

The institutional design of agri-environmental contracts—How stakeholder attitudes can inform policy making

Christoph Schulze ^{1,*} and Bettina Matzdorf ^{1,2}

¹Leibniz Centre for Agricultural Landscape Research, ZALF, Eberswalder Str. 84, 15374 Müncheberg, Germany

²Leibniz Universität Hannover, Institut für Umweltplanung, 30419 Hannover, Germany

*Corresponding author: Eberswalder Str. 84, 15374 Müncheberg, Germany; E-mail: christoph.schulze@zalf.de

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Abstract

Agri-environmental climate measures (AECM) are considered a promising tool to achieve environmental policy goals. Not only farmers but also policy administrators and intermediaries are important actors whose attitudes and actions drive the success of these measures. To follow the idea of better stakeholder participation in the design of policy instruments, we analyse stakeholder viewpoints on the contract design of the AECM. We apply the Q methodology to 25 individuals from Brandenburg, Germany, who are from the farmer, policy administrator, and intermediary domains. We identify three distinct attitudinal profiles: the ‘planners’, the ‘cooperators’, and the ‘individualists’, which do not correspond to the three individual stakeholder groups. The results provide evidence that general differences in the viewpoints of policy designers and implementers on the one hand and farmers on the other hand are not a source of potential institutional mismatch. We further use the attitudinal profiles to develop three types of policy programmes with slightly different underlying rationalities. Policymakers could use such an approach to better develop target group-specific (sub)programmes in parallel. Our research strengthens the argument that multiple stakeholders should be involved in co-designing conservation measures. Moreover, behavioural factors should be considered in policy making processes.

Keywords: Social perspectives, Stakeholder engagement, Policy design, Agri-environmental schemes, Institutional economics, Environmental governance.

JEL codes: Q00, Q18, Q58

1. Introduction

The high intensity of agriculture places enormous pressure on the world’s ecosystems (Harrison et al. 2010; Beckmann et al. 2019; Foley et al. 2011). Although initially conceptualised to steer the management of scarce natural resources more efficiently (Beckmann et al. 2019; Allan et al. 2015), land use changes induced by agricultural intensification highlight the conflicting goals in agriculture: providing food and protecting nature (García et al. 2020). Overall, agricultural intensification is a major driver of land use change

(Foley et al. 2011; Kleijn et al. 2009; Felipe-Lucia et al. 2020) and affects biodiversity through fragmentation of habitats (Clough et al. 2020; Fischer and Lindenmayer 2007; Krauss et al. 2010). Moreover, intensive management of agricultural land can increase soil erosion (Pimentel et al. 1995), reduce soil organic matter (Foucher et al. 2014) and disturb soil biota communities (Postma-Blaauw et al. 2010).

There are various economic policy instruments in place providing incentives to farmers to adopt nature conservation measures, such as agri-environmental programmes as part of the Common Agricultural Policy (CAP) in Europe or contracts under the Farm Bill in the United States (Snilsveit et al. 2019). The success of these kinds of programmes is often attributed to the programmes' institutional setup (Mettepenningen et al. 2013) and, thus, to specific contract features, such as contract length, payment mode, or degree of conditionality (Engel 2016). Moreover, the assessment of stakeholder views regarding the institutional design of policy instruments is important, as perceptions and attitudes are key determinants of behavioural change under widely recognised theoretical frameworks (Ajzen 1991; Dryzek 2013; Bamberg 2013; Sok et al. 2020).

In the case of agri-environmental programmes, several stakeholders are responsible for their effective co-design and implementation. On the one hand, policymakers and administrators conceptualise, design, and implement programmes. They define rules and policy scope based on what they believe is in the best interest of society. On the other hand, between farmers and policy administrators, there are often intermediaries to facilitate the implementation of policy instruments (Labarthe and Laurent 2013). These intermediaries often act as advisors and inform e.g., farmers about recent policy changes (Polman and Slangen 2008) or offer guidance to implement agri-environmental climate measures (AECM) (Prager et al. 2016; Schomers et al. 2021). Intermediaries usually have local knowledge and, in many cases, ensure that measures are truly targeted at nature conservation (Schomers et al. 2015; Schomers et al. 2021). Empirical studies in that regard have addressed the effects of the privatisation of agricultural extension services in Europe (Labarthe and Laurent 2013; Compagnone and Simon 2018) or analysed how intermediaries explain farmers' choices with regard to ecological focus areas (EFAs) (Zinngrebe et al. 2017).

Existing research has assessed individual stakeholder groups to a large extent, whereas very few studies (Velten et al. 2018; Brown et al. 2021) have considered multiple stakeholder groups when addressing environmental governance issues. However, there remains a gap between the individual stakeholder visions for agri-environmental contract design. The objective of this paper is to compare the viewpoints of farmers, policymakers, and intermediaries with regard to the institutional design of agri-environmental measures by using Q-methodology—a method designed to study subjective viewpoints with regard to a topic of interest.

For the successful design of policy instruments, specifically voluntary measures, it is important to consider the motivations of all relevant stakeholders (Iversen et al. 2022). Following the evidence of co-designing AECM, that is, an intensive collaboration between practitioners and researchers (Wyborn et al. 2019), including stakeholders provides promising opportunities to increase the acceptability, feasibility, and ecological and economic efficiency of conservation measures at the landscape scale (Hölting et al. 2022). In practice, it is not always possible to find a 'one-size-fits-all' contractual design for AECM that matches the preferences of all relevant actor groups. However, it may be possible to provide alternatives to contractual options according to the perceptions and preferences of different target groups. Accordingly, our study aims to improve the attractiveness of AECM to farmers by asking the following question:

How would the contract design of agri-environmental programmes look based on stakeholder perceptions?

In analysing the reform process of the CAP in Europe, Daugbjerg and Swinbank (2016) emphasise that 'signals sent by the policy instruments may create perceptions about certain

outcomes among some stakeholders, and this may shape interests in a particular way'. Following up on that statement, we aim to capture stakeholder perceptions with respect to the institutional settings of agri-environmental contracts by considering monitoring, advisory services, financing mechanisms, and duration in particular.

If policymakers perceive contract design features differently from farmers or intermediaries, implemented policies might even create disincentives. For example, policymakers might perceive the nature of result-based remuneration as a positive feature, whereas farmers primarily conceive this form of payment as risky. Taking the example of collaborative AECM, recent evidence from Germany shows substantial discrepancies between farmer behaviour and expert beliefs on farmer behaviour (Rommel et al. 2022). Therefore, we followed up on the first question by asking:

Is there a mismatch between stakeholder groups in how they perceive the contract design features of AECM?

Within the framework of this analysis, we included currently debated institutional features, such as results-based payments or collaborative approaches (Pe'er et al. 2021). These features challenge the current status quo of AECM, as they each affect farmers' flexibility in carrying out management practices, either by establishing environmental goals for a project or by adjusting individual plans to align with those of fellow farmers.

This article provides a valuable contribution to the literature in going beyond the focus on farmers and analysing multiple stakeholder viewpoints on agri-environmental policy design. The study showcases the potential of stakeholder involvement through the application of Q methodology.

2. Methodology

Q methodology seeks to reveal the common subjective viewpoints of key stakeholder groups that exist in relation to a particular topic of interest (Zabala et al. 2018; Watts and Stenner 2012). The method is based on individual interviews in which participants sort opinion statements into a grid according to their personal level of agreement or disagreement (see Fig. 1 below). These opinion statements build the core of the method and must be carefully formulated by the researchers in advance. As there is only one field per statement on the grid, participants have to think carefully about where to place the statements. In this way, the statements are indirectly compared and evaluated against each other. The final allocation of the statements then reflects the individual viewpoint. As part of the interviews, participants not only engage in the sorting process but also have the opportunity to provide reasoning for their subjective evaluation of opinion statements.

By sorting the opinion statements into the grid and thus implicitly evaluating the statements relative to each other, Q methodology enables the elicitation of unique social viewpoints through the combination of quantitative and qualitative information provided in the interviews. In other words, the results of the quantitative factor analysis are the distinct attitudinal profiles of the study participants, and each reflects unique social viewpoints. The interpretation of these viewpoints is facilitated by subsequent content analysis of the interviews. In conservation research, Q has been broadly applied to discuss different management alternatives (Kvakkestad et al. 2015), critical expert reflection (D'Amato et al. 2017; Sandbrook et al. 2011), policy appraisal (Gall and Rodwell 2016; Pike et al. 2015) and even conflict resolution (Mazur and Asah 2013; Dempsey 2021).

In the present study, we analyse stakeholders' viewpoints on the contractual design of economic instruments for agri-environmental governance. We explicitly interviewed stakeholders who have experience with different economic instruments, in particular AECM and contractual nature conservation measures¹, to capture the benefits and disbenefits of either policy mechanism. To develop the framework for the present Q study, we followed the state-of-the-art literature and best practice guidelines suggested by Zabala et al. (2018).

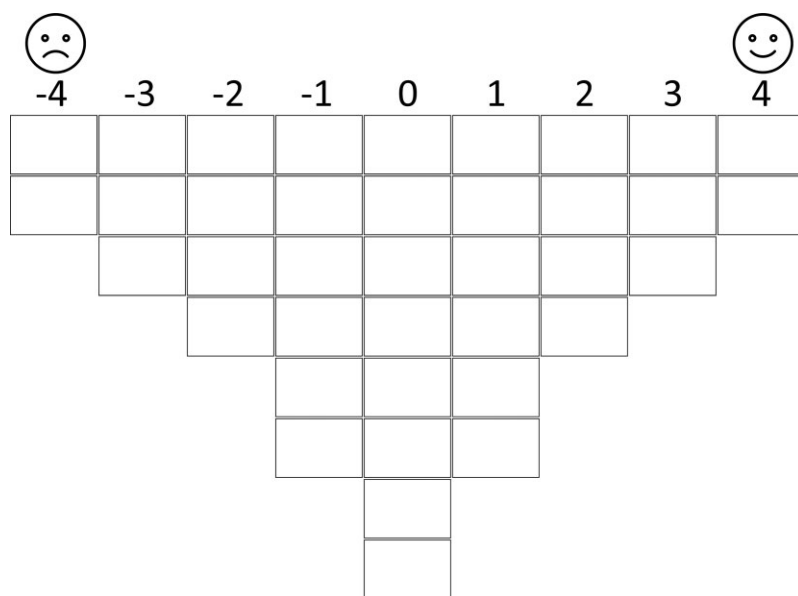


Figure 1. Applied grid in this study.

2.1. Concourse and Q set

We established the concourse, the full opinion spectrum of the debate, with reference to the literature and prior research regarding farmers' acceptance of agri-environmental contracts. In doing so, we initially brainstormed and formulated statements that represented opinion statements related to agri-environmental contract design. The focal question underpinning the design of this study was, 'How do stakeholders, such as farmers, policymakers and intermediaries, of the policy process of agri-environmental policies perceive the contract features of agri-environmental policies?'

To gather arguments that shape the discourse around that focal question, we conducted four expert interviews to construct relevant categories for the body of statements included in the study (the Q set). These categories are duration of projects, monitoring of success, level of technical advice, flexibility in the execution of programmes and the mode of payment. This classification of contractual features of AECM is in line with frameworks from the literature (Mettepenningen et al. 2013; Zinngrebe et al. 2017; Schomers et al. 2021; Engel 2016). To further increase the validity of the study design, we discussed these categories in three workshops with representatives of land care associations in the German federal states of Bavaria, Saxony, and Brandenburg. The statements were framed in such a way that they were relatable to AECM and no other agri-environmental programmes. During the course of the final Q-interviews, however, participants could state whether they would pose a statement differently if they were being interviewed about a different programme, such as contractual nature conservation measures. The idea behind this is that people may have had different experiences with agri-environmental programmes, and we wanted to see to what extent the experiences were related to the contractual features of the distinct programmes.

A total of 54 statements concerning the importance of different design elements of AECM were developed in the workshops, representing common contract features of publicly financed agri-environmental measures. These statements often took the perspective of the farmer and covered the monitoring of AECM, the provision of advisory services, the risk aspect of different payment modes, and cooperative elements of AECM. While formulating the

opinion statements, we followed the best practice guidelines by [Watts and Stenner \(2012\)](#), who recommend a ‘balanced and structured Q-set’, that is, a Q-set that represents multiple opinions and perspectives in relation to the research question. The decision about whether a statement is framed as negatory or affirmatory was done in a way that the statements were balanced but also understandable at the same time by specifically trying to avoid double negations. In addition, we included statements characterising alternative mechanisms for programme financing, such as private or results-based payment schemes. Currently, alternative financing mechanisms for AECM are being tested in Germany that are based on the premise of private financing of AECM. As these private initiatives enable new design options for agri-environmental contracts, topics such as risk, responsibility, and possible higher remuneration through private financing were addressed during the interviews. For example, there is more freedom in determining the payment amount, as well as more flexibility in setting the objectives of concrete nature conservation measures if they are privately financed.

We piloted this Q set with seven people who are involved in the implementation of agri-environmental measures. These experts included employees of the German Landcare Association, employees of biological stations in North Rhine-Westphalia, and research associates of the Leibniz Centre for Agricultural Landscape Research. This led to a reduction to a total of 38 statements. During the pilot interviews, experts had to elaborate on their understanding of the statement and clarify, which statements they believe do not add information to the debate. The then deleted statements were either inappropriate in the sense that they involved ambiguous opinions or they were irrelevant to the debate. For each of the final statements, we developed individual explanations that were applied for clarification when participants expressed uncertainty with respect to the statements.

To reveal the attitudinal profiles of the included stakeholder groups, participants had to rank the 38 statements, as displayed in [Table 1](#).

2.2. Case study context and participant set

As part of the expert interviews conducted prior to the study design, we discussed how the different existing agri-environmental policy instruments are implemented and how these instruments differ in terms of flexibility and duration. This helped immensely to identify the relevant participants for our study context (the participant set). The principal idea was to determine how different stakeholder groups who are involved in the implementation of agri-environmental programmes perceive different agri-environmental contract features. As is common practice in applications of Q methodology, it is not the primary aim to cover as many participants as possible in a study. Instead, the role of each individual is what matters. The present study involved 25 participants selected by the author to reflect a wide range of opinions on the key issues within the agri-environmental contract design discourse, as outlined above.

The Q-interviews were conducted in Brandenburg, Germany (see [Fig. 2](#)), with farmers and farm advisors operating in the highlighted administrative districts and nature reserves. Policymakers from the subordinate environmental protection agencies represented the highlighted administrative districts. Other policymakers from the environmental protection agency or agricultural departments (German: ‘*Extensivierungsreferat*’) represented the federal state of Brandenburg.

As AECMs are defined at the level of the federal states, it is important to consider actors at the appropriate level ([Pabst et al. 2018](#)). In the course of the research project *AgoraNatura*, we are investigating alternatives to governmentally funded AECM. For this purpose, the first pilot projects of privately financed AECM were carried out in the federal state of Brandenburg. In view of this, we had access to a range of relevant actors who were interested in the project.

Table 1. The Q set—list of statements related to contract design features.*

Category	#	Statement	Source
Transparency	1	The more information farmers have to reveal about themselves when applying for AECM, the less willing they are to participate.	Ruto and Garrod (2009)
Monitoring	2	The monitoring of success is an unnecessary effort.	Interview
	3	The number of monitored farmers is not sufficient.	Mariel and Meyerhoff (2018)
	4	Environmental criteria should be monitored instead of area sizes or dates.	Matzdorf and Lorenz (2010)
Advisory	5	Farmers should be integrated into the monitoring process.	Braitto et al. (2020)
	6	Advisory services merely increase transaction costs.	Zinngrebe et al. (2017); Meyer et al. (2015)
	7	Advisory services for environmental measures should be an integral part of farm consulting.	Knierim et al. (2017); Labarthe and Laurent (2013)
	8	Farmers need to be trained on the ecological impact of AECM so that they can be implemented successfully.	Lienhoop and Brouwer (2015); Polman and Slangen (2008)
	9	Farmers should be given room to mutually discuss AECM.	Lliso et al. (2020)
Risk	10	Results-based measures entail high levels of flexibility for farmers.	Bartkowski et al. (2021)
	11	Results-based measures entail too much risk for farmers.	Matzdorf and Lorenz (2010)
	12	Clear specifications of the necessary management measures for AECM favour their implementation.	Polman and Slangen (2008)
	13	Farmers need to be assured that policy measures exist for multiple planning horizons.	Braitto et al. (2020)
	14	Remuneration should be paid partly for the implementation of nature conservation measures and partly for their environmental effects (Bonus).	Vaissière et al. (2018)
	15	Improving the natural condition of particular land should not lead to protected status for that particular land.	Koemle et al. (2019)
Finance	16	The level of remuneration should be determined individually for each farm.	Interview
	17	Payment for AECM should only be made after achieving certain environmental goals (results based).	Matzdorf and Lorenz (2010)
	18	Farmers are eager to carry out privately financed AECM.	Interviews
	19	It is important that the state organises and ensures financing for AECM.	Mettepenningen et al. (2013)
Publicity	20	A public localisation and display [via signs] of implemented policies is important to convey farmers' commitment to the public.	Interviews
	21	Successful examples of implemented AECM should be presented to the public and other farmers.	Interviews

Table 1. Continued

Category	#	Statement	Source
Cooperation	22	The successful implementation of AECM requires actors who actively engage in the advisory process with farmers.	Schomers et al. (2015)
	23	It is important that advisory actors are familiar with local circumstances.	Zinngrebe et al. (2017)
	24	Farmers would be more willing to participate in AECM if the payments were not directly part of governmental subsidised agricultural policy.	Interviews
	25	For improving environmental effects, cooperation between farmers is often indispensable. This should be promoted.	Westerink et al. (2017)
	26	Farmers do not need technical advice.	Labarthe and Laurent (2013)
	27	Farmers are often convinced by other farmers pledging to adopt AECM.	Müller (2020)
	28	It should be the farmer's decision who provides technical advice to them.	Schomers et al. (2015)
	Duration	29	AECM should be short term so that farmers can act flexibly.
30		A long project duration implies planning certainty for farmers.	Espinosa-Goded et al. (2010)
31		Contract terms, in particular durations, must be designed flexible.	Ruto and Garrod (2009)
Ecology	32	The longer the project duration is, the better the effect for the environment.	Batary et al. (2011)
	33	Only through adapted management at the landscape level AECM have a significant impact.	Mettepenningen et al. (2013)
Identity	34	Farmers are primarily producers of agricultural goods and not conservationists.	Interviews
	35	Restrictions on AECM often do not fit into the operational concept of farming businesses.	Interviews
	36	Farmers conduct AECM to improve their image	Interviews
	37	Farmers conduct AECM for nature conservation. Money plays a subordinate role.	Interviews
	38	Farmers conduct AECM for economic reasons.	Mettepenningen et al. (2013)

* German version of the statements available in Table A2.

Conventional AECM, in the sense that they are funded by pillar 2 payments of the CAP, are to be defined by the member states '[...] in accordance with their national, regional or local specific needs and priorities' (Article 28, Regulation (EU) No 1305/2013). In line with that, member states define specific programmes at the federal level, which include AECM, that are suitable to the respective federal state. In the case of Brandenburg, the KULAP ('Kulturlandschaftsprogramm', engl. 'subsidy programme for cultivated landscapes') constitutes the basis for AECM (Pabst et al. 2018). The specifics of the programme are defined by the respective heads of the division working in the environmental agency of Brandenburg and carried out by the subordinate agricultural and environmental divisions of the agency. Hence, we included the heads of the division, as well as representatives of the subordinate agencies in the interviews.

Farmers are key stakeholders in this study, as they are the principal addressees of agri-environmental policies. It is their decision whether to use their land for intensive agricultural production or to implement nature protection measures. In certain constellations, they must obey management restrictions laid out in management plans for certain areas. This depends

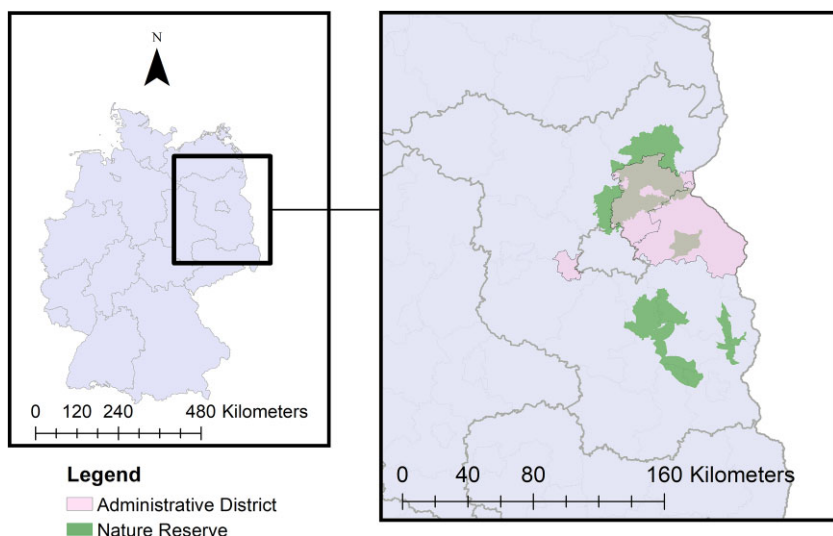


Figure 2. Case study location in Germany.

on the legal status of their land (Pabst et al. 2018). However, farmers still have the choice to enrol in different programmes, which differ in their institutional settings. Therefore, it is central to understand their perspective on contract design features.

Finally, intermediaries providing advisory services to farmers play a key role in the implementation process of AECM (Schomers et al. 2015; Sutherland et al. 2022). The spectrum of intermediaries is diverse and includes individuals belonging to nongovernmental organisations (NGOs), private advisory organisations, and governmental and semigovernmental entities to advise farmers on the different project types and thus foster the coordination of farmers within a certain region to elevate the effects of individual projects at the landscape level (Polman and Slangen 2008). Their role is also to mediate between policymakers and land managers by informing farmers about new regulations and environmental laws (Knierim et al. 2017). They have particular expertise in the design and relevance of different contract features, but also in ecological processes (Labarthe and Beck 2022). In Brandenburg, farmers have several options to reach out for advice to intermediaries, such as the German Land Care Association, the Nature and Biodiversity Conservation Union, and the state environmental agency.

In this study, we interviewed people from environmental NGOs, representatives from the subordinate environmental and agricultural ministries, and staff from nature reserves. All of them actively engage with farmers and provide assistance with implementing AECM as part of their jobs.

There are few people qualifying as policymakers or intermediaries in the federal state of Brandenburg. We contacted officers from the Ministry of Agriculture in Brandenburg who are in charge of nature conservation contracts and AECM. Moreover, we reached out to subordinate environmental administration bodies. Only a few offices declined to participate or stated, 'they only carry out what is determined above and do not actively participate in the design'. Farm advisors in nature reserves were, by contrast, quite eager to engage in the study. To contact farmers, we approached the previously interviewed intermediaries and asked them if they knew any farmers who would like to be interviewed and who were not strict opponents of nature conservation measures.

The interviewed farm advisors had an academic background in agricultural sciences, forestry engineering, agricultural engineering, or ecology. The advisors either worked

in nature reserves, for the Nature and Biodiversity Conservation Union, the German Nature Conservation Fund, or for the German Landcare Association (Deutscher Landschaftspflegeverband). The work experience ranged from three to 34 years, with a mean experience of 21 years. The farmers in turn received professional training in agricultural sciences or had similar engineering degrees. Their experience counts for 15 years on average. Participants in the policy were either employed by the subordinate environmental administration or held different positions in the departments of agriculture in Brandenburg.

2.3. Interviews

The participant set consisted of 25 people. Eleven people were intermediaries, eight interviewees were farmers, and six were policymakers. Face-to-face interviews were conducted between October 2019 and March 2020. Upon contact with the interviewees, we emphasised that the aim was to obtain their views on contract design features and that the Q sorting was not a test of the interviewees' knowledge. Formal consent was given, and interviews were recorded only with the interviewee's permission. Before the start of the interview, participants were instructed that the interview would be about exploring their personal views on the topic of AECM contract design.

In the first step, the statements were read out and then handed over to the participants. Before the actual sorting process took place, participants created piles of statements: 'agree', 'neutral', and 'do not agree'. While doing so, participants were encouraged to justify their initial reasoning.

A grid consisting of a 9-point scale ranging from -4 ('least like I think') to $+4$ ('most like I think') was applied (see Fig. 1). In the second step, participants were asked to complete either side of the grid, with its range from -4 to $+4$, before filling in the middle of the grid.

The transition between statements viewed positively, neutrally, and negatively was recorded, as this enabled the researcher to better assess where participants' negative/positive feelings began (Watts and Stenner 2012). After the sorting was completed, participants were asked to elaborate on the meaning of the statements placed at the very extremes of the grid ($+/-4$ and $+/-3$ columns), as these represented the interviewees' most polarised opinion statements.

2.4. Data analysis

The data retrieved from the interviews were analysed using the freely accessible 'qmethod' package for R by Zabala (2014). First, the retrieved Q sorts were intercorrelated using Pearson correlation. In the next step, principal component analysis was used to reduce the dimension of the dataset by detecting underlying patterns of latent components based on the previously calculated correlations. Finally, we applied varimax rotation, an orthogonal rotation technique, to maximise the variance of each factor loading. Other rotation techniques also returned three factors with similar Q sort allocations. However, after considering the different statistical criteria behind the different rotation techniques (Akhtar-Danesh 2016), we concluded that varimax rotation was the most appropriate for our study.

The following statistical criteria were applied to determine the number of factors:

- Cattell's scree test (Cattell 1966)
- Humphrey's Rule (Watts and Stenner 2012)
- The Kaiser–Guttman criterion (Guttman 1954; Kaiser 1960)
- A minimum of 2 Q sorts that significantly load on each factor (Watts and Stenner 2012; Brown 1996)

Table 2 summarises the most important factor properties for the three-factor solution based on the abovementioned criteria. Therefore, each factor includes at least two Q-sorts,

Table 2. Factor characteristics.

Factor	Number of Q-sorts	Eigenvalue	Variance explained (in %)
1	9	5.5	22
2	7	5.3	21
3	6	3.4	14

has an Eigenvalue larger than one, and all factors together explain more than 30 per cent of the variance in the data.

The analysis shows that out of the 25 realised Q sorts, 22 loaded significantly onto one of the three factors. The remaining Q sorts were not considered in the development and interpretation of the viewpoints.

The scope of social viewpoints in this study comprises three factors; each represents a unique attitudinal profile on the contract design of AECM and can be expressed in the form of an idealised Q sort associated with that viewpoint. The statistical procedure behind these idealised Q sorts relies on the calculation of z-scores for each statement-factor combination. The z-scores show the degree to which a statement loads onto a factor². By constructing the by-factor differences in the z-scores, it is possible to determine the statistical distinctions among the factors and thus the conflict and consensus statements among the different viewpoints.

By analysing the dispersion of the statement z-score for each factor, we determined whether a statement is significantly distinguished by that factor. This is being captured by calculating the standard error of the difference of the respective z-scores of a statement.³ This measure indicates whether two factors evaluated a certain statement differently by looking at the dispersion of the z-scores for each factor. The authors confirm that the data supporting the findings of this study are available within the article in the supplementary materials.

3. Results

The qualitative part of the analysis concerns the interpretation of the different factors and thus builds the viewpoints of the study. Therefore, we compared the most polarising statements and subsequently analysed the distinguishing statements for each factor (see [Table A1](#) for more detail). Moreover, we linked the information provided in the interviews to interpret the viewpoints accordingly.

3.1. Consensus

Before addressing diverging issues related to the institutional design of agri-environmental policy measures, it is worth reflecting on where participants found consensus within the spectrum of different viewpoints. All study participants agreed that farmers require technical advisory services to successfully implement nature conservation projects (S26). The importance of peer effects was confirmed by all viewpoints (S27), meaning that farmers often adopt new measures when they are recommended by farmer colleagues. In terms of contract length, all respondents agreed that short contract durations are not desirable (S29). Further consensus was found regarding publicly sharing successful examples of agri-environmental measures (S21). The general public is often not aware of all farmer activities. This form of outreach might help to improve farmers' images and may, to a certain degree, expose farmers to new information. Providing the option to showcase a successful project might therefore incentivise other farmers to participate.

Turning now to the diverging points of the analysis, the following three attitudinal profiles emerged after the content analysis of the interviews. These three profiles were named

‘planners’, ‘cooperators’, and ‘individualists’ accordingly, based on their most distinctive objective of agri-environmental policy.

3.2. Factor 1—the planners:

The first factor accounts for 22 per cent of the study variance, and nine respondents loaded onto it. Regarding the stakeholder group affiliation, four people belong to the policy administrators group, three are intermediaries, and two are farmers. The ‘planners’ stress the point of long contract durations (S30, +4; S13, +3; S32, +3). In discussing relevant programme features, the ‘planners’ reported that the duration of environmental programmes is essential to farmers (S13, +4; S30, +3; S29, -4). Proponents of this viewpoint clearly stated that the duration of policy measures involves a trade-off between planning security and flexibility in management for farmers: *‘The duration is not the decisive criterion. It is much more important to include an opt-out’* (R12). Thus, a good way to balance this trade-off is to include an opt-out for policy programmes. In line with this, the ‘planners’ emphasised the role of land tenure in the context of scheme participation. Currently, lease agreements tend to be of short duration. Therefore, it is often not an option to commit to five-year contracts in the framework of the AECM.

Furthermore, ‘planners’ advocated the application of action-based policy measures by introducing policy measures with very well-defined instructions and actions for farmers (S12, +3). Consequently, people adhering to that viewpoint were highly sceptical of results-based measures (S17, -4). *‘Paying farmers based on their achieved results would be purely arbitrary!’* (R3). The ‘planners’ argued that there are too many factors affecting the outcome of a policy scheme. The results-based payments could therefore be applied only for relatively simple measures, if at all.

People belonging to this viewpoint also saw substantial room for the improvement of AECM features, as often the monitoring of particular measures appeared too restrictive to enable meaningful environmental protection. Respondents emphasised that the management of agricultural transition zones, such as field margins adjacent to forest structures, is not well thought through. Instead of being rewarded for creating highly diverse biotopes, farmers are punished for not accurately fulfilling territorial agreements, such as maintaining agreed dimensions of flowering strips or fallow land: *‘Monitoring and nature conservation measures often contradict each other’* (R16).

The ‘planners’ are further distinguished by emphasising the role of the state in terms of ensuring programme financing. Participants stated that *‘[...] a successful agri-environmental policy depends on a strong state, with a strong environmental agency that builds a regulatory framework, under which flexible programmes can be implemented’* (R18). Despite heavily emphasising the role of the state (S19, +4), ‘planners’ clearly see potential in privately financed agri-environmental programmes (S18, +2), as they know of examples that worked well.

3.3. Factor 2—the cooperators:

This factor accounts for 21 per cent of the study variance, and seven people load significantly onto it. The Q sorts associated with this viewpoint stem from six intermediaries and one farmer. Even though this factor does not include the domain of policy makers, the intermediaries of that viewpoint represent a broad range of actors, as they belong to three distinct levels of agencies: environmental NGOs, land care associations, and nature conservation administrations.

The common theme among representatives of this factor is the role of networking in nature conservation and creating links between regional stakeholders, hence deserving the term ‘cooperators’. In particular, this factor is distinguished by the emphasis on the importance of farm advisors having knowledge of the local circumstances (S23, +4). ‘Cooperators’

argue that there is no such thing as a ‘one size fits all’ measure. In contrast, programmes must be designed, monitored, and financially rewarded individually. This of course entails higher transaction costs but ensures that ‘*people [don’t] talk at cross purposes*’ (R2).

This viewpoint is built on experiences of well-structured networks and detailed planning. The benefit of strong interlinkage is that advisors provide support and conceptualise management plans for particular landscape elements. ‘*Including agroforestry and maintaining treelines along field edges is important for plant diversity and soil erosion*’ (R7). Similarly, ‘*[...] foresters, farmers, and scientists must work together to conserve high value landscapes*’ (R7).

In contrast to ‘planners’, ‘cooperators’ are distinguished by the desire to monitor environmental impacts (S4, +3). To successfully implement high-value projects, technical advisory services for nature conservation projects should be an essential part of farm advisory services (S7, +3). The resulting payments might then also involve top-up bonus payments for achieving especially high environmental targets (S14, +3). In a similar vein, this viewpoint postulates that only by approaching farmers can well-coordinated measures be developed at a landscape scale (S33, +1).

Another distinguishing element of ‘cooperators’ is the appreciation of results-based payment measures (S11, –1; S12, 0; S17, +1). Whereas ‘planners’ were highly sceptical, ‘cooperators’ evaluated statements regarding result-based payments more positively. In the interviews, the ‘co-operators’ emphasised that they see much potential in paying for results to stimulate farmers’ efforts put into AECM.

3.4. Factor 3—the individualists:

The last factor accounts for 14 per cent of the study variance, and six people load significantly onto it, consisting of three policy administrators, one intermediary, and two farmers. They argued that the production of agricultural goods and sustainable land management are not mutually exclusive (S34, +2). In contrast, ‘*Ecology should be seen as a whole*’ (R23). Respondents did not see a divide between producers and conservationists. ‘*By complying with ecological standards, farmers can be both producers and conservationists*’ (R21). Cooperation among farmers is not necessarily seen as a positive feature in this factor (S25, –1), as they see themselves as ‘individualists’.

Touching upon the topic of the duration of environmental programmes, ‘individualists’ emphasised the role of land tenure in scheme participation (S15, +4; S30, +1). Similar to the argument stressed by ‘planners’ and ‘cooperators’, the ‘individualists’ state that farmers are quite limited in their management options, as land contracts and lease agreements are often of short duration.

The ‘individualists’ are further distinguished by highlighting the amount of information farmers must provide in the applications of governmental funding for agri-environmental programmes (S1, +3). They stressed that in the past, farmers denounced each other when they learned that other farmers did not comply with the management options (R20). Therefore, farmers are now reluctant to publicly report their management plans.

Regarding farmers’ knowledge and farm advisory services, ‘individualists’ believe that the knowledge obtained from vocational training is still not sufficient to successfully implement agri-environmental measures. There is still a dire need for farm advisors who actively advise farmers. ‘*There is all the information out there. Newsletters, magazines, homepages... you name it. It is more that there is too much information, and farmers do not know what is relevant to them*’ (R20). Another distinguishing feature of the ‘individualists’ is the opinion that farmers should have the option to choose who will advise them, given that farm advisors are certified.

3.5. Statements of complete disagreement

Among the most polarising topics of the concourse were the amount of monitoring (S3), the benefits of results-based measures (S10), the protected status of agricultural land (S15), and farmers' motivations to participate in nature conservation policies (S34).

Regarding the monitoring (S3), the 'individualists' were particularly sceptical and dismissive towards more controls on their lands, whereas the 'planners' did not strictly oppose in-depth monitoring. The 'cooperators' see themselves in the middle in that regard. In terms of result-based measures (S10), the 'planners' strongly dislike the idea and favour action-based payments instead. In contrast, 'cooperators' are relatively open to result-based payments, as with adequate consultancy these seem to be a feasible option in their opinion. Last, regarding the protected status of land (S15), 'cooperators' do not see an issue with that, as they advocate for targeted nature conservation measures, which might end up in protected zones. In contrast, 'individualists' see AECM not as something that should be exclusively allocated at targeted field patches but rather integrated into the farms' production.

3.6. Programme design

How can 'planners', 'cooperators', and 'individualists' adequately be addressed by policy? To approach this question, we used not only our analysis of the three factors but also the interview transcripts, with particular emphasis on the individual rationale of statement allocations. This helped not only to understand what contractual features were regarded as important but also why participants believed AECM should be designed accordingly. In doing so, we derived three distinct programmes, which each correspond to either 'planners', 'cooperators', or 'individualists'.

The idea behind the statement development was to pinpoint features of different existing environmental programmes within Germany. In doing so, we could derive differently nuanced environmental policy programmes based on what the study participants stated in the interviews. Each programme has similarities with existing policy measures such as EU-financed AECM or contractual nature conservation measures funded by federal states.

1. *Low-threshold programme*

Derived from the viewpoint of the 'planners', these measures strongly resonate with voluntary 'light green' AECM funded by the second pillar of the CAP. The idea of this programme is to compensate farmers for predefined executed actions that are implementable independent of the biotic conditions of individual landscapes. Since there is a strict protocol in terms of the execution of these measures, policy makers are able to plan ahead and are willing to offer these measures on a long-term basis. This programme addresses a broad audience of farmers and represents a first step in integrating nature conservation into the daily activities of farming businesses. Measures under the 'low-threshold programme' are designed in such a way that farmers, with their knowledge from vocational training, are able to implement them on their own. Technical assistance can be provided on an as-needed basis but is not as strictly needed, in contrast to the other two programme types. Within the 'low-threshold programme', farmers follow clear protocols with moderate ecological impact. Hence, payments are also action based, since monitoring large-scale results and structuring payments around these results would be too costly. This type of programme is important for two reasons. On the one hand, it will reach farmers who have comparatively little interest in participating in nature conservation. The target audience is thus farmers who are not willing to take risks and instead plan ahead with secure payment streams for multiple periods of time. On the other hand, these measures should in any case exist to be used as an interim solution and facilitate the adoption of and transition to more complex 'dark green' nature conservation measures. With climate change and highly fluctuating returns from agricultural production ahead, nature conservation might represent

an alternative income-generating pathway to purely production-based agriculture. Farmers subscribing to this kind of scheme usually see agricultural production as separate from nature conservation and are willing to engage only in low-threshold biodiversity-enhancing programmes.

2. Targeted and flexible nature conservation programme

The second type of programme, derived from the ‘cooperators’, resonates to a great extent with an already existing regional programme outside the GCAP. The measures under this programme differ widely from those under the ‘low-threshold programme’, as they allow for more flexibility when carrying out actions and are targeted at highly environmentally relevant areas. The underlying idea is not to implement agri-environmental measures on as much land as possible but rather in areas where they bring the largest ecological benefit. Identifying these particularly valuable spots requires expertise and advice from farm extension services. Contracts for these types of measures follow clearly defined aims but allow for potential adjustments. The possibility of results-based remuneration is not excluded with this type of programme, as this is intended to give farmers more flexibility in implementing conservation actions. In general, measures falling under this programme type account for more flexibility in execution. Consequently, payment rates are not set in stone, and remuneration might also include individual bonuses. The amount of these bonus payments may then be subject to the achieved results. The clear idea is that greater effort should be rewarded accordingly, opening the door for payments beyond the opportunity cost approach.

Quite importantly, these measures require substantial assistance and nature conservation advice, as they are complex and go beyond the vocational training of farmers in Germany. Thus, actors with specific local environmental knowledge and nature management plans are essential to implement these kinds of measures. Furthermore, successful implementation is strongly dependent on the networking of key actors within a certain region. These actors can be e.g., local NGOs, farm nature extension services, environmental administration, or land care associations. An important feature of this type of programme is to share local knowledge and experiences among stakeholders to improve trust and social learning. In this sense, collective AECM might come into play, where farmers form collectives along the lines of the Dutch model to improve the spatial coordination and targeting of agri-environmental measures (Barghusen et al. 2021).

Farmers interested in these measures agree with farmers of the first programme type in terms of seeing agricultural production and nature conservation as separate from each other. However, in contrast to those in the first programme type, these farmers are eager to participate in measures of high ecological value. Hence, they like to contribute to nature conservation, but more so in areas where their exerted efforts have the largest impact.

3. Agroecological farm system programme

Finally, following the rationale of the ‘individualists’, there are action-based measures focusing on high natural values. These types of measures potentially require technical assistance from experts, which is why farmers should be eligible to choose their provider of technical advisory services. Moreover, the option to terminate the contract should be made available as much as possible if the measure does not correspond to their individual expectations. An oft-mentioned obstacle in the Q-interviews with regard to the uptake of AECM is the fear of sanctions if contracts are terminated prematurely. Farmers are thus deprived of the incentive to establish new nature conservation projects on their land and to experiment with new measures. To retain as much flexibility as possible and still guarantee high environmental effects, these projects could be rewarded with a ‘public good bonus’ system, for example. Currently, the first drafts of such a system are being considered and conceived. The underlying rationale of this ‘public good bonus’ is a multilevel points system in which

farmers collect points by implementing certain environmental measures and receive payments per hectare of farmland in return (Birkenstock and Röder 2020; Röder et al. 2021).

In contrast to the ‘low threshold’ programmes, which aim to address a broad audience, this programme focuses on fewer individuals who would like to experiment on their own account. Very important for these measures is that farmers maintain their autonomy and do not commit to long-term arrangements or give them more flexibility to cancel long-term contracts under specific circumstances. Additionally, in contrast to the first programme type are the requirements for applying to this programme. This programme targets ‘adventurous’ farmers who would like to pioneer new types of agri-environmental measures. Their administrative burden should be lower than that of the first programme type. However, these programmes also tend to be much more complex and require more effort in the actual implementation process. To avoid scaring off ‘adventurous’ farmers with excessive administrative inputs, there should be a low level of bureaucracy. It is important to clearly communicate to farmers that these types of programmes follow a farm systems approach. Hence, this programme is intended for farmers who have clear intentions to shift or further develop a systematic agro-ecological approach and is particularly addressed to farmers who inherently believe that agricultural production and nature conservation go well together. Hence, these ‘Agroecological farm system measures’ are well aligned and integrated within farm operations, similar to rationale of organic farming.

4. Discussion and Policy Implications

Our results show that different viewpoints do not strictly correspond to the different stakeholder groups; thus, a mismatch among stakeholder groups causes no challenge for the development and implementation of a new AECM. Rather, importantly, it is possible to derive three distinct agri-environmental (sub)programmes.

Past studies have used the adaptation of policy designs primarily to derive farmer typologies based on past observed farmer behaviour (Guillem et al. 2012; Barnes and Toma 2012; Walder and Kantelhardt 2018). In line with Hanley et al. (2012) and Hannus and Sauer (2021), we argue that a more direct integration of the relevant stakeholder perspectives in the development of policies can be an important step for effective policy design.

Our results show that farmers are open to the introduction of novel contract features such as result-based and cooperative approaches advocated by experts (Pe'er et al. 2020) and EU policy makers (European Commission 2020). However, these novel contract design features fit more to specific types of programmes corresponding to the viewpoints of specific farmers. The results-based payments e.g., are appealing to farmers who identify with ‘targeted and flexible nature conservation programme’. A broad implementation of the result-based approach, such as, for example, within Germany’s programmed so-called eco-schemes of the first pillar of the CAP (Runge et al. 2022), could fail in terms of broader implementation. Eco-schemes cover typical low-threshold measures, as we described for the ‘low-threshold programme’. Furthermore, result-based measures need an advisory system, at least during the introduction phase. Within the ‘targeted and flexible nature conservation programme’, stakeholders see the importance of advisory services and a collaboration between the relevant stakeholders as an important element. Thus, this ‘targeted and flexible nature conservation programme’ is suitable to accommodate cooperative approaches, such as those now implemented in the Netherlands (Barghusen et al. 2021). In contrast, this cooperative approach seems to be ill suited, for example, to our described ‘agroecological farm system programme’ for farmers with a high appreciation of autonomy and a desire to make their overall operating system more environmentally friendly. Our results provide evidence that policymakers should develop a coherent concept for the entire agri-environmental programme rather than trying to incorporate individual novel contractual elements into existing schemes. In this sense, our research findings broaden the view away

from individual contract elements to the importance of a coherent programme and thus complement prior research that mainly emphasised the role of specific contractual elements in the successful implementation of AECM (Velten et al. 2018; Meyer et al. 2015; Polman and Slangen 2008; Mettepenningen et al. 2013). Similar to our findings, Meyer et al. (2015), Polman and Slangen (2008), and Mettepenningen et al. (2013) concluded that targeted advisory services are of primary importance for AECM in general.

Considering the individual derived programmes in light of the scientific literature, two particularly resonate with recent claims made in the academic discourse. Comparing the ‘targeted and flexible nature conservation programme’ to prior findings, we conclude that these findings strongly correspond to the findings of Mettepenningen et al. (2013) and Herzon et al. (2018), who identified flexibility in carrying out measures and results-based remuneration as important factors for farmers’ scheme participation. Moreover, the ‘targeted and flexible nature conservation measures’ found here support findings from Huber et al. (2017) and Früh-Müller et al. (2019), who emphasised the role of spatially targeting agri-environmental measures to increase farmer participation and the environmental effectiveness of policy measures. Similarly, DeFrancesco et al. (2018) found that the spatial targeting of measures and policy tailoring were important drivers of farmers remaining in AECM. Finally, our results suggested that the networking of key actors is a key driver of the success of targeted measures. This has previously been confirmed by Arnott et al. (2019), Schomers et al. (2021) and Häfner and Piorr (2020), who emphasised the role of intermediaries in farmer participation in AECM. From their German case study, Schomers et al. (2021) concluded that the involvement of intermediaries lowers private transaction costs, as these intermediaries are capable of providing effective agri-environmental information, training, and support for the implementation of programmes. These findings correspond to the motivations of the people advocating the ‘targeted measures’ derived herein. Overall, this programme type largely corresponds with suggestions by Pe’er et al. (2020), who call for results-based payments, collaborative implementation of programmes and increased flexibility when carrying out agri-environmental programmes.

Turning to the ‘agroecological programme’, Meyer et al. (2015) likewise defined the whole-farm approach as a condition for the successful implementation of an AECM. Hence, agroecological programmes emphasise nature conservation as an integral part of the farm, drawing parallels to the principles of organic farming. Further characterising agroecological programmes is the increased level of farmer autonomy, since farmers under these measures strongly dislike being dependent on others. This coincides with findings by Arnott et al. (2019), who recommend increased farmer autonomy to enhance scheme uptake based on their case study in Wales. When classifying empirical findings on agroecological farm systems, Lacombe et al. (2018) describe five distinct ideal types of agro-ecological food systems. The agroecological programmes in this paper strongly correspond to their declared ‘activity-centred designs’ (Lacombe et al. 2018). The nature of these activity-centred designs allows practitioners considerable autonomy and follows the principle of ‘learning by doing’. This was also determined to be a key feature of agroecological programmes, where respondents stated that farmers must be given room to test new approaches and realise their nature conservation ideas. A common bottleneck in the implementation of agro-ecological practices such as enhanced crop rotation is short-term lease contracts for arable land. This is a finding mentioned in the scientific literature (Pe’er et al. 2021) but is also expressed in the conducted Q interviews.

To reiterate the advantages of our methodological approach, the individual interviews in combination with predefined opinion statements allow for critical reflection with respect to the research topic. By predetermining the shape of the grid by the researchers, participants were forced to critically examine the statements and weigh them against each other. Since a researcher was always present during the allocation of the statements, it could be ensured that the statements were interpreted correctly. The allocation process as such was also

perceived very positively by the participants, as it gave them a very active role in the interview. Even participants who were afraid of not being able to give much information beforehand were able to draw parallels to their daily work through the provision of the statements and were thus encouraged to share their personal experiences.

Future research could build upon these three contract designs, precisely going beyond attitudes and quantifying preferences for contract specifications by using experimental approaches. Applying, for example, stated preference methods such as discrete choice experiments enables researchers to simulate farmers' ex ante required compensation payments for different contract settings. Thus, large-sample surveys might complement this research and provide deeper insights into farmers' trade-offs between particular contract features and respective compensation payments. Previous research addressed this to some extent with respect to contract duration, monitoring, and land enrolled (see [Mamine and Minviel \(2020\)](#) for a review). In addition, future research may focus on expert forecasts of farmers' required compensation payments. Therefore, research might compare farmers' required compensation payments to predictions by policymakers or farm advisors. These forecasts might be of particular importance in terms of updating experts' beliefs and thus improving stakeholders' understanding of farmer behaviour ([Rommel et al. 2022](#); [DellaVigna et al. 2019](#)). From a qualitative perspective, our results form a basis for establishing further co-design processes of agri-environmental programmes. While the results of this study are of a general nature, future studies might consider concrete measures to be developed through co-design processes.

Some of the presented findings in this study are area specific, while others potentially can be generalised to a wider context. The specific networks of actors, for example, are quite unique and often depend on individual relationships rather than expertise. Moreover, the density and distribution of particular NGOs is quite heterogeneous across Germany. The German Landcare Association (Deutscher Landschaftspflegeverein) for example, is relatively present in the southeast of Germany, but not so much in the west. Therefore, the 'ideal' contracts presented here might not be suitable in other federal states. Moreover, we acknowledge that the farm structure in Eastern Germany is quite different from the rest in that farm sizes are substantially larger, thereby leading to inherently different farm management. Other contract models, which are beyond those presented here, might be more suitable for smaller farms.

5. Conclusion

This empirical study has illustrated an underlying diversity of viewpoints on the institutional design of agri-environmental programmes. The findings demonstrate the need to expand the understanding of 'the perfect contract' for farmers. Instead, stakeholders revealed that the institutional design of agri-environmental contracts needs to take a variety of forms. Depending on the overall objective and complexity of a policy measure, different features of agri-environmental policy design might come into play. In this sense, this study legitimises the availability of diversely design ed agri-environmental programmes to accommodate the diverse preferences of individual actors.

A commonly embraced idea around policy making is to ensure that policies fit the needs of the people who have to implement them. For example, agri-environmental policies are addressed to farmers and thus must be aligned with their preferences.

This study illustrates that the process of agri-environmental policy making does not necessarily involve mismatches between different stakeholder groups. However, including different stakeholder groups definitely strengthens farmers' arguments in favour of having multiple agri-environmental programme designs to choose from. In the present case, it was possible to derive three ideal types of policy measures to cater to all different types of farmers. This study further sheds light on the interlinkages of contract design features

and the complexity of policy programmes and provides guidance on how to adjust policy programmes for different farmer types.

Appendix

Table A1. List of statements and corresponding factor scores⁴ per viewpoint.

#	The planners	The cooperators	The individualists
1	-1	0	3
2	-4	-4	-2
3	0	-2	-3
4	-1	3	0
5	2	2	1
6	-3	-3	-4
7	0	3	1
8	1	2	4
9	1	0	1
10	-2	0	-1
11	0	-1	2
12	2	0	3
13	3	1	-1
14	-1	3	-1
15	1	-2	4
16	-2	-3	-2
17	-4	1	-4
18	2	1	1
19	4	0	0
20	0	2	0
21	1	2	2
22	2	4	1
23	1	4	2
24	-1	-1	0
25	1	0	-1
26	-3	-4	-3
27	3	1	3
28	-2	-1	0
29	-3	-2	-2
30	4	1	1
31	0	0	0
32	3	-1	-1
33	0	1	-1
34	-2	-1	2
35	0	0	0
36	-1	-1	-2
37	-1	-3	-3
38	0	-2	0

Table A2. List of German statements.

code	Statement
S1T1	Je mehr Informationen Landwirte beim Beantragen von AUM über sich Preis geben müssen, desto geringer ist die Bereitschaft zur Teilnahme.
S2M1	Das Monitoring der Umwelteffekte der Maßnahmen ist ein unnötiger Arbeitsaufwand.
S3M2	Die Anzahl der Durchführungskontrollen von Maßnahmen reichen nicht aus.
S4M3	Statt Flächengrößen und das Einhalten bestimmter Termine zu kontrollieren, sollten klar definierte Umwelteffekte erfasst werden.
S5M4	Landwirte sollten in das Monitoring der Umwelteffekte von AUM einbezogen werden.
S6B1	Beratung zu AUM kostet nur zusätzliches Geld.
S7B2	Sofern eine naturschutzfachliche Beratung angeboten wird, sollte diese Teil einer landwirtschaftlichen Betriebsberatung sein.
S8B3	Landwirte müssen hinsichtlich der ökologischen Wirkungsweise von AUM geschult werden, damit diese erfolgreich durchgeführt werden können.
S9B4	Landwirten muss Raum geschaffen werden, sich gegenseitig über Agrarumweltmaßnahmen auszutauschen.
S10R1	Zahlungen, die an das Erreichen des Umwelteffektes geknüpft sind (ergebnisorientiert), geben den Landwirten mehr Flexibilität in der Bewirtschaftung.
S11R2	Wenn Zahlungen für AUM an die Umwelteffekte geknüpft sind (ergebnisorientierte Honorierung), bedeutet dies ein zu hohes finanzielles Risiko für die Landwirte.
S12R3	Klare Vorgaben der notwendigen Bewirtschaftungsmaßnahmen bei AUM begünstigen deren Durchführung.
S13R4	Landwirte brauchen die Sicherheit, dass die einzelnen AUMs längerfristig angeboten werden (nicht nur in einer Förderperiode).
S14R5	Eine Honorierung sollte teils für die Durchführung der Naturschutzmaßnahmen und teils für deren Umwelteffekte erfolgen (Erfolgsbonus).
S15RS1	Die naturschutzfachliche Aufwertung von Flächen durch AUM darf nicht dazu führen, dass die Flächen einen Schutzstatus erhalten und die landwirtschaftliche Nutzung eingeschränkt ist.
S16F1	Die Prämienhöhe für AUM sollte betriebsindividuell festgelegt werden.
S17F2	Die Zahlungen für AUM sollte nur bei Erreichen des Umweltziels erfolgen (ergebnisorientiert).
S18F3	Landwirte würden privat finanzierte (z.B. Unternehmen) AUM durchführen.
S19F4	Es ist wichtig, dass der Staat die Finanzierung der AUM organisiert und absichert.
S20N1	Eine öffentlich nachvollziehbare Verortung von Maßnahmenflächen ist wichtig, um das Engagement der Landwirte der Öffentlichkeit zu vermitteln.
S21N2	Erfolgreiche Beispiele für die AUM Umsetzung sollten anderen Landwirten und der Öffentlichkeit präsentiert werden.
S22K1	Um AUM effektiv für den Naturschutz einzusetzen, bedarf es Akteure, die beratend auf die Landwirte zugehen.
S23K2	Es ist wichtig, dass die beratenden Akteure sich in der Region auskennen.
S24K3	Die Bereitschaft von Landwirten bei AUM teilzunehmen wäre höher, wenn die Zahlungen nicht direkt Teil der staatlichen Agrarsubventionspolitik wären.
S25K4	Für die Umwelteffekte ist eine Kooperation von Landwirten oft unerlässlich. Diese müsste gefördert werden.
S26K5	Landwirte brauchen keine AUM Beratung.
S27K6	Oft überzeugt es ein Landwirt, wenn ein Landwirt seines Vertrauens für die Umsetzung von AUM plädiert.
S28K7	Es muss einzig die Entscheidung des Landwirts sein, wer sie mit Bezug auf Naturschutz berät.
S29D1	AUM sollten eine kurze Vertragsdauer haben sodass Landwirte flexibel reagieren können.
S30D2	Eine lange Vertragsdauer bei AUM gibt den Landwirten Planungssicherheit.
S31D3	Vertragslaufzeiten müssen flexibel sein.

Table A2. Continued

code	Statement
S32Ö1	Je länger die Laufzeit einer Agrarumweltmassnahme, desto positiver der Umwelteffekt.
S33Ö2	Erst durch ein angepasstes Management auf Landschaftsebene zeigen AUM Wirkung.
S34BA1	Landwirte sind in erster Linie Produzenten von Agrargütern und keine Naturschützer.
S35BA2	Auflagen von Agrarumweltmassnahmen passen oft nicht in das landwirtschaftliche Betriebskonzept.
S36W1	Landwirte führen AUM zur Imagepflege durch.
S37W2	Landwirte sind von sich aus motiviert Naturschutz zu betreiben. Geld spielt dabei eine untergeordnete Rolle.
S38W3	Landwirte führen AUM aus ökonomischen Gründen durch.

Supplementary Material

Supplementary data are available at [Q Open](#) online.

End Notes

- 1 Similar to the AECM funded by the second pillar of the CAP, contractual nature conservation measures intend to maintain the natural state of a specific area or site. The primary difference is that contractual nature conservation projects have to be financed entirely by the national budget, whereas AECM are additionally subsidised by the CAP and only a share has to be contributed by the national budget (MLUK 2020).
- 2 ‘The z-score is a weighted average of the values that the Q-sorts most closely related to the factor give to a statement, and it is continuous.’ (Zabala and Pascual 2016).
- 3 For more detail on the statistical procedures behind factor extraction, we recommend consulting the instructions of the ‘qmethod’ R package, accessible at <https://github.com/aiorazabala/qmethod>
- 4 Factor scores are integer values based on z-scores and reconstruct the representative ideal Q-sort of a factor.

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