangements aimed at such changes of behaviour not only include those from government , but also from institutions as developed bottom-up by farmers, other actors and networks. This paper investigates the role that governance arrangements developed by groups of farmers in intensive arable production systems in The Netherlands may have in changing agronomic practices that will improve the delivery of regulating and cultural ecosystem services. We evaluate the arrangements according to their potential effects on farmers and their social environment. Firstly, we consider the effect on farmers' motivation and ability to change their practices. And secondly we consider the legitimation of, and demand for behavioural change by their social environment. The results suggest that social learning and land lease are promising supportive governance arrangements for behavioural change, and that private and public governance arrangements can be complementary.

1. Introduction

With 103 million hectares, arable land covers about 60% of the EU agricultural area (EUROSTAT, 2019). Therefore, arable farming practices have a large potential to enhance ecosystem services and reduce the disservices. Arable farming is particularly associated with negative impacts on air and water quality due to volatile and aquatic nitrogen losses (Carpenter et al., 1998), and with a large decline in farmland biodiversity (Stoate et al., 2001; Withers and Haygarth, 2007). In the Netherlands arable production is overall intensive for two main reasons. First, the landscape has very little elevation and soils are fertile, therefore production levels can be high. And second, the high population density in the Netherlands adds severely to the level of land prices. High land costs are a strong incentive for farmers to intensify.

The favourable natural conditions of the land rarely constrain Dutch arable farmers to such extent that their income relies on the small extra payments from the agri-environmental-climate schemes (AECS) of the Rural Development Programme (RDP) of the European Union Common Agricultural Policy (CAP). In 2016, RDP contributed approximately 1% to the farm income of an average Dutch arable farm, while direct income support constituted 47% of the arable farmers' income (Agrimatie, 2016). Direct support includes some basic environmental instruments such as standards on good agricultural and environmental condition of land (GAECS) and Greening. Greening is a direct payment rewarding farmers for farming practices beneficial for soil quality, carbon sequestration and biodiversity. However greening, in its current implementation, is not yet environmentally effective (ECA, 2019). This suggests that an effective environmental management of arable land in the Netherlands mainly depends on personal motivation of farmers.

If personal motivation of farmers is key in achieving farming practices that deliver more ecosystem services than merely food, then identifying alternative governance arrangements that address the more 'soft' aspects of behaviour are of urgent interest and complementary to the current literature on ecosystem services governance (Buelow and Cradock-Henry, 2018; Dessart et al., 2019; Lienhoop and Schröter-Schlaack, 2018; Sattler et al., 2018). In this paper, we investigate the role of two mechanisms influencing farmer behaviour. One is farmer-based, private arrangements (Knickel and Maréchal, 2018; Runhaar and Polman, 2018); the other is based on social learning as important mechanism in motivating farmers for environmental actions (Mills et al., 2011; Pahl-Wostl et al., 2007; Reed et al., 2014; Schusler et al., 2003). To explore the potential of such private governance arrangements, we carry out a case study of the Skylark Foundation in the Netherlands (*Stichting Veldleeuwerik*))[1]: an organisation that unites arable farmers, food processors and stakeholders in the food supply chain with the aim to stimulate a joint effort to improve sustainability of arable farming. Our research question is: how likely is it that arable farmers change their practices towards the

[1] Skylark was terminated in January 2020 as a result of reduced funding by the chain partners

delivery of a greater variety of ecosystem services because of the governance arrangements developed by Skylark? This paper builds on the case study research in the EU H2020 research project PEGASUS (Westerink and Van Doorn, 2017). For our analysis, we make use of a framework of factors that are important in farmers' choices. Based on the case study we make a number or recommendations for CAP and agri-environmental policy in general.

2. Conceptual framework, case study and research approach

2.1 Conceptual framework

A range of factors influencing farmers choices regarding environmentally friendly practices has been identified (Dessart et al., 2019; Siebert et al., 2006; Wauters et al., 2017). Runhaar et al. (2017) categorized these factors as motivation, ability, legitimation and demand (Figure 1). While motivation and ability are attributes of the farmer, demand and legitimation represent the influence of other actors (the societal environment). With a focus on agro-ecological practices, Schoonhoven and Runhaar (2018) define these categories of factors as follows:

- Motivation: the extent to which farmers are willing to participate in agro-ecological practices;
- Ability: the extent to which farmers are capable to farm according to agro-ecological principles;
- Demand: the extent to which farmers are requested or obliged to farm according to agro-ecological principles;
- Legitimation: the extent to which farmers are allowed to farm according to agro-ecological principles.

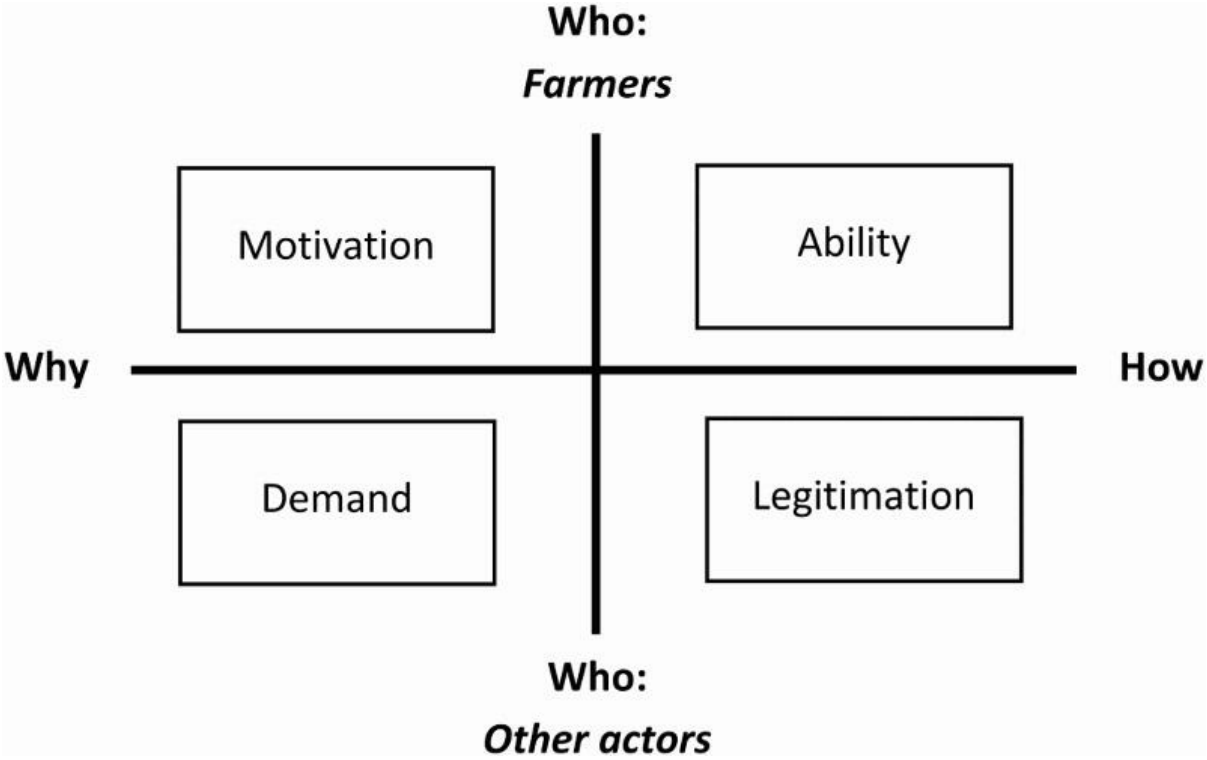

Figure 1: Decisions of farmers regarding environmental practices are influenced by factors of motivation, ability, demand and legitimation (Runhaar et al., 2017).

Mills et al. (2016) propose a similar framework, using willingness, ability and engagement to categorise a number of factors that influence farmer behaviour. Engagement represents the relationships with the social environment. While Runhaar et al. view the societal environment of the farmer as both relational and institutional, Mills et al. focus on the embedding of the farmer in social networks. Both views are relevant for the purpose of this paper. We therefore depart from the framework of Runhaar et al. and consider Mills et al.'s engagement as part of both demand and legitimation.

The *motivation or willingness* of a farmer to take care of the environment is related to his/her affinity with nature, the image of him/herself as a farmer and the image of what a 'good' farmer is (Ahnström et al., 2013; Beedell and Rehman, 2000; Burton and Paragahawewa, 2011; Lokhorst et al., 2011). For example, many farmers consider a uniform arable field without weeds as a sign of being a good farmer (Burton, 2004; Sutherland, 2013). In contrast, farmers with a high motivation for conservation measures often see nature as part of their farm (Van Herzele et al., 2013). For them, working with nature and the environment enhances pleasure in farming (Farmar-Bowers and Lane, 2009).

Ability includes a range of factors that relate to farm economy, landscape, farming system, skills and knowledge, and risks and room for manoeuvre as perceived by the farmer (Siebert et al., 2006). Much attention in studies of farm decisions goes to revenues and costs in terms of time and money, but at least as important is the farming system in which the farmer operates and which dictates most of the operational decisions for a longer period of time (Ingram et al., 2013; Peerlings and Polman, 2009; Sutherland, 2010; Swagemakers et al., 2009; Wilson and Hart, 2000). Often, a farmer is 'locked-in', not in the least because of previous investments that need to be earned and paid back (Jongeneel et al., 2008). Land is part of the puzzle. In the Netherlands, farmers often say that the limited availability of land and related high land rent impede extensification (Westerink et al., 2018).

Demand from the social and institutional environment is far from uniform for farmers: the market for products and services, governmental regulations and subsidy schemes, public opinion, farmer groups, the local community and advisors and suppliers can represent different and even conflicting demands (De Krom, 2017; Jongeneel et al., 2008; Kuhfuss et al., 2016; Wauters et al., 2017). Farmers are sensitive to the public opinion about farming (Mills et al., 2016; Wauters et al., 2017). Demand for local products can be an incentive for farmers to engage in conservation (Van Herzele et al., 2013). Extension by public advisors has a more positive effect on participation than extension by private farm advisors (Polman and Slangen, 2008; Schroeder et al., 2015).

The cultural norms within the farming community are an important aspect of *legitimation* (Burton and Paragahawewa, 2011). Farmers identify with other farmers and create their image of themselves as 'good farmer' in relation to each other and the general farming culture (Burton, 2004). Membership of an environmentally oriented group of farmers enhances the motivation to take measures on the own farm for the benefit of the landscape and the environment (Beedell and Rehman, 2000; Lockie, 2006). Peer pressure among farmers can lead to sustainable and environmental farm decisions, but can also constrain farmers to make such choices: some farmer networks do not even aim at greening agriculture at all (Beedell and Rehman, 2000; Burton and Schwarz, 2013; Polman and Slangen, 2008).

There are interactions between the four categories of factors (Runhaar et al., 2017). Motivation precedes ability: motivated farmers will seek a way to accomplish their ambitions (Farmar-Bowers and Lane, 2009). However, lacking ability (for example as a result of a weak economic position) is demotivating. Demand from the societal environment can be motivating (e.g. acknowledgement) and/ or enabling (e.g. a good product price). A lack of societal legitimation can be demotivating (e.g. loss of status in the farming community) and/ or constraining (e.g. state aid regulation).

The conventional governance arrangements for promoting environmentally friendly behaviour – regulations and subsidy schemes - are public and mainly aimed at factors of societal demand and farmer's ability. However, Runhaar et al. (2017) as well as Mills et al. (2016) stress that governance arrangements are most likely to be successful when they address all categories of factors:

motivation/willingness, ability and engagement (demand and legitimation). Public governance arrangements increasingly embody 'soft' strategies such as nudging and promotion of study groups (Beers and Geerling-Eiff, 2014; Dessart et al., 2019; Kuhfuss et al., 2016; Prager and Creaney, 2017). In this paper, we explore whether private governance arrangements can also effectively address all relevant categories of factors influencing environmentally friendly behaviour of farmers, using as case study the Skylark Foundation in the Netherlands.

2.2 Case study and research approach

Skylark is a private initiative of farmers and companies in the chain. In 2016, the foundation had in total a membership of 388 arable farmers, who together managed over 45.000 ha (8,7%) of arable land in the Netherlands (Veldleeuwerik, 2016). The process of setting up the Skylark Foundation started in 2002, when the Heineken brewery asked a couple of its suppliers in Flevoland, in the centre of The Netherlands, whether they could offer sustainable barley. These farmers however did not only grow barley and suggested to consider the production methods of other crops as well, because of the need for crop rotation. Several additional food industry companies became involved: Suikerunie (sugar) and Van Liere (onions). With the aid of rural development subsidy, a project was organised for developing sustainability indicators and a network and in 2009 a Foundation was set up. The approach of Skylark appealed to arable farmers and to several parties in the supply chain. In 2016, a range of food processors, suppliers and advisors was involved in Skylark that was organised in 40 regional farmer groups from many parts of the Netherlands. (Veldleeuwerik, 2016). Skylark participants are in general, for Dutch perspectives, the larger arable farms. Skylark is funded by the companies in the chain as well as by the participating farmers. Occasionally, public funding is acquired for specific projects, however, the meetings of the regional groups and the composition of arm plans are purely privately funded.

The case study research approach combined literature desk study with interviews and meetings with stakeholders in 2016-2017. The desk study involved the analysis of documents of Skylark and public data on environmental conditions in the area of De Dommel (for a complete reference list see Westerink and Van Doorn, 2017). In-depth interviews were conducted with two arable farmers, both members of the Skylark Midden-Brabant group, its regional coordinator, an official of the Water Board and the national coordinator of Skylark. One meeting of the regional group was attended (25 May 2016: 8 members, 1 regional coordinator): here participatory observation was combined with a group interview about ecosystem services and environmental management. In addition, a workshop was organised with the regional Midden-Brabant group and the Water Board, to discuss water quality data, the farmers' proposal for land lease as governance arrangement, and joint monitoring (10 March 2017: 7 members, 1 regional coordinator, 3 Water Board officials). Finally, a workshop at the national level was organised with the Skylark Foundation and the Ministry of Agriculture to discuss the results

of the PEGASUS research in the Netherlands including the analysis of the Skylark governance arrangements.

3. Results: Skylark governance arrangements

3.1 National approach of social learning

The main principles of Skylark are: collaboration in the chain, sharing knowledge, and a system of continuous improvement. Unlike what the name seems to suggest, Skylark does not specifically focus on the conservation of this declining farmland bird, but it aims for sustainable land management in general. The Skylark foundation carries out its objectives according to ten sustainability indicators (see Box 1). These indicators were discussed in 2003 in the first Skylark group of ten farmers in Flevoland. Skylark does not set *performance levels* for the sustainability criteria; rather the approach focuses on the *process of improvement*. This means that all farmers who wish to improve can participate, regardless of their point of departure. The participants can choose from around 200 sustainability actions, such as production of solar energy, use of farmland manure, poles for birds of prey, and multi-annual buffer strips.

Box 1: Sustainability indicators used by Skylark (www.veldleeuwerik.nl):

1. Product value
   a. Economic sustainability
   b. Balance of revenues and costs
2. Soil fertility
   a. Soil structure
   b. Soil recovering capacity
3. Soil erosion
   a. Topsoil organic matter
   b. Cover
4. Nutrients
   a. Fertilisation
   b. Nutrient balance Nitrogen (N), Phosphorus (P), Potassium (K)
   c. Use of rest products
5. Crop protection
   a. Technique & methods
   b. Products (pesticides/ herbicides)
6. Water
   a. Water quality
   b. Water quantity for irrigation
7. Energy
   a. Machines/ fuel
   b. Storage/ climate
   c. Alternative sources
8. Biodiversity
   a. Above soil
   b. Soil biodiversity
9. Human capital
   a. Human capital
   b. Social capital
10. Local economy
    a. Relations with other farms
    b. Relations with other firms

Each year, a farmer develops a plan for his/ her own farm with the aid of an advisor. The farmer can choose which sustainability indicators to work on, but should as a participant give attention to all ten Skylark indicators within four years. Of all sustainability criteria, above ground biodiversity is the least popular because of the lack of incentives and a cost-revenue balance that is not attractive. Soil health and soil biodiversity are much more interesting to the farmers, as well as water quality. Among Skylark farmers, and Dutch arable farmers in general, there is an increasing awareness of the importance of the soil (which in the discourse includes aspects such as soil life, soil organic matter, soil structure, lasting soil fertility and resistance to diseases in the soil) for sustaining production levels in future. Water quality is of interest to them because of progressing environmental regulations and because of possibilities to save on costs of inputs. The sustainability actions of Skylark participants (not their results) are monitored in the Skylark database of 'sustainability profiles' which the participants fill out themselves. Because performance is not monitored in terms of results, the effectiveness of the Skylark approach with regard to sustainability levels cannot be measured.

In the Skylark approach, 'peer review' of sustainable arable farming practices during the group meetings and farm visits is seen as an important element in raising awareness, and in strengthening the intrinsic motivation of farmers. To attend regular group meetings is mandatory for participants of the foundation and also a prerequisite for obtaining a 'Skylark' certificate for sustainable farming. In the Skylark regional groups, farmers discuss each other's sustainability plans, actions and results. Regional groups are led by an acknowledged regional coordinator and consist of 8-10 farmers who meet at least five times a year at each other's farms. By meeting in small groups, farmers challenge each other in striving for sustainable practices. They visit each other's farm, learn from each other's experiences and set joint learning goals. Common themes for Skylark groups to work on are soil health and water quality. Often, they combine a discussion at the kitchen table with a field visit. In addition, interregional meetings are organised about specific themes (see also Nijman, 2015). Each group has a budget for organising their meetings. The groups are stimulated to invite advisors from Skylark partners to contribute to these meetings (not the chain companies but the consultancies). Participants are obliged to attend at least eight meetings in total per year (farm meetings plus thematic meetings).

Skylark groups tend to go through several development phases. At first, the farmers are busy discussing each other's sustainability plans. After a few years, they choose specific themes to learn about, such as soil health. The first groups in the province of Flevoland have now started to consider their social environment and to discuss themes such as the licence to produce and short supply chains.

The personal motivation of farmers to participate in the network, to learn from peers and to improve their sustainability achievements is shown by their investment in terms of time and money

needed to participate in Skylark[2]. In addition to the intrinsic motivation of the farmers, the demand from the food processing companies for sustainable production is also a motivator. Some of these companies require their producers to have a Skylark certificate. Lastly, the increasing environmental regulations in the EU are driving for farmers to innovate towards more sustainable practices.

3.2 Regional collaboration between arable farmers and the Water Board

To investigate how this national Skylark approach works out in a concrete region, we will now zoom in on the group in Midden Brabant, in the South of the Netherlands. Most farmers of this group have their conventional arable farm in the area of the watershed of the small river *De Dommel*. The water quality in this area is below the norms of the Water Framework Directive (IHW, 2013). For a large part, this is due to intensive farming practices, including fertilisation and crop protection with pesticides and herbicides. Environmental policies so far have not yet resulted in a satisfactory water quality. For its joint learning agenda, the Skylark Midden Brabant group has chosen water quality, water quantity (availability in times of drought and management of water excess), and soil health (particularly soil fertility and soil structure); see indicators 2, 3 and 6 in Box 1. For farmers, as individual land managers, management of soil structure and soil organic matter are feasible actions on land that they will be using for multiple years. However, an increasing share of the hired land is hired for only one season as a result of progressing specialisation in especially potato growing, combined with the need for crop rotation. Each year, the farmers grow this crop on other pieces of land, owned by someone else. This practice of 'land rotation' discourages farmers to invest in the land that they will use short term, especially in raising soil organic matter. The quality of that piece of land is worrisome to them because they are uncertain about the behaviour of the other farmers who have used it before.

The farmers of the Midden Brabant group are aware of the fact that management of the arable fields influences the water quality. It also influences the water quantity, in the sense of amount of runoff and peak levels in the rivers, as well as of ground water levels in periods of drought. According to one interviewee, the sandy soil is suitable for a wide range of crops, but because the soil is so easy to work, farmers in the area have become careless in its management. Group members are critical about farmers wasting their soil structure: when they notice puddles on someone's land, they blame it on poor land management. The group has an interest in raising soil organic matter in order to improve soil structure and fertility, support soil biodiversity, reduce leakage of nutrients, improve water storage capacity and reduce sensitivity to crop diseases. However, soil indicators are measured by a

[2] participation in at least eight meetings per year, membership fee of €150,- per year plus €2,- per ha, costs of sustainability plan €300,- per year, plus the investments in sustainability actions on their farm

few individual farmers only. As one participant remarked: "*Farmers know a lot of what happens above ground, but nothing of what happens in the soil"*. Skylark has organised courses to teach farmers how to dig a soil profile and how to assess soil structure.

It is important to notice that intensive arable production in the Midden-Brabant area is both a result and a driver of high land prices. These high land prices are an obstacle for farmers to implementing broad buffer strips for protecting water quality. Another barrier is the practice to rotate land among farmers. The use of land for only one year makes investment in soil organic matter less attractive, and buffer strips less sustainable. Turning land from a constraining factor to an enabling factor is therefore key in designing governance arrangements for sustainable development of farming in the area. Using land as an incentive to promote provision of ecosystem services is innovative, and in the Netherlands there are only a few examples of such schemes (Nieuwenhuizen et al., 2017; Westerink et al., 2010). As a rule, financial incentives are provided, for example for the promotion of broad buffer strips. However, by some Skylark participants in Midden-Brabant, land is considered to be more convincing than money. A few of those farmers are participating in the agri-environment scheme, with buffer strips as a management option, but they do not find the scheme very attractive because of the many rules.

For that reason the farmers of the Midden Brabant group proposed Water Board De Dommel to work out a governance arrangement with land as an incentive to improve water quality. Water Boards are regional public authorities with democratically elected representatives. The Water Boards are responsible for water quality and water quantity issues in the regional watersheds as part of the implementation of the EU Water Framework Directive in their areas. For the Midden Brabant group, the Water Board is its main partner in the improvement of water quality, (indirectly) soil health and the management of water quantity at landscape level. In January 2016, the Skylark regional coordinator organised a meeting with Water Board De Dommel, the neighbouring Skylark group Oost Brabant and Water Board Aa en Maas to discuss possibilities for collaboration. In March 2017, this was followed-up in a meeting of the Midden-Brabant group and De Dommel Water Board.

The Skylark group proposed to develop buffer strips along shores to improve water quality, in return for land elsewhere. The envisioned buffer strips are much broader than the mandatory 0.25-1.50 m. The group proposed to the Water Board that, instead of a subsidy, they would like to lease land from the Water Board to compensate for the production space. The Water Board owns 180 ha in the region. The proposal could be extended to other land owners, such as the province, municipalities, nature organisations and rural estates.

The Water Board was not very responsive to the proposal of the Skylark farmers, because it is reluctant to give a preferred position to some farmers above others. Nevertheless, since 2019 the

Water Board selects land managers for its land based on a sustainable score[3]. Skylark farmers can apply for this land, but they will not be favoured over other farmers who can show the requested sustainability requirements.

Instead, the farmers and the Water Board agreed to enter into a joint process of learning and exchange of data and information. The farmers expressed an interest in getting to know the water system better. So far, the Water Board provided information on levels of Nitrogen and Phosphorus in the larger waterways, but not on pesticide residues or on aquatic biodiversity. In addition, the Water Board monitors the state of the larger waterways, while the farmers were interested in more specific information relating to their land and the effects of their farming practices. Farmers wished for a more precise monitoring system of ditches and smaller streams to be able to locate problems and match solutions such as buffer strips to sites where these make sense.

3.3 Assessment of the Skylark governance arrangements according to the conceptual framework

In Figure 2, we have summarized according to the conceptual framework how the main aspects of the Skylark governance arrangements described in sections 3.1 and 3.2 influence farmer behaviour.

[3] https://www.dommel.nl/nieuws/2019/01/openbare-inschrijving-pachtgronden-2019.html accessed 28 Feb 2019

Motivation	**Ability**
Image of 'good farmer' • *Intensive arable farmers are reluctant to give up production space for biodiversity* • Skylark membership is part of being a 'good farmer' Learning • Farmers learn from each other in groups and copy good practices	Knowledge • Farmers want to know more about their production system • Farmers understand better the relations between farming practices, soil and water • *Data and monitoring are lacking: no feedback from environmental outcomes* Resources • Land as convincing incentive • *Costs of biodiversity exceed benefits for farmers*
Demand	**Legitimation**
Market demand • Food chain companies increasingly demand sustainable produce and evidence Community demand • *Lack of interaction with local volunteers*	Peer pressure (farmer-to-farmer) • Farmers know each other's sustainability plans • Puddles are a sign of poor soil management which is linked to 'bad farmers'

Figure 2: How the Skylark governance arrangement influences environmental behaviour of arable farmers. In *italics* the counterproductive aspects.

Motivation is addressed by appealing to the self-identity of the arable farmers and their ambition to become better farmers. Sustainability is incorporated into the image of a 'good farmer' and being a member of Skylark is a signal of that. Turning this ambition into a group effort by learning from each other is a strong motivator because seeing good examples lowers the threshold to try something yourself. However, the productivist image of a good farmer is still very strong and giving up land for biodiversity is a painful idea for many Skylark farmers.

Ability is addressed by focussing on sharing and gaining knowledge. In the study groups, themes of joint interest are explored and knowledge is available from Skylark partners. However, no data are available of the results of the sustainability actions of the farmers. Here an opportunity is missed to strengthen willingness and ability through feedback from results (Burton and Schwarz, 2013). Skylark does not use economic incentives. Nevertheless, farmers are constrained in their ability to take sustainability actions by a limited availability of land and by the costs of biodiversity actions. We suspect that their reluctance to give up land is stronger than the financial incentives provided by the agri-environment scheme as the motivation to participate in the scheme is low. Land

may be a more convincing incentive; it is to the Midden –Brabant group who proposed the Water Board to make its land available for supporting Skylark farmers.

Demand is addressed by the market, having a range of food chain companies in the Skylark partnership. The interest in sustainable produce that these food chain companies express, raises awareness with the Skylark farmers. However, this interest has not yet resulted in a preferred supplier status or better prices for the farmers, to the disappointment of some. In addition, some of the Skylark partners have, as suppliers, a stake in legitimizing the use of chemical inputs such as pesticides. A weakness in the Skylark network is the lack of engagement with citizens and local environmental groups (community demand), particularly in the Skylark Midden Brabant group. Such engagement could strengthen the motivation through social learning strategy and monitoring, and eventually modify the image of the 'good farmer' (see De Krom, 2017).

Legitimation is addressed by the approach of peer pressure in the study groups. Farmers know of each other's sustainability plans and visit each other's farm. For example, the attention to soil management in the groups has resulted in farmers recognizing puddles on land as a result of poor soil structure and a signal of bad farming practices.

As Figure 2 shows, the strategy of social learning as applied by Skylark addresses all relevant categories of factors that influence environmental behaviour of farmers. The Skylark governance arrangement is effective in motivating and enabling farmers to take sustainability actions that have low costs or a benefit for the farm economy. The Skylark farmers are less willing to deliver those ecosystem services which economic costs exceed the benefits for the farm. These are usually cultural and regulating ecosystem services, such as landscape amenity, broad buffer strips for water quality and habitat provision for biodiversity. The land lease governance arrangement was proposed by the farmers of the Midden Brabant group just to bridge that gap.

4. Discussion

In this section we first review the conceptual framework used, then we briefly compare this study to the analysis of the Skylark approach by Triste et al. (2018), before we make recommendations for future CAP.

This study focuses on the potential of private governance arrangements to influence environmentally friendly choices of farmers and thus to enhance the delivery of ecosystem services by agriculture. For the assessment, we used a conceptual framework with four categories (motivation, ability, demand and legitimation) that cover a range of factors that are expected to influence farmers' environmental behaviour. It offers a way to categorise and synthesise insights from various social

science disciplines, including rural sociology, behavioural economics, behavioural psychology, public administration and political economy. We have used the framework to analyse the Skylark foundation, a private initiative of arable farmers in the Netherlands. The framework was helpful to identify and categorize the various ways in which the private governance arrangements of Skylark address farmers' behaviour. However, we could not always distinguish between the social environment categories 'demand' and 'legitimation'. For example, cultural norms within a farming community of what a 'good farmer' is can both be a legitimizing factor for environmental behaviour (by which a farmer feels constrained when this behaviour is not considered appropriate for a 'good farmer', or supported when it is considered as something that 'good farmers' do) and a demanding factor (when it is expected of 'good farmers' adopt environmentally friendly practices by their peers). In that respect, the framework of Mills et al. (2016) is more straightforward with only one category for the influence of the societal environment. Their framework is suitable for the analysis of the Skylark case, but would need some adaptation to cover the influence of market demand. For other case studies than Skylark, the influence of the public opinion and national policy would be missed with their framework. We therefore propose to integrate the frameworks of Runhaar et al. and Mills et al. as follows: willingness to adapt, ability to adapt and societal support as categories of factors influencing the choices of farmers that need to be addressed to encourage behavioural change (Figure 3). When one or more categories are missing, additional governance arrangements are needed in the public and private policy mix.

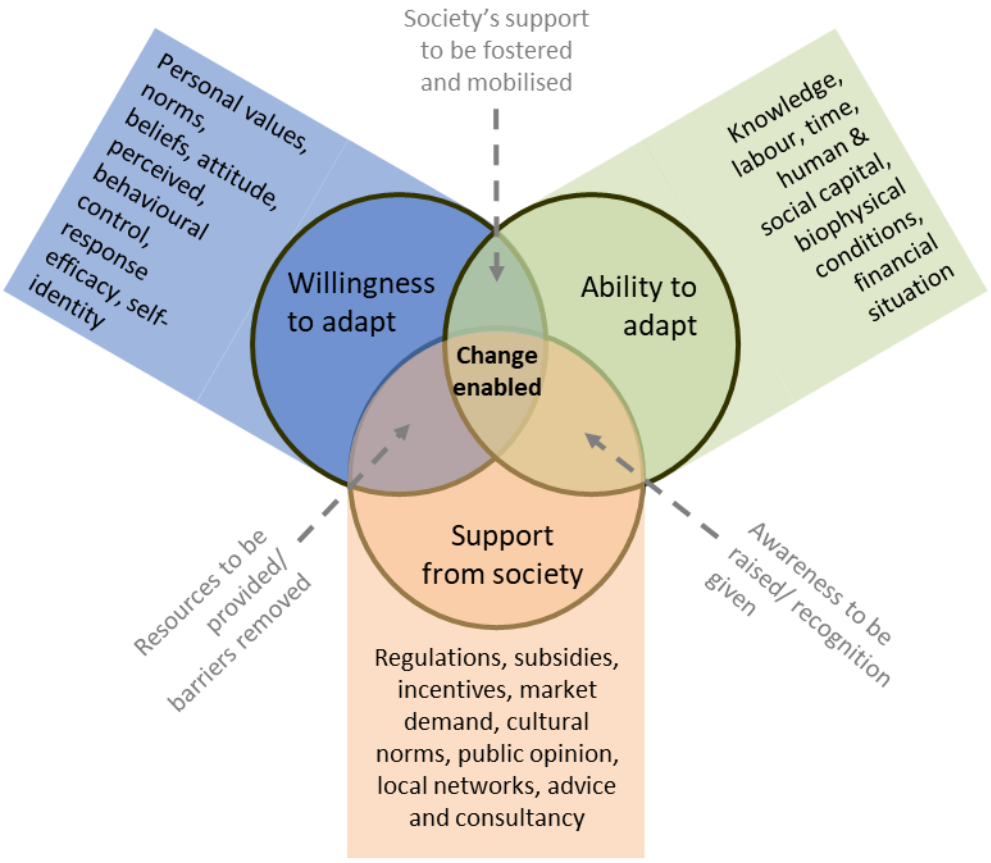

Figure 3: Categories of factors influencing environmental decisions of farmers (this paper), adapted from Mills et al. (2016) and Runhaar et al. (2017).

The framework does not capture actual behaviour and its impact. To be able to assess the real effectiveness of governance arrangements and their intervention logic, the causality chain from governance arrangements and how they influence farmers' behaviour would need to be followed. The assessment needs to include the actual behavioural change in the form of adapted farming practices, and their impact on trends in environmental conditions and the ecosystem. This constitutes very complex and long-term interdisciplinary research that is rarely done, but urgently needed to address the environmental challenges in farming.

Triste et al. (2018) analysed the Skylark initiative from the angle of motivational processes by questioning participating farmers. They found that knowledge exchange, business opportunities, sustainability and social contact had been important reasons for Skylark farmers to participate. Skylark's bottom-up approach, flexibility regarding actions to perform on the farm and its learning topics and a clear explanation of the internal rules addressed participating farmers' needs in terms of autonomy, competence and relatedness. These needs fall into the categories of motivation (autonomy), ability (competence) and support (relatedness). Our study considers a wider range of factors per category. Nevertheless, we draw a similar conclusion with regard to Skylark's promising characteristics.

Our analysis indicates that the private governance arrangements of Skylark addressed all relevant categories of factors that influence environmental behaviour of farmers, but that these were less likely to be effective in promoting the delivery of regulating and cultural ecosystem services such as biodiversity and landscape amenity. This is where public governance arrangements can complement the private. Public local and regional governance arrangements can be developed, such as the option of land lease that the Skylark Midden-Brabant group tried to arrange with the Water Board.

In addition, the EU Common Agricultural Policy (CAP) provides an important public instrument that complements the private initiatives. A first important role of the CAP is setting a level playing field for the baseline of environmental requirements through the cross-compliance. The farmers in the Midden-Brabant Skylark group felt the incremental challenge of environmental regulations and aimed to remain ahead of the baseline.

A second important role of the CAP is incentivising the delivery of regulating and cultural ecosystem services. In principle, the agri-environmental subsidy schemes of the second pillar of the CAP and the 'greening' of the direct income support of the first pillar of the CAP have been implemented for this purpose. However, for a majority of the Skylark farmers, agri-environmental payments are not attractive, as a result of high land costs and a dominant productivist image of 'good farming'. Clearly, it is not about farm economy alone, as the AES payment levels are generally sufficient to cover costs incurred and income forgone.

A third important role of the CAP is incentivising the set-up of networks of farmers and other stakeholders that enable social learning about sustainable farming and ecosystem services (Prager and Creaney, 2017; Westerink et al., 2017). An example is the European Innovation Partnership for Agricultural productivity and Sustainability (EIP-AGRI) launched in 2012. The EIP-AGRI brings together innovation actors (farmers, advisers, researchers, businesses, NGOs and others) in agriculture and forestry, at EU level. Within this EU-wide EIP network, Operational Groups, Multi-actor projects and Thematic Networks are all key building blocks. While Operational Groups are funded under the Rural Development Programmes, Multi-Actor projects and Thematic Networks are supported by the H2020 Programme. It is important that farmers meet because the image of a 'good farmer' is constructed among farmers. In addition, involvement of other stakeholders is needed to change the productivist image of a 'good farmer' – as well as to raise awareness among non-farmers of the complexity of farming practices. A specific type of network could be promoted for collective action by farmers and land owners in the sense of self-governance of land quality as a common pool resource, which could address the concerns evolving from crop rotation on short-term leased land. Such networks could design rules for land management, rights to lease and monitoring of soil quality (Ostrom, 1990).

The future CAP (2021-2027) wants to play a fundamental role in developing a sustainable agricultural sector that supports environmental and climate performance and focuses on result-based payments. In the legislative proposals for the future CAP (COM(2018) 0392, 0393 and 0394 of 1 June 2018) the European Commission presents a new delivery model for the policy which is rather based on performance than on compliance. Member states will have more room to decide on ways how CAP support is paid to farmers. They can choose for example to destine (a part of) the budget of the direct income support for payment of eco-schemes. In that way farmers will be rewarded for the environmental services they deliver. The Skylark case gives reason to be cautious about such a result-based approach, as it illustrates that (financially) motivating farmers to deliver more ecosystem services may not be enough for farmers to monitor environmental results. A focus on results can motivate some farmers and discourage others. Skylark has chosen an inclusive approach based on

stimulating action, in which all arable farmers who wish to improve can participate, regardless of their level of sustainability. For this reason, Skylark does not set targets for the ten indicators and results are not monitored. As a result, demonstrating effects of this approach in terms of sustainability indicators or ecosystem service delivery is not feasible at the moment. Only indirect indications of result can be derived, such as 'Skylark farmers irrigate less than non-Skylark farmers' (Kuneman, 2017). According to a study that was carried out by students of Wageningen University, for many of the 200 sustainability actions that Skylark promotes with its participants, it is very hard to find scientific evidence of their effects in literature (Bisperink et al., 2016). Because ways of working and physical conditions at farms can differ greatly among farmers, predicting results based on actions would be extremely hard. Much more monitoring at farm level appears to be needed to get insight into impacts of the Skylark approach (Kuneman, 2017). However, even then, linking measures to impacts would be very difficult, not least because of the complexity of the farm as a social-ecological system. Nevertheless, Skylark is considering ways to start monitoring in order to demonstrate its sustainability achievements (Skylark board at the Skylark congress 15 June 2017). In addition, gathering more data may support Skylarks ambitions to motivate farmers to improve their practices. However, the case study of the Skylark group Midden Brabant suggests that farmers do not always consider monitoring of environmental indicators as their task. Most farmers do not monitor soil conditions, while they request better water quality data from the Water Board. Skylark could support self-monitoring by farmers, which is more of a cultural problem than a capacity problem, because these highly professional farmers monitor all kinds of aspects on their farms already.

5. Conclusions

The case of the Skylark Midden-Brabant group in the Netherlands highlights a number of issues that are similar for intensive arable farmers elsewhere in Europe, who aim to improve their delivery of regulating and cultural ecosystem services in addition to food provision. Firstly, high land prices and production levels and probably the socially constructed image of a 'good farmer' constrain the willingness of farmers to give up production space for the delivery of additional ecosystem services. Therefore, governance arrangements are needed that address land as production factor and farmer's identity issue, and not only as an economic issue. Secondly, there is a lack of direct feedback to farm management actions from environmental data. A fine-grained monitoring of ecosystem services could provide farmers with feedback to their actions. One of the strong features of the Skylark approach is that farmers are motivated by their peers and their supply chain partners to move towards sustainability. In addition, social capital is built within groups of farmers, which enables social learning, innovation and collaboration with others. As a farmers' organisation, Skylark generates a new image of a 'good farmer' and provides a group in which a new culture of farming can develop. In

addition, there is support from supply chain partners. Therefore, the private governance arrangement of regional farmer groups, individual sustainability plans and social learning is expected to be an effective strategy. Its effectiveness could be enhanced by societal support in the sense of market demand that is reflected in the price of the product, monitoring that provides feedback to farmers' actions, governance arrangements for land, engagement of citizens, and appropriate regulations.

Whenever more private initiatives such as the Skylark Foundation were to emerge, these could greatly contribute to enhancing the delivery of various ecosystem services from agriculture. However, such initiatives do not always evolve spontaneously, and if they do, this coincides with (temporary) public support as was the case in the institutionalising phase of Skylark. In addition, private initiatives such as Skylark may benefit from public policies and from collaboration with public authorities. Therefore, private initiatives can strengthen the complex policy mix that is needed to safeguard the delivery of ecosystem services from agriculture. Such potential synergies are important to consider in the future CAP.

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Social learning and land lease to stimulate the delivery of ecosystem services in intensive arable farming

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