

## **Skylark case study: social learning and land lease as mechanisms for the delivery of ecosystem services in intensive arable farming**

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### **Abstract**

Potentially, arable fields can deliver a range of public goods and ecosystem services in addition to food, such as clean water, soil recovering capacity and natural pest reduction. However, current intensive arable production systems tend to favour food production at the cost of the level of delivery of the regulation and cultural ecosystem services (ES). In order to increase the level of ES delivery, arable production systems farmers would need to change their practices. Governance arrangements are ultimately aimed at achieving such a change of behaviour; they do not only include government initiatives, but also institutions that were developed bottom-up by other actors and networks.

This paper investigates governance arrangements developed by groups of intensive arable farmers in the Netherlands, known as the Skylark Foundation (*Stichting Veldleeuwerik*). We zoom in on two arrangements. First, the way in which social learning is organised in small farmer groups and between groups in a nested structure. And second, the way in which a particular Skylark group took initiative to develop a land lease arrangement for promoting water quality in collaboration with the Water Board (regional authority managing a comprehensive water system).

The results show that by meeting in small groups of 8-10 farmers, farmers challenge each other in striving for sustainable practices. They meet regularly, visit each other's farm, learn from each other's experiences and set joint learning goals. In addition all participants must compose a plan for each year, specifying their sustainability actions. For instance: to reduce the use of pesticides or to improve nesting possibilities for farmyard birds. The common themes selected by them to work on are soil health and water quality. In the group located in the Middle Brabant region, this learning process triggered the wish to collaborate with the Water Board. In a number of meetings, the farmers and Water Board officials exchanged ideas about how to managing water better and improving soil health. They decided to make better their exchange of knowledge and data, as well as work towards a more fine-grained understanding of the landscape and the water system. With this improved knowledge the group of farmers aims at adapting the current management practices underpinning the delivery of better water quality.

## 1. Introduction

Arable production in the Netherlands is, as a rule, intensive. There is very little elevation and soils are fertile, therefore production levels can be high. Due to differences in soil type, however, there are regional differences as to dominant crops. The high population density in the Netherlands puts additional pressure on land prices. High land prices are a strong incentive for farmers to intensify. The natural conditions of the land rarely constrain Dutch arable farmers to such extent, that they rely on agri-environment schemes. In 2016, Payments from agri-environmental-climate schemes (AECS) contributed approximately 1% to the farm income of an average arable farm (Agrimatie, 2016), while direct income support constituted 47% of the farmers' income. In other words: agri-environmental management on arable farms in the Netherlands mainly depends on personal motivation of farmers.

According to the international literature, the motivation of a farmer to take care of the environment is related to his/her affinity with nature, image of him/herself as a farmer and of what a 'good' farmer is (Ahnström et al., 2013; Beedell and Rehman, 2000; Burton and Paragahawewa, 2011; Lokhorst et al., 2011). Highly motivated farmers often consider nature as a 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). Others are mainly motivated by an agri-environmental payment or by optimising their farming system (Van Herzele et al., 2013).

In addition to personal motivation and preferences, farmers influence each other. They identify with other farmers and create their image of themselves as 'good farmer' in relation to others (Burton, 2004). The influence of farmers on farmers is bigger than the influence of environmentalists on farmers (Carr, 1988 in Beedell and Rehman, 2000). 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 also can constrain farmers to make such choices: various farmer networks do not aim at greening agriculture at all (Beedell and Rehman, 2000; Burton and Schwarz, 2013; Polman and Slangen, 2008).

If personal motivation and farmers influencing each other are key in achieving farming practices that deliver more public goods and ecosystem services than only food, then identifying governance arrangements that address those 'soft' aspects are of urgent interest. In this paper we identify social learning as an important mechanism in motivating farmers for environmental actions (Pahl-Wostl et al., 2007; Schusler et al., 2003). In addition, in this paper we propose that private, farmer-based governance arrangements may be effective in influencing farmer behaviour. To explore the potential of such private arrangements, we carry out a case study of the Dutch Skylark Foundation: 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 sustainable arable farming. In total 388 arable farmers

are member of the foundation, managing over 45.000 ha (8,7%) of arable land in the Netherlands (Veldleeuwerik, 2016). Interesting features of the Skylark approach are the focus on intrinsic motivation, tailor-made sustainability plans, social learning among farmers, the involvement of the food processing industry, and the attempts to get recognition for the farmers' sustainability efforts in CAP greening. In addition to the national approach of the Skylark Foundation, we investigate the efforts of one of the Skylark groups to collaborate with the Water board in their area to develop a governance arrangement for the improvement of water quality, based on land lease. Land lease is identified in this paper as an additional mechanism for the delivery of ecosystem services, as alternative to subsidy. This paper builds on the case study research in the EU H2020 research project PEGASUS. The research combined desk study with interviews (farmers, regional coordinator, water board, national coordinator) and workshops with stakeholders (Westerink and Van Doorn, 2017).

## **2. Case study: Skylark governance arrangements**

### **The national approach of social learning**

Skylark is a private initiative. The process for setting up the Skylark Foundation started in 2002 when the Heineken brewery asked a couple of its suppliers in Flevoland whether they could offer sustainable barley. These farmers however did not only grow barley, and suggested that they would need to consider the production methods of other crops as well, because of the need for crop rotation. They involved additional food industry companies: Suikerunie (sugar) and Van Liere (onions). With the aid of Rural Development Policy 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 parties in the supply chain. Currently, there are 40 regional groups of arable farmers, around 390 in total, and a range of food processors, suppliers and advisors is involved in Skylark. Skylark is funded by the companies in the chain as well as by the participating farmers. At times, public funding is acquired for specific projects, but the meetings of the regional groups and the composition of the farm plans is purely privately funded.

The investment of farmers in terms of time and money to be able to participate in Skylark is considerable<sup>1</sup>: this demonstrates their motivation to participate in the network, to learn from peers and to improve their sustainability achievements. In addition to the intrinsic motivation of the farmers, the demand from the food processing companies for sustainable produce is a motivator. Some of those companies require their producers to have a Skylark certificate. Lastly, the progressing environmental regulations are a driver for farmers to innovate towards more sustainable practices.

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<sup>1</sup> 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

The three basic 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 aims for sustainable land management in general. The Skylark foundation carries out its objectives according to 10 sustainability indicators (see Box 1). These indicators were discussed in 2003 in the first Skylark group of 10 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. 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.veldleuwerik.nl](http://www.veldleuwerik.nl)):

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| <ol style="list-style-type: none"> <li>1. Product value               <ol style="list-style-type: none"> <li>a. Economic sustainability</li> <li>b. Balance of revenues and costs</li> </ol> </li> <li>2. Soil fertility               <ol style="list-style-type: none"> <li>a. Soil structure</li> <li>b. Soil recovering capacity</li> </ol> </li> <li>3. Soil erosion               <ol style="list-style-type: none"> <li>a. Topsoil organic matter</li> <li>b. Cover</li> </ol> </li> <li>4. Nutrients               <ol style="list-style-type: none"> <li>a. Fertilisation</li> <li>b. Balance NPK</li> <li>c. Use of rest products</li> </ol> </li> <li>5. Crop protection               <ol style="list-style-type: none"> <li>a. Technique &amp; methods</li> <li>b. Products (pesticides/ herbicides)</li> </ol> </li> </ol> | <ol style="list-style-type: none"> <li>6. Water               <ol style="list-style-type: none"> <li>a. Water quality</li> <li>b. Water quantity for irrigation</li> </ol> </li> <li>7. Energy               <ol style="list-style-type: none"> <li>a. Machines/ fuel</li> <li>b. Storage/ climate</li> <li>c. Alternative sources</li> </ol> </li> <li>8. Biodiversity               <ol style="list-style-type: none"> <li>a. Above soil</li> <li>b. Soil biodiversity</li> </ol> </li> <li>9. Human capital               <ol style="list-style-type: none"> <li>a. Human capital</li> <li>b. Social capital</li> </ol> </li> <li>10. Local economy               <ol style="list-style-type: none"> <li>a. Relations with other farms</li> <li>b. Relations with other firms</li> </ol> </li> </ol> |
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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 participants must give attention to all 10 Skylark indicators within 4 years. Skylark participants are in general, for Dutch perspectives, the larger arable farms. Of all sustainability criteria, above ground biodiversity is the least popular, by lack of incentives and because the cost-revenue balance 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, enduring 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 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 for the awareness raising and intrinsic motivation of farmers. Attending regular group meetings is obligatory for participants of the foundation and a prerequisite for obtaining a ‘Skylark’ certificate for sustainable farming. In the Skylark regional groups, farmers discuss each other’s sustainability plans and at the end of the year the 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.

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

### **Collaboration of Skylark Midden Brabant Group with Water Board De Dommel**

In the area of De Dommel, where most farmers of the Skylark Midden Brabant group have their arable farm, water quality is below the norms of the Water Framework Directive (IHW, 2013). For a large part, this is due to intensive farming practices. 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 - both availability in times of drought and management of excess water - 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 use 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. This practice of 'land rotation' discourages farmers to invest in the land that they use short term, especially in soil organic matter, which makes them worry about the behaviour of the other farmers that have used that piece of land, and about its quality.

The case study Skylark group is aware that management of the arable fields influences the water quality and also the water quantity in the sense of amount of runoff and peak levels in the rivers, as well as ground water levels in periods of drought. According 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 stagnant water on someone's land, they blame it on poor land management. The group has an interest in raising soil organic matter: 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 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 organised courses to teach farmers how to dig a soil profile and how to assess soil structure.

Intensive arable production in the Midden-Brabant area is both a result and a driver of high land prices. These high land prices are a threshold for farmers to implement buffer strips. 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. Land is therefore key in designing governance arrangements for sustainable development of farming in the area both in the sense of land tenure and stewardship. Also the farmers of the Skylark Midden Brabant group consider land as an enabling factor in taking sustainability actions. For that reason they proposed De Dommel Water Board to work out a governance arrangement with land as incentive to improve water quality.

For the Skylark group Midden Brabant, the Water board is their main partner in the improvement of water quality, (indirectly) soil health, and the management of water quantity at landscape level. 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 and thus for implementing the EU Water Framework Directive in their area. 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 as well as reed fields in lower areas to improve water quality, in return for land elsewhere. For this, they wanted to develop a new governance arrangement for buffer strips. The envisioned buffer strips are much broader than the mandatory 0.25-150 cm. In addition, or as alternative, they proposed the layout of a reed field to filter the water that originates from a group of farms. They proposed the Water board that instead of a subsidy, they would like to be able to lease land from the Water board to compensate for the production space. The Water board owns 180 ha in the region. The idea could be extended with land that is owned by the province, municipalities, nature organisations and rural estates.

Using land as an incentive to promote provision of public goods and 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. However, by some Skylark participants in Midden-Brabant, land is considered to be more convincing than money. Some of them participate in the agri-environment scheme, in which buffer strips are also a management option, but they do not find the scheme very attractive because of the high number of rules.

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. For that reason they do not wish to further develop the idea. Even a workshop with Water board officials and the Skylark Midden Brabant group of farmers did not change their opinion. Nevertheless, the Water board is planning to change its land policy and to select land managers based on sustainable land management. What this encompasses, still needs to be developed. 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 have expressed an interest in getting to know the water system better. The Water board and the Midden Brabant Skylark group agree that information provision on water quality to the farmers has been poor. So far, the water board has provided information on levels of Nitrogen and Phosphorus in the larger water ways, but not on pesticide residues or on aquatic biodiversity. In addition, the Water board monitors the state of the larger water ways, while the farmers are interested in more specific information relating to their land and the effects of their farming practices. Farmers wish for a more precise monitoring system to be able to locate problems and match solutions such as buffer strips to sites where they make sense.

### 3. Discussion and conclusions

This case study suggests that knowledge and motivation of farmers are key factors for sustainable delivery of public goods and ecosystem services. The Skylark case shows that participating farmers are motivated to learn from each other and copy good practices. In Midden-Brabant the regular meetings and the knowledge provided by Skylark have enhanced understanding among participating farmers of the relations between farm management, soil and water. Biodiversity is a less popular indicator to work on, because biodiversity, as public good, is not valued economically. Nevertheless, Skylark rules prescribe to give attention to biodiversity at least once in four years. To improve the delivery of ecosystem services that are also public goods, such as landscape amenity and biodiversity, the social learning strategy could benefit from involving citizens and environmental groups. So far, most Skylark Midden Brabant farmers have very limited interaction with citizens.

However, as a group the farmers have shown to be able to collaborate with authorities and to design new solutions together. The case of the Midden-Brabant group points at a number of issues that must be relevant to intensive arable farmers elsewhere in Europe, who similarly aim to improve their delivery of public goods and ecosystem services. 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 public goods and ecosystem services. Therefore, governance arrangements are needed that address land as production factor and identity issue, and not only as a financial issue. Secondly, there is a lack of direct feedback to farm management actions from environmental data. A fine-grained monitoring of public goods and ecosystem services could provide farmers with feedback to their actions.

The Skylark case illustrates the complicated relations between motivating farmers for delivering more ecosystem services and monitoring of results. Skylark has chosen an inclusive approach based on stimulating action, in which all arable farmers who wish to improve can participate. For this reason, no targets are set 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, at the moment, impossible. Only indirect indications of impact 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 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, predicting outcomes based on actions would be extremely hard. Much more monitoring would need to be done at farm level to get insight into impacts of the Skylark approach (Kuneman, 2017). However, even then linking measures to results would be very difficult, not in the least because of the complexity of the 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 could support Skylarks ambitions to motivate farmers to improve their practices. Seeing results can be a good motivator for environmental behaviour (Burton and Schwarz, 2013). However, the case study of the Skylark group Midden Brabant suggests that farmers do not always consider monitoring of environmental indicators as their task. On the one hand, most farmers do not monitor soil conditions, while on the other hand, 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 other aspects on their farms.

One of the strong features of the Skylark approach is that farmers are motivated to move towards sustainability by their peers and their supply chain partners. In addition, within groups of farmers social capital is built, which enables social learning, innovation and collaboration with others. Therefore the governance arrangement of regional farmer groups, individual sustainability plans and social learning is expected to be an effective strategy. The private Skylark governance arrangement is effective in motivating farmers because it is an organisation of farmers. Farmers listen to farmers. In addition, it is a self-organised organisation: the Skylark rules are created in the group and are not imposed from outside. Participation farmers voluntarily join and even pay a fee to participate. If such private initiatives emerge, they can greatly contribute to the delivery of more public goods and ecosystem services from agriculture. However, such initiatives do not always evolve spontaneously, and if they do, they may benefit from (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 public goods and ecosystem services from agriculture.

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