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## Promoting nature conservation by Dutch farmers: a governance perspective<sup>†</sup>

H. A. C. Runhaar <sup>a,b</sup>, Th. C. P. Melman<sup>c</sup>, F. G. Boonstra<sup>c</sup>, J. W. Erisman<sup>d,e</sup>, L. G. Horlings<sup>f</sup>, G. R. de Snoo<sup>g</sup>, C. J. A. M. Termeer<sup>h</sup>, M. J. Wassen<sup>b</sup>, J. Westerink<sup>c</sup> and B. J. M. Arts<sup>a</sup>

<sup>a</sup>Forest and Nature Conservation Policy Group, Wageningen University and Research, P.O. Box 47, 6700 AA, Wageningen, The Netherlands; <sup>b</sup>Copernicus Institute of Sustainable Development, Utrecht University, P.O. Box 80,115, 3508TC, Utrecht, The Netherlands; <sup>c</sup>Alterra, Wageningen University and Research, P.O. Box 47, 6700 AA, Wageningen, The Netherlands; <sup>d</sup>Athena Institute, VU Amsterdam, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands; <sup>e</sup>Louis Bolk Institute, Hoofdstraat 24, Driebergen 3972 LA, The Netherlands; <sup>f</sup>Rural Sociology Group, Wageningen University and Research, P.O. Box 8130, 6700EW, Wageningen, The Netherlands; <sup>g</sup>Institute of Environmental Sciences, Leiden University, P.O. Box 9518, Leiden 2300 RA, The Netherlands; <sup>h</sup>Public Administration and Policy Group, Wageningen University and Research, P.O. Box 8130, Wageningen 6700 EW, The Netherlands

### ABSTRACT

Reconciling productive agricultural practices with nature conservation is not only an ecological challenge, but also a demanding matter of governance. This paper analyses the potential as well as the limitations of various governance arrangements, and explores ways to enhance the governance of nature conservation in agricultural landscapes. We assume four conditions to contribute to the performance of these arrangements: farmers should be motivated, demanded, enabled, and legitimized to participate in arrangements that promote nature conservation by farmers. We analyse 10 distinct Dutch governance arrangements in the period 2000–2016, including agri-environment schemes but also privately initiated arrangements. The arrangements target a large but unknown share of farmers and farmlands, but nature conservation ambition levels are generally low to moderate. The expected low-to-moderate performance is associated with a low-to-moderate motivation, demand, and ability. Underlying are stronger forces driving towards intensification and problems farmers face in recuperating the cost of nature conservation. New greening requirements in the EU Common Agricultural Policy and in agri-food supply chains are first, cautious steps addressing these fundamental drivers of ecological degradation. More ambitious greening requirements may contribute to a higher motivation and ability of larger groups of farmers to implement nature conservation measures.

### KEYWORDS

Nature conservation;  
biodiversity; agriculture;  
governance; the Netherlands

## Introduction

In the past decades, many Western European agricultural landscapes have been transformed with often detrimental consequences for the abundance and diversity of species. Agricultural intensification, for instance, results in increased mechanization, more frequent mowing, increasing livestock densities, the removal of landscape elements such as hedges and hedgerows,

lowering of groundwater levels, intensified nitrogen and phosphorus emission and deposition, and intensified use of pesticides. These developments in turn contribute to disturbance, loss of habitat, and eventually loss in flora and fauna (Baudron & Giller, 2014; EEA, 2010; Geiger, Bengtsson, Berendse, Goedhart, & Inchausti, 2010; Henle, Alard, Clitherow, Watt, & Young, 2008; Kleijn, Baquero, Clough, West, & Yela,

**CONTACT** H. A. C. Runhaar  [hens.runhaar@wur.nl](mailto:hens.runhaar@wur.nl); [h.a.c.runhaar@uu.nl](mailto:h.a.c.runhaar@uu.nl)

<sup>†</sup>Affiliation where the research was conducted: Wageningen University and Research, The Netherlands.

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2006; Ollerton, Erenler, Edwards, & Crockett, 2014; Sayer, Sunderland, Ghazoul, Van Oosten, & Buck, 2013; Stoate, Boatman, Borralho, De Snoo, & Eden, 2001; Van Vliet, 2013; Warren & Bourn, 2011).<sup>1</sup> Nowadays, the conservation status of many species and habitats in agricultural landscapes such as grasslands and croplands is unfavourable (EEA, 2015a).

The trend of continuous intensification in Western Europe poses serious challenges to the *governance* of nature conservation in agricultural landscapes, that is, the interventions deliberately initiated in order to prevent, reduce, or mitigate harmful effects of agriculture on species diversity and abundance, and to promote positive effects. In many countries, agri-environment schemes (AES) are implemented for nature conservation by farmers, providing them with publicly funded financial compensation for conservation measures such as reduction in fertilizer and herbicides in field margins for botanical values, for preserving landscape elements, or for the protection of specific species such as meadow birds (Grüebler, Schuler, Horch, & Spaar, 2012). But there are also private forms of governance of nature conservation by farmers, such as cooperation between nature conservation NGOs and farmers or biodiversity standards requested by companies in agricultural supply chains as part of their Corporate Social Responsibility programmes (Curran & Moran, 2004; Friedmann & McNair, 2008; Penker, Mühlmann, & Muhar, 2014; Targetti, Herzog, Geijzendorffer, Pointereau, & Viaggi, 2016).

The reported ongoing decline in biodiversity, flora and fauna in agricultural landscapes raises questions about its governance: what has been achieved thus far and what not (and why), but also how nature conservation governance can be made more effective. Most studies that address these questions start from an *ecological perspective*, for example, evaluate AES on their ecological consequences (e.g. Kleijn et al., 2006) or develop guidelines for conservation management based on ecological research (e.g. Erisman et al., 2016; Guilherme & Miguel Pereira, 2013; Pelosi, Bonthoux, Castellarini, Ladet, & Balent, 2014). Fewer studies, however, start from a *governance perspective*, that is, focus on the initiatives of, and interactions between, farmers, governments, and other actors, and how these affect farmers' choices and behaviour (e.g. Buizer, Arts, & Westerink, 2015; De Snoo, Herzon, Staats, Schwarz, & Musters, 2013; Termeer, Stuiver, Gerritsen, & Huntjens, 2013). A governance

perspective shifts attention away from conservation measures to behavioural change and to the actors involved and how they interact. Such a perspective also widens the scope by not only including public policies such as AES but also private initiatives. Finally, by employing a governance perspective, we will provide insight into the conditions that affect the performance of nature conservation governance – farmers do not automatically adopt conservation measures or participate in AES. In this way, our governance perspective complements an ecological and agronomic perspective.

This paper has four aims. The first aim is to explore and analyse distinct 'governance arrangements' aimed at promoting nature conservation in agricultural landscapes, that is, particular configurations of objectives, actors, and their interactions. The second aim is to assess the performance of these governance arrangements in terms of participation of farmers and nature conservation ambition levels. The ecological performance of governance arrangements is outside the scope of this paper, as this also depends on exogenous factors such as the presence of predators. The third aim is to understand how arrangements reinforce or weaken other arrangements. The fourth and final aim is to identify the main obstacles involved in nature conservation governance and explore ways to overcome them. The paper will not analyse in depth *why* arrangements have emerged and *why* they are as they are (see, e.g. Börzel & Risse, 2010; Feindt, 2010), but rather how they *perform*. The empirical focus in this paper is on the Netherlands, where species, habitats, and biodiversity in agricultural landscapes continue to be threatened (e.g. CBS, 2015; CBS et al., 2012; EEA, 2015a, 2015b). The Netherlands is an interesting case, because of the relatively large population density, a relatively high land use of agriculture (covering over 50% of the ground surface of the Netherlands (CBS et al., 2015), a relatively long tradition in financial compensations for nature conservation measures, and the recent renewal in AES policy of which a larger responsibility for groups of farmers for achieving results is characteristic.<sup>2</sup>

The remainder of this paper unfolds as follows. In Section 2, we will present our analytical framework and method. In Section 3, we will analyse and evaluate distinct governance arrangements for nature conservation in Dutch agricultural landscapes. In Section 4, we will wrap up with our main conclusions and some reflections.

## Analytical framework and method

### Governance and governance arrangements

Governance refers to the ways in which both public and private actors (e.g. companies, NGOs, and other stakeholders) act and interact in an attempt to solve societal problems (Weber & Christophersen, 2002). Governance therefore is more than public policy (Driessen, Dieperink, van Laerhoven, Runhaar, & Vermeulen, 2012; Mol, 2016).

Conceptually, governance can be characterized in terms of 'arrangements': particular combinations of objectives, actors, and the ways in which these actors interact and try to influence each other. Interactions can be top-down with public authorities in a dominant role; interactive with public authorities, companies and/or NGOs interacting on a more horizontal level; and bottom-up with companies, NGOs, and citizens in a leading position (Arts, Leroy, & van Tatenhove, 2006; Hysing, 2009; Lowndes & Skelcher, 1998).

In this paper, we will use the framework developed by Driessen et al. (2012), which distinguishes between five governance 'modes' (see Figure 1; see Supplementary Online Material, Appendix 1 for a detailed description). We will identify and classify nature conservation governance arrangements according to the five 'modes'. Specific attention will be paid to the *framing* of nature conservation objectives in the arrangements. These objectives can be framed very differently, as Admiraal, Musters, and de Snoo (2016) show. From environmental governance literature, we have learnt that environmental issues are more difficult to govern when they are narrowly defined and not linked to values or objectives in the sectors or practices at issue (Cashmore & Wejs, 2014; Uittenbroek, Janssen-Jansen, & Runhaar, 2013).

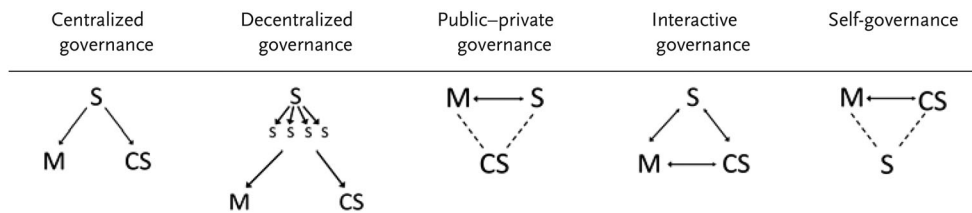
### Evaluating governance arrangements

Governance arrangements will be evaluated in the light of their objectives (cf. Runhaar, Dieperink, & Driessen, 2006; Van Gossum, Arts, & Verheyen, 2012). These objectives will be defined in terms of the *scope* of the arrangement (how many farmers are targeted and how many participate in the arrangement?) and in *qualitative* terms (how ambitious are objectives in terms of the gap between the objective and the existing situation, or, how difficult is it to achieve the objectives?)

The performance of governance arrangements in terms of the extent to which they contribute to the achievement of their objectives is assumed to depend on the extent to which they provide conditions for farmers to participate in the arrangement and incorporate nature conservation in their practices.<sup>3</sup> We assume that four conditions should be provided: farmers should be *motivated*, *demand*, *able*, or *enabled*, and *legitimized* to participate and act (compare: Hemerijck & Hazeu, 2004). Whether participation subsequently contributes to nature conservation depends not only on the conditions provided, the ambitions of the governance arrangement, but also on exogenous factors (e.g. the presence of predators).

The four conditions are derived from various bodies of literature about behavioural change by farmers or other subjects of environmental governance, and includes literature from policy sciences, planning, organizational studies, educational studies, management, and social psychology (references in the explanation below). Motivation and ability are primarily characteristics of farmers, whereas demand and legitimation originate from other actors. In addition, motivation and demand provide reasons for implementing nature conservation measures, whereas ability and legitimation are facilitating or supporting factors. Figure 2 visualizes this framework.

Motivation to change behaviour (in our case, this means participating in a nature conservation governance arrangement) is closely related to a sense of ownership of nature conservation (Buizer et al., 2015; Lokhorst, Staats, van Dijk, & de Snoo, 2011). A demand for sustainable products may form an external incentive that creates a motivation to change (Mitro-kostas & Apostolakis, 2013). Motivation and ability to change behaviour are often discussed in combination (e.g. Adler & Kwon, 2002). Ability is also often referred to in terms of capacities or capabilities (e.g. Termeer, Dewulf, Breeman, & Stiller, 2015) and refers to being in possession of resources and skills, needed for nature conservation. A particular type of resource that is often discussed in literature about nature conservation by farmers is social capital, that is, shared norms and relations of trust among farmers and other actors as preconditions for cooperation and collective action (Pretty, 2008). In the Netherlands, cooperating groups of farmers in so-called environmental cooperatives are often considered as important for building social capital (e.g. Nieuwenhuizen, Westerink, Gerritsen, Schrijver, & Salverda, 2014). Social capital not



**Figure 1.** Five modes of governance based on their specific interaction patterns.

Note: S: state (or public authorities), M: market, CS: civil society; →: dominant role; ↔: equivalent role; - - -: background role.

Source: Driessen et al. (2012, pp. 146–147).

only enables farmers to implement nature conservation measures but may also motivate them to do so. Demand encompasses (a) an actor who is asking for behavioural change (e.g. a government or an NGO (representing (parts) of the society)) and (b) the coerciveness of the request (e.g. a requirement in a contract is more binding and coercive than agreements in a covenant and hence leave less opportunities to avoid or weaken the required behavioural change) (Mees et al., 2014). Finally, the extent to which behavioural change is legitimized has both a legal and a normative dimension (Hemerijck & Hazeu, 2004; Mees et al., 2014). Legally, governmental regulations may inhibit particular forms of conservation (Buizer et al., 2015). Normatively, stakeholders may influence what is considered appropriate or acceptable in terms of production (Hall, Lacey, Carr-Cornish, & Dowd, 2015). The exact meaning and importance of the governance conditions may vary for different governance arrangements.

The extent to which governance arrangements can provide the four conditions is expected to depend also on characteristics of the farmers themselves (e.g. intrinsic motivation related to self-identity) as well as

on contextual factors (e.g. physical constraints to the implementation of nature conservation measures). See Table 1 for an operationalization of the four conditions and how they may be influenced by governance arrangements, characteristics of farmers, and contextual factors.

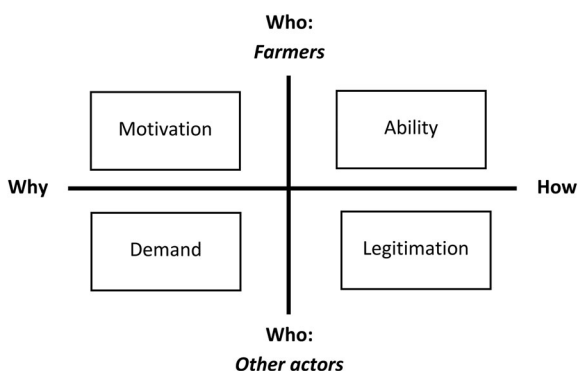
Governance arrangements may be complementary if an arrangement contributes to a condition not addressed by another arrangement (cf. Driessen et al., 2012). Arrangements may also weaken each other, for example, when top-down regulations limit bottom-up initiatives in experimenting with new measures for nature conservation (Buizer et al., 2015).

Figure 3 visualizes our analytical framework to identify and classify explanations for the performance of nature conservation arrangements and to identify dilemmas and trade-offs in nature conservation governance. The arrows represent influences. In practice, we expect feedback loops between the elements of the framework; however, these fall outside the scope of this paper and are therefore disregarded.

### Method, data collection, and analysis

We focus on nature conservation governance arrangements related to dairy farming and arable farming. These two forms of agriculture encompass the largest share of the total agricultural landscape (CBS et al., 2015).

For the identification of governance arrangements (first research aim), we tapped from our own knowledge. The author team consists of 10 carefully selected scientists with ecological and governance expertise regarding nature conservation governance in the Netherlands. Supplementary desk research (formal policy documents, refereed scientific publications, professional publications, etc.) was conducted in order to explore other arrangements and to characterize the arrangements identified. The focus was on



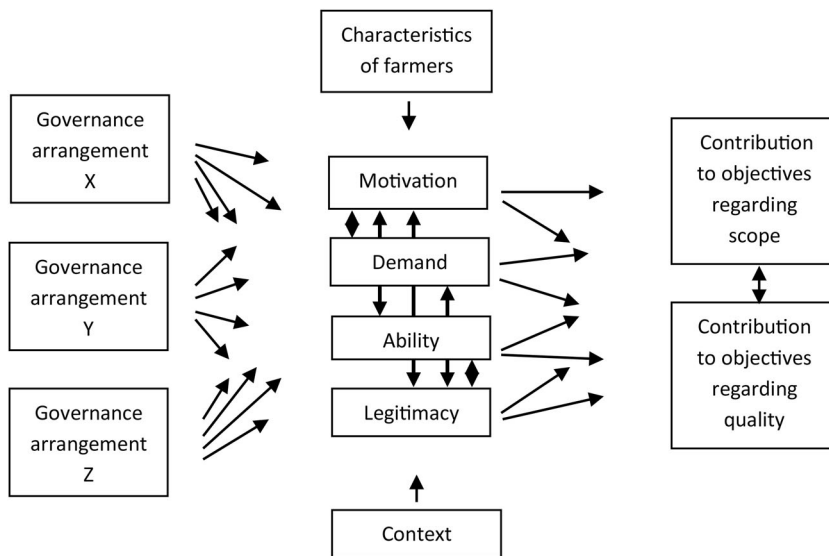
**Figure 2.** Conditions for farmers to adopt and implement nature conservation measures. Source: authors.

**Table 1.** Operationalization of conditions and examples of factors influencing them.

Condition	Operationalization	Factors influencing conditions
Motivation	Extent to which farmers are motivated to participate in a nature conservation governance arrangement	<p><i>Governance arrangements</i></p> <p>Recognition; rewards; cooperation; degree of autonomy in choosing and implementing measures; visible results</p> <p><i>Context</i></p> <p>Cost–benefit ratio of nature conservation measures; place (natural characteristics); recognition from neighbouring citizens; behaviour by other farmers; social capital; impact of measures on primary processes; duty</p> <p><i>Characteristics of farmers</i></p> <p>Values (intrinsic motivation); self-identity (personal drive); education; farming styles and systems; training and education; interest; enjoyment; satisfaction</p>
Demand	Extent to which farmers are requested or even obliged to participate in a nature conservation governance arrangement	<p><i>Governance arrangements</i></p> <p>Environmental/market regulations; conditions in contracts with customers; pressure from nature conservation NGOs; consumer strategies</p> <p><i>Context</i></p> <p>Other policies; public opinion about agriculture (social licence to produce); social capital</p> <p><i>Characteristics of farmers</i></p> <p>(Religious) values; economic considerations</p>
Ability	Extent to which farmers are capable to act within, or enabled to act by, a nature conservation governance arrangement Capacity to act: availability of resources and skills for nature conservation	<p><i>Governance arrangements</i></p> <p>Resources made available (time, money (subsidy; product price), information about benefits of nature conservation; communities of practice (farmers and others); learning, research</p> <p><i>Context</i></p> <p>Availability of new business models (e.g. multifunctional agriculture); physical opportunities or restrictions; market conditions; place (natural characteristics); support from e.g. NGOs</p> <p><i>Characteristics of farmers</i></p> <p>Competences; knowledge; farming styles and systems; farm economy; finance</p>
Legitimacy	Extent to which farmers are allowed to participate in, and act within, a nature conservation governance arrangement This includes permission to implement nature conservation measures	<p><i>Governance arrangements</i></p> <p>Degrees of freedom within contracts with customers or in legislation; strictness of legislation and standards; indirect effects of adjacent policies; framing of agriculture in policy and communication</p> <p><i>Context</i></p> <p>Prevailing social norms ('social licence to operate'); room for manoeuvre in (changing) legislation</p> <p><i>Characteristics of farmers</i></p> <p>Norms within the sector (group pressure); cultural setting; social control; innovativeness</p>

Sources: Buizer et al. (2015), Dedeurwaerdere et al. (2016), De Snoo et al. (2013), Driessen (2005), Hall et al. (2015), Horlings (1994), Lokhorst et al. (2011), Meijer, Catacutan, Ajayi, Sileshi, and Nieuwenhuis (2015), Mitrokostas and Apostolakis (2013), Pretty (2008), Runhaar et al. (2015), Smits, Driessen, and Glasbergen (2008), Van Dijk, Lokhorst, Berendse, and de Snoo (2015).





**Figure 3.** Analytical framework.

arrangements that have been in use since 2000, in order to keep the data collection feasible. We identified a total of 10 typical arrangements.

The assessment of the performance of governance arrangements (second research aim) was measured against (a) the *ambitions* of the arrangement at issue regarding scope and quality, and (b) based on the extent to which these objectives are *achieved*, based on our assessment of the four governance conditions. Expert judgement formed the basis of our assessments. Each author had expertise regarding at least one of the governance arrangements that we identified. The assessments were made during two workshops involving the largest part of author team, which allowed us to evaluate arrangements in a systematic and comparative manner (compare: Mees et al., 2014). The assessments were the outcomes of a deliberative process, where the exchange of arguments resulted in a further refinement of indicators and factors affecting conditions (see Table 1). Per arrangement, we started assessing the *governance conditions*. Subsequently, the *performance* was assessed. Prior to the workshops, we collected data in order to inform the assessments from scientific literature, policy evaluations, and research reports. Because data quality and availability differed along the arrangements we identified, we also used the results from 15 semi-structured interviews with 17 farmers and their representatives and sector specialists working at universities and research institutes

(see Supplementary Online Material, Appendix 2). Data sources are presented in Supplementary Online Material, Appendix 3.

The performance and presence of the four governance conditions were assessed on a 3-point scale (scope: *large – moderate – small*; quality: *high – moderate – low*; conditions: *high – moderate – low*). Also, an indication was given of the variability (*high – low*).

The analysis of how governance arrangements interact (third research aim) and the identification of the main obstacles in the governance of nature conservation in agricultural landscapes and the exploration of ways to improve existing governance arrangements or develop alternative arrangements (fourth research aim) were partly based on desk research (e.g. Buizer et al., 2015) but primarily on our own analysis and discussions during the two workshops.

### Analysing and evaluating nature conservation governance arrangements in Dutch agricultural landscapes

In this section, we will discuss governance arrangements for nature conservation in the Netherlands, organized according to the five governance modes described in Section 2.1. We identified 10 arrangements. The overview is not exhaustive, but encompasses the typical arrangements identified within each governance mode. Note that the distinction between governance arrangements is an analytical

one – in practice, arrangements sometimes originate from one policy (e.g. arrangements 2 and 3). Centralized and decentralized governance arrangements are discussed in combination, because these arrangements started as centralized modes but were gradually decentralized.

The governance arrangements are briefly characterized and evaluated in Section 3.2. More detailed analyses can be found in Supplementary Online Material, Appendix 3. Although the focus is on contemporary arrangements, we will start with a brief history of the governance of nature conservation in Dutch agricultural landscapes in order to provide the necessary contextual knowledge.

### *Governance of nature conservation in Dutch agricultural landscapes: a brief history*

In 1975, the first public policy was decided upon that aimed to stimulate farmers to implement nature conservation measures. Two approaches were taken. One, 100,000 hectares of nature conservation area were to be realized by taking agricultural land out of production, to be transferred to organizations such as the State Forestry Service. These nature reserve areas often have kept the characteristics of historical agricultural landscapes (and often are farmed out), but with the aim to preserve associated species. Two, the 1975 policy envisaged another 100,000 hectares of farmland where farmers would implement nature conservation measures. From the start, the emphasis was on conservation of meadow birds. An AES was developed in order to be able to compensate farmers for the costs for implementing nature conservation measures and for income losses.

These two approaches can be considered as two distinct centralized governance arrangements, which over time changed into decentralized governance arrangements due to a transfer of responsibilities from state level to provinces (see Section 3.1 and Supplementary Online Material, Appendix 3).

Due to the lack of success of the 1975 policy – farmers were not much inclined to sell their lands or to participate in nature management activities – a new, radically different approach to nature conservation emerged (Arnouts, 2010). Instead of integrating agriculture and nature conservation, this approach was based on the idea of spatially separating agricultural and nature areas because of the detrimental effects of modern agricultural on biodiversity (i.e. 'land sparing'). Furthermore, the approach focused

on the development of new, 'wild' nature and the importance of connecting natural areas. However, instead of replacing the old governance arrangements of farmed nature reserve areas and AES, the different approaches were merged in one new Nature policy plan (1990). The plan introduces the concept of an ecological main infrastructure (EHS), similar to the Natura2000 network in Europe, based on the island biogeography theory and the meta-population theory (Jurgens, 1993). The EHS should consist of the traditionally farmed nature reserve areas, AES areas, other existing nature areas, and 50,000 hectares of new nature area, to be connected via green corridors (Boonstra, 2004).

In spite of the increased government funding, the implementation of the EHS copes with many the same problems as the 1975 policy. Many farmers still refuse to sell their lands and are reluctant to engage in AES. In a reaction, in 2000, a new subsidy scheme was implemented that formally recognizes farmers and private land owners as nature managers and breaks with the past tradition of transferring agricultural land taken out of production automatically to formal reserve area management organizations (Arnouts, 2010). However, the concept of the EHS still remains central to Dutch nature policy.

Next to the above government-led, (de)centralized governance arrangements, other governance arrangements have emerged around nature conservation in agricultural landscapes. Farmers have organized themselves into agri-environmental cooperatives since the 1980s but particularly since the 1990s, partly in response to top-down governance and in an attempt to have more responsibilities and freedom in implementing nature conservation measures (see Section 3.5). Also other forms of self-governance are observed: for instance, nature conservation NGOs cooperating with farmers and initiatives from within agri-food supply chains. Below, we will discuss these and other arrangements in more detail.

### *'Centralized' and 'decentralized' governance arrangements*

We identified four arrangements that classify as centralized or decentralized governance arrangements. Arrangement 1 consists of the prescribed habitat measures in the greening and cross-compliance conditions to the income support payments of EU Common Agricultural Policy (CAP). The greening conditions include 5% Ecological Focus Areas for arable



**Table 2.** Overall evaluation.

	(De)centralized governance				Public–private governance	Interactive governance		Self-governance		
	<b>Arr. 1: Prescribed habitat measures</b>	<b>Arr. 2: Farmed nature reserve areas</b>	<b>Arr. 3: AES (until 2015)</b>	<b>Arr. 4: Fauna fund</b>	<b>Arr. 5: 'New style' AES (as from 2016)</b>	<b>Arr. 6: Place-based partnerships</b>	<b>Arr. 7: Farming for Nature</b>	<b>Arr. 8: Agri-environmental cooperatives (until 2015)</b>	<b>Arr. 9: NGO-individual farmer cooperation</b>	<b>Arr. 10: Supply chain governance</b>
<b>Characteristics</b>										
Framing of nature conservation	General requirements regarding habitat	Both specific species and habitat types	Both specific species and habitat types	Specific species	Both specific species and habitat types	Specific species, or nature conservation as part of a broader set of objectives	Nature conservation part of a broader set of objectives	Very different across ECs, usually only one aspect of broader set of objectives	Specific species	Nature conservation as part of a broader set of objectives
Steering philosophy	Regulations and penalties	Zoning, farming out contracts, compensation	Voluntary cooperation, compensation	Voluntary cooperation, compensation	Voluntary cooperation, contracting/ negotiations, compensation	Voluntary cooperation, negotiation about objectives, compensation and support	Initiated by researchers and farmers, voluntary cooperation and intensive (financial) support; allowed as pilot	Initiated by farmers, voluntary cooperation, compensation and support	Initiated by NGOs, voluntary cooperation, support by acquisition of funding and knowledge; knowledge sharing among participating farmers	Initiated by 'upstream' companies; bonus-malus system, based on compliance with sustainability criteria; voluntary participation
Geographical focus	No specific geographical focus	Specific areas, interesting from an ecological perspective	Specific areas, interesting from an ecological perspective	No specific geographical focus	Specific areas, interesting from an ecological perspective	Specific areas, interesting from a landscape/ ecological perspective	Specific areas, interesting from a landscape/ ecological perspective	No specific geographical focus (but participation differs substantially; see under Scope)	Specific areas, interesting from an ecological perspective	No specific geographical focus
<b>Performance</b>										
Scope	Moderate (var.: low)	Small (var.: high)	Moderate (var.: low)	Small (var.: high)	Moderate (var.: low)	Small (var.: low)	Small (var.: low)	Moderate (var.: high)	Small (var.: unknown)	Unknown but potentially large (var.: high)
Quality	Low (var.: low)	Moderate (var.: high)	Low (var.: low)	Moderate (var.: high)	Moderate (var.: low)	Moderate (var.: high)	Moderate (var.: low)	Low (var.: unknown)	Moderate (var.: unknown)	Probably low (var.: unknown)
<b>Governance conditions</b>										
Motivation	Low (var.: high)	High (var.: low)	Moderate (var.: low)	Moderate (var.: low)	Moderate (var.: low)	Moderate (var.: high)	Low (var.: low)	Moderate (var.: high)	Low (var.: unknown)	Not clear yet (var.: unknown)
Demand	Moderate (var.: low)	Moderate (var.: low)	Low (var.: low)	Low (var.: low)	Low-moderate (var.: high)	Low (var.: low)	Low (var.: high)	Low (var.: high)	Low (var.: low)	Potentially high (var.: high)
Ability	High (var.: low)	High (var.: low)	Moderate (var.: high)	Moderate (var.: high)	Moderate (var.: high)	Moderate (var.: high)	High (var.: high)	Moderate (var.: high)	High (var.: high)	Unknown (var.: unknown)
Legitimacy	High (var.: low)	Moderate (var.: low)	Moderate (var.: high)	Moderate (var.: high)	Moderate (var.: high)	High (var.: low)	Low (var.: low)	Moderate (var.: low)	High (var.: low)	Unknown (var.: unknown)

farms and maintenance of permanent grassland. The cross-compliance conditions include compliance with national and regional regulations regarding, for instance, the protection of woody landscape elements and maintenance of ditches (Sanders & Westerink, 2015).<sup>4</sup> These regulations promote nature conservation by protecting habitat or by requiring expansion of natural habitat in agricultural landscapes. Arrangement 2 consists of farmed nature reserve areas: agricultural areas that are bought by the government with the aim to conserve and protect particular species associated with the traditional agricultural landscape, for example, meadow birds on grasslands (see Section 3.1). Arrangement 3 is the AES system in its form until 2015. As from 2016, the AES system is substantially revised. A much larger role now is given to cooperating groups of farmers ('farmer collectives'). From a governance perspective, the 'new style' AES now classifies as a form of 'public-private governance' (see Section 3.3). Arrangement 4 is the so-called Fauna fund, which compensates farmers for damage caused by a specified list of species that are protected or otherwise considered special species. The spatial distribution of the four arrangements differ, whereas arrangements 1 and 4 in principle apply to all agricultural landscapes in the Netherlands, arrangements 2 and 3 concentrate on specific, designated areas that are interesting from an ecological perspective (e.g. the presence of relatively large populations of meadow birds).

The main differences between these arrangements relate to the framing of conservation objectives (arrangement 1 focuses on habitat in broad terms, arrangements 2–4 focus on particular habitats and/or species), the voluntariness of the arrangement (participation is not required in any arrangement but in arrangement 1, where participation is a condition for income support), the instruments employed (arrangement 1: legislation and penalties; arrangement 2: legislation, spatial planning, purchasing, performance agreements, and subsidies; arrangements 3 and 4: primarily subsidies/compensation), and the level of stakeholder autonomy (low only in the case of arrangement 1). See Supplementary Online Material, Appendix 3, for a more detailed description and characterization, including an indication of how the arrangements deviate from the 'ideal typical' characterization in the framework by Driessen et al. (2012) (see Figure 1 and Supplementary Online Material, Appendix 1).

The performance of the arrangements differs. The scope, that is, the share of farmers who are targeted

or participate is moderate in the case of arrangements 1 and 3 and low in arrangements 2 and 4. The quality, that is, ecological ambition levels and the extent to which these are achieved ('quality') shows an opposite picture, which suggests that there is a trade-off between the two performance indicators. Quality is low in the case of arrangement 1 because requirements are either low or can be implemented flexibly. Ecological effects of AES (arrangement 3) were limited, mainly because of a low motivation of farmers to choose for measures that were expected to have a large ecological impact but also would have a substantial impact on farming practices. For instance, regarding meadow birds, nest protection was relatively often chosen, in contrast to measures that benefit meadow birds in the chick-rearing phase (Van Vliet, 2013). In nature reserve areas (arrangement 2) where traditional agricultural landscapes and their associated species are being maintained, ecological objectives are relatively ambitious. However, even there, the ecological results have been moderate. For instance, only slightly more than 10% of grassland reserve areas in the Netherlands meet all the conditions required for the Black-tailed Godwit (Melman, Teunissen, & Guldmond, 2016b). The Fauna fund (arrangement 2) also has a moderate performance in terms of quality. Compensation is eligible for a preselected list of species only and a threshold value is applied. We do not know what share of total damage is claimed and to what extent farmers take measures themselves to chase animals that cause damage. We think, however, that most farmers will prefer claiming damage rather than choosing these alternatives. Illegal killing seems to have been reduced substantially. For example, illegal killing of Badgers on agricultural fields has dropped substantially since the 1960s (e.g. Runhaar, Runhaar, & Vink, 2015) because this is no longer socially acceptable (legitimate). The most important indicator is that the favourable conservation status is not in danger, which seems to be the case for most species in Fauna fund regulations.

For the arrangements 1, 3, and 4, the low-to-moderate performance correlates with a low-to-moderate motivation of farmers to participate in the arrangements and a moderate-to-low demand to do so. Legitimacy scores moderate on average; this governance condition does not seem to form a major obstacle for farmers to participate in (de)centralized governance arrangements. Ability is assessed as moderate in arrangements 3 and 4, as there are indications

that recuperation of the full costs of nature conservation measures is difficult (which goes at the expense of motivation). See Supplementary Online Material, Appendix 3 for an elaborated evaluation.

### ***'Public-private' governance arrangements***

Only the revised AES arrangement (arrangement 5) classifies as 'public-private governance'. The AES arrangement has been strongly revised in view of its criticized performance. Informed by scientific studies (e.g. Kleijn, 2012), various changes have been made which address part but not all of the criticisms. Nature conservation objectives are still centred round specific species, but now limited to species for which the Netherlands bear international responsibility following the EU Bird and Habitat Directive. Important changes include (a) a stronger focus on ecological 'core areas'; (b) a decentralization of contracting responsibilities to the 12 provinces; and (c) the required organization of farmers into 40 'farmer collectives' that develop and propose bids to the provinces and that are responsible for contracting farmers and for enforcing contracts. Participation by farmers, however, is still voluntary. Compensations remain to be the main instrument. Yet, mainly due to the new contracting relationships (which provide cooperatives a larger degree of freedom in developing plans), the arrangement now (predominantly) classifies as public-private (see Supplementary Online Material, Appendix 3, Table A3).

The arrangement went into force on 1 January 2016. In view of the changes made as compared to the old system and how that was evaluated (see Supplementary Online Material, Appendix 3, Table A2), we expect that the performance of the 'new style' AES will be slightly higher than the old AES, not in terms of scope but in terms of quality. This is partly explained by a stricter focus on areas that are promising from an ecological perspective (making this arrangement a bit more demanding), and partly because we expect a slight increase in motivation to participate and contribute to conservation objectives.

### ***'Interactive' governance arrangements***

We identified two arrangements that fit within the 'interactive governance mode' category. Arrangement 6 consists of place-based partnerships between farmers, agri-environmental cooperatives (groups of farmers; see under arrangement 8), nature

conservation or landscape restoration NGOs, local and provincial governments, and other stakeholders within a particular region. Often, these partnerships are initiated by NGOs, agri-environmental cooperatives, or local or provincial governments. The partnerships are characterized by their regional scope and bottom-up way of working. Government involvement at the state level is usually limited to funding. Goals are formulated in a broad, integrated way, and include landscape quality, biodiversity, recreational access, cultural artefacts, and nature conservation. In Supplementary Online Material, Appendix 3, we discuss a partnership in detail, as an example. In this example, nature conservation is framed as 'green and blue services' provided by farmers. In this partnership and in several other partnerships that were initiated as pilot projects experiments, the aim was to develop landscape elements covering about 5% of the fields, ideally combined with recreational measures, as part of a spatial landscape development plan.

Arrangement 7 is the so-called 'Farming for nature' arrangement. Participating farmers transformed their farming practices into an extensive form of farming, in which nature conservation was one of the objectives (in addition to landscape quality, water quality, and recreation). The underlying concept was developed by researchers. Nature conservation was framed in general terms: biodiversity was an explicit aim, but no specific (group of) species were targeted. The farming practices were inspired on the conditions that resulted in the biodiverse agricultural landscapes of the recent past. As a result of broad partnerships of farmers, citizens, governmental actors, and researchers, four 'pilot projects' were started in which the farmers involved transformed their farming practices according to Farming for nature principles. Subsidies required to finance the transformation were provided by the governmental actors; however, because of EU state aid regulations, the funding was limited to only four farmers.

Both arrangements are found in areas with particular ecological or landscape values. They perform moderately in terms of quality (i.e. nature conservation ambitions) because nature conservation is only part of broader sustainability objectives. In the case of place-based partnerships, variability in quality is high; some partnerships do well, whereas others have failed. In Online Supplementary Material, Appendix 3, we discuss a successful partnership that resulted in the creation of new biotopes that attracted new rare

animal and plant species. The performance of both interactive governance arrangements in terms of scope is low, in particular, for arrangement 7 because only a few pilots were allowed. Motivation and demand to participate in these arrangements score moderately (arrangement 6) to low (arrangement 7). For the arrangement 7, legitimacy formed an important bottleneck: state aid regulations restricted participation in this arrangement to only four farmers. Ability scores moderate to high, mainly depending on the funding available (which in turn influences motivation).

### 'Self-governance' arrangements<sup>5</sup>

Already in the 1980s but particularly during the last 15 years, self-governance has emerged as a new form of rural governance. Agri-environmental cooperatives are one of the first manifestations (Termeer et al., 2013; Wiskerke, Bock, Stuver, & Renting, 2003). These arrangements classify as self-governance in terms of Driessen et al. (2012) because they are initiated by private actors (farmers, companies, NGOs, and sometimes citizens), which operate autonomously and partly based on informal rules.

Agri-environmental cooperatives (ECs) – arrangement 8 – started because participating farmers wanted to be more responsible themselves to realize environmental objectives and, in a later stage, for nature conservation and landscape restoration objectives. Their work related to nature conservation includes supporting farmers in applications and reporting for AES, promoting regional cooperation (which may help in coordinating conservation activities), knowledge dissemination and training, recruiting farmers to participate, and acquiring funding for landscape restoration. In 2015, about 150–160 ECs existed, distributed over the Netherlands.

In the current system of AES, part of the tasks of agri-environmental cooperatives have been taken over by the farmer collectives who implement parts of the AES, and form a compulsory element in the Dutch AES. Some of these farmer collectives are mergers of agri-environmental cooperatives; others are newly established as partnership of several agri-environmental cooperatives that continue to exist. Therefore, agri-environmental cooperatives are nested in and have founded the farmer collectives.

Another form of self-governance is cooperation between nature conservation NGOs and individual farmers (arrangement 9). NGOs such as BirdLife

Netherlands aim to support farmers to implement conservation measures for specific species by means of knowledge and advice, acquisition of funding, and the development of new business models (e.g. direct sale of dairy products).

A more recent form of self-governance is what we label 'supply chain governance' (arrangement 10): processors and other companies involved in agri-food chains that demand more sustainable farming, which includes, but is not restricted to, nature conservation and restoration. One example is a large dairy processor to which a majority of dairy farmers deliver and that is developing sustainability criteria (which includes participation in AES as a specific criterion). Farmers who comply with sustainability criteria receive a surplus on their products, which is 'paid for' by non-participating farmers (bonus-malus). Another example is a large bank, where a majority of farmers have loans and mortgages, and that is considering a similar system; farmers who comply with sustainability receive discounts on their loans. An initiative which has existed for almost 10 years started with a bonus-malus system but faced large resistance among farmers; this system therefore is downscaled. Knowledge dissemination nowadays is the main instrument employed within this initiative.

Most supply chain governance initiatives are in development and not fully implemented. Because they represent a new form of steering nature conservation in agricultural landscapes, we have included them in our analysis. Because of their broad objectives, these arrangements do not focus on specific regions (e.g. with particular landscape or ecological values), in contrast to, for example, AES (arrangements 3 and 5).

The (expected) performance of the above self-governance arrangements differs substantially. The scope of arrangements 8 and 9 is moderate and small, respectively. About 10% of all farmers participate in ECs, although there are regions where a majority of farmers participate. For NGO–farmer cooperation (arrangement 9), participation by farmers is low because NGOs have limited capacity to engage with many farmers. The scope of arrangement 10 is expected to differ, but for some initiatives, the *potential* scope is large; this applies to the two examples described above. The performance in terms of quality is moderate in the case of arrangement 9 (NGO–individual farmer cooperation). This arrangement focuses on specific species. Only anecdotal evidence is available. For instance, BirdLife Netherlands

states that their cooperation with farmers has contributed to an increase in numbers of Barn Owls from about 100 pairs in the 1970s to about 3000 nowadays. The quality of the other two arrangements is expected to be low because usually nature conservation is only one of the aims of these arrangements and we have seen no signs of very high nature conservation ambitions.

Motivation to participate in self-governance arrangements 8 and 9 is moderate to low, which is mainly explained by a lack of structural funding of nature conservation measures. Motivation to participate in supply chain governance arrangements (arrangement 10) is not clear yet, because many initiatives are in development. If the market-based instruments that are intended to be employed (bonus-malus) are sufficiently attractive for farmers, motivation to participate in these arrangements may be high. Legitimacy does not seem to form a major bottleneck for farmers to participate. Although ability does not score low overall, finding income sources to recover the costs for nature conservation measures is reported to be difficult. As stated above, this also is found to influence motivation negatively. For a detailed description, we again refer to Supplementary Online Material, Appendix 3.

## Discussion and conclusions

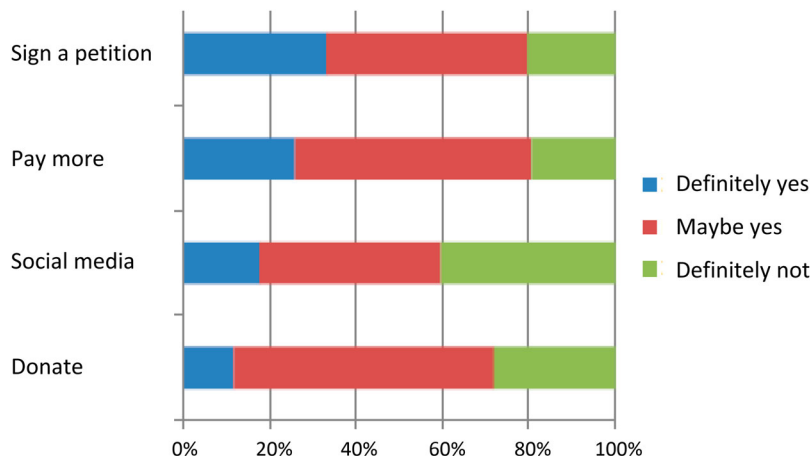
The aim of this paper was to explore and analyse the various ways in which nature conservation in agricultural landscapes is governed, to elucidate the potential as well as limitations of these governance arrangements individually and in combination, and to explore ways to overcome constraints. Below, we will discuss our findings and reflect on the limitations of the study (Section 4.1) as well as on the research questions (Section 4.2).

### Discussion

In this paper, we analysed and evaluated governance arrangements that promote nature conservation by farmers, focusing on the last 15 years. We identify three limitations of our study. One, because we focused on typical arrangements in terms of the Driessen et al. (2012) framework discussed in Section 2.1, our overview is not complete; not all individual arrangements with their own peculiarities were mentioned. Our paper does, however, represent the most distinct arrangements. Two, expert judgement was

used as a means for evaluation, as far as possible supported by findings from earlier studies and by supplementary interviews. The evaluation therefore is qualitative in nature. It nevertheless allowed us to evaluate the 10 arrangements in a systematic and comparable way, to compare them, and to identify limitations of governance arrangements. Further evaluations at the level of individual arrangements are required to obtain more quantitative assessments. Such evaluations could also highlight differences between (groups of) farmers; for instance, motivation to participate in nature conservation arrangements may be different among organic farmers. Three, the analysis of how governance arrangements interact focuses on performance, not on the very emergence of arrangements. As Section 3.1 showed, also other types of interactions between governance arrangements exist; for instance, many arrangements emerged in response to dissatisfaction with existing ones. A more detailed analysis in that area, however, was beyond the scope of this paper.

The analytical framework we employed assumed that nature conservation by farmers is not only a matter of motivation. Nature conservation governance arrangements should also enable, legitimize, and demand farmers to participate and act. At first sight, Table 2 does not show a clear pattern regarding the extent to which governance arrangements provide the conditions we expected to be of importance (see Section 2.2) and the performance of governance arrangements (either in terms of scope or in terms of quality, given the apparent trade-off we discussed above). When we focus on performance in terms of scope, we observe that the best-performing arrangements (1 and 10) are those that are (potentially) the most demanding (i.e. that strongly coerce many farmers to participate), and those that score well on the conditions of motivation, ability, and legitimacy (arrangements 3, 5, and 8). Arrangements that have low scores on both 'motivation' and 'demand' (7 and 9) also have a low performance. For arrangements 2 and 4, relationships are less clear, but here the low performance in terms of scope is explained by the ambitions of the arrangement itself (total size of nature reserve areas that can be farmed out is small and the Fauna fund only compensates damage for a limited list of species and employs a threshold value). Arrangement 6 (place-based partnerships) has high variance in scores on conditions and performance, so that there are no clear conclusions possible for this arrangement. Given that bottom-up initiatives



**Figure 4.** Willingness of Dutch citizens to cooperate with initiatives that aim to protect meadow birds. Source: Langers and Goossen (2014, p. 18).

in nature conservation in general is gaining in importance (Mattijssen, Buijs, Elands, & van Dam, 2015), and that some perform high in terms of quality (but some not), it is interesting to examine the performance of this arrangement in more detail.

## Conclusions

*Research question 1: How is nature conservation governed in agricultural landscapes?*

A total of 10 distinct governance arrangements for promoting nature conservation by farmers were identified. This inventory confirms that employing a governance ‘lens’ indeed broadens perspectives. One out of the 10 arrangements is predominantly based on the principle of land sparing (arrangement 2, nature reserve areas); all others are on the principle of land sharing. Nature conservation objectives are framed differently across governance arrangements: some arrangements focus on specific species, others on nature conservation in broader terms, and sometimes, nature conservation is embedded in a more general effort to contribute to more sustainable agriculture and to landscape restoration.

*Research question 2: Potential and limitations of governance arrangements*

Table 2 summarizes the performance of the 10 arrangements. As explained in Section 2.2, we distinguish between two performance criteria: scope and quality. Regarding the first criterion, our judgement is that a low-to-moderate number of farmers participate in each of the 10 arrangements. Arrangements each attract a maximum of 5–10% of all

farmers covering 20–25% of all farmland (but usually less). Arrangement 10 potentially has a larger scope in terms of participating farmers, but most initiatives within this arrangement are ‘under construction’. The arrangements *in parallel* may target a large number of farmers and hence have a large scope. However, we cannot estimate how large that share of farms could be, because from our experience, we know that many farmers participate in multiple arrangements. This ‘overlap’ exists because many (but not all) governance arrangements are found in, or focus on, areas with particular ecological or landscape values (see Sections 3.2–3.5); this is the case only in part of the agricultural landscapes.

In terms of quality, the performance of the 10 arrangements is low-to-moderate. Table 2 suggests that at the level of individual arrangements, a trade-off between scope and quality exists, except for arrangement 5 (‘new style’ AES). From the analyses in Supplementary Online Material, Appendix 3, this is explained by the observation that ‘shallow’ nature conservation measures are easier to integrate in farming practices than more profound ones that more substantially contribute to nature conservation (e.g. higher water tables) but that also have major repercussions for farming practices (cf. Westerink, Melman, & Schrijver, 2015).

Few arrangements score high on the condition of ‘ability’. From the more detailed evaluations in Supplementary Online Material, Appendix 3, it becomes clear that a major bottleneck to participate in nature conservation governance arrangements seems to be covering the costs of implementing conservation



measures. Financial compensation or other forms of funding therefore seem an important precondition not only for ability, but also for motivation (see Supplementary Online Material, Appendix 3, arrangements 6–10). Payment can come not only from government subsidies, but also from private actors. It is unclear to what extent Dutch consumers are willing to pay for nature conservation by farmers. In a survey among over 1000 citizens, Langers and Goossen (2014) found that only a small share of citizens states to be willing to pay or to support farmers in other ways (see Figure 4).<sup>6</sup> This also seems to inhibit, for instance, dairy producers to introduce 'bio-diverse' dairy products on the market (interviewee 10).

Based on literature referred to in Section 2.1, we expected that the framing of nature conservation objectives would influence the ease with which they could be governed. Indeed, it seems logical that the more specific these objectives are, the more specific associated nature conservation measures are, which in turn are more difficult to integrate in farming practices. This then should become particularly evident in low scores on the governance conditions of 'motivation' and 'ability' for arrangements that have specific objectives (arrangements 2–5 and 9). Table 2, however, does not suggest that there is such a clear correlation. The more detailed evaluations in Supplementary Online Material, Appendix 3 show that relationships between the framing of nature conservation objectives, conditions provided by arrangements, and the expected performance of the arrangements are more complex in that respect.

#### *Research question 3: Interaction between governance arrangements*

In some cases, synergies between governance arrangements were observed. For instance, the farmer collectives from 'new style' AES (arrangement 5) are often based on environmental cooperatives (arrangement 8) that merged into these collectives in order to be eligible for funding for AES. Farmers who participated in ECs are therefore expected to be motivated to also participate in AES. In addition, being invited by collective to participate may motivate more than a 'distant' subsidy call (Prager, 2015). In addition, place-based partnerships (arrangement 6) and environmental cooperatives (arrangement 8) are based on, or facilitate, AES (arrangements 3 and 5); here, arrangements complement each other by enabling farmers to participate in the other arrangement ('ability' condition). Some initiatives in supply chain governance (arrangement 10) reward

participating farmers who also participate in AES (enhancing motivation to continue doing so or start doing so). Supply chain governance arrangements are still in development, but if powerful companies in agri-food chains set stricter demands regarding sustainability and nature conservation, and taking conservation measures hence becomes a less voluntary activity, this may motivate farmers to participate in other governance arrangements.<sup>7</sup>

We also observe a conflict between governance arrangements. The legitimacy of the Farming for Nature arrangement (arrangement 7) was negatively influenced by centralized governance arrangements that did not focus on nature conservation directly but indirectly through state aid regulations (see Supplementary Online Material, Appendix 3; see also Buizer et al., 2015).

#### *Research question 4: Main obstacles in the governance of nature conservation in agricultural landscapes and ways to overcome these*

This paper started with the observation that trends in the conservation status of many species and habitats and in biodiversity in Dutch agricultural landscapes are unfavourable. We identified and assessed 10 distinct governance arrangements that aim to promote nature conservation by farmers. Although a large part of farmers participate in these arrangements, apparently this is not enough to halt the decline in flora and fauna caused by the trend towards further intensification of agricultural practices. The intensification is incentivized by other forms of governance, such as the CAP and requirements from within agri-food chains (see, e.g. Sander-son, Kucharz, Jobda, & Donald, 2013). Effective nature conservation on Dutch agricultural landscapes hence should also be promoted by these other forms of governance. In other words, nature conservation should be mainstreamed or integrated in other, non-nature conservation governance arrangements that target agriculture. We observe some cautious, first steps in that direction. The greening requirements in the CAP (arrangement 1) but also initiatives within agri-food chains (e.g. arrangement 10) potentially target large groups of farmers ('scope'), although thus far nature conservation ambitions are low ('quality'). Mainstreaming nature conservation in agricultural policies and governance may also positively influence participation in nature conservation governance arrangements.

We have no immediate solutions how to stimulate the further mainstreaming of nature conservation in

agricultural policy and agri-supply chains, but suggest three lines of further inquiry. One, a further analysis of the driving forces of agricultural intensification – who benefits from further intensification and how can a reconciliation of agricultural practices and nature conservation be (made) profitable for these actors? Two, an exploration of how citizens' awareness of the ecological consequences of agricultural intensification can be raised, in order to stimulate a further 'greening' of the CAP. Three, an analysis of how consumers' willingness to pay for agri-food that is produced in ways that promote nature conservation can be increased, in order to increase market potential for 'nature-friendly' food.

### Disclosure statement

No potential conflict of interest was reported by the authors.

### Supplemental data

Supplemental data for this article can be accessed at [10.1080/14735903.2016.1232015]

### Notes

1. In some cases, opposite effects are observed. For instance, species such as meadow birds benefit from the removal of hedges (Besnard & Secondi, 2014).
2. For data about the Dutch agricultural sector, see [www.agrimatie.nl/Default.aspx](http://www.agrimatie.nl/Default.aspx).
3. A variety of frameworks are available for evaluating governance arrangements. Some take the arrangement itself as the starting point and assess, for instance, resources and capacities of governing actors. Others focus on the problem at issue and explore the extent to which all of its causes and effects are targeted. We start from the farmers and the incentives they are exposed to, which enables the identification of their (and other stakeholders') concerns about the feasibility and possible side effects of governance arrangements. With that, an important criticism of objectives-based evaluation is overcome; namely that target groups are largely ignored (Fischer, 1997; Verschuren & Zsolnai, 1998; Austin, Penic, Raffaelli, & White, 2015; Runhaar et al., 2006, 2016). The framework we developed is inspired by the literature that we cite but also by other frameworks, among which the 'four key questions for policy design' framework developed by Van Hemerijck and Hazeu (2004). That framework, however, is broader than ours, as it focuses not only on evaluating policy outcomes, but also on the policy-making process. At the same time, it is more limited in scope than ours because it only focuses on policy and ignores other forms of governance.

4. In the Netherlands, also at the provincial level, habitat requirements apply, but in this paper, we will focus on the CAP in order not to confuse the reader; the aim of the paper is to discuss the *typical* arrangements in terms of the Driessen et al. (2012) framework, not to discuss *all* arrangements.
5. We ignore farmers who implement nature conservation measures voluntarily. It is not known how many farmers do so, but there is some anecdotal evidence; many farmers have nest boxes for owls and other predatory birds and many allow swallows and other birds to breed in their barns. Also it seems there is more tolerance towards animals that forage and cause damage than in the past (e.g. Runhaar et al., 2015). This form of self-governance was ignored because conservation measures are usually taken at farmyards and not at the field level, which means that the nature conservation gains are generally limited.
6. The low willingness to pay may be related to difficulties consumers face in recognizing products that are produced in ways that incorporate nature conservation (Sanders & Westerink, 2015; interviewee 8; 12) and in part because large part of agri-food products are exported (interviewee 11; 13). A related problem is that it seems more difficult to change the perception of Dutch citizens about the agricultural landscapes; many Dutch citizens are found to have an idealized picture of these landscapes in mind, rich in terms of nature and landscape values, despite changes in agricultural practices such as intensification which have negatively impacted upon these values (Steenbekkers, Simon, Vermeij, & Spreeuwers, 2008).
7. As we stated in the Introduction to this paper, we do not focus on the emergence of governance arrangements, although also in this respect interactions exist; for example, without regulation, the ECs probably would not have emerged (see also Section 3.1).

### ORCID

H. A. C. Runhaar  <http://orcid.org/0000-0001-7790-097X>

### References

- Adler, P. S., & Kwon, S. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, 27(1), 17–40.
- Admiraal, J. F., Musters, C. J. M., & de Snoo, G. R. (2016). The loss of biodiversity conservation in EU research programmes: Thematic shifts in biodiversity wording in the environment themes of EU research programmes FP7 and Horizon 2020. *Journal for Nature Conservation*, 30, 12–18.
- Arnouts. (2010). *Regional nature governance in the Netherlands. Four decades of governance modes and shifts in the Utrechtse Heuvelrug and Midden Brabant* (Ph.D. thesis) Wageningen University, Wageningen.
- Arts, B., Leroy, P., & van Tatenhove, J. (2006). Political modernisation and policy arrangements: A framework for understanding environmental policy change. *Public Organization Review*, 6, 93–106.

- Austin, Z., Penic, M., Raffaelli, D. G., & White, P. C. L. (2015). Stakeholder perceptions of the effectiveness and efficiency of agri-environment schemes in enhancing pollinators on farmland. *Land Use Policy*, 47, 156–162.
- Baudron, F., & Giller, K. E. (2014). Agriculture and nature: Trouble and strife? *Biological Conservation*, 170, 232–245.
- Besnard, A. G., & Secondi, J. (2014). Hedgerows diminish the value of meadows for grassland birds: Potential conflicts for agri-environment schemes. *Agriculture, Ecosystems and Environment*, 189, 21–27.
- Boonstra, F. G. (2004). *Laveren tussen regels en regels* (Ph.D. thesis) Katholieke Universiteit Nijmegen, Van Gorcum, and Assen.
- Börzel, T. A., & Risse, T. (2010). Governance without a state: Can it work? *Regulation and Governance*, 4(2), 113–134.
- Buizer, M., Arts, B., & Westerink, J. (2015). Landscape governance as policy integration ‘from below’: A case of displaced and contained political conflict in the Netherlands. *Environment and Planning C: Government and Policy*, 34(3), 448–462.
- Cashmore, M., & Wejs, A. (2024). Constructing legitimacy for climate change planning: A study of local government in Denmark. *Global Environmental Change*, 24, 203–212.
- CBS. (2015). *Persbericht: weidevogels in duikvlucht* (press release: Meadow birds in a nose dive; in Dutch), The Hague: Statistics Netherlands. Retrieved from [www.cbs.nl/nl-NL/menu/themas/natuur-milieu/publicaties/artikelen/archief/2015/weidevogels-in-duikvlucht1.htm?RefererType=RSSItem](http://www.cbs.nl/nl-NL/menu/themas/natuur-milieu/publicaties/artikelen/archief/2015/weidevogels-in-duikvlucht1.htm?RefererType=RSSItem)
- CBS, PBL and Wageningen UR. (2012). *Ontwikkeling soorten in natuurgebieden en agrarisch gebied 1975–2005* (Developments in species in nature reserves and agricultural areas 1975–2005; in Dutch), The Hague /Bilthoven/Wageningen: Statistics Netherlands/Netherlands Environmental Assessment Agency/Wageningen UR, The Hague/Bilthoven/Wageningen Retrieved from [www.compendiumvoordeleefomgeving.nl](http://www.compendiumvoordeleefomgeving.nl)
- CBS, PBL, Wageningen UR. (2015). *Land- en tuinbouw: ruimtelijke spreiding, grondgebruik en aantal bedrijven, 1980–2014* (indicator 2119, versie 06, 30 juli 2015), Statistics Netherlands/Netherlands Environmental Assessment Agency/Wageningen UR, The Hague/Bilthoven/Wageningen, Retrieved from [www.compendiumvoordeleefomgeving.nl](http://www.compendiumvoordeleefomgeving.nl)
- Curran, M. M., & Moran, D. (2004). The nature of corporate social responsibility in the food and agriculture sector. *Corporate Environmental Strategy*, 11(7), 2-153–2-161.
- Dedeurwaerdere, T., Admiraal, J., Beringer, A., Bonaiuto, F., Cicero, L., Fernandez-Wulff, P., ... Vivero, J. L. (2016). Combining internal and external motivations in multi-actor governance arrangements for biodiversity and ecosystem services. *Environmental Science & Policy*, 58, 1–10.
- De Snoo, G. R., Herzon, I., Staats, H., Schwarz, G., & Musters, C. J. M. (2013). Toward effective nature conservation on farmland: Making farmers matter. *Conservation Letters*, 6(1), 66–72.
- Driessen, P. P. J. (2005). Restructuring the Dutch countryside: Limits of a governance strategy. *Planning Practice and Research*, 20(1), 69–77.
- Driessen, P. P. J., Dieperink, C., van Laerhoven, F., Runhaar, H. A. C., & Vermeulen, W. J. V. (2012). Towards a conceptual framework for the study of shifts in environmental governance – Experiences from the Netherlands. *Environmental Policy and Governance*, 22(3), 143–160.
- EEA. (2010). *10 messages for 2010. Agricultural ecosystems*. Copenhagen: European Environmental Agency.
- EEA. (2015a). *SOER 2015 – The European environment – state and outlook 2015. A comprehensive assessment of the European environment's state, trends and prospects, in a global context*. Copenhagen: European Environmental Agency.
- EEA. (2015b). *State of nature in EU. Results from reporting under the nature directives 2007-2012*. EEA technical report no2/ 2015. Luxembourg: European Environment Agency.
- Erismann, J. W., van Eekeren, N., de Wit, J., Koopmans, C., Cuijpers, W., Oerlemans, N., & Koks, B. J. (2016). Agriculture and biodiversity: A better balance benefits both. *AIMS Agriculture and Food*, 1(2), 157–174.
- Feindt, P. H. (2010). Policy-learning and environmental policy integration in the Common Agricultural Policy, 1973-2003. *Public Administration*, 88(2), 296–314.
- Fischer, F. (1997). *Evaluating public policy*. Chicago: Nelson-Hall.
- Friedmann, H., & McNair, A. (2008). Whose rules rule? Contested projects to certify ‘local production for distant consumers’. *Journal of Agrarian Change*, 8(2–3), 408–434.
- Geiger, F., Bengtsson, J., Berendse, F., Goedhart, P. W., & Inchausti, P. (2010). Persistent negative effects of pesticides on biodiversity and biological control potential on European farmland. *Basic and Applied Ecology*, 11(2), 97–105.
- Grüebler, M. U., Schuler, H., Horch, P., & Spaar, R. (2012). The effectiveness of conservation measures to enhance nest survival in a meadow bird suffering from anthropogenic nest loss. *Biological Conservation*, 146(1), 197–203.
- Guilherme, J. L., & Miguel Pereira, H. (2013). Adaptation of bird communities to farmland abandonment in a mountain landscape. *PLoS one*, 8(9), e73619.
- Hall, N., Lacey, J., Carr-Cornish, S., & Dowd, A.-M. (2015). Social licence to operate: Understanding how a concept has been translated into practice in energy industries. *Journal of Cleaner Production*, 86, 301–310.
- Hemerijck, A. C., & Hazeu, C. A. (2004). Werkt het, past het, mag het, en hoort het? De kernvragen van beleidsvorming, toegepast op milieubeleid. *Bestuurskunde*, 13(2), 55–65.
- Henle, K., Alard, D., Clitherow, J., Watt, A., & Young, J. (2008). Identifying and managing the conflicts between agriculture and biodiversity conservation in Europe – A review. *Agriculture, Ecosystems and Environment*, 124(1–2), 60–71.
- Horlings, L. G. (1994). Policy conditions for sustainable agriculture in the Netherlands. *The Environmentalist*, 14(3), 193–199.
- Hysing, E. (2009). From government to governance? A comparison of environmental governing in Swedish forestry and transport. *Governance*, 22(4), 647–672.
- Jurgens, C. R. (1993). Strategic planning for sustainable rural development. *Landscape and Urban Planning*, 27(2–4), 253–258.
- Kleijn, D. (2012). *De effectiviteit van agrarisch natuurbeheer*, commissioned by RLI-PBL, Wageningen Retrieved from [www.rli.nl/sites/default/files/u61/david\\_kleijn\\_-\\_de\\_effectiviteit\\_van\\_agrarisch\\_natuurbeheer.pdf](http://www.rli.nl/sites/default/files/u61/david_kleijn_-_de_effectiviteit_van_agrarisch_natuurbeheer.pdf)
- Kleijn, D., Baquero, R. A., Clough, Y., West, T. M., & Yela, J. L. (2006). Mixed biodiversity benefits of agri-environment schemes in five European countries. *Ecology Letters*, 9(3), 243–254.
- Langers, F., & Goossen, M. (2014). *Beleving van de weidevogelproblematiek in Nederland*. Wageningen: Alterra.
- Lokhorst, A. M., Staats, H., van Dijk, J., & de Snoo, G. (2011). What's in it for me? Motivational differences between farmers'

- subsidised and non-subsidised conservation practices. *Applied Psychology*, 60(3), 337–353.
- Lowndes, V., & Skelcher, C. (1998). The dynamics of multi-organizational partnerships: An analysis of changing modes of governance. *Public Administration*, 76(2), 313–333.
- Mattijssen, T. J. M., Buijs, A. E., Elands, B. H. M., & van Dam, R. I. (2015). *De betekenis van groene burgerinitiatieven. Analyse van kenmerken en effecten van 264 initiatieven in Nederland* (in Dutch), Wageningen University and Research Centre, Wageningen Retrieved from [www.wageningenur.nl/upload\\_mm/a/7/0/6c7611c8-1af6-4af7-b9b8-566853254c16\\_WOT-rapport%20127%20webversie.pdf](http://www.wageningenur.nl/upload_mm/a/7/0/6c7611c8-1af6-4af7-b9b8-566853254c16_WOT-rapport%20127%20webversie.pdf)
- Mees, H., Dijk, J., van Soest, D., Driessen, P., van Rijswijk, M., & Runhaar, H. (2014). A method for the deliberate and deliberative selection of policy instrument mixes for climate change adaptation. *Ecology and Society*, 19(2), article no. 58, 1–15.
- Meijer, S. S., Catacutan, D., Ajayi, O. C., Sileshi, G. W., & Nieuwenhuis, M. (2015). The role of knowledge, attitudes and perceptions in the uptake of agricultural and agroforestry innovations among smallholder farmers in sub-Saharan Africa. *International Journal of Agricultural Sustainability*, 13(1), 40–54.
- Melman, D., Teunissen, W., & Guldemond, A. (2016). Weidevogels – op weg naar kengebieden. In G. R. de Snoo, Th. C. P. Melman, F. M. Brouwer, W. J. van der Weijden, & H. A. Udo de Haes (Eds.), *Agrarisch natuurbeheer in Nederland. Principes, resultaten en perspectieven* (pp. 137–161). Wageningen: Wageningen Academic.
- Mitrokokostas, E., & Apostolakis, A. (2013). Research note: Strategic corporate social responsibility and competition in the tourism industry – a theoretical approach. *Tourism Economics*, 19(4), 967–974.
- Mol, A. P. J. (2016). The environmental nation state in decline. *Environmental Politics*, 25(1), 48–68.
- Nieuwenhuizen, W., Westerink, J., Gerritsen, A. L., Schrijver, R. A. M., & Salverda, I. E. (2014). *Wat je aan elkaar hebt – Sociaal kapitaal in het agrarisch natuur- en landschapsbeheer*. Wageningen: Wageningen University and Research Centre.
- Ollerton, J., Erenler, H., Edwards, M., & Crockett, R. (2014). Extinctions of aculeate pollinators in Britain and the role of large-scale agricultural changes. *Science*, 346(6215), 1360–1362.
- Pelosi, C., Bonthoux, S., Castellarini, F., Ladet, S., & Balent, G. (2014). Is there an optimum scale for predicting bird species' distribution in agricultural landscapes? *Journal of Environmental Management*, 136, 54–61.
- Penker, M., Mühlmann, P., & Muhar, A. (2014). Volunteering for land care – a typology of civil society organizations in Austria, Germany and Switzerland as the basis for establishing new initiatives. *Eco.mont*, 6(2), 21–28.
- Prager, K. (2015). Agri-environmental collaboratives as bridging organisations in landscape management. *Journal of Environmental Management*, 161, 375–384.
- Pretty, J. (2008). Agricultural sustainability: Concepts, principles and evidence. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363(1491), 447–465.
- Runhaar, H., Dieperink, C., & Driessen, P. (2006). Policy analysis for sustainable development: The toolbox for the environmental social scientist. *International Journal of Sustainability in Higher Education*, 7(1), 34–56.
- Runhaar, H., Runhaar, M., & Vink, H. (2015). Badger reports in Dutch newspapers 1900–2013: Same animals, different framings? *Mammal Review*, 45(3), 133–145.
- Runhaar, H., van der Windt, H. J., & van Tatenhove, J. P. M. (2016). Conclusions from the Environmental Science & Policy special issue on Organising productive science-policy interactions for sustainable coastal management. Lessons from the Wadden Sea. *Environmental Science and Policy*, 55(3), 377–379.
- Sanders, M., & Westerink, J. (2015). *Op weg naar een natuurinclusieve duurzame landbouw*. Wageningen: Alterra Wageningen UR.
- Sanderson, F. J., Kucharz, M., Jobda, M., & Donald, P. F. (2013). Impacts of agricultural intensification and abandonment on farmland birds in Poland following EU accession. *Agriculture, Ecosystems and Environment*, 168, 16–24.
- Sayer, J., Sunderland, T., Ghazoul, J. (.), Van Oosten, C., & Buck, L. E. (2013). Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses. *Proceedings of the National Academy of Sciences of the United States of America*, 110(21), 8349–8356.
- Smits, M. J., Driessen, P., & Glasbergen, P. (2008). Governing agri-environmental schemes: Lessons to be learned from the New Institutional Economics approach. *Environment and Planning C: Government and Policy*, 26(3), 627–643.
- Steenbekkers, A., Simon, C., Vermeij, L., & Spreeuwers, W.-J. (2008). *Het platteland van alle Nederlanders. Hoe Nederlanders het platteland zien en gebruiken*. The Hague: Sociaal en Cultureel Planbureau.
- Stoate, C., Boatman, N. D., Borralho, R. J., De Snoo, G. R., & Eden, P. (2001). Ecological impacts of arable intensification in Europe. *Journal of Environmental Management*, 63(4), 337–365.
- Targetti, S., Herzog, F., Geijzendorffer, I. R., Pointereau, P., & Viaggi, D. (2016). Relating costs to the user value of farmland biodiversity measurements. *Journal of Environmental Management*, 165, 286–297.
- Termeer, C. J. A. M., Dewulf, A., Breeman, G., & Stiller, S. J. (2015). Governance capabilities for dealing wisely with wicked problems. *Administration and Society*, 47(6), 680–710.
- Termeer, C. J. A. M., Stuiver, M., Gerritsen, A., & Huntjens, P. (2013). Integrating self-governance in heavily regulated policy fields: Insights from a Dutch farmers' cooperative. *Journal of Environmental Policy & Planning*, 15(2), 285–302.
- Uittenbroek, C. J., Janssen-Jansen, L. B., & Runhaar, H. A. C. (2013). Mainstreaming climate adaptation into urban planning: Overcoming barriers, seizing opportunities and evaluating the results in two Dutch case studies. *Regional Environmental Change*, 13(2), 399–411.
- Van Dijk, W. F. A., Lokhorst, A. M., Berendse, F., & de Snoo, G. R. (2015). Collective agri-environment schemes: How can regional environmental cooperatives enhance farmers' intentions for agri-environment schemes? *Land Use Policy*, 42, 759–766.
- Van Gossom, P., Arts, B., & Verheyen, K. (2012). 'Smart regulation': Can policy instrument design solve forest policy aims of expansion and sustainability in Flanders and the Netherlands? *Forest Policy and Economics*, 16, 23–34.
- Van Vliet, R. E. (2013). *Closing in on meadow birds. Coping with a changing landscape in the Netherlands* (Ph.D. thesis) Utrecht University, Utrecht.

- Verschuren, P. J. M., & Zsolnai, L. (1998). Norms, goals, and stakeholders in program evaluation. *Human Systems Management*, 17(2), 155–160.
- Warren, M. S., & Bourn, N. A. D. (2011). Ten challenges for 2010 and beyond to conserve Lepidoptera in Europe. *Journal of Insect Conservation*, 15(1), 321–326.
- Weber, N., & Christophersen, T. (2002). The influence of non-governmental organisations on the creation of Natura 2000 during the European Policy process. *Forest Policy and Economics*, 4(1), 1–12.
- Westerink, J., Melman, D. C. P., & Schrijver, R. A. M. (2015). Scale and self-governance in agri-environment schemes: Experiences with two alternative approaches in the Netherlands. *Journal of Environmental Planning and Management*, 58(8), 1490–1508.
- Wiskerke, J. S. C., Bock, B. B., Stuiver, M., & Renting, H. (2003). Environmental co-operatives as a new mode of rural governance. *NJAS – Wageningen Journal of Life Sciences*, 51 (1–2), 9–25.