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Exploring farmers' perspectives on collective action: a case study on co-operation in Dutch agri-environment schemes

Margarethe Reichenspurner^{a*} , Rena Barghusen^a  and Bettina Matzdorf^{a,b} 

^aWorking Group 'Governance of Ecosystem Services', Research Area 'Land Use & Governance', Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany; ^bInstitute of Environmental Planning, Leibniz University of Hanover, Hanover, Germany

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To improve the ecological effectiveness of agri-environment-climate measures (AECM), collective approaches to co-ordinate AECM beyond the farm level have emerged, which are characterised by different levels of co-operation between individual farmers. As participation is voluntary, understanding farmers' perspectives on collective action in the context of these economic incentive instruments is crucial to improve existing or design novel approaches. We conducted a Q study on farmers' viewpoints on collective AECM in the Netherlands, where all AECM have to be realised jointly since 2016. Our results reveal three dominant views on collective AECM: a collective-oriented, a business-oriented and an environment-oriented perspective. Clear preferences for the collective approach show that even in cultures with strong values of independence joint action is possible, as farmers' autonomy can be strengthened through co-operation. Considering different perspectives on collective approaches within the institutional design can help to develop more targeted, and thus successful, incentives.

Keywords: economic incentive instruments; landscape level approach; co-operation; farmer motivation; Q methodology

1. Introduction

The Common Agricultural Policy of the European Union (EU) provides the option to apply for payments in the national programmes for agri-environment-climate measures (AECM) as a group. Collective approaches to AECM emerged to co-ordinate action beyond the farm level (Franks and McGloin 2007; Prager, Reed, and Scott 2012; Emery and Franks 2012; McKenzie *et al.* 2013). The common individual approach to AECM that targets individual farms has been criticised as having limited ecological effects due to a lack of spatial co-ordination and local targeting of measures (Kleijn *et al.* 2006; Uthes and Matzdorf 2013; Westerink, Melman, and Schrijver 2014). Further, collective AECM can promote a cultural embeddedness of pro-environmental practices, since social learning and increased confidence facilitated through communication and exchange between farmers and other stakeholders leads to changing

*Corresponding author. Email: margarethe.reichenspurner@zalf.de

attitudes and behaviour (Emery and Franks 2012; Mills *et al.* 2011; van Dijk 2016). Although a collective approach is often recommended, its characteristics and advantages remain rather vague due to the variety of existing cases across regions and countries that differ in their design (Westerink *et al.* 2017; Wanner *et al.* 2020). Prager (2015) explains the range of collective approaches as based on different degrees of co-operation between individual farmers. Some approaches emphasise collaboration, which means that farmers work together and maintain a dialogue. Other approaches are based on co-ordination, which implies that farmers work towards the same goal, but in isolation (Boulton, Lockett, and Seymour 2013; Prager 2015).

Since participation in AECM is voluntary for farmers, a suitable design of collective action depends on the preferences of the respective farmers. Collaboration has been promoted to foster co-operative norms through increased interaction and the experience of mutual support and learning (Wynne-Jones 2017; de Vries *et al.* 2019). However, a co-ordinated approach may rather fit where farmers' identity as autonomous business people is strong. Riley *et al.* (2018) argue that farmers perceive themselves as experts on their lands and thus a "good farmer" as someone who is not reliant on others. Mechanisation enhanced individualism and the openness of farmers to work with others depends more on reputation than on trust from reciprocal exchanges. Collective AECM arrangements could bear a loss of image as a good farmer, not only by compromising their own individualism, but also by being associated with farmers who are not perceived as "good farmers" which traditionally is also related to productivity and tidiness of land (Burton, Kuczera, and Schwarz 2008). Also, farmers could be reluctant to join co-operation if they fear that others will act as free riders, benefitting from the group action without contributing themselves (Mills *et al.* 2011; OECD 2013). On the downside, individualism is not seen to counter co-operation per se, but instead can motivate farmers to co-operate for greater independence from the government or the market (Stock and Forney 2014; Emery 2015).

As the only EU Member State so far, the Netherlands changed the national AECM programme to a collective approach in 2016. Since the 1990s, local environmental farmer associations for landscape management had been emerging as a response to increasing governmental prescriptions, to regain some autonomy on deciding about how to achieve conservation goals (Westerink, Termeer, and Manhoudt 2020; Runhaar *et al.* 2017). Based on the success of these local bottom-up initiatives, for the new approach 40 farmer-based "agricultural collectives" were established covering the whole of the Netherlands, partly building on the former associations (Terwan *et al.* 2016). If farmers want to apply for AECM, they need to become a member of their regional collective, which co-ordinates actions on a regional level and acts as intermediary between governmental authorities and farmers. The approach integrates a mixture of co-ordinative and collaborative elements in a so-called front-door-back-door principle: Regional governments have one contract with the collectives, whereas the collectives contract with individual farmers (Terwan *et al.* 2016). Farmers need to apply for participation jointly with other farmers, but remain solely responsible for the implementation of measures on their lands. Collaboration between farmers occurs in organising themselves as a collective with enforcement rights, as well as in on-site exchange and learning events.

While a broad range of studies exist on the motivation to participate in individual AECM or other conservation measures (see, e.g. Ahnström *et al.* 2008; Lastra-Bravo *et al.* 2015), the design of, and participation in, collective schemes so far has been mainly covered by theoretical and experimental studies with a focus on financial

incentives such as bonus payments (cf. Nguyen *et al.* 2022). Based on the institutional design, farmers' motives for participating in collective AECM will differ. In a survey among board members and staff from the Dutch collectives on farmers' motivation to join collective AECM, Barghusen *et al.* (2021) found that economic and intrinsic environmental motivations were assessed as equally important, whereas the role of socially induced motivations remained unclear. In this study, we investigate Dutch farmers' perspectives on collective AECM using Q-methodology to explore in more detail what convinces them to engage in the collective approach. Understanding farmers' subjective viewpoints can help to improve collective AECM initiatives as well as to design new ones. Developing attractive incentive instruments matching farmers' perspectives is key to promote participation and enhance the programmes' ecological effectiveness through increased participation. Hence, the study addresses the question: "What viewpoints exist on Dutch collective AECM among participating farmers?"

To integrate the results within the current policy context (i.e. farmers having no choice but to participate in collective AECM, if wanting to participate in the Dutch agri-environmental programme) and to be able to better discuss the results in terms of policy implications, it is complemented by the sub-question "What advantages and disadvantages do farmers perceive of the collective in comparison to the individual approach to AECM?"

In contrast to existing studies on pro-environmental behaviour of farmers based on farm and farmer characteristics or creating typologies (e.g. Maybery, Crase, and Gullifer 2005; Van Herzele *et al.* 2013; Cullen *et al.* 2020), this study focuses on agri-environmental engagement in the context of collective action, i.e. on the co-operation between farmers. Also, the aim is not to categorise them according to values or certain characteristics, but instead to explore their subjective perspectives independent of pre-defined attributes.

2. Methodology

2.1. Q methodology

To explore farmers' perceptions, *Q methodology* has been chosen, as it enables subjective viewpoints of research participants to be revealed (Watts and Stenner 2012). Q methodology was originally developed for psychology research, but is now used in a wide range of disciplines, including environmental and agricultural research (see, e.g. Zabala, Sandbrook, and Mukherjee 2018; Norris *et al.* 2021; Sudau, Celio, and Grêt-Regamey 2022; Tafel *et al.* 2022), as understanding stakeholders' perspectives is central to many environmental (conservation) questions.

To identify similarities in individuals' perceptions, an inverted factor or principal component analysis is used where people become the variables, and a range of statements on the discourse its sample (Watts and Stenner 2012). In Q interviews, research participants are confronted with a set of statements (the *Q set*), each of which represents an individual opinion. The Q set ideally covers almost the whole discourse of the topic under consideration (the *concourse*), representing all relevant aspects with a respective number of statements (so-called *items*). The Q set should enable participants to model and express their perspective on the topic by sorting the statements relative to each other in a grid with a quasi-normal distribution. As participants explain the most extreme sorting positions (at the sides of the grid) and other statements deemed of importance, qualitative information is added to the quantitative sorting process. Before the sorting, additional (quantitative) information can be obtained, while after the sorting further questions can be asked for more profound elaboration.

2.2. Conceptual framework

The collection, structuring and selection of statements for the Q set was guided by a framework of Barghusen *et al.* (2021) on motivation for participation in collective AECM, covering costs and benefits, personal norms and social norms. Costs and benefits are clustered into monetary rewards (e.g. compensation payments), indirect rewards (e.g. provision of extension services or ecological benefits) and cost savings (e.g. through sharing labour or resources). The personal norms refer to the perceived obligation to behave in environmentally friendly ways based on an individual's internalised values. They include (i) problem awareness, (ii) perceived responsibility and (iii) group efficacy, which is the trust in the group's ability to reach a goal. Social norms guide individual behaviour. They are rules and standards of a group or society to which an individual feels attached. They comprise (i) injunctive norms, which are moral guidelines or beliefs on how to act and (ii) descriptive norms, describing the (perceived) actual and popular behaviour of people. The different (sub)categories influence each other and are part of a cognitive weighting process which leads to a decision. For a schematic representation of the framework, see [Supplementary Material 1](#).

2.3. Research design and data collection

The study design was developed based on a literature review covering articles on agri-environmental co-operation and the uptake of voluntary agri-environment or conservation schemes published since 2000 in the EU and countries with a similar biophysical and/or socio-cultural context. Furthermore, nine SWOT (Strengths, Weaknesses, Opportunities, Threats) analyses of an EU project on different collective approaches created in seven workshops with mainly farmers, but also representatives from other groups, such as authorities, conservation or environmental NGOs or rural development entities (sum of participants: 121) were used to develop statements for the Q set (for a summary of the SWOT results see Wanner *et al.* (2020)). A Q concourse of 117 statements was developed and clustered according to the framework by Barghusen *et al.* (2021) on motivation for participation in collective AECM. 37 representative statements were selected (for an overview of all statements and motivational categories see [Table 2](#)). Following the recommendation by Brown (1980), a nine-point grid, ranking from high disagreement (−4) to high agreement (+4) with a forced distribution was chosen.

The participants (*P set*) should represent the breadth of opinions in the target population (Watts and Stenner 2012). To obtain such a P set, 13 collectives were contacted via email and phone and asked for participants holding different opinions. As the aim of a Q study is not to generalise findings in a statistical, but rather in a conceptual sense, by exploring the existence of viewpoints on a topic, a relatively low number of research participants suffices. The number of participants is recommended to be smaller than the number of items (Watts and Stenner 2012) with a common ratio of three items per participant (Webler, Danielson, and Tuler 2009). In the end, 15 interviews with farmers from six collectives were organised between 22 January and 11 February 2021 (see [Figure 1](#); for more information on the collectives and on participation in Dutch collective AECM see [Supplementary Material 2](#)). The interviews were conducted in Dutch via video call using *HtmlQ*,¹ recorded based on the informed consent of the participants and transcribed. In the interviews, (i) farm and farmer characteristics were obtained via a questionnaire, then (ii) participants were asked to sort the statements into three piles according to whether they agreed, disagreed or were neutral

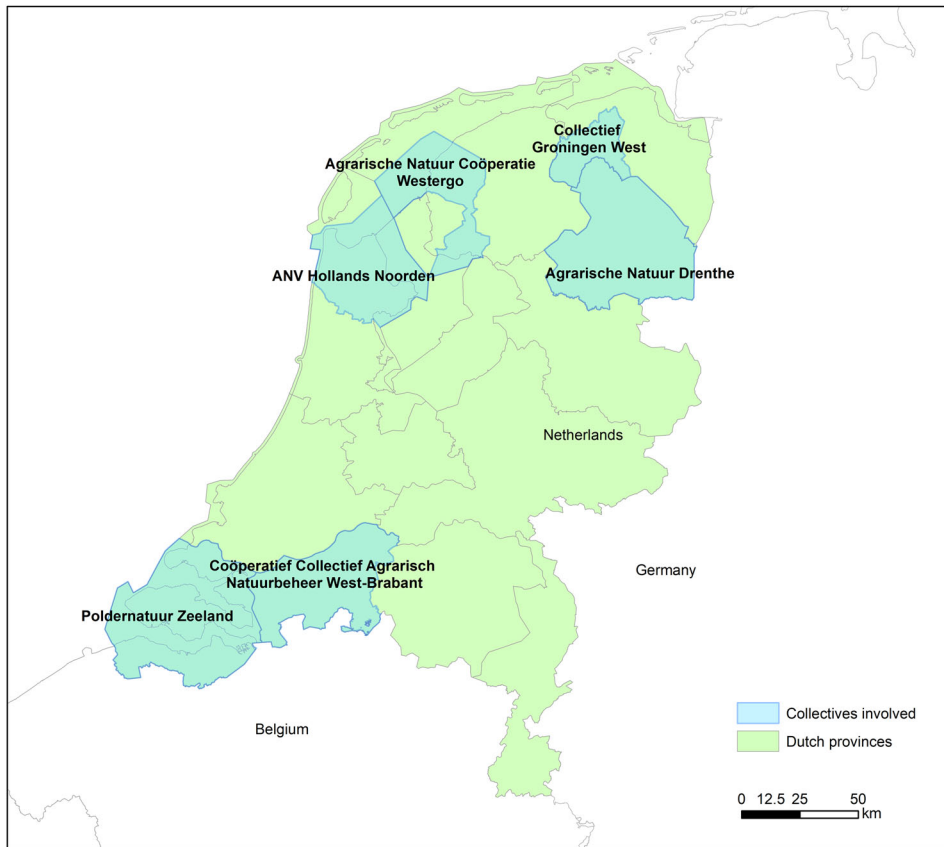


Figure 1. Overview of the participating farmers' collectives (map by Sigrid Ehlert using ArcGIS 10.8.1, geospatial data by BoerenNatuur [collective areas] and GADM [administrative boundaries]).

about the statement, (iii) sort the statements into the grid according to the relative (dis)agreement with each statement, (iv) explain the most extreme sorting positions and comment on other statements deemed of importance and in the end (v) reflect on the advantages and disadvantages of the collective AECM in comparison to the individual approach. While the perceived advantages and disadvantages are part of the farmers' perspective on the collective schemes, qualitative questions were added after the sorting process to gain a more profound understanding. For details on data collection, questionnaire and Q grid see [Supplementary Material 3](#).

2.4. Data analysis

To reduce the complexity of the data and identify shared perspectives, the 15 Q sorts were intercorrelated with the Spearman correlation coefficient and analysed through Principal Component Analysis using *qmethod for R* (Zabala 2014).² Testing different possible solutions, components (here also called factors) were extracted based on the following criteria (cf. Brown 1980; Watts and Stenner 2012; Zabala 2014):

1. Kaiser-Guttman criterion: Each factor's eigenvalue has to be greater than 1.
2. The set of factors accounts for at least 35% of variance.

3. At least two Q sorts per factor have to be flagged, which requires that (i) factor loadings are significantly high (p -value < 0.05) and (ii) the square loading for a factor needs to be higher than the sum of square loadings for all of the other factors.
4. Humphrey's rule: the cross-product of its two highest loadings (regardless of the sign) exceeds twice the standard error.

The extracted factors represent groups of individuals who ranked items in a similar way, i.e. persons who share a similar perspective on the topic.

The *factor loading* is the correlation of a Q sort with a factor, i.e. describes the extent to which each Q sort exemplifies a factor's pattern. The squared factor loading is the amount of variance accounted for by the factor. To have the factors best representing a respective number of Q sorts, i.e. increase the factor loadings of Q sort groups for each respective factor, varimax rotation was used. The respective Q sorts of the rotated factors can then be used to derive representative estimates of each factor's perspective, the *factor estimate* (Watts and Stenner 2012). The factor estimate was ordinarily prepared via weighted averaging of all individual Q sorts which significantly load on one factor. To account for the different number of Q sorts which load into the weighted averages, so-called z-scores were calculated. Finally, for each factor a *factor array* was constructed, which mirrors a representative, idealised Q sort for each factor. In the end, the integration of the quantitative analysis and all qualitative information provided through comments and explanations related to the sorting was used for the interpretation of factors to create narrative viewpoints, i.e. a narrative description of the people who belong to a factor. The factor interpretation entails a careful and holistic inspection of each factor, looking not only at the extreme values but at the composition of all values relative to each other (cf. Watts and Stenner 2012). The questions on advantages and disadvantages of the collective schemes in comparison to the individual approach were analysed using a qualitative content analysis.

3 Results

3.1. Factor characteristics and descriptive statistics

In the first sorting step, participants sorted an average of 23 statements to the positive pile, six statements to the negative pile and eight to neutral, implying that statements sorted to 0 or -1 were often still seen positively. Two quantitative solutions for extracting two and three factors fulfilled all criteria for factor extraction as listed above. Three factors were chosen, as they explain a plus of 7.72% of variance in comparison to two factors and allow for more detailed findings and interpretation. The three factors explain 66.31% of the study variance. 14 of the 15 Q sorts load significantly on exactly one of the factors. Q sorts which significantly load on more than one factor are considered confounding and are not flagged (Zabala 2014), which in this study was the case with one Q sort, which could not be assigned to any factor and was excluded from the quantitative analysis. The factor characteristics are depicted in Table 1. Table 2 gives an overview of the different statements related to the respective categories of the conceptual framework and the factor arrays (idealised Q sorts) for each factor.

All factors comprise farmers from different regions. All except one farmer (factor 2) have been members of their collective since before 2014, i.e. before the transition to collective schemes. In each factor, some but not all farmers participate in further projects of the collective (besides AECM). Further descriptive information is depicted

Table 1: Factor characteristics and descriptive data

Characteristics	Factor 1	Factor 2	Factor 3
Number of Q sorts flagged	5	3	6
Eigenvalue	3.53	3.24	3.18
Explained variance (%)	23.52	21.58	21.20
<i>Sum of explained variance (%)</i>			<i>66.31</i>
Reliability ($\in [0,1]$)	0.952	0.923	0.960
Standard error of factor scores	0.218	0.277	0.200
Descriptive data			
Participants involved (ID)	2, 7, 10, 11, 12	5, 9, 14	1, 3, 4, 6, 8, 13
Regions represented	Brabant, Drenthe, Friesland, Zeeland	Brabant, Friesland, Groningen	Brabant, Drenthe, Friesland, Groningen, Noord-Holland
Farming sector	dairy (2), arable (2), arable and livestock (1)	livestock (1), dairy (2)	dairy
Average farm size (ha)	76.4	86.3	68.2
Average number of cattle in dairy farming	170	405	152
Farm type	conventional	conventional	Conventional (5), organic (1)
Average income from farming (%)	84	98.3	87.2
Average age (years)	45	52	57
Average of years farming	24.4	33.7	33.8

in Table 1. The ranking of average z -score differences shows that factors mostly correspond on indirect rewards, aspects of group efficacy and descriptive norms. There is a medium consensus concerning direct rewards (with all agreeing on the importance of direct payments, but different opinions on bonus payments), cost savings and injunctive norms. The strongest differences occur in personal norms, both concerning problem awareness and perceived responsibility.

3.2. Viewpoint narratives

3.2.1. Points of consensus

All farmers agree that direct payments are important (30: 3),³ as without them they would not be able to afford to invest in nature protection.

You have costs and fewer yields and that has to be compensated. The money is [... not] the only important thing, but it makes sure you can do the maintenance. Without money it is not possible. (P10)⁴

All perceive it as a main advantage of the collective schemes that the collectives support them with the application and administrative tasks (17: 1, 2, 2) and provide

opportunities to get together and create useful networks (16: 1). Also, they value meetings and exchanges to learn from each other (24: 2, 1, 1). While it is important for them that people acknowledge their effort with the schemes (35: 2, 0, 0), they do not perceive a pressure by society which would influence their actions (32: -2). Further, they appreciate the collaboration of the collective with nature conservationists as well as with citizens (25: 1, 2, 3).

Normally farmers and nature conservation are opposite to each other. Nature conservation likes to see nature and the farmer is traditionally anti-nature because he has to hand over agricultural soil for it. The collective creates a win-win. Normally the two of us never talk, but this is the opening of a dialogue. (P7)

Most farmers see some ecological benefits for their farms beyond the increase in biodiversity (18: 0, -1, -1). Also, most people who are important to them think positively about collective AECM (11: 0, 0, -1). Yet, all of the farmers strongly reject the idea of having joined the scheme because their farmer colleagues take part in collective AECM (34: -4): “I don’t care what other farmers do [...]. I fight for my own farm. I don’t follow others. I am too stubborn for that.” (P14).

Not all of them trust that their neighbours are good partners for co-operation (28: -1), but they are not at all afraid that someone in the collective would benefit without contributing himself (23: -3, -4, -4): “It is good when others benefit from me. In the end we all have to do it.” (P3). The farmers are positive to neutral about whether the collective scheme offers more flexibility and is less restrictive than the previous scheme (21: 1, 0, 0), but all of them prefer the collective schemes. To distinguish the different viewpoints (Vs), they were labelled as V1: *The Collectivists*, V2: *The Business Rationalists* and V3: *The Environmental Optimisers*.

3.2.2. Viewpoint 1: *The collectivists*

For farmers from V1 taking care of the environment is part of being a good farmer (8:4):

That is what I grew up with. You do everything for nature. If you are not doing good for the land or the cows, you are not going to make it yourself. [...] If you don’t have any affinity with nature, you should not become a farmer. (P2)

However, it has to be their own decision how to protect nature and which schemes to join (33: 4): “[...] we are already so limited in our freedom, so I don’t want to hand over even more freedom. The freedom of the job is an enormous motivation, not only the financial support.” (P11).

They love nature and the surrounding landscape (4: 3) and are convinced that their land use maintains biodiversity (7: 2). V1 farmers are open to new practices (1: -3) and are proud of what they achieve as a collective (27: 3). They help each other out within the collective (15: 1) and are influenced in their decision on whether to participate in the schemes by what others in the collective think (12: 0). Even though they would like to do so, they do not see a chance of continuing with the measures if they were no longer paid for it (9: -3): “I have to invest so much time and money, it won’t be worth it. Even as a lover of nature, in the end it is having a business.” (P2).

Table 2: Overview of all statements with z-scores and factor arrays for each factor with distinguishing statements for a certain factor written in bold, and consensus statements written in italic.

Statement Category	ID	Item	Factor 1			Factor 2			Factor 3			Statement based on
			z-score	array	z-score	array	z-score	array	z-score	array		
Costs & benefits	30	For me, direct payments are a very important reason to participate.	<i>1.31</i>	3	<i>1.68</i>	3	<i>1.27</i>	3	Defrancesco <i>et al.</i> (2008), Karali <i>et al.</i> (2014)			
	29	The schemes would be more attractive if I received a financial bonus once we as a group achieve a certain level of participation.	-1.6	-4	-0.1	0	0.71	1	Kuhfuss <i>et al.</i> (2015)			
Indirect rewards	17	A main advantage of the collective scheme is that we get support with the application and administrative tasks.	<i>0.82</i>	1	<i>0.79</i>	2	<i>1.07</i>	2	Lastra-Bravo <i>et al.</i> (2015), Dedeurwaerdere <i>et al.</i> (2016), Wanner <i>et al.</i> (2020)			
	16	The collective provides opportunities to get together and create useful networks.	<i>0.56</i>	1	<i>0.53</i>	1	<i>0.56</i>	1	M. P. M. M. de Krom (2017), Wanner <i>et al.</i> (2020)			
	21	The collective schemes offer more flexibility and are less restrictive than the schemes we had before.	<i>0.39</i>	1	<i>-0.2</i>	0	<i>-0.15</i>	0	McKenzie <i>et al.</i> (2013), Wanner <i>et al.</i> (2020)			
	19	Being part of a collective and participating in the scheme improves my image.	<i>0.09</i>	0	<i>-0.4</i>	-1	0.72	2	Mills <i>et al.</i> (2011), van Herzele <i>et al.</i> (2013)			
	18	Implementing measures yields ecological benefits for my farm – beyond increases in biodiversity.	<i>-0.01</i>	0	<i>-0.66</i>	-1	<i>-0.22</i>	-1	Ahnström <i>et al.</i> (2008), van Herzele <i>et al.</i> (2013), Wynne-Jones (2017)			
	20	I want to benefit from product marketing and labelling activities.	-0.84	-2	1.23	3	-0.16	-1	Barghusen <i>et al.</i> (2021)			
Cost savings	36	In the collective scheme I can save costs through easier access to information and resources.	<i>-0.7</i>	-1	0.54	1	<i>-0.46</i>	-1	Westerink <i>et al.</i> (2017), Wanner <i>et al.</i> (2020)			

(Continued)

Table 2: (Continued).

Statement	Category	ID	Item	Factor 1		Factor 2		Factor 3		Statement based on
				z-score	array	z-score	array	z-score	array	
		37	In collective schemes we can save costs through division of labour and shared machinery usage.	-1.06	-2	-0.28	-1	-0.42	-1	OECD (2013)
Personal norms	Problem awareness	06	I want to protect species that I know and like, for example meadow birds.	1.03	2	0.42	1	1.35	3	van Dijk et al. (2016), Barghusen et al. (2021)
		07	My agricultural land use maintains biodiversity.	1.02	2	0.41	1	1.42	4	van Dijk et al. (2015), Vries et al. (2019), Wanner et al. (2020)
		05	Collective schemes yield higher ecological benefits than individual actions.	0.48	1	0.21	0	1.86	4	McKenzie et al. (2013), Wanner et al. (2020)
		03	I want to tackle environmental problems in our region.	-0.96	-2	-0.73	-2	0.44	1	Greiner (2015), M. P. M. M. de Krom (2017), Jones et al. (2020)
		01	I am cautious about adopting new ideas and farm practices.	-1.53	-3	-0.12	0	-1.7	-3	Howley et al. (2015), Cullen et al. (2020)
Perceived responsibility		08	It's part of being a good farmer to care about the environment.	1.93	4	0.65	1	0.73	2	Westerink et al. (2019)
		04	I love nature and our landscape.	1.21	3	1.74	4	0.87	2	van Dijk et al. (2016)
		02	It is a waste to leave farm land idle and not use it for production.	0.01	0	0.99	2	-0.07	0	Burton, Kuczera, and Schwarz (2008), Howley et al. (2015)
		09	I may continue with some of the measures, even if I'm not paid anymore.	-1.41	-3	-0.14	0	0.32	0	van Dijk et al. (2016)
Group efficacy		27	I'm proud of what we achieve as a collective.	1.32	3	0.14	0	0.64	1	Wynne-Jones (2017), Wanner et al. (2020)
		24	I value the meetings and exchange with other farmers to learn from each other.	<i>1.04</i>	2	<i>0.53</i>	<i>1</i>	<i>0.56</i>	<i>1</i>	Jones et al. (2020), Wanner et al. (2020)

(Continued)

Table 2: (Continued).

Statement	Category	ID	Item	Factor 1			Factor 2			Factor 3			Statement based on
				z-score	array	z-score	array	z-score	array	z-score	array		
		25	Working collectively helps to bridge the gap between farmers and nature conservationists by supporting mutual understanding.	0.71	1	1.16	2	1.09	3	M. P. M. M. de Krom (2017)			
		26	Within the collective I dare to try more complex schemes than I would on my own.	-0.36	-1	-1.03	-2	0.38	0	Jones <i>et al.</i> (2020)			
		22	Through the collective we get a say in the design of the scheme.	-0.5	-1	-1.31	-3	-0.1	0	M. P. M. M. de Krom (2017), Westerink <i>et al.</i> (2017)			
		28	I trust that my neighbours will do a good job cooperating.	-0.61	-1	-0.22	-1	-0.58	-1	Franks <i>et al.</i> (2016), Villamayor-Tomas, Sagebiel, and Olschewski (2019)			
		23	In collective schemes I'm afraid that others will benefit from my work without contributing themselves.	-1.55	-3	-1.91	-4	-1.87	-4	OECD (2013)			
Social norms	Injunctive norms	15	In the collective we help each other out if anyone needs support.	0.83	1	-0.43	-1	-0.12	0	Mills <i>et al.</i> (2011), Wynne-Jones (2017)			
		11	Most people who are important to me think positive about collective agri-environment schemes.	0.38	0	-0.2	0	-0.2	-1	van Dijk <i>et al.</i> (2016)			
		14	Even if meetings and administration are tiring; sharing moments of laughter, sorrow or pride unite us as a group.	-0.08	0	-0.65	-1	-0.72	-2	Wynne-Jones (2017)			

(Continued)

Table 2: (Continued).

Statement Category	ID	Item	Factor 1		Factor 2		Factor 3		Statement based on
			z-score	array	z-score	array	z-score	array	
	10	I participate in collective agri-environment-schemes because collaborating for environmental protection is a tradition in this area.	-0.3	0	-0.95	-2	-1.37	-2	Barghusen <i>et al.</i> (2021)
	12	I participate because most members of my collective think that it's important to join collective conservation measures.	-0.3	0	-1.38	-3	-1.71	-3	van Dijk <i>et al.</i> (2015), van Dijk <i>et al.</i> (2016)
	13	I would only cooperate with farmers that I respect.	-0.43	-1	-1.37	-3	-1.59	-3	Mills <i>et al.</i> (2011), Riley <i>et al.</i> (2018)
Descriptive norms	33	It's important for me that on my own farm I remain the boss and decide how things are done.	1.44	4	1.93	4	0.66	1	Wynne-Jones (2017)
	35	It is important that people in the region realise and appreciate what we do with the schemes.	<i>0.93</i>	2	<i>0.71</i>	2	<i>0.38</i>	0	M. P. M. M. de Krom (2017), Vries <i>et al.</i> (2019)
	31	I won't implement measures that make the farm look messy.	-0.34	-1	1.29	3	-0.89	-2	van Dijk <i>et al.</i> (2016), Riley <i>et al.</i> (2018)
	32	There is a high pressure of society – if I don't collaborate for conservation I may just lose my license to produce.	-1.04	-2	-0.74	-2	-0.66	-2	Siebert, Toogood, and Knierim (2006), Karali <i>et al.</i> (2014), M. P. M. M. de Krom (2017)
	34	I participate in collective agri-environment-schemes because my farmer colleagues participate.	-1.9	-4	-2.13	-4	-2.02	-4	Defrancesco <i>et al.</i> (2008), Lastra-Bravo <i>et al.</i> (2015), Cullen <i>et al.</i> (2020)

Note: Based on the difference between z-scores, statements are considered distinguishing when significantly differing from others, which is applicable when scores are greater than 1.96*standard error of difference for $p < 0.05$ (Brown 1980, p. 245). Statements are considered as consensus, if none of the differences between any pair of factors is significant. The statement ID is used for identification and possesses no further meaning.

They reject a system of financial bonuses for certain levels of participation reached (29: -4). Also, product marketing and labelling activities by collectives are no motive to participate in the schemes (20: -2).

3.2.3. *Viewpoint 2: the business rationalists*

For farmers from V2 it is most important to “remain the boss” on their own farm (33: 4):

We already have to comply with many rules. But within our collective you still have the freedom of deciding your own things. It is way better than during the individual contracts, that was more controlled by the government. Now, the collectives can design the packages themselves and we have short lines with them. (P5)

They love nature and the regional landscape (4: 4), but they would not implement measures that make the farm look “messy” (31: 3) and believe it to be a waste to leave farmland idle and not use it for production (2: 2). They are less optimistic than the other farmers that their land use maintains biodiversity (7: 1), yet, either believe that no environmental problems exist within their area or rather think about how to adapt to environmental problems from a business perspective than about how to mitigate environmental problems (3: -2).

V2 farmers want to benefit from marketing and labelling activities by the collectives (20: 3) and see the opportunity to save costs through easier access to information and resources (36: 1). They do not think that it is possible to only co-operate with farmers they personally respect, but that co-operation with all farmers is necessary (13: -3). They are more cautious than the other farmers about adopting new ideas and farming practices (1: 0) and would not participate in more complex schemes within the collectives compared to individual schemes (26: -2). Also, they do not think that through the collectives they got a say in the design of the schemes (22: -3): “There are things that we would like to change and we know the people in the province. But it is a laborious and long-winded process.” (P14).

3.2.4. *Viewpoint 3: The environmental optimisers*

The farmers of V3 are convinced that collective schemes yield higher benefits than individual actions (5: 4) and that their land use contributes to the protection of biodiversity (7: 4).

As a collective you make a mosaic landscape from the area. You cannot protect the biotope on your own. As a collective you can offer much more and at the right spots. Individually you don't achieve anything. And as a collective you learn from each other. (P3, stat_5)

They want to protect species which they know and like (6: 3), in particular meadow birds: “Those meadow birds are visible and they are very important to me. When I was 10 years old I was already protecting nests.” (P4, stat_6). Through the protection of the birds they are “getting closer to the citizens” (P13, stat_25), also facilitating collaboration between farmers and nature conservationists, which is deemed very important (25: 3). Taking care of the environment is part of being a good farmer

(8: 2) and also improves their own image (19: 2). The farmers want to tackle environmental problems (3: 1) and are open towards trying out new things (1: -3): “I would like to contribute to fight climate change through my collective. Binding CO₂, being CO₂-neutral for example.” (P1, stat_3). They are not opposed to implementing measures which would make the farm look “messy” (31: -2) and are more positive about continuing with the schemes, even without payments, than the other farmers (9: 0). They would welcome an extra bonus for collaboration (29: 1). V3 farmers are proud of the collective’s achievements and feel supported in implementing more complex schemes (26: 0). However, they do not see their participation being influenced by other members of the collective (12: -3) and dismiss the idea of only co-operating with farmers they respect (13: -3).

3.3. Advantages and disadvantages of the collective scheme in comparison to the individual approach

In comparison to the previous individual approach to AECM, the organisation by the collective and the provision of knowledge and advice are strongly emphasised as advantages of the collective approach by farmers of all viewpoints. P1 (V3) also stresses that organising the schemes collectively saves the farmers a “lot of money”. A short line between farmers and the field worker of the collective who “speak[s] the language of the farmer” (P3 (V3)) and “knows what’s going on and gives tailored advice” (P5 (V2)) is highly appreciated. There is little administration, lowering the threshold for participating in the schemes and enabling “a combination of decreasing regulations and collectively achieving results.” (P3 (V3)). Being a member of a collective widens the perspective (P7 (V1)) and creates room for discussions, inspiration and mutual learning (P10 (V1), P15). Also, the collectives build bridges between the farmers and nature conservationists and citizens (P7 (V1), P8 (V3)). Moreover, the ecological benefits of the area-oriented approach are mentioned by many farmers (V1, V3, P15).

Generally, many improvements and no disadvantages in comparison to individual AECM were mentioned. Nevertheless, farmers wish for more flexibility from EU policies (P12 (V1), P14 (V2)), as the rules are still perceived as very strict (P5 (V2)) and not accounting for the farmers’ “healthy common sense” (P12 (V1)). Further concerns are raising standards and requirements for compensation (P3 (V3)), unclear communication on certain issues (P10 (V1)) and the duration of the scheme, requesting either shorter (P6 (V3)) or much longer terms (P8 (V3)). Also, farmers still wish for an increase of exchange and common activities (P13 (V3), P15), and a stronger integration of farmers’ knowledge and experience into nature conservation planning (P11 (V1), P3 (V3)). Opinions differ concerning the remuneration of collective AECM, being assessed as undervalued (P14 (V2)) and “pretty good” (P9 (V2)). P12 (V1) believes that the reward scheme should be shifted – granting financial awards for “acting right” instead of receiving compensation for producing less, while P14 (V2) stresses that efforts should be remunerated instead of results.

4. Discussion

The results of Q methodology are not meant to be generalised in a statistical sense (Watts and Stenner 2012). In this case, the generalisation of results is further restricted by the selection of participants, most of whom have been involved in the collective for

many years, a few even in an official position such as being part of the board of directors. Nevertheless, the results reveal distinct viewpoints that exist even within this narrow sample, offering interesting insights for improving existing or developing new collective schemes.

4.1. Views on Dutch collective AECM

Three viewpoints of farmers could be identified, who differ through their sense of collective achievement (V1), a rather traditional business perspective (V2) and strong environmental ambitions (V3). Although clearly distinguished, the three viewpoints coincide in several main points, in strong agreement as well as strong disagreement to the statements. For all farmers, the love of nature and the landscape is a key motivation for participating in collective AECM, yet the perception of the environment and of existing problems is very distinct between the different views. For V1, taking care of the environment is an inherent obligation of being a farmer, while V2 views nature in a more traditional way, which does not allow for land left fallow or a “messy” landscape. For V3, taking care of nature is central to the farmer’s identity and goes beyond not harming nature, but also includes ideas on how circumstances can actively be improved. The shift from seeing a good farmer as someone keeping his farm tidy and productive to someone additionally taking care of the environment was also described by Westerink *et al.* (2021).

All viewpoints agree that financial compensation is very important as a necessary means to be able to carry out the schemes. They strongly dismiss the influence of neighbouring farmers on their decision to participate in collective AECM, disagreeing less with regard to the influence of other members of their collective, with “the collectivists” (V1) even being partly positive about it. This is, again, in accordance with findings from Westerink *et al.* (2021) who discovered that the reference peer group has shifted from neighbouring farmers to members of the collective. However, the influence of others should be interpreted carefully, as values of independence (cf. Emery and Franks 2012) or social norms based on autonomy (cf. Riley *et al.* 2018) may hinder a true reflection of the influence of others.

Caveats concerning collective schemes, such as a fear of depending on others (cf. Sutherland *et al.* 2012) or being afraid of free riders (cf. Mills *et al.* 2011), were not confirmed or even explicitly rejected by all farmers. Instead, similar to findings by Wynne-Jones (2017), farmers seem to enjoy greater autonomy as a group represented by the collective than before when directly dealing with governmental authorities. Moreover, the tradition of collaborating for environmental protection was by almost all farmers either perceived to play no role or to not even exist. While the Netherlands have a history of farmers working together during the last decades, and all except one research participant joined their collective before the transformation of collectives in 2014, it might not be perceived as a co-operation for environmental protection, but rather as working together to strengthen the farmers’ position under increasing regulatory pressure.

4.2. Implications for policy

The very positive résumé of the collective approach provides a solid basis for collective AECM in the Netherlands. Yet, the different perspectives indicate that an institutional design and a communication strategy addressing different needs and

motives is important to engage different groups of farmers. While farmers agree on the necessity of financial compensation (direct rewards), the benefits of the support through the collective (indirect rewards) and the trust in the collective (group efficacy), the differences in “problem awareness” and “perceived responsibility” highlight that different benefits should be promoted. The ecological benefits may mostly appeal to the more environmentally engaged farmers (V3), while for farmers of V1 the exchange and learning between farmers and the support through the collective may be equally important arguments. For V2, the question of how the measures can be integrated into the farms’ business model might be pivotal. In contrast to economic literature where bonus payments are discussed as promising incentive mechanisms for co-operation (cf. Nguyen *et al.* 2022), their potential was either rejected or not deemed decisive by the Dutch farmers in our study. Instead, the combination of the collective approach with a results-based payment option or bonus could possibly motivate farmers due to granting a reward instead of compensation, while also increasing the farmers’ flexibility and helping to communicate the farmers’ efforts towards the public.

Even though some collectives were involved in the development of the collective approach (cf. Westerink, Termeer, and Manhoudt 2020), all viewpoints still wish for more flexibility and a better integration of their knowledge and experiences in processes of scheme design and decision-making. Intensive participation in the planning phase of co-operatives and in the development of management plans could, therefore, be recommended. Policy processes should be transparent to avoid disappointments and mistrust. Remaining the boss on one’s own farm – which is important to all of the farmers – does not seem to be threatened by the collective, but rather by governmental or EU regulatory pressures or even citizens, who fail to recognise the farmers’ efforts. This indicates that external communication can still be improved to achieve greater public appreciation for the farmers’ work.

As existing caveats related to collective action were rebutted and tradition is not perceived as important by all farmers’ viewpoints, the Dutch model may offer inspiration for evolving collective initiatives elsewhere. Taking local context and preferences into account, existing (environmental) farmer organisations could support such a transition and be used as a basis for establishing a collective approach. In particular, if new institutions are formed, it is crucial to establish social capital (Westerink, Termeer, and Manhoudt 2020; Barghusen *et al.* 2022). However, in the Netherlands the individual approach to AECM until 2014 was also associated with high transaction costs, bureaucratic burdens and financial penalties with mistrust between actors leading to mistrust towards the scheme (de Vries *et al.* 2019). In the Netherlands, this could be changed during the process of establishing the collective approach. Local field workers who know the region well and “speak the language of the farmer” may be essential to overcome mistrust towards (EU) politics and gain trust towards a new approach.

The Dutch approach shows that collective action is possible without compromising values of independence or autonomy, but instead strengthening the farmers’ peer group. Designing appropriate schemes with a differentiated level of collaboration or co-ordination (cf. Prager 2015) suitable for the target area might be essential for new approaches’ success. Individual contracts which secure independence, as in the Dutch case, offer a lower-threshold approach in comparison to group contracts, which might pose a barrier, in particular if co-operation is not yet established. While group contracts are currently only implemented in regions where a strong tradition of co-operation already existed (cf. Dodsworth *et al.* 2020; Bredemeier *et al.* 2022), some

authors argue that they are more suited for smaller farms which might be excluded from individual contracts due to high transaction costs (cf. Franks 2011; Olivieri *et al.* 2021). However, the Dutch model also significantly reduced the farmers' transaction costs for joining the schemes due to high levels of support provided by the collectives.

The results highlight that designing programmes for spatial co-ordination of AECM should go beyond financial incentives, such as bonus payments. Instead, personal and social norms, as well as the need for regional or local support, are equally important. When introducing collective AECM as an alternative to individual AECM, the interests and needs of farmers must be taken into account even more for this approach to be implemented successfully. This also includes considering prevailing social norms: Descriptive norms (perceived actual behaviour of people) will only induce a desired change when being the norm; otherwise the focus on what others do is likely to lead to the opposite effect (cf. Cialdini, Kallgren, and Reno 1991). This may pose a challenge, as in other countries farmers have been found to view collective action pessimistically, expecting high transaction costs and doubting that other farmers would be willing to co-operate (Villamayor-Tomas, Sagebiel, and Olschewski 2019). At the same time, other farmers' opinions on agricultural practices were considered quite or very important for the majority of farmers. Hence, communication does not only need to make clear how a new approach works and what implications it does (not) entail to prevent caveats. As pointed out by Villamayor-Tomas *et al.* (2021), additional efforts will be needed to address disbelief in successful co-operation to promote the uptake of such schemes. On the other hand, in the Netherlands, the collectives now act as a new reference group (cf. Westerink *et al.* 2021), being able to influence injunctive norms (moral guidelines on how to act), further spreading environmental awareness and the feeling of collective efficacy. When focused upon, injunctive norms can lead to changing behaviour across different situations (cf. Cialdini, Kallgren, and Reno 1991), enabling schemes to become culturally sustainable (cf. Burton and Paragahawewa 2011). The more established this cultural shift becomes, the more the descriptive norms (what others are actually doing) can additionally encourage farmers to engage.

A follow-up study based on a large survey (cf. Zabala, Sandbrook, and Mukherjee 2018) would be an option to reach representative results and study certain aspects in more detail, such as the complexity of measures implemented, or to be able to better compare to the results of other existing studies, such as by Häfner and Piorr (2021) on the influence of farm and farmer characteristics on the willingness to co-operate. Future research should also broaden the scope, including non-participating farmers, to gain further insights on successful design of economic incentive instruments for collective action.

5 Conclusion

The ecological effects of AECM might be enhanced through a co-ordinated landscape approach, which on a larger scale within the EU is only applied in the Netherlands. The aim of this study was to explore farmers' perceptions of collective AECM. The results show three different viewpoints on collective AECM among participating Dutch farmers: a collective-oriented, a business-oriented and an environment-oriented viewpoint. For all of them, the love of nature and their region is a crucial motivation to participate, while financial rewards are important to be able to implement the required changes. While they show different levels of problem awareness, all agree that taking care of the environment

is part of being a good farmer. Individual independence is important to all of them; however, the co-operation within the collectives does not threaten, but rather strengthens their autonomy as farmers. They all agree that the collective scheme yields advantages compared to the previous individual scheme, particularly concerning ecological effects and the facilitation by the collectives. While the overall résumé of the collective scheme is very positive; farmers still wish for more flexibility and a better integration of their knowledge and experiences into scheme design.

The Dutch model shows that in a culture with a strong value for independence a collective approach to AECM is possible and can even strengthen the farmers' autonomy. It is important how such a scheme is designed, which elements of co-ordination or collaboration it entails and that, beyond necessary financial incentives, tailored support and exchange on a local or regional level is provided. Finally, even within one country between farmers participating in the same scheme different views on nature, conservation and co-operation exist, implying that institutional designs should meet different needs and appeal to a wider range of farmers to foster co-ordinated or collaborative participation for increased ecological effects of AECM.

Notes

1. See <https://github.com/aproxima/htmlq>
2. See <https://github.com/aiorazabala/qmethod>
3. In the following, the numbers in brackets refer to (Statement: factor array). When referring to several viewpoints, one number means that all viewpoints have ranked the statement the same way, while three numbers indicate three different rankings). When referring to one viewpoint only, the factor array relates to this viewpoint only.
4. If no further reference is mentioned, the quotation refers to the statement mentioned before. In case of ambiguity, a reference is provided in the form of 'stat_number of item'. P refers to participant, each of whom received a number for anonymisation.

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

Ethics declaration

In accordance with ethical guidelines and good scientific practice, we obtained consent from each of our interviewee in the following way: We informed about confidential data usage and purpose of the interview in an information and consent form before the interview which was signed by all interviewees. Right before the interview started, we again asked for consent to record the interview. All collected data was anonymised to ensure privacy. The original data is stored on a secured server by Leibniz Centre for Agricultural Landscape Research (ZALF) until it will be deleted according to its' data policy regulations.

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Supplemental data

Supplemental data for this article can be accessed [here](#).

ORCID

Margarethe Reichensperner  <http://orcid.org/0000-0001-7391-0521>

Rena Barghusen  <http://orcid.org/0000-0001-6619-6964>

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

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