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Farmer groups as a device to ensure the provision of green services in the Netherlands: a political economy perspective

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Farmer groups as a device to ensure the provision of green services in the Netherlands: a political economy perspective

Roel Jongeneel and Nico Polman

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Abstract

The latest reform of the CAP, CAP towards 2020, opens up the possibility to arrange agri-environmental service provision via contracting groups of farmers, rather than contracting individual farmers. The Dutch government decided to fully switch to a farmer group service provision system in 2016. The paper analyses the new organisational framework that now is derived and links it to the Dutch tradition of environmental cooperatives. Issues of collective action, transaction costs, information problems, effectiveness, accountability, and procurement efficiency are analysed in a qualitative way. It is concluded that the Dutch model is promising, although not without risks. Its implementation path seems properly chosen. However, in order to fully reap the benefits possible under the new system one need to reduce restrictions and increase incentives.

Keywords: agri-environmental scheme, collective action, transaction costs, procurement

Introduction

Agriculture is not only known as a provider of food, feed, fiber and fuel, but also gets increasing recognition for its role in the rural area (Huylebroeck and Durand, 2003). EU Agriculture uses about 45% of the rural area as its production space, where it has both negative and positive impacts on the natural assets. On the negative side are the pressure on the environment (e.g. a negative impact on water quality) generated by agriculture, its contribution to the loss of biodiversity, the emission of greenhouse gases (e.g. methane), etc.. On the positive side are agriculture's provision of green services (multifunctionality) like agro-tourism, on-farm production and selling of local products, as well as its contribution to biodiversity and wildlife preservation and other public goods like landscape.

Since the introduction of the second pillar of the CAP (as part of the Agenda 2000 policy reform), the EU's rural development (RDP) policy aims to strengthen the sustainability and greening of agriculture, by providing payment schemes which actively promote the provision of green services. A main policy instrument are the agri-environmental schemes (AES) (axis 2 of the RDP) that are offered to individual farmers and which pays them a compensation in return for having them providing certain environmental management services or taking measures that contribute to the realization of pre-defined policy objectives regarding biodiversity and landscape preservation. Participation in these schemes is voluntary and usually at an individual basis. Although it is recognized that ideally several rural public goods need to be provided at a larger spatial scale than the individual farm scale level (see Tscharntke et al, 2005), most studies and analyses have focused on individual farmers rather than on collective action. Although so far participation in AES implies a contract between an individual farmer and the policy authority, farmers may combine this with some kind of grouping, where such a group might help farmers to share knowledge and experiences, assist each other in their choice for specific schemes and also handle the associated paper work in efficient ways. Following the OECD (2013) farmer collective action is defined as "a set of actions taken by a group of farmers, often in conjunction with other people and organisations, acting together in order to tackle local agri-environmental issues". The Netherlands has a rich history of farmer agri-environmental associations, where farmers group themselves in order to strengthen their position as provider of green services and landscape-entrepreneurs (e.g. Polman, 2002). As such the Netherlands has already years of experience with coordinated agri-environmental service provision, even though in the end contracts are made with individual farmers, as is required by the current EU policy framework.

When examining the literature on the achieved results during the last decade two observations can be made. First, several studies question the ecological, costs effectiveness and design of the schemes currently applied (Klein and Sutherland, 2003, ECA, 2011). The mixed effects found indicate that the overtime increasing efforts have not been sufficient to halt the decline in biodiversity (e.g. Fisher et al, 2011). Second, evidence shows that by being arbitrary with respect to location and conditions where AES-schemes are adopted (voluntary participation) the ecological effectiveness can become poor. As such following a collective action approach, that effectively takes into account knowledge about the local landscape (e.g. its degree of complexity, ecological characteristics), land use (intensity) and is flexible with respect to the choice of measures in such a way as to secure sufficient ecological contrast, should be able to contribute to an improved performance of the EU's nature conservation policy (Klein et al, 2011).

The Dutch government has been active during the last policy reform (the CAP towards 2020) in lobbying for getting the role of farmer groups recognized as a new option in the EU's RDP policy with respect to nature conservation. Now this option is introduced (Com(2011) 627), the Dutch Minister on Agriculture, Dijksma, has announced that from 2016 and onward, farmers can only participate in nature conservation activities if they do this via so-called farmer groups (FG) and no longer as individuals (MEA, 2013). By introducing this green social innovation she would like to strengthen a collective approach at landscape-level to nature provision and increase the effectiveness as well as efficiency of this policy. As regards agri-environmental service provision three organisational modes can be distinguished: (i) individual contracting, (ii) coordinated action, and (iii) collective contracting. In terms of this continuum, the Dutch policy aims to make a shift from a system of coordinated contracting (with individual farmers) to collective action (e.g. from (ii) to (iii)).

The aim of this paper is twofold. First, it describes the institutional set-up of the new Dutch model of agri-nature provision by farmer groups. This model is subsequently analysed using a political economy perspective. Moreover, a brief comparative analysis is made with the standard individual farmer participation model, as well as with some already pre-existing selected collective action approaches in other domains of agriculture, with the aim to create some further insights from those experiences that could be helpful for a successful implementation of the Dutch approach.

The remainder of this paper is organised as follows. Section 1 provides a description of the Dutch collective approach, how this is structured, the organisational requirements it should satisfy, the role of different actors and institutions, etc. It also links this description of the new policy with current forms of collective action, especially the nature cooperatives, and their position in the nature conservation supply chain. Subsequently a political economy approach is applied in further analysing different aspects of the newly proposed farmer groups model (see Section 3). Political economy was originally referring to studying production and trade and their relations with law, custom and government (policies). Classical exponents of this approach are Adam Smith, Alfred Marshall, John Maynard Keynes and Jan Tinbergen, whereas today economists like Edmund Phelps, Paul Krugman and Joseph Stiglitz are prominent examples of this tradition (Phelps, 1985). The political economy approach then stands for a problem solving, policy-advisory-oriented type of economics, which alongside the efficiency-aspect, dominating standard neo-classical economic, covers a host of other aspects such as transaction costs, contract theory, institutional economics, informational-behavioural issues, etc.

The analysis is pursued in different steps in the Sections 2 till 6 of the paper. Section 2 provides a brief discussion about experiences with collective action by farmers in different domains and locations (inside and outside the EU). Section 3 describes in a stylized way the new Dutch farmer group approach to agri-environmental policy contracting. Section 4 discusses the role of multiple scales and levels that have to be taken into account when assessing the agri-environmental policy deliverance mechanism. Section 5 addresses the issues associated with the procurement off green services by means of collective agri-environmental contracts. Finally, Section 6 provides a qualitative discussion of the (economic) determinants of farmer participation and the more general overview on the pro's and con's of procuring agri-environmental services via farmer group-supply. It closes with a selected number of main observations drawn from the analysis.

2. Farmers groups and the provision of agri-environmental goods

EU and non-EU examples of collective action

Whereas most studies on agri-environmental public good provision have focused on individual farmers rather than on collective action for selected public goods it is evident that providing them by farmers co-operatively is for various reasons attractive. Collective action is particular advantages over individual action when dealing with externalities beyond the individual farm level, when managing resources, such as natural habitats and catchments, that have a common pool character and when providing club goods (e.g. water supply for group members). Figure 1 provides a classification of main public goods associated with agriculture, according to excludability and rivalry criteria. Except for those goods classified to be private goods, for all other categories collective action may be helpful or even a prerequisite for an (optimal and efficient) delivery of green public goods and services. Whereas Figure 1 focuses on public goods, they often overlap with actions facilitating positive or reducing negative externalities.

Worldwide several examples of collective action exists (see OECD, 2013 for a recent overview). Notable examples are wetland management in Australia and Sweden, biodiversity and air management in Canada (Saskatchewan), hydro-geological management in Italy, animal health associations in Spain, irrigation and drainage projects in Japan, water associations in New Zealand. Although usually farmers form the core group of such collectives and provide key inputs for group activities, other parties, such as private firms, NGO's, citizens, and local authorities might also play a role as partner, intermediary and even as coordinator. Non-farmer partners often also play a role in providing (specific) knowledge and expertise the farmer group needs. Although (local) governments may be a participant to the group, more often they are a non-participant. They are a natural counterpart of farmer groups in that they specify the demand for the agri-environmental services and contract the farmer group as a supplier. Moreover, they might support collective action in various other ways, such as by providing clarity on requirements and regulatory conditions, providing assistance with respect to planning, organisation, communication and administration of activities, and providing funding for capacity and institution building.

		Rivalry	
		low	high
Excludability	difficult	<p><i>Pure public goods</i></p> <ul style="list-style-type: none"> • Landscape • Biodiversity, wildlife (non-use value) • Flood control • Soil conservation • Landslide prevention • Agro-tourism services (hiking paths) 	<p><i>Common pool resources</i></p> <ul style="list-style-type: none"> • Biodiversity, wildlife (use value) • Community irrigation systems (if difficult to exclude) • Catchments
	easy	<p><i>Club goods</i> (services exclusive to group members)</p> <ul style="list-style-type: none"> • Biodiversity, wildlife • Irrigation systems • Community garden 	<p><i>Private goods</i></p> <ul style="list-style-type: none"> • Agricultural commodities • Agro-tourism (e.g. farm camping site) • On-farm product sales • Care-farming

Source: OECD(2013), adapted.

Figure 1 *Public goods associated with agriculture classified by their rivalry and excludability properties*

The geographical boundaries of such collectives extent by definition the level of the individual farm, but can vary from a region of a few hectares, to townships, county boundaries or other regional borders, and cover several thousands of hectares.

As the OECD (2013) survey of examples of collective action (25 cases from 13 countries) shows, farmer groups often have a very specific focus, in particular in the initial phase of their life. Later on this might change in that other aspects of services are added to the initial *raison d'être*. Biodiversity preservation might be combined with landscape service provision. In a lot of cases providing such services is combined with some kind of water management. Insights from the PES and ecosystem services literature suggest that there might be much more potential for integrated management actions covering several domains or dimensions (see BCRD, 2010 for an overview).

Farmer groups in The Netherlands

The Dutch agri-environmental policy started in the seventies of the last century with a policy paper on the linkage between farming and nature and landscape management (Rijksoverheid, 1975). Management

schemes were introduced and adapted in the eighties and nineties of last century. In this period, the compensation was based on the income farmers earned in comparable areas. Main element of these packages focussed on maintaining natural handicaps on their farm, changing farm management like postponing mowing and grazing of cattle and maintaining landscape elements. Farmers adjusted their way of farming the these agri-environmental schemes and as a result they became also dependent on the schemes. Farmers in comparable areas developed their farm in a more traditional way. At the end of the 1980s, compensatory payments were based on the income foregone for the farmer and an extra payment for additional cost associated with the nature management activity itself. In the 1990s, national regulation was further harmonized with European regulation. An important change was a movement from simple agreements with requiring relatively few adjustment on a farm to packages having more severe impacts on the actions farmers are allowed to. One of the objectives from 2000 onwards was the integration of agri-environmental management and nature management.

The first farm group-approaches to agri-environmental management in the Netherlands were established in the early 1990s. The number of farmer groups or cooperatives(hereafter labelled by the Dutch acronym ANV) grew steadily to about 150 nowadays. The majority of the ANV collectives was established in the period 1995-2005. The size of the ANVs is still growing. Most groups are operating for more than 10 years nowadays. When they get older their growth in numbers of participants decreases. In practice the groups are heterogeneous, as they differ in size and type of activities. This can partly be explained by the physical environment in which they are operating, which ranges from large scale grassland areas oriented on meadow birds, to arable areas and small scale areas with a focus on the management of landscape elements. Other explanations are for instance cultural and presence and availability of leadership because the attitude towards cooperating and responding to new challenges differs for different regions. The organisation differ also with respect to the ways in which they operate. Some of them entirely rely on volunteers for their activities, whereas others do also employ people for coordination, administrative tasks and ecological support. The area covered by an ANV organisation ranges from a few 100 hectares to more than 15.000 hectares. Many of these groups support their participants in applying for individual agreements. A large number is also involved in collective agreements with regional/local authorities. The governance arrangements of these organisations have developed in different ways, partly as a response to the pressure felt to show credible commitment (Polman, 2002). Taking initiative to set up farmers groups to manage wildlife and landscape shows that many farmers are concerned about their farming environment. The local focus, the bottom-up approach, lean organisation are important elements of their success. Many of ANVs organised courses on wildlife and landscape management for their participants, were involved in monitoring efforts that went beyond direct legal requirements, and worked with result based payments.

Issues

From an examination of the literature and the Dutch experiences several issues are identified that play a crucial role in making collective action feasible and effective. The most important ones are free-riding behavior, significant start-up costs, transaction costs stemming from collective action, lack of trust and transparency about individual and collective benefits, costs and risks, the role of asymmetric information and moral hazard in relation to optimal contract design, and uncertainty with respect to the policy environment either or not in relation to the market environment. Policy makers face the issue how to achieve their policy objectives by contracting farmer groups, which will decide voluntary whether they will participate, under which conditions and for which compensation. The policy maker on the one hand would like to have a sufficient number of suppliers competing for delivering the requested services, while on the other hand they would like to avoid overcompensation of farmers. From a broader perspective, the contribution of a farmer group approach to a more efficient and more effective delivery of green public goods as compared to the traditional individual farm-approach, is an important issue, even more so because the traditional approach has been criticized for its limited effectiveness. Of this list of issues in the following discussion in particular attention will be paid to issues of scale and procurement. The next section first describes how the Dutch policy framework is re-designed.

3. A re-designed Dutch agri-environmental policy framework

The recent CAP reform (CAP towards 2020) has several implications for the role of agriculture both with respect to satisfy a sustainable use of natural resources (e.g. mandatory greening in the 1st pillar of the

CAP) and the provisioning of green services (e.g. the redesign of the CAPs 2nd pillar on rural development planning). As such the institutional context of this paper refers to measures such as Ecological Focus Areas (EFA), targeted direct payments (e.g. green payment, payments to cope with natural handicaps, cross compliance; see Regulation EU, no 1307/2013) and agri-environmental, biodiversity, landscape and climate change related measures (allowing member states to organize schemes via agreements with individual farmers or by collective agreements with groups of farmers; see Regulation EU, No 1305/2013). Moreover there still are preconditioning directives like the Habitats and Birds directive and the Water Framework directive. Both pillars of the CAP allow for collective implementation of agri-environmental management (AES, EFA) by farmers. Figure 2 gives an schematic overview of the Dutch implementation of agri-environmental climate policy.

In the first pillar, farmers who will be managing more than 15 ha arable are required to have 5% EFA on their holding. EFA can be land lying fallow, terraces, landscape features adjacent to arable land, buffer strips, catch crops and areas with nitrogen fixing crops. Farmers have the possibility to implement collectively their EFA obligations, with a maximum farmer group size of 10 farmers. Each participating farmer needs to ensure that at least 50% of the EFA is located on the land of his holding. A number of additional criteria needs to be fulfilled for the qualification of areas as EFA (see Regulation EU, no 1307/2013). The second pillar Regulation 1305/2013 offers the opportunity to individual farmers or groups of farmers to carry out operations consisting of one or more agri-environment climate commitments. In this case no limits imposed to the size of the farmer groups. The measures included in the 2nd pillar of the CAP are voluntary and beyond the relevant mandatory standards. However, discussing both pillars in detail goes beyond the scope of this paper.

Important preconditions for allocating agri-environmental schemes within the Netherlands are the Habitats and Bird directives, the Water Framework directive, and the Nitrate directive. The European landscape convention (Council of Europe Treaty Series no. 176) came into force in the Netherlands in 2005 and is supplementary to these directives. The different directives are implemented as a guiding framework for agri-environmental schemes and EFAs.

Implementing the European policies remains the responsibility of the national Dutch government. The Dutch government has opted for a farmer group implementation of agri-environmental management including Ecological Focus Areas (EFA). As a result from 2016 in the Netherlands no individual contracts will be possible¹. Whereas up till now the government contracted only individual farmers (even those that operated within the framework of an ANV), the collective contracting implies a major change of agri-environmental policies in the Netherlands. Figure 2 provides a schematic overview of the new Dutch system.

As Figure 2 shows at the policy maker's side several governance levels (EU, national, provincial) can be distinguished, whereas at the supply side there are the farmer groups, which act as a contracting party on behalf of the individual farmers they represent. The national responsibility with respect to demand articulation is to a large extent delegated to the 12 provinces, which now also become the contracting parties. In practice this implies that planning and procurement are the responsibility of provinces (demand side), where these provinces are to a large extent autonomous in the way the implementation. For this purpose the different provinces develop integral regional plans, Provincial Nature Conservation Plans (PNCPs), which cover their (full) territory and take into account all national and international legal obligations The Netherlands has. Here in particular the Birds and Habitats Directive plays a key role, part of which focuses on species and part on habitats. Note that most measures that are considered focus on species and on supporting these in areas outside the National Ecological Network (NEN) and Natura 2000 area, with the aim to complement and provide additional support to preservation measures already taken in these nature-designated areas (NEN and Natura 2000). As regards the Landscape Convention the Dutch government has not (yet) specified a special policy objective within the framework, although at national level money has been reserved for landscape actions. As regards water, it is expected that in the future, this will become full part of the system, although now it is still a separate entry.

Alongside specifying their demands and determining the contract length (will be fixed at 6 years), the provinces also determine the requirements the offers from farmer groups will have to respect. In

¹ See for more detailed information the entry on "agri-environmental services in 2016" at the Portaal Natuur en Landschap-website <http://www.portaalnatuurenlandschap.nl/themas/vernieuwd-stelsel-agrarisch-natuurbeheer/overzicht/>

addition, they also formulate a number of other conditions (organisational requirements with respect to capacity, etc.) farmer groups should satisfy before being acceptable as a service delivering party. As regards the supply side, it is expected that in the end about 45 collectives will be responsible for offering a package bid, consisting of agri-environmental measures². The size of the farmer groups and the number of farmer groups per province depends on regional circumstances and preferences of policy makers³. Collective agri-environment service provision has to fit within these provincial nature management plans. Based on existing collectives we expect that up to 10,000 farmers (now there are about 14 thousand) will be involved with a median number of members of about 200.

The 12 provinces contract regional farmer groups for collective agricultural management. Payments are granted annually to compensate farmers "for all or part of the additional costs and income foregone resulting from the commitments made" Additional payments are possible for transaction costs (up to 20 % of the premium paid for individual farmers and up to 30% for groups of farmers and other land managers. For water related measures regional water boards play a planning role in addition to the Provinces.

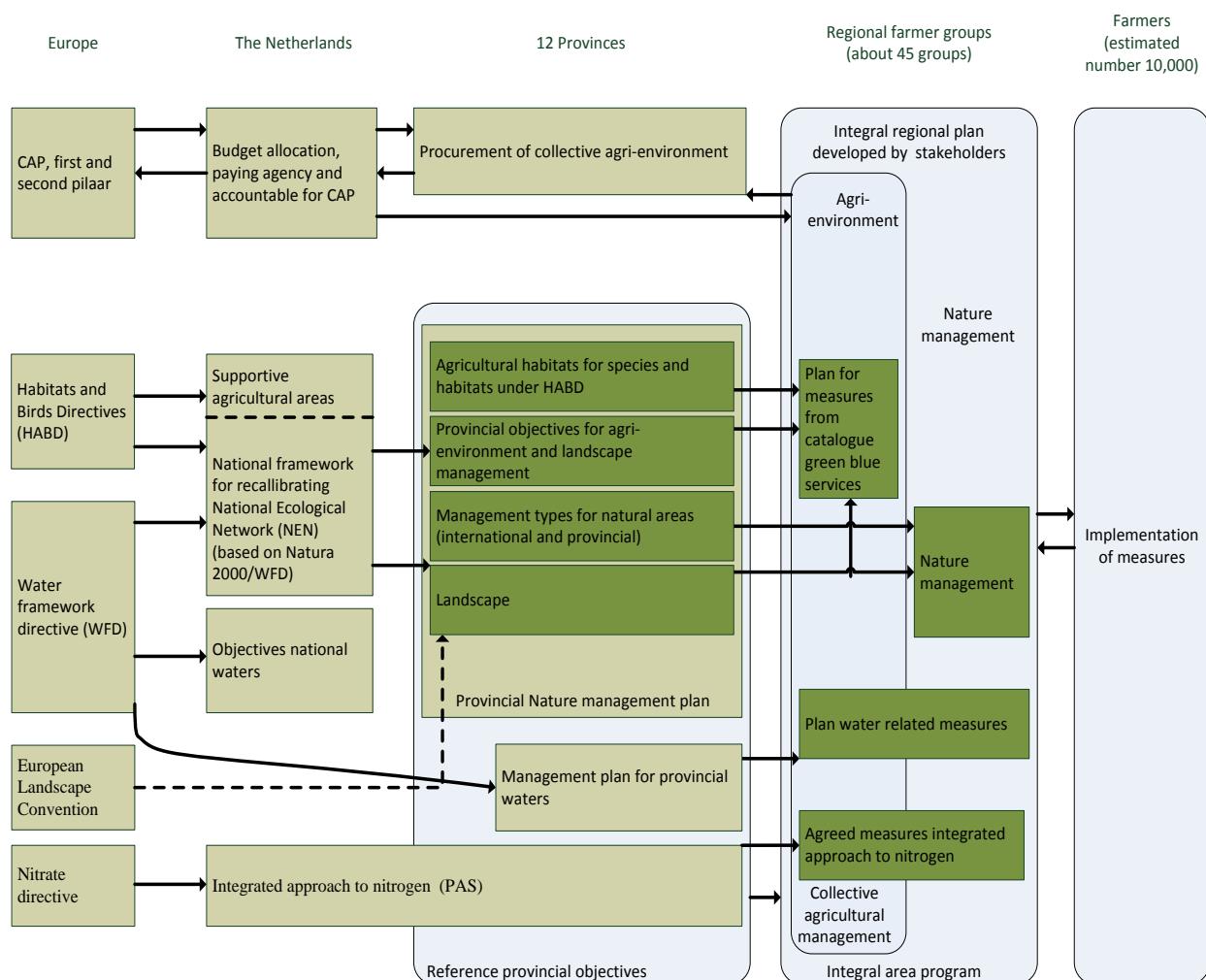


Figure 2 Institutional context of the revised Dutch agri-environmental management policy framework

² Initially measures will only contain agri-environmental measures. At a later stage also measures coming from other backgrounds (e.g. water bodies, tourism-organisations) might be integrated.

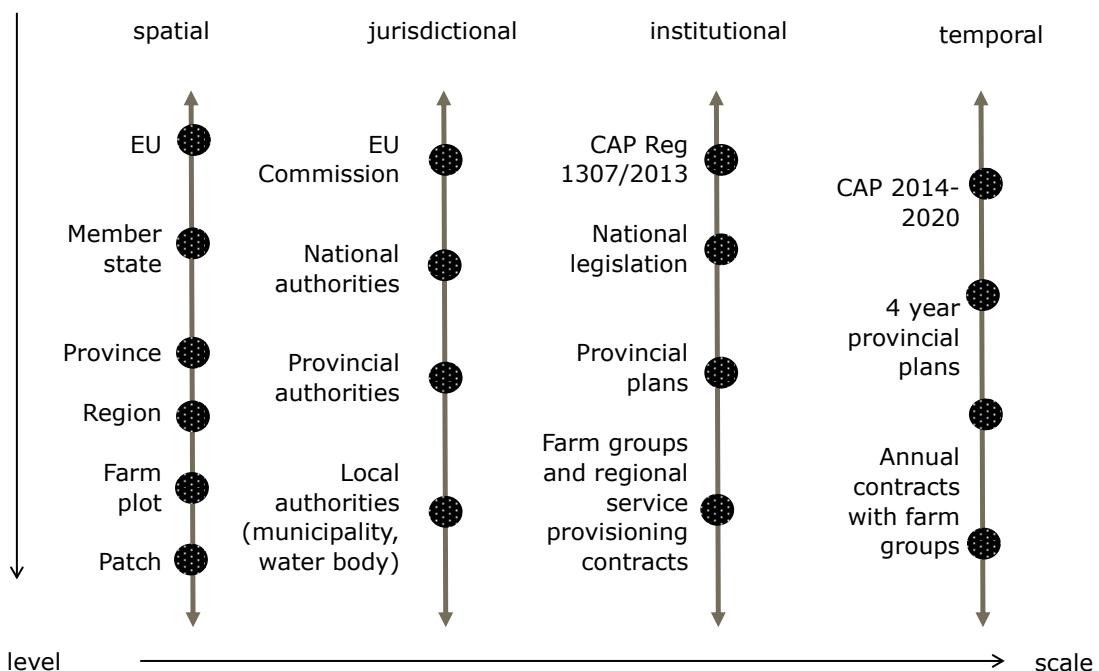
³ Individual farmers that want to participate in agri-environmental service provision can only do so by becoming a member of a farmer group. The exact status and task of the old ANVs in the new framework is not yet clear. Their formal role is limited (they can themselves become a member of the farmer group and get some delegated tasks from the farmer group organisation). Their informal role is that they are active counterparts for the Dutch Ministry in the development and design stage of the new framework.

4. Multiple scales and levels in agri-environmental service provision

Kleijn et al (2011) argue that the effects of agri-environmental management is, alongside other factors such as to what extend management improves habitat conditions for the targeted species (ecological contrast) and agricultural land-use intensity, determined by the complexity of the landscape (landscape contrast). Also Hodge (2001) emphasizes that conservation values are created at the landscape scale and that it can take significant periods of time to develop these values. As such multiple levels and scales are involved when one tries to properly measure and study agri-environmental problems and processes.

Following Gibson et al (2000) and Cash et al (2006) we define scale as the spatial, temporal, quantitative or analytical dimensions relevant to measure and study green service provision. The levels are defined as the units of analysis that are located at different positions on a scale. Based on an examination of the issues playing a role in this field and the new structure as proposed by the Dutch policy maker (see Figure 2 for a schematic overview), the following physical-ecological and social-institutions scales and levels have been distinguished (see Figure 3 for overview):

- Spatial: environmental, ecological and agricultural processes and activities are essentially spatial, occur over a continuous range of scales (from country to patch), and create competing claims
- Jurisdictional: there are clearly bounded and organized political units involved, having different responsibilities with respect to agri-environmental policy design, development, implementation, financing and monitoring.
- Institutional: institutional arrangements, include governance procedures and arrangements, supra national, national and local legislation, accountability structures, contract law, contract specification (completeness, exchange/interaction mechanisms (e.g. tender system, auction, bargaining), formal and non-formal rules/norms (e.g. views about good farming practice)
- Temporal: time as a dimension relevant when investing in natural capital, and as a factor characterizing the commitments between parties, with a linkage to risks various actors may perceive and uncertainties (e.g. time inconsistency of policy makers).



Source: Adapted from Cash et al. (2006, 8)

Figure 3 Scales and levels critical in understanding and responding to human-environment interactions

As agri-environmental policies are aimed at improving and conserving habitats for various plant and wildlife species, spatial-ecological processes are paramount. As an example, biodiversity objectives can be formulated applying different scales and levels like "parcel – local - landscape – region". At the same time water quality objectives are often framed using "ditch – stream - river – water system – river basin". Moreover geographical targeting will be required, the need for which will be stronger in case individual farmers possess specific landscape elements which are needed to be pooled in order to make provision of public goods possible. An important issue to consider for effective agri-environmental policy making is that spatial dimensions of biodiversity objectives are not uniform or scale-invariant and relationships between scales are often non-linear (Hodge, 2007). As such deficiency of agri-environmental schemes might be due to implementation of scales at local scale without considering the larger landscape context (Westphal et al., 2003 and Whittingham, 2011).

The design, development and implementation of agri-environmental policies, include various jurisdictional levels, such as the European Commission, which after a complex political process defines and implements EU legislation (e.g. EU Regulation 1307/2013), with at member state level governments implementing national legislation, while taking use of the flexibilities included in the EU legislation, and delegating decision-making powers to authorities with a lower hierarchy (e.g. provinces).

As Figure 1 illustrates, different European policies are relevant for farmers developing collective agri-environmental management in their area: e.g. Birds and Habitat Directive, Water Framework Directive, Landscape convention and the Nitrate Directive. These policies address different aspects of sustainable environment management. In addition to these European policies, national, provincial and regional policies are governing for farmers as well making the institutional context multifaceted. Interactions between these policies are important across environmental scales as well as the interactions between different policies or between different levels of policy implementation. Lower governmental levels are responsible to implement different policies such as water quality improvement or biodiversity conservation from higher levels and will be monitored for these tasks. Interactions across scales and levels may change in strength and direction over time. These cross level interactions highlight the importance of collective action at higher levels such as landscapes. Closely linked to the jurisdictional scale is the institutional dimension, where the "institutions"-concept is used in a broad way as is done in the institutional economics stream of literature (e.g. Williamson, 1985 and Ostrom, 2009) and includes for example various institutions (e.g. EU Commission, Ministries of Agriculture of member states, provincial authorities, the Paying Agency), legislation, decision-making frameworks and procedures, monitoring and accountability mechanisms. Also informal norms and rules, such as for example ideas about good farming and nature management practices are included under this heading, as well as trust and other forms of social capital.

As regards the institutional scale, and more particularly the mode of allocation, from the transaction costs literature the issues of contract incompleteness and asset specificity have been emphasized. When parties make an arrangement, like the provinces and farmer groups are supposed to do, they (in particular the farmer group) impose themselves to a hazard: If circumstances change the trading partners involved may try to expropriate the rents accruing to specific assets (Shelanski and Klein, 1995, 336). This response is due to the fact that due to the complexity involved in agri-environmental arrangements contracts will necessarily be incomplete, while parties accepting a contract will be required to invest in assets specific to this transaction-relationship. Whereas in the new farmers group-approach to agri-environmental policy making the government may reduce on such transaction costs, this saving on transaction costs might be more than counterbalanced by the increase in transaction costs associated with the farmer groups, which not only have to arrange a bid in which they offer green services to the demanding party (provinces), but also internally have to organize the implementation of such an offer and have to be able to convince the demanding party that they will have the power to do so (feasibility).

The scale of time refers to the different time frames related to durations of policy programs, length of contracts, frequencies of negotiation or re-negotiation. Note that the length of the contract, which is planned to get a duration of 6 years, requires a long term commitment from both parties. The time-dimension is directly linked to issues such as flexibility, risk and uncertainties as distributed over and perceived by different parties in the agri-environmental 'supply chain', including the risk of time inconsistency of policy makers, the room preserved to make adjustments in negotiated programs based on learning and improved insights. In the framework as it currently is foreseen (see Figure 1) the CAP's Rural Development Policy runs for 7 years (period 2014-2020), the provincial nature conservation plans

(PNCPs) have a different length and cycle (in most cases covering a period of multiple (4-6) years), while the government plans to make agreements with farmer groups that are annually renewed or re-negotiated. It should be further noted that when introducing performance based schemes or measures, time nearly always is a crucial variable to consider.

Note that interactions across scales and levels may change in strength and direction over time. Measures in one environmental domain will often create spill-overs to other domains. However, there will not only be cross-overs with respect to impacts of measures, but also possibilities to create synergies between scales and there might be options to apply measures which create a 'double dividend' at multiple scales. For instance, most species will be influenced by factors at the field level as well as the landscape level (Kleijn et al., 2011). As such considering different scales and levels creates possibilities to improve the effectiveness of agri-environmental policy interventions⁴.

When evaluating the new farmer group-approach to agri-environmental policy, as it is now proposed by the Dutch government to the current one, a number of observations can be made:

- The decentralization as it is now proposed in the new Dutch farmer group model extends the possibilities for cross level interaction between stakeholders at different levels in the jurisdictional domain. The new model allows for a more distinctive role for demanders (mainly Provinces) and suppliers (groups of farmers).
- With the delegation of important decision making powers to the provincial level the possibility to target policy outcomes to local conditions, both in terms of objectives as well as constraints, could lead to potential gains in efficiency (e.g. Hooghe and Marks, 2003).
- The spatial level, which in the new model clearly extends that of individual farms, can be better linked to geographical scales relevant to specific habitats or landscapes. Here it has to be acknowledged that in the current agri-environmental policy implementation the policy makes also already applies some zoning requirements, therewith clustering specific agri-environmental actions to specific areas.
- A specific area of concern is the accountability/flexibility-issue. Although a new option in the EU's Rural Development Policy has been created for policy makers to interact with groups of farmers rather than with individual farmers, the EU's accountability framework seems still to be rather rigid and based on an individual farmer-contracting model. This may then "enforce" a structuring of farmer group contracts and deliveries which allows them to be downscaled in "as-if" individual farmer deliveries and associated compensations. To the extent this happens and depending on the restrictiveness of the accounting scheme, this may reduce the flexibility of the new scheme, making it in effective terms still rather close to the old individual farmer-model.
- Whereas the new approach may lead to a substantial reduction of public transaction costs, these savings will be counteracted by an increase in private transaction costs of the farmer group associations. Due to the relation-specific investments they have to make and the inherent incompleteness and complexity of agri-environmental collective contracts they cannot avoid imposing a hazard on themselves when participating into a collective agri-environmental contract.

As regards the efficiency of cost-effectiveness side of the new agri-environmental policy approach, the organisation and outcome s from the procurement operation as this will be made by the provinces will be a critical factor. Also from an EU policy making perspective this is a highly relevant question as increasing the effectiveness and efficiency of agri-environmental policy is an important objective of the CAP towards 2020-reform, while also it is important that the farmer groups-approach operates within the general level playing field conditions applying to EU policies and thus avoid over-compensation of certain groups of farmers. The next section will further deal with the procurement issue.

5. Procurement

Contracting a a farmer groups to deliver a package of biodiversity services is a typical procurement problem. A good overview of conservation contract design and procurement is provided by Latacz-Lohmann and Schilizzi (2005). In this section the key issues associated with efficient procurement in

⁴ For a further discussion about the institutional arrangements that multi-level approaches can lead to see Van Huylenbroeck et al. (2009) and Polman et al. (2011).

collective agri-environmental contracting will be discussed, exploiting insights from the literature on public and private procurement. From this literature it turns out that there are several factors that are crucial in determining the properties of the final outcome. These factors are:

- A characterization of the basic parameters defining the procurement setting (e.g. monopsony-buyer situation);
- Contract specification by the buyer and the specifics of the contracting due to the peculiarities of the public good or green service to be contracted;
- The allocation mode chosen by the procuring party (e.g. market exchange, auction-tender system, bargaining);
- Frequency of (re)contracting and expected design-changes after the contract is signed.

Agri-environmental collective contract procurement in the Dutch agri-environmental policy approach has two economic basic features: the government, more precisely the provinces, are the major buyers and have (regional) monopsony power. They can use this power to structure to a large extent what happens at the supply side. They can and do impose requirements on the organisational structure of the farmer groups, which they need to satisfy before being qualified as an acceptable potential contract partner. Second, the government or provinces has to make choices in what to buy (deliveries contract), who to buy from (choice of contractor or farmer group), how to buy (choice of contract type).

In Dutch case the buyer appears to play a very decisive role. This is illustrated by the steps the provinces have taken to develop procedures, define requirements and make formats and templates for the contractors, therewith to a large extent determining their room for manoeuvre. As such in reality the process is rather top down, probably more so than Figure 1 might suggest. Also the degree of competition seems to be limited, because the capacity building activity among farmers and their associations also functions as a pre-selection of contract partners, which will limit competition at the suppliers side. This issue will be further explored below, when other aspects are also brought into the discussion.

In the previous section it was already pointed to that collective agri-environmental contracts for the delivery of green services are by their nature incomplete. Moreover, farmer groups offering a collective contract or bid have to make investments that are specific to the relationship (cf. Polman, 2002), with examples of such investments the generation of the social capital, trust, and the organisational capacity needed to qualify as an acceptable contract partner, satisfying the requirements of the tenderer, and the investments made in creating a detailed proposal. As has already been argued, entering into an incomplete contract under these conditions implies that the contracting farmer group-partner imposes a hazard on itself. But not only with the farmer but rather with both sides there are risks when contracting. Given the contract incompleteness and the complexity of the services to be contracted (e.g. their impact or the effective constraints they generate to farmers being subject stochastic conditions such as variations in weather), there might arise a need for ex-post contract adaptation during the contractual relation. As is known from the procurement literature (see for example Tadelis, 2012) both the buyers and sellers will share uncertainty about many important contract design changes than will, or are very likely to occur after a contract is signed.

In a standard procurement procedure the buyer faces several challenges: (s)he must design an allocation mechanism and/or contract to infer the farm group suppliers cost; she must make clear what exactly should be procured, including a detailed specification of the contractual obligations and how to convey its needs to potential suppliers; and finally she has to select an award mechanism through which the procurement contract is allocated to potential supplier-farmer groups. The allocation mode chosen in the Dutch case is suggested to be a competitive tendering or auctioning system, where competitive farmer groups make offers consisting of a package of different agri-environmental services or efforts, meeting the requirements as they are made clear by the tenderer. As is known from the auction theory (see Klemperer, 2004 and references cited therein for further details) under a number of assumptions and conditions, such a competitive bidding mechanism will lead to an efficient outcome, where an efficient outcome is defined as a least cost provision of the services requested. However, as was already pointed to before, the actual way the farm group agri-environmental procurement process is organized, differs in various respects from the stylized theoretical tendering/auctioning case.

In designing a contract the policy maker has to face two important information asymmetries (Ferraro, 2008). The first one is hidden action or adverse selection, which arises when procuring the contract.

Farmer groups or suppliers having better information about their opportunity costs than the buyer can, by claiming that the costs are higher than they really are, secure higher payments than necessary to provide the service. The second information asymmetry is hidden action or moral hazard, which arises after the contract has been settled. Farmer groups or suppliers have then an incentive to avoid (fully) fulfilling the obligations of the contract, which they may exercise if the buyer finds monitoring contract compliance costly and is unable or unwilling to verify full compliance. Given that the new policy is a follow-up to the existing policy, where the policy makers and farmers "collaborate" already for many years, at least to some extent track record information is available, which may limit the efficiency costs associated with information asymmetries.

Defining a collective agri-environmental contract not only requires a detailed and as complete as possible specification of the obligations and deliverables a contractor has to fulfil, but also to specify a reward procedure. Here several options are possible, with the three options that frequently are observed in the literature being a fixed-price contract, a cost-plus contract and a unit-price contract⁵. As has been proved by Bajari and Tadelis (2001) and Tadelis (2012) in case of relatively simple projects, which are likely to have relatively complete contract specifications, fix price procurement may be most efficient. A competitive auction will in that case induce suppliers to compete their surplus away and the buyer will procure the design at the lowest price. Fixed price contracts provide an incentive to reduce production costs, but hamper efficient adaptation. With complexity and contract incompleteness increasing, and as a result adaptations more likely occurring, contrary to the conventional wisdom, both another type of contract (a cost plus contract) and another allocation mode (bargaining with a reputable and qualified buyer) are likely to be optimal. Procuring cost plus contracts via an auction can create severe problems with adverse selection creating a risk that the "wrong" suppliers (highest cost, least able) will win the contract (see Tadelis, 2012, 300 for a detailed argument). It is acknowledged that negotiated contracts may be less effective in selecting the lowest bidder than open auctions or tendering systems. But they can economize on ex-post transaction costs resulting from frequent adaptions of the contract. The cost savings involved with this may outweigh the gains of competitive bidding. Whether this will be actually the case for agri-environmental management needs empirical research, but an empirical assessment of Bajari et al (2014) of data on 819 completed public highway construction contracts show that the adaptation cost associated with incomplete contracts can be substantial, and maybe even more important than the standard sources of (asymmetric) private information and moral hazard mentioned to explain departure from efficiency in procurement.

How does the procurement strategy followed by the Dutch province authorities look like? It is clearly a single buyer procurement setting. However, as regards the bidding process there is a special posted price-feature which imposes a tight restriction to agri-environmental public sector procurement, classifying the Dutch procurement system as unit price auction rather than a discriminate price auction. An important institutional aspect in the Dutch multilevel governance approach is the so-called Catalogue Green and Blue Services (CGBS) which offers building blocks for composing agri-environmental measures for individual farmers. This catalogue provides a pre-fixed unit price fixation for different agri-environmental measures and services, with the calculated compensation based on the estimated costs for providing these services by an "average" supplier (being a supplying farm rather than a farmer group)⁶. More specifically, the compensation for the different measures is based on the income forgone-

⁵ A fixed price contract specifies a fixed price the contractor agrees to accept in return for keeping the obligations and delivering the services as specified in the contract. In a cost-plus contract the contractor is reimbursed for the costs (labour, material, forgone revenues) she makes with an additional stipulated fee. Hence the costs of any adaptations are automatically compensated for by the conditions that are already specified in the original contract. A unit price contract can be interpreted to be a hybrid form of the previous ones: the unit price contract is easily set up to allow competitive bidding, while if some adaptations are needed (e.g. additional hectares of ecological buffer zones) the contract has a built in "cost-plus" mechanism using the item's per unit bid (e.g. the unit price for one hectare of ecological buffer zone).

⁶ Rather than specifying a unique unit-price, the Catalogue specifies maximum payments by measure that fit within the regulation on State Aid in the European Union, where some kind of regional differentiation is taken into account. The catalogue has been originally developed as a joint initiative of the national government and the provinces, as a way to govern (regional) initiatives that did not fit within the regular policy instruments. Until 2006, to ensure that innovative initiatives fit with European legislation, a time consuming consultation was needed between the Dutch government and European Commission to achieve mutual agreement. These negotiations were also perceived discouraging and frustrating by local initiatives (see Westerink et al., 2008). The Catalogue can operate as a device avoiding or reducing the transaction costs that would have been to be considered when developing new initiatives open to any specification. It can however also function as a reference level (since past payments have been based on this principle) and thus create an endowment bias

principle, which compensates farmers for their efforts (costs) as well as for the revenues forgone associated with these actions. The measures included in the Catalogue are not only described in detail with respect to implied requirements on farmer behaviour, but are also notified to and confirmed by the EU Commission (European Commission, 19-II-2007, C(2007) 586). Following this standard has as an advantage for The Netherlands that it by doing so can prove its accountability and defend oneself for example against accusations of overcompensation of (individual) farmers. The Catalogue not only provides an overview of measures farmers can take on their farms, but also including information on the maximum payments for these measures that fit within the regulation on State Aid in the European Union.

The catalogue offers a toolbox or menu for pooling measures for developing measure packages within collective approaches. Since both the buyers (provinces) and suppliers (farmers and their organisations such as the ANVs) are familiar with the Catalogue both sides can save on transaction costs when using this toolbox, rather than inventing the wheel anew. However, a drawback is that following this posted-unit pricing-rule will not provide any guarantee to the policy maker that it will achieve its policy objective with respect to the level of service provision (as defined in the regional provincial plans). For that to achieve one should allow the farmer groups to specify an endogenous price as part of their bid. Following this pricing rule allows the policy maker to calculate a fixed price for a farmer group package-contract and then create a take it or leave it exchange rather than a sealed bid unit price auction (see for an elaborated discussion on the economic consequences also the next section).

As regards the frequency of contracting, annual contracting rather than making a contract covering a multi-annual period can be beneficial for both parties since a higher contracting frequency reduces the time gap between unit commitment and delivery period for suppliers and therefore their risk of marketing their asset in a suboptimal way. Moreover, it allows the buyer to arrange adjustments and utilize learning and information revealing effects in new contracts, thereby reducing the costs associated with ex-post haggling and frictions. Note that such ex-post frictions cannot only lead to direct costs, but also to indirect costs, in terms of uncertainty for the farm businesses and a deterioration of the social (trust) capital and perceived fairness. The benefits of higher frequency procurement need to be weighed against the additional transaction costs associated with more frequent procurement. As far as increasing the frequency may foster collusion between suppliers and by that reducing the efficiency of the outcome this should be also taken into account.

As regards the competition between suppliers the spatial character of agri-environmental contracting should be acknowledged. By allowing only groups of farmer to offer bids, the number of competitors for the tender will depend on the number of farmer groups that can be formed, which in turn depends on the minimum specified for the number of farmers that should be at least included in a group, as well as by the farm scale (in terms of hectares of land) in relation to the total area in a region. In particular, when a policy objective of the buyer is to get an over its territory balanced participation of farmers in the provision of agri-environmental services, this will limit the number of suppliers and increase the likelihood of strategic and collusive behaviour among suppliers in normal auctions (monopolistic competition). Following a non-auction awarding procedure, in which the buyer pre-selects a number of reputable suppliers (e.g. ANVs with a proven track record from the past), shares information with them and funds organisational capacity building for a limited number of groups of farmers that are evaluated to be potential reliable suppliers, can then in the end generate a more competitive outcome (Tadelis, 2012).

6. Discussion

In this paper, taking into account the agri-environmental, transaction cost economics and procurement auctioning literature, a mainly qualitative analysis has been provided of a number of economic aspects of the new Dutch farmer group policy approach to agri-environmental service provision. Since the model is still in the stage of development the analysis takes the current state of the art as its starting point. The summary focuses on the relative success (measured by the degree of farmer participation) under the new approach relative to the individual farmer contracting approach and provides a qualitative discussion of the pro's and con's of the farmer group approach relative to the current policy approach benchmark.

which makes it difficult for the province/buyer to pay less than this "standard" and make it less easy to achieve full efficiency-gains. The latest update of the Catalogue with the EU Commission dates from 2010 (see <http://www.portaalnatuurenlandschap.nl/themas/catalogus-groenblauwe-diensten/overzicht/> for further details).

As regards the expected participation Figure 4 provides a schematic overview of the economic trade-offs that have to be considered. The supply of services offered is given by the marginal cost curve of the farmer group. Note that these marginal costs will depend on the “prescribed” locations where the policy maker would like to have the actions take place. Note that whether a farmer group will opt in or out not only depends on its marginal costs of supplying the service, but is also co-determined by the (fixed) set-up costs. In case of entry, i.e. the first round of contracting, the relevant supply curve is $OABE$, including the entry point. When a farmer group has already opted in its fixed investments are bygones and its supply curve will be $OCDE$, including the exit point. As such there are two reason why the policy maker has an incentive to support farmer groups in making the initial investments and start-up costs. By doing this they firstly reduce the barrier to entry and increase the competition in the first round, and secondly when farmer groups have opted in at later rounds they are less likely to exit, as long as the compensations they will receive cover their variable costs of service supply. Note that in case the policy maker decides not to support for the fixed costs and/or the organisational set-up costs of farmer groups, and bases the payments based on the CGBS posted price system previously applied under the old model, the participation of the number of farmers under the new approach will be unambiguously lower than under the old model with individual farmer contracting. If farmers can only participate as a group marginal as well as intra marginal farmers grouped in a farmer group will decide not to.

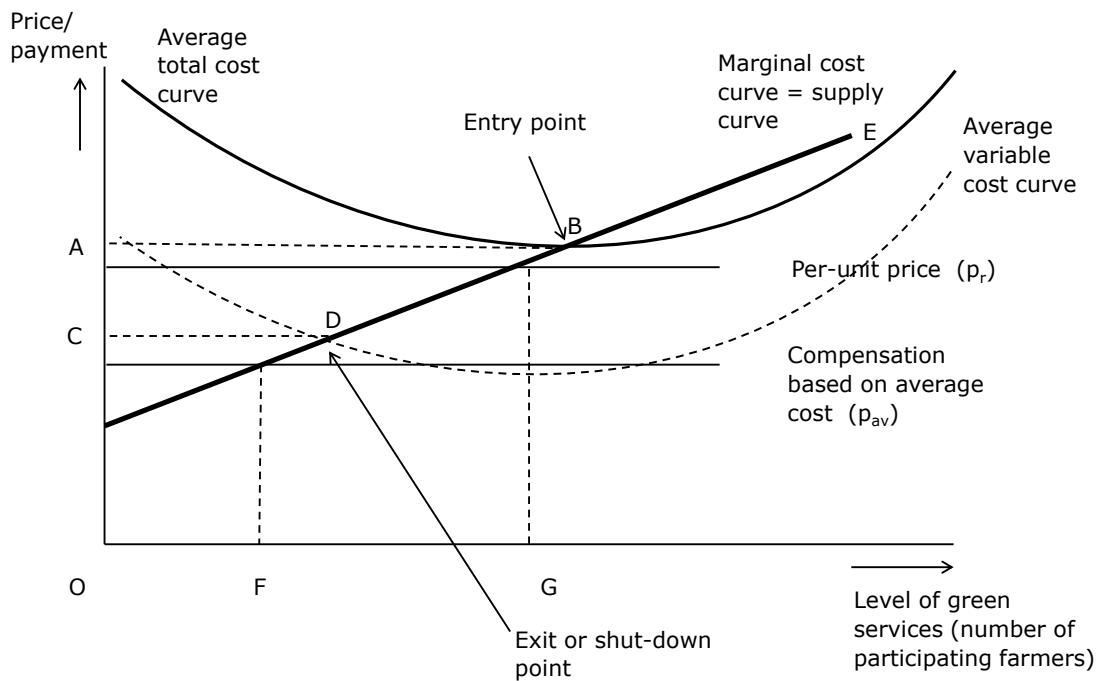


Figure 4 Unit price contracting of agri-environmental services and farmer group supply

Note that when the policy maker would have as an objective to achieve a green service provision level of OG , in a competitive bidding process, they would need to be prepared to pay at least the per-unit price, i.e. the reservation price of the farm group p_r , to get this level of supply. If they however offer to the farmer group a take it or leave it contract at a compensation level based on an average supply farm's cost, or p_{av} , they will only contract a service provision level of OF (rather than OG), which is below their volume-objective. With using a fixed system of posted prices based on the CGBS-book, there is in general no guarantee that the agri-environmental service level offered will meet the policy maker's objective. Note that the payment-system leaves it open how the farmer groups will decide to internally schedule the payments. As private organisations, farmer groups have the autonomy to apply some kind of price discrimination with respect to low and high costs suppliers. Potentially, such a redistribution could lead to a higher service level and a higher number of farmers participating (not further explored in this paper)⁷.

⁷ Note that if, under the current system there is rationing of low cost suppliers because of the limited budget available and a reward mechanism which allows high cost supplying farms to be selected and receiving a payment that covers their costs, then under the new system, conditional on the contract specifications being

For a more general summary of the pros and cons of the farmer group approach to agri-environmental policy as proposed by the Dutch government see Table 1.

Table 1 Qualitative assessment of the pro's and con's of the farmer group (FG)-approach to agri-environmental contracting (using the individual farm contracting approach as a benchmark)

Issue	Pro's	Con's	Comment
Ecological effectiveness	Buyer and supplier roles are better distinguished; depending on the mode of allocation (bargaining) quality aspects of services delivered, its geographical targeting and the composition of the package of measures (select from the CGBS) can be negotiated	FG-approach may lead to lower farm participation, which has to be compensated by the improved quality of the services delivered by the remaining participants	Depends on the ambition expressed in the policy objectives as well as the contract specification with respect (has not been a main objective of this paper).
Degree of farmer participation	Might improve because of a reduction in individual farmer transaction costs because of the arrangements now made by the farmer group on their behalf	If no sufficient support is given to support FGs with respect to start-up costs, and the posted price approach (CGBS) is followed participation is expected to decline	Also farmers' trust in the new policy approach and the reliability of the policy maker as well as the role of private transactions costs (see below) also play a role in explaining farmer participation
Achieving a balanced territorial coverage of AES	The regional provincial plans (PNCPs) specify the territorial targeting bids should address	Spatial competition may lead to white gaps due to non-selected suppliers	
Transaction costs	Public transaction costs are likely to be reduced, conditional on FG-contracts becoming not too complex	Private transaction cost with FG will substantially increase	Transaction costs will also depend on the frequency of contracting
Procurement efficiency	A procurement auctioning (tender) approach can contribute to least cost provision of a desired quantity of high quality services	By not utilizing the full possibilities of (sealed bid, discriminatory) price auctions the potential efficiency gains from a competitive tendering system will not be achieved; By relying on a posted-price approach, the amount of services delivered will be endogenous, and does not have to meet the policy objective on this	Rather than a competitive auction, the Dutch government uses a negotiation approach, which might however lead still to a good outcome, given the discussed complexities in agri-environmental contracting and the custom made product
Accountability	Agreements on accountability systems at FG rather than individual farm level can be made; the use of the established and EU-recognized CGBS-framework simplifies the proofing of the administrative accountability, but leaves freedom to the FGs to internally schedule the money in an alternative way which then improves	The approach to follow the CGBS-framework will "enforce" the new system to stick relatively close to the old/current one, at least at the province-FG interaction level.	As noted when signing a contract a FG imposes a hazard on themselves. The perceived risk associated with this might depend on the strictness of the accountability system; EU accountability procedures and the lack of time for

redesigned more in favour of the low cost suppliers, an increase in the green service level or effectiveness of agri-environmental schemes could be possible. However, achieving this efficiency gain might also be feasible by redefining the entry conditions under the current individual farm contracting-approach.

	(perceived) fairness, effectiveness and efficiency.		implementation of the new policy restrict national and provincial policy makers to at this stage already use a more flexible approach
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Source: based on the previous analysis

The weighting of the various pro's and con's summarized in Table 1 in order to derive a single final judgement about the new approach is not possible, without doing a much more detailed and also empirical research.

7. Conclusions

Based on the previous analysis some concluding observation from our analysis can be made:

- The farmer group approach to agri-environmental service delivery contracting offers potential benefits and flexibilities that go beyond those realized by the current individual contracting approach and can be identified as being favourable to improving fairness, effectiveness and efficiency;
- Achieving these benefits, however, requires that the potentials and flexibilities from a regional or farm group agri-environmental services delivery contracting approach would be fully exploited. This is currently clearly not the case;
- Issues of contract incompleteness, the creation of a custom made product, the spatial aspect and the implications this has for organizing a competitive bidding process (for a specific area and in addition to there being a monopoly buyer there can be a monopoly supplier), as well as the lack of time to specify detailed contracts can be a legitimate factor to rely on a bargaining/negotiation approach with reputable suppliers, rather than sticking to a competitive auction approach with several buyers. The latter does in that case not to lead to the most efficient outcomes, as might be suggested by the conventional wisdom in the standard procurement literature;
- When being able to take into account information from past performance (track record of ANVs), a pre-selection of a limited number of reputable suppliers may contribute to reduce the buyers problems of adverse selection;
- The strategy followed by the Dutch policy maker to rely on the Catalogue of Green and Blue Services is likely to contribute to reduce the public as well as private transaction costs that might be associated by designing new collective contract in a fully open way;
- Since the (provincial) government is a monopsony buyer in its territory it can potentially use its buying power to determine to a large extent the conditions under which agri-environmental services will be delivered. In this context, selecting suppliers without a competitive bidding mechanism, may raise concerns with transparency and favouritism. Moreover, after a contract has been signed it may leave the suppliers in a relatively weak bargaining position when adjustments are required. This emphasizes the importance of mutual understanding (reciprocity) and trust, while it also could provide an argument for an independent dispute settlement mechanism.

The design and implementation strategy the Dutch government is currently pursuing takes into account the complexities associated with organizing farmer collective action in agri-environmental service delivery, as well as the many uncertainties for the buyer as well as its suppliers that are associated with switching to a new farmer group policy approach. Therewith it tries to build upon past experiences with the Dutch private nature cooperatives (the coordination approach with ANVs) as well as with the previous

investments made in the Catalogue of Green and Blue Services. This approach seems defendable in an attempt to minimize political risk (e.g. different views on accountability procedures among various stakeholders) and policy failure. As a result, in effective terms, the outcome obtained by the new approach may be still "close" the one achieved under the old individual farm contracting approach. However, this being the case, it still may pay in terms of making different players more aware of their role and responsibilities in the agri-environmental service provision supply chain, making an improvement in the tailoring of agri-environmental service delivery to local needs, and having set an important step in an arrangement that has several promises for the future. The farmer group approach to environmental policy as it currently is proposed has than to be seen as a first step that needs to be followed by subsequent steps that make better use of the flexibilities and potentials (extensions with respect to discriminatory pricing and combining payments for efforts and performance) in the new approach.

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