



Co-Design of innovative contract models for agri-environment and climate measures and the valorisation of environmental public goods

Delphi study on innovative contracts for agri-environmental payments

Interim report on the 1st round of the Delphi study

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KEY FINDINGS

The first round of a policy Delphi survey was organized in March 2021 as part of the Contracts2.0 project to better understand the feasibility of innovative contractual solutions from the point of view of policy implementation. 41 experts from 17 European countries filled the online questionnaire.

The overall evaluation of the **currently used agri-environmental and climate measures** (AECM) show the insufficiency of the *available budget*, the high level of associated transaction costs, and the rational calculation of the *cost-benefit ratio* at the farmers' side. A key question is how payments are defined: while 'rewards' might be better accepted by farmers, they are more uncertain than 'compensatory payments' if closely linked to environmental impact. Further limitations emerge due to *institutional factors* of the contracts, i.e. path-dependency and the importance of strong political commitment to achieve systemic change. *Lack of knowledge, expertise and advisory* also hinder the effective functioning of current contracts. Respondents highlighted the need for more flexibility, improved monitoring, and better regional differentiation as potential ways forward.

Considering innovative contract types - AECMs with results-based payments or group-based elements, and value-chain or land-tenure contracts implying environmental requirements - there was **no single best solution** found in the survey. The perceived effectiveness of these contracts to achieve environmental impacts is relatively similar, as well as their suitability to the current policy and cultural context, while there is more divergence in terms of how costly and knowledge-intensive their implementation is (land tenure contracts being the least demanding in this respect).

Experts have **diverse opinion about the feasibility of novel contractual solutions**, which is indicated by the relatively high variance of the ratings but can also be discovered in the textual answers. This diversity of opinion is partly explained by the fact that most of these novel solutions are considered to be *context-dependent*, i.e. they are considered effective in certain contexts, but not everywhere. Several experts suggested combining these innovative elements with more regular AECM contracts and apply them as *voluntary elements or top-ups*. In the following four paragraphs we sum up the key findings for the novel contract solutions that were proposed in the survey.

- **Result-based AECM contracts:** beside their positive biodiversity impacts, these contracts can have wider environmental and social benefits, although often difficult to measure. They put more responsibility on the farmers' shoulders but give them bigger flexibility and appreciation by rewarding their contributions to nature conservation. This approach has an empowering impact on farmers, improving their motivation, awareness of ecological processes, and acceptance of specific conservation goals and measures. On the other hand, result-based AECMs entail huge uncertainty because whether results are achieved or not depends on external factors which are beyond the control of the farmers. Increased uncertainty goes together with increased risks of failing the goals and missing the payments.

- **Group-based AECM contracts:** the long history and existing experience with cooperation among farmers can be a starting ground to develop group-based AECMs, although socio-cultural factors can hinder their implementation. Cooperation among farmers might require increased coordination and facilitation but can contribute to joint learning and increased motivation. Several respondents highlighted that the current legal and institutional system is specified to bilateral contracts and making room for collective contracts would need substantial adjustments in the public administration system. In countries where collective contracts are legally challenging, less structured ways of collaboration, i.e., through facilitated interactions, increased communication, or shared visioning at the landscape scale etc. might be applied to create synergies at the landscape level. Considering transaction costs, most respondents argue that group-based contracts are less expensive for the public administration and the farmers than bi-lateral contracts, but private transaction costs can be higher at the intermediary organization.
- **Value-chain contracts:** while these contracts were considered generally useful to support sustainable production, it was debated what can guarantee that such a contract can effectively deliver ecological objectives. Some experts argued that value-chain contracts are better suited to shorter food supply chains, especially because large retailers are often hard to get engaged in such schemes. Intermediaries - diverse actors along the value chain - are key players in value-chain contracts, as well as consumers themselves. The role of public actors in value-chain contracts is not always clear, and contract specifications should be transparent about it.
- **Land-tenure contracts:** might be better suited to contexts where land ownership is concentrated and national parks or other intermediary actors have access to land. Some experts argued that land-tenure contracts are not compatible with situations where private property dominates land ownership - or at least requires an altruistic motive from private landowners. Land-tenure contracts have the potential to shift towards more sustainable agricultural practices (public benefit), and at the same time can preserve / enhance the natural capital for the landowner (private benefit). Farmers' main motivation can be the lower rent which they receive as a compensation for applying more environmentally friendly practices. The duration of the contract is a crucial factor: and the longer duration can create added value for both the environment and the farmer. Compared to other contract types, land-tenure contracts can contribute to a more predictable financial environment to farmers, where uncertainty and risk related to external factors are not as significant as in the case of result-based or collective contracts.

When asking about the ***ideal contractual solution***, experts argued that *a mixed approach with flexible length and regional adaptability* would be the most beneficial for farmers. The most preferred contract setup was *based on AECM using both result-based and action-based elements*,

with a medium long contract signed by individual farmers. All other combinations had lower occurrence. If we focus on the result based/action-based character and the signatories of the contracts, we find that *mixed bilateral contracts* (for the medium-term or mixed length) were the most popular, followed by *result-based collective contracts* (for the long- and medium-term).

1. BACKGROUND

The present report is about the first round of the Delphi study conducted as a part of the Contracts 2.0 research project. The aim of the Delphi study is to explore the ideas and to facilitate discussion about innovative agri-environmental contracts among policy-makers, experts, NGO representatives, farmers and researchers.

We approached 120 European stakeholders at the beginning of the study on the 15th of March 2021, and 43 of them opened the questionnaire, finally 41 answered most of the questions. The participants represent the European regions, as we had respondents from the following countries: The Netherlands, the United Kingdom, Belgium, France, Italy, Spain, Hungary, Austria, Ireland, Denmark, Portugal, Estonia, Switzerland, Germany, Czechia, Sweden and Romania. Figure 1 presents the basic distribution of the regional and professional background, and the decision-making level of the participants.

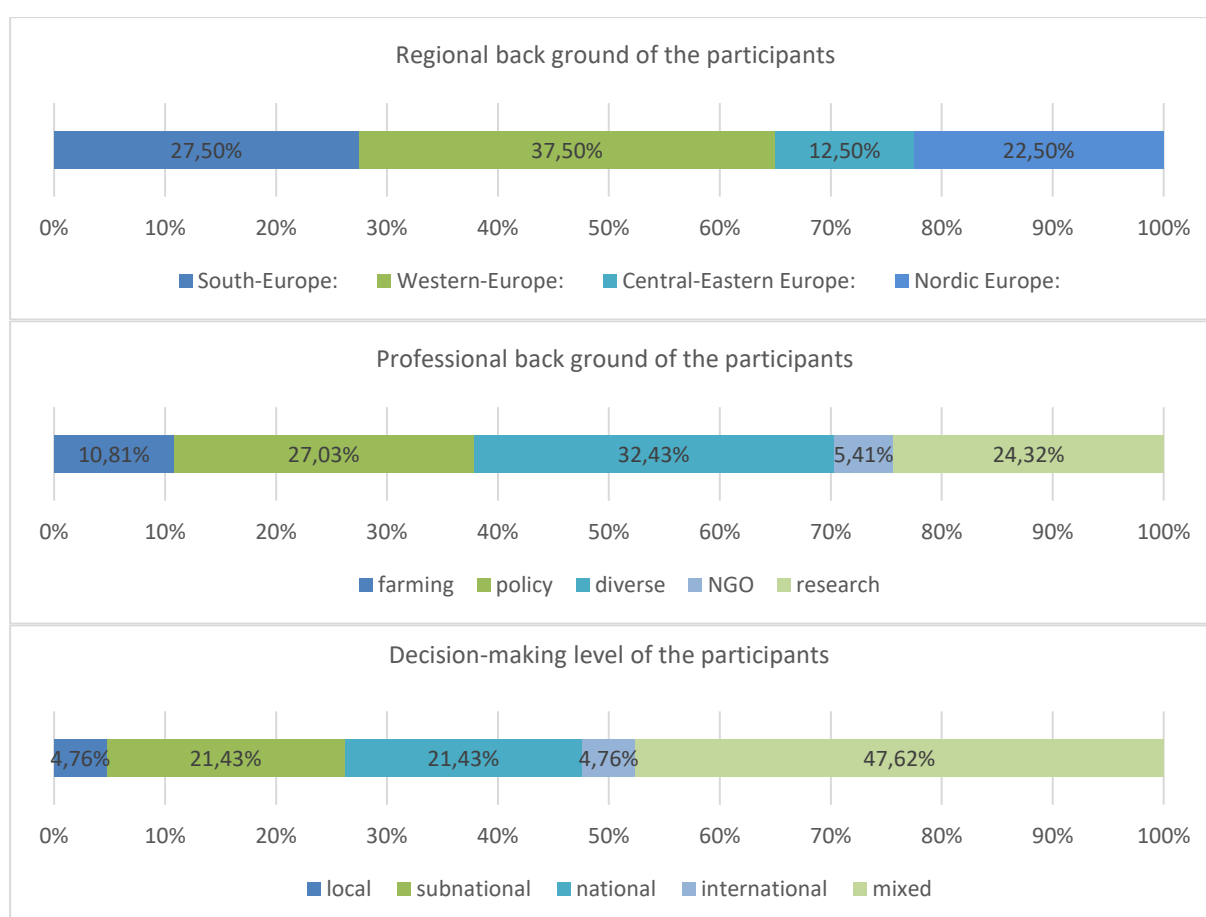


Figure 1. The background of the participants of the Delphi study. *Source: own compilation based on the 1st round of the Delphi survey.*

The report follows the structure of the questionnaire: after describing the background of the participants, and the methodological framework, it presents an analysis of the limitations of existing agri-environmental and climate schemes (AECMs). The next part of the report is an analysis based on the ratings and open-ended answers of the participants about result-based and collective AECM contracts, followed by an analysis on value-chain and land-tenure contracts. Finally, the analysis of the ideal contract type is presented.

2. METHODS

The first round of the Delphi survey was administered online via the Mesydel platform between March 15th and April 11th, 2021. The questionnaire included 3 profile questions (country of work, professional background and decision-making level where the respondent is mostly involved), and 32 research questions organized in four blocks. The first block focused on the overall assessment of current agri-environmental measures with specific focus on their limitations (open-ended question). The second block focused on novel contractual solutions for AECMs, such as result-based and group-based contracts, including several numeric questions and one open-ended for both contract variants. The third block focused on other innovative contract types, such as value-chain and land-tenure contracts, including again numeric questions and one open-ended for both contract variants. The fourth block consisted of questions about the ideal contract, allowing respondents to build their own model by selecting among three contract types (AECM, value-chain, land-tenure) and several contract elements (e.g. result- or action-based, bilateral or group-based, short-, medium- or long term).

Numeric questions were analysed in excel, using descriptive statistics (means, variance) and crosstabulations. Open-ended questions were analysed with qualitative content analysis using the tools (creating tags and facets) offered by the Mesydel platform. Textual responses were coded (tagged) using in-vivo codes by two researchers. Codes that explain related concepts were grouped into parent categories (facets). During the categorization individual codes were further refined and when necessary merged or split into two to ensure that each code covers one main and coherent topic. Inter-coder reliability was achieved by continuously comparing and discussing codes (tags) and categories (facets). Explanations for each code and category were created after reaching a common agreement of the major meaning of each code and category. Altogether 80 codes (tags) and 12 categories (facets) were used to analyse the textual answers. Figure 2 shows the 12 categories and the different codes they include.



Figure 2. Codes and categories developed during the qualitative content analysis (the size of the words indicates the frequency of occurrence). *Source: own compilation using the Mesydel platform.*

3. OVERALL EVALUATION OF CURRENT AGRI-ENVIRONMENT AND CLIMATE CONTRACTS: CHALLENGES AND LIMITATIONS

The first research question of the Delphi survey focused on the overall evaluation of currently used agri-environmental and climate measures to better understand the main limitations and challenges, and to discover the niches for innovative contractual approaches. The main limitations can be grouped into 5 main categories.

Financial aspects were mentioned the most frequently. The insufficiency of the available budget set aside to design and manage agri-environmental schemes, and the high level of associated transaction costs creates challenges at the public administration level. The amount of compensation defines the cost-benefit ratio at the farmers' side (whether it pays off to take part in a scheme or not). Whether payments are defined as a compensation (i.e. levelling off the forgone income and the increased costs) or as a reward (i.e. a payment for public goods delivery) influences the attractiveness of the scheme: while 'rewards' might be better accepted by farmers, if they are closely linked to achieved environmental impact than they can be more uncertain, than 'compensatory payments'.

Equally important limitations emerge due to **institutional factors**, i.e. the increased administration (lack of flexibility, bureaucracy) of the contracts, the embeddedness of existing contracts into the current institutional and legal environment and the path-dependency (resistance to change) at the institutional level, and the importance of strong political commitment to achieve change at the system level.

Knowledge-related factors also hinder the effective functioning of current AECMs, especially the lack of knowledge and robust scientific evidence, the limited availability of farm advisory (at least in some regions), and the lack of ecological expertise and experience with novel contract types both at the farm advisory system and at farmers.

Considering the **characteristics of currently typical AECM contracts**, respondents highlighted the need for more flexibility, improved monitoring and control mechanisms, and better regional differentiation (i.e.g tailor-made solutions which adapt to regional specificities both in terms of the environmental and the socio-economic context). The overly complicated nature of some of the existing schemes were mentioned as a limitation, based on which some respondents argued for simplified contracts. Some quotes also referred to contract duration as a key factor of success, highlighting that achieving real environmental impacts often need more time than the duration of a short- or medium-term contract (so there is a time mismatch between ecological and institutional/market processes).

Farmers' awareness and motivation were less frequently addressed as limiting factors, just as ecological constraints or social aspects (e.g. the lack of trust or other social characteristics like risk aversion).

4. ASSESSING NOVEL VARIATIONS OF AECM CONTRACTS: RESULT-BASED AND GROUP-BASED PAYMENTS

4.1 AECMs with result-based payment: “outsource risks and price the public goods”

The participants of the Delphi see result based contracts compared to action based more effective in supporting sustainable production, but at the same time being more costly to implement, requiring a broader knowledge base, less suited to the existing institutions and suiting less to the social and cultural context. The participants agreed with all the statements on result-based schemes, but the level of agreement and the heterogeneity of the answers is different. It is worth noting that the statement about being suited into the social and cultural context had the lowest average and the highest variance; if we have a closer look at the answers, we see that there were only 6 neither agree, nor disagree answers, while 15 agreed and 15 disagreed with the statement, which means that the participants were divided about the topic. Figure 3 presents the average and the variance of the responses.

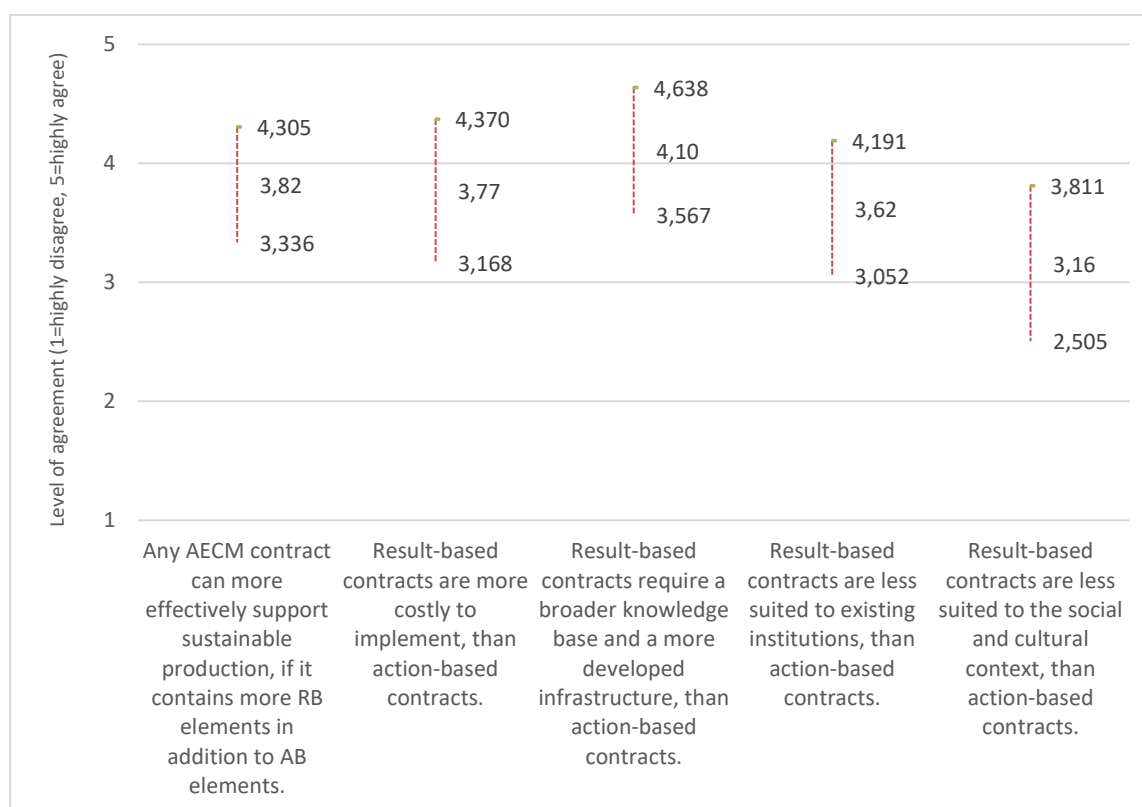


Figure 3. Statements on result-based and action-based elements. Average and variance of the answers (N=36) (1 - highly disagree; 3 - neither agree, nor disagree; 5 - fully agree). *Source: own compilation based on the 1st round of the Delphi survey.*

The open-ended question about the overall evaluation of result-based contracts was filled by 35 respondents, and missing experience was mentioned only by 3 of them, indicating that result-based contracts, although novel in the EU, build on a quite strong evidence base. This question was the richest in terms of the length and diverse aspects addressed by the textual answers (57 different codes were used during the analysis of this question from the 80 codes used altogether to analyse the whole survey). Figure 4 shows the word cloud of the codes used for the analysis of the comments

acceptance administration advisors agricultural practice available budget
awareness business modell communication compensation complexity context
dependence control coordination cost-benefit ratio design design process digital tools
distrust ecological objectives effectiveness empowerment
environmental impact examples external factors farm advisory farmers' expertise
feedback to researchers flexibility indicators institutional environment intermediaries
involvement labelling lack of knowledge learning market measurable
outcomes missing experience mixed approach motivation Novelty other
land users personal attitudes political commitment predictability public
administration public vs. private responsibilities reward risk scientific evidence social
characteristics sustainable production transaction costs trust uncertainties wider
benefits

Result-based contracts are appreciated by most respondents for being “*of great value in terms of making environmental goals clear, involving farmers more actively in achieving them, building on farmers own experience, and making the link between performance and payment much clearer.*” (quote no. 7). Ecological objectives are at the core of result-based schemes, and beside their positive (and targeted) biodiversity impacts, these contracts can also have wider benefits (e.g. improved water quality or climate adaptation), although these co-benefits are difficult to measure.

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Result-based contracts put more responsibility on the farmers' shoulders but give them bigger flexibility and appreciation by rewarding their contributions to nature conservation. *"As they have to decide on their own which management action fits the goals best, they start to invest their creativity and start to see biodiversity more as part of their farming 'crops'."* (quote no. 24). Several quotes, like the previous one, mention that result-based schemes build on strong involvement of farmers, and provide them autonomy, flexibility and freedom of choice in terms of how they achieve the conservation goals. This approach has an empowering impact on farmers, improving their motivation, awareness of ecological processes, and acceptance of specific conservation goals and measures. On the other hand, result-based contracts entail huge uncertainty because whether results are achieved or not depends on external factors which are beyond the control of the farmers. Increased uncertainty goes together with increased risks of failing the goals and missing the payments. In the market context, taking risks is not unfamiliar to farmers, although risk aversion might be different across countries and social groups. *"As regards the social and cultural context farmers are well used to understanding various market specifications for products and understand the concept of a higher quality product receiving a higher price in the market. Well-designed result-based schemes apply this principle to create markets for environment services and design systems where the product specification (i.e. quality scoring system) is understood by the farmer."* (quote no. 17)

Among the financial aspects of result-based contracts, reward and compensation are key concepts. Quotes often highlight that rewarding farmers for their environmental performance (instead of compensating for their lost income or increased costs) is an advantage of this type which contributes to its attractiveness among farmers. Transaction costs are also mentioned frequently, although the quotes are controversial. Experts agree that setting up a result-based scheme needs large investments (i.e. defining the suitable indicators, designing the fact sheets, providing training to staff, IT infrastructure for monitoring etc.). Some argue that transaction costs remain high in later stages as well, mainly due to challenges in monitoring and the increased demand for advisory. Others think, however, that if monitoring is largely done by farmers, the system can function with moderate transaction costs at later stages.

Result-based payments are recommended by some respondents to be used in combination with more regular approaches, i.e. action-based measures can provide a basis for safe income, result-based payments can provide extra incentive to achieve more ambitious ecological objectives. Some respondents also acknowledge that without adequate ecological knowledge and advisory support (to enable farmers to really adapt the measures to their own context and capabilities) farmers might gradually shift to simply follow a prescribed (agreed) measure, that is, the result-based element can downgrade to a mainstream action-based element. The main added value of result-based approaches can be realized if they are applied in the right niches emerging in the interplay of ecological and institutional factors: *"(i)t needs to be used where it has the potential to add most value beyond other approaches. There are two specific situations where this is the case - first where action-based approaches become highly complex and inflexible with lots of prescription/record keeping and second where the relationship between the actions and outcomes is weak/very sensitive to small factors such as timing resulting in widespread poor delivery of outcomes."* (quote no. 9)

4.2 AECMs with group-based payments: “outsource coordination and transaction costs”

The opinions about the group-based contracts seem to be more heterogeneous, than in the previous contract type, as the higher variances and the averages show. There is a consensus that collective contracts more effectively support sustainable production, although they are more costly. Participants see that collective contracts are not less suited to existing institutions than bilateral contracts. As the figure shows the participants had very different opinions about the necessary knowledge base and the infrastructure for a collective contract, and also about its fit into the cultural and social context. As we will see in the next section the participants discussed two of the above topics in the open-ended questions: social and financial aspects. Figure 5 presents the average and the variance of the responses.

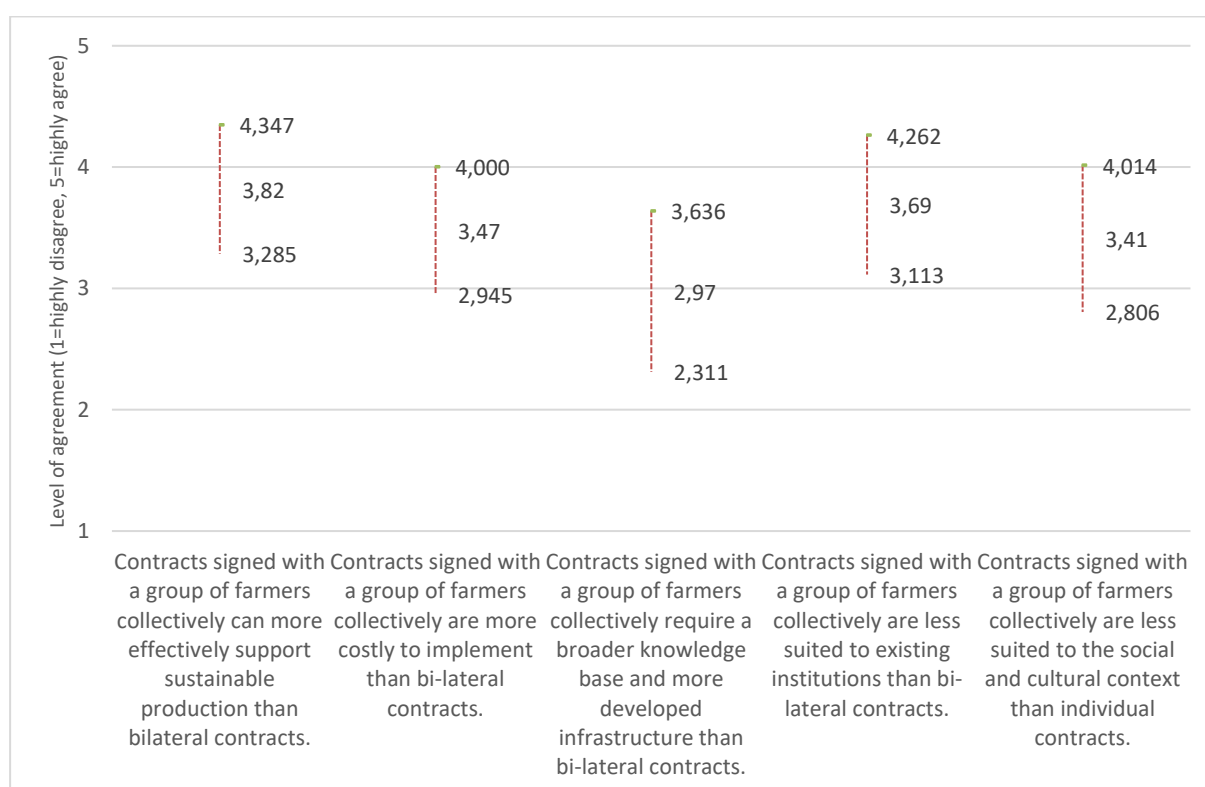


Figure 5. Statements on the role of collective contract elements. Average and variance of the answers (N=36) (1 - highly disagree; 3 - neither agree, nor disagree; 5 - fully agree). Source: own compilation based on the 1st round of the Delphi survey.

Altogether 30 respondents filled the open question about the overall evaluation of collective contracts, and only 1 respondent mentioned that a lack of experience hinders the effective evaluation of collective contracts. Figure 6 shows the word cloud of the codes used for the analysis of the comments on collective contracts. The most important (most frequent) codes that describe collective contracts are ‘cooperation’ (30 quotes, 60% of all mentions), landscape scale (9 quotes, 64% of all mentions), ‘transaction costs’ (9 quotes, 31% of all mentions), traditions (8 quotes, 67% of all mentions), trust (8 quotes, 57% of all mentions), and ecological objectives (8 quotes, 35% of all mentions).



Figure 6. Keywords emerging from the assessment of group-based contracts (the bigger size of the words indicates the higher coding frequency while colors refer to the “parent” category of the codes). Source: own compilation using the Mesydel platform.

There is a long history and existing experience with cooperation among farmers (even if not in the environmental domain), which can be a starting ground to develop group-based AECMs. In areas where land is managed as collective property (i.e. agricultural commons), farmers naturally have to work together, but in other contexts collaboration might be more challenging: *“there's a myth too in collective approach, more precisely that farmers are collective executors. In my knowledge, farmers do collaborate but only when there's a business interest, not to achieve idealistic goals.* (quote no. 19). Cooperation among farmers might require increased coordination and facilitation efforts but can contribute to joint learning and increased motivation. While collective contracts might be legally challenging (see below), less structured ways of collaboration, i.e. through facilitated interactions, increased communication, or shared visioning at the landscape scale etc. might equally be able to create synergies at the landscape level: *“in most cases effective spatial coordination can be achieved by other mechanisms without the need for legal collaboration. (...) Softer 'group working' involving facilitators bringing groups together without legal contracts has tended to be the model adopted.”* (quote no. 8). To achieve these synergies, intermediary actors, such as a collective organization or an advisor who mediates between the public agencies and the farmers, have a key role: *“Only when there is a strong process manager with high ecological knowledge and authority among farmers, such an approach may work.* (quote no. 19).

Most respondents agree that collective contracts can effectively deliver biodiversity related objectives at a relatively low transaction cost if adequate ecological expertise is involved. Their biggest added value is to enable a coordinated effort at the landscape scale. Therefore, group-based contracts can be more suitable to realize geographically dispersed ecological impacts (e.g. conservation of species or habitats along a river or raising the water table level in a region), than to achieve farm-specific objectives (e.g. measures related to animal welfare). However, there are also some arguments that group-based contracts serve rather pragmatic and economic goals, instead of ecological objectives. *“I do observe that the idea of collectivising an ecological target among farmers does tend towards a pragmatic /economical approach rather than an ecological approach. (...) What*

you see next is that measures are taken in areas with the least economic relevance. This only matches sometimes with ecological potential.” (quote no. 19)

Several respondents highlight that the current legal and institutional system is specified to bilateral contracts and making room for collective contracts would need substantial adjustments in the public administration system. The major concerns against collective contracts emerge from their institutional and social environment: *“(w)hile from a general perspective group-based contracts can generate a stronger impact than bilateral ones, they mostly depend on the quality of the group relations and the group real commitment in terms of values, principles and shared goals.”* (quote no. 6). In collective schemes if one farmer violates the rules, the consequences (e.g. penalty payment) might be borne by the whole group of farmers, which creates uncertainty and risk for the farmers. High level of trust and existing traditions for collective action might help overcome this challenge. Otherwise, targeted contract elements are needed to regulate individual behaviour, at the expense of growing legal complexity and increased transaction costs.

Considering transaction costs, most respondents argue that group-based contracts are less expensive for the public administration than bi-lateral contracts: *“Collective contracts are for me one of the most important ways to reduce costs of transaction and, therefore, to promote result-oriented schemes.”* (quote no. 1) However, the lower level of public transaction costs is accompanied by an increase in private transaction costs which appears mostly at the intermediary actors (the collective organization). Some quotes therefore suggest including a higher compensation for transaction costs in the AEEM if the contract is signed by a group of farmers. Others recommend implementing group-based contracts on a voluntary basis, paying a basic amount for individual actions and offering a bonus payment (top-up) for the collective action.

5. ASSESSING OTHER INNOVATIVE CONTRACT TYPES: THE VALUE-CHAIN AND THE LAND-TENURE CONTRACT

5.1 Value-chain contracts: “outsource control and let the market decide”

Value-chain contracts have a good reputation among the participants of the research: they agree that it can support sustainable production through-out the value chain and reward farmers for their environmental performance. There are more concerns that it requires a broad knowledge base and extensive infrastructure, but less worry about its suit into the current institutional, social or cultural context. Figure 7 presents the average and the variance of the responses.

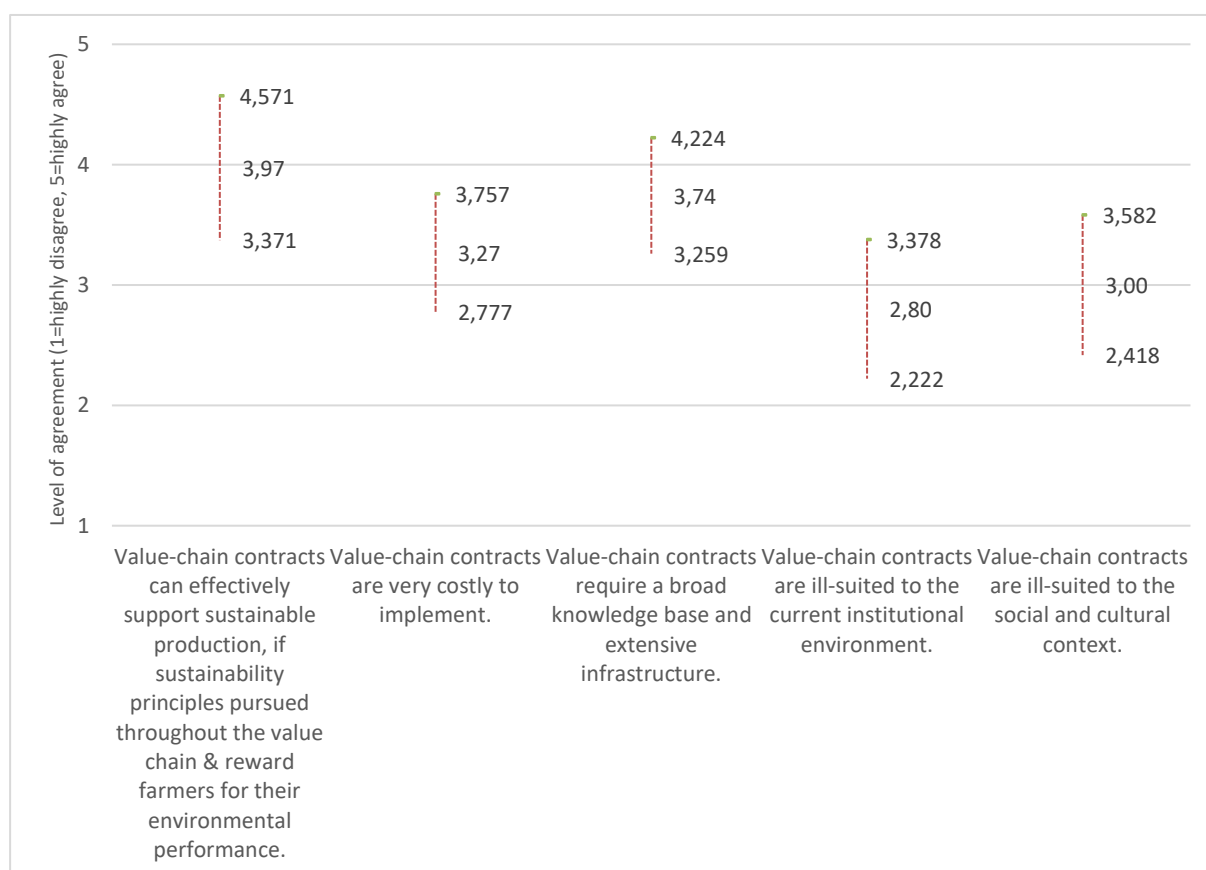


Figure 7. Statements on the role of value-chain contracts. Average and variance of the answers (N=36) (1 - highly disagree; 3 - neither agree, nor disagree; 5 - fully agree). *Source: own compilation based on the 1st round of the Delphi survey.*

Altogether 31 respondents filled the open question about the overall evaluation of value-chain contracts, and 5 respondents mentioned the lack of experience with value-chain contracts in the specific context he or she is working. Figure 8 shows the word cloud of the codes used for the analysis of the comments on value-chain contracts.

Not surprisingly, the most frequent code in this question is ‘market’ (altogether 9 quotes, 69% of all mentions). Related quotes highlight that there is a demand for sustainable food products, but on the other hand there is an overload of labels, so the goals and the communication along the whole value chain should be transparent and persuasive to realize market success. Some respondents argue that value-chain contracts are better suited to shorter food supply chains, especially because large retailers are often hard to get engaged in such schemes.



Figure 8. Keywords emerging from the assessment of value-chain contracts (the bigger size of the words indicates the higher coding frequency while colors refer to the “parent” category of the codes). Source: own compilation using the Mesydel platform.

Market factors are strongly associated with the code ‘reward’ which belongs to the financial aspects coding category. Respondents highlight that the higher price realized on the market is the biggest motivation for the farmer, and this approach is often more in line with farmers’ business logic than AECMs. Therefore, a value-chain contract can create an extra incentive for more sustainable production: *“(i)f it is put on top of existing AECM as providing an additional reward from markets besides the reward from policy it could work.”* (quote no. 3).

Among the coding categories ‘ecological aspects’ were referred to most frequently, including quotes on ‘sustainable production’, ‘wider benefits’ and ‘environmental impact’. While value-chain contracts were considered generally useful to support sustainable production, it was debated whether such a contract can effectively deliver ecological objectives. *“Value chain contracts are often as much about a marketing campaign and presenting a particular story around an issue rather than delivering environment results.”* (quote no. 17) *“(it has a) high potential because the best way to motivate farmers to implement biodiversity friendly farming methods is a higher price for their products. But also a high risk of greenwashing, if requirements are not controlled sufficiently or not transparent enough.”* (quote no. 23)

The second most frequent coding category is the ‘institutional aspects’, highlighting the dilemma of ‘public vs. private’ control over the action and the impacts. Some respondents highlighted that public funds should support only public good provisioning, but when farmers produce private (marketable) goods which are rewarded by consumers with higher prices, then public expenditure is not appropriate. Others argued, on the other hand, that public funds through AECMs are more focused on compensating farmers for their increased costs or lost revenues, and combining these sources with value-chain contracts can provide additional motivation to farmers (i.e. a mixed approach is offered). It is undoubted, however, that the role of public actors in value-chain contracts is not clear, and the specifications of the contract should be transparent about it: *“(w)hat is the role of the government within these value-chain contracts? Control on the content of the specifications, creating a level playing field between different value chains?”* (quote no. 11) Other quotes mentioned that value-chain contracts require less input from the government or public administration, since they are set up and coordinated by private actors, which distinguish this contract type from AECMs. This is the main reason why transaction costs - at least at the public administration side - can be lower for value-chain contracts, than for AECMs or land-tenure contracts.

Intermediaries - diverse actors along the value chain - are key players in value-chain contracts, as well as consumers themselves: *“to be successful, the approach must involve all relevant actors of the food chain and must be consistently implemented by all of them to avoid risk of losing the whole value by a wrong behaviour of one of the actors.”* (quote no. 29). Although not mentioned frequently, some quotes argue that the design of a value-chain contract should build on knowledge

co-created by these diverse actors through involvement (i.e. farmers' knowledge on production and market processes, advisory knowledge on environmental and quality aspects, and consumers' awareness of environmental impacts can be equally important). Adequate sharing of the benefits and risks along the value-chain actors is another crucial success factor, which can be secured with adequate contract design.

5.2 Land tenure contracts: “outsource control, lower rent for long term return on natural capital”

There is a consensus among respondents that land tenure contracts can effectively support sustainable production; also the variance is low. The participants agree that it is not costly to implement it. According to the responses there are some uncertainties around the availability of the necessary knowledge, infrastructure about suiting into the institutional, social and cultural context, but it is a general uncertainty: the number of neither agree nor disagree answers were the highest for these questions; it is also reflected in the open-ended questions as we will see in the next paragraphs. Figure 9 presents the average and the variance of the responses.

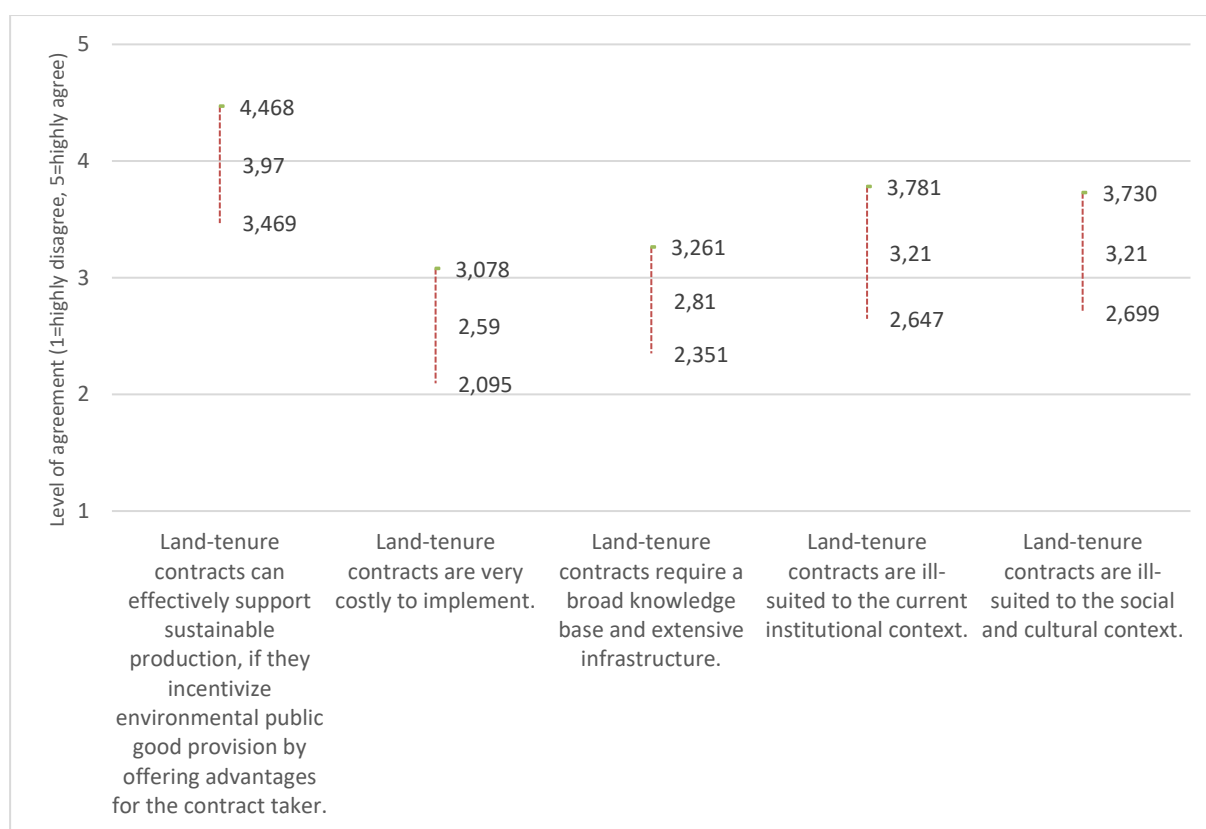


Figure 9. Statements on the role of land tenure contracts. Average and variance of the answers (N=36) (1 - highly disagree; 3 - neither agree, nor disagree; 5 - fully agree). Source: own compilation based on the 1st round of the Delphi survey.

Among the different contractual solutions we assessed in this survey, the land-tenure contract is definitely the one characterized by the highest level of uncertainty. At the overall textual evaluation of land-tenure contracts we can see a tendency of lacking experience with this contract type: altogether only 22 respondents filled this question, and 8 of them acknowledged in their comment that they do not have specific experience to assess the effectiveness of this contract type (see the

high frequency of the ‘missing experience’ code in the figure below). Figure 10 shows the word cloud of the codes used for the analysis of the comments on land-tenure.

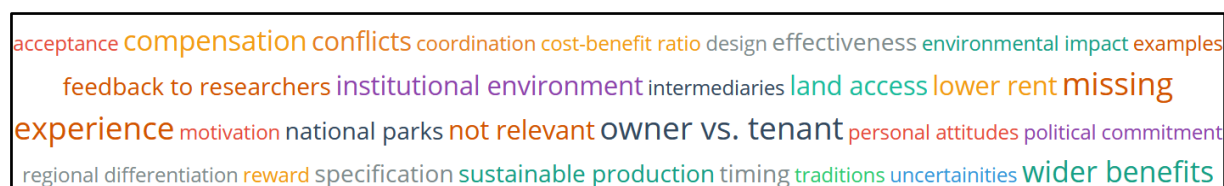


Figure 10. Keywords emerging from the assessment of land-tenure contracts (the bigger size of the words indicates the higher coding frequency while colors refer to the “parent” category of the codes). *Source: own compilation using the Mesydel platform.*

The most frequent coding category is the category of ‘Actors’, where the keywords ‘owner vs. tenant’ (8 quotes altogether, accounting for all mentions throughout the survey) highlights the key contractual players, while the codes ‘national parks’ and ‘intermediaries’ refer to the fact that land-use contracts might be better suited to contexts where national parks or other intermediary actors have access (ownership) to land. Some quotes mention that land-tenure contracts are not compatible with the institutional environment - especially the land ownership structure - if it is characterized by the high proportion of private land ownership. Instead, they can work in places where a substantial amount of land is owned by the state (or nature conservation agencies like national parks), or where altruistic landowners (e.g. charities, NGOs, or private companies running excessive CSR programs) decide to lease their land - i.e. where land is more easily accessible for tenants. Some quotes suggest that because land-tenure contracts often involve third parties (beside the owner and the farmer), coordination across the different actors might be more difficult, and sometimes even lead to conflict. As one of the respondents stated: *“Again the main complexity is that you add a new agent to the discussion (the owner of the land) and coordination becomes more complex.”* (quote no. 3)

The ‘ecological aspects’ of land-tenure contracts were also relatively frequently mentioned - within this category the quotes coded as ‘wider benefits’ and ‘sustainable production’ highlights that land-tenure contracts have the potential to shift towards more sustainable agriculture, which can also lead to co-benefits (e.g. better water quality via reduced pesticide use), although the low frequency of the ‘environmental impacts’ code, or the absence of the ‘ecological objectives’ code suggest that land-tenure contracts are often not specifically targeted to achieve well-defined biodiversity goals. The duration of the contract (‘timings’) is a crucial factor to ensure the effectiveness: *“Longer contract period is very important to achieve environmental results.”* (quote no. 8)

What can make land-tenure contracts attractive to owners and farmers? Farmers’ main motivation can be the lower rent which they receive as a compensation for applying more environmentally friendly practices. Compared to other contract types, land-tenure contracts can create a more predictable financial environment to farmers, where uncertainty and risk related to external factors are not as significant as in the case of result-based or collective contracts. On the other hand, land-tenure contracts ensure that the tenant maintains or even enhances the natural capital of the leased land, therefore a land-tenure contract can also directly benefit the landowner, too.

6. THE IDEAL CONTRACT

After knowing the opinion of the participants about the different contract types and contract elements, we asked them to prepare their ideal contract. Create a highly effective contractual model for their own country or region. They could choose from the three contract types: the AECM, the land-tenure, or the value-chain.

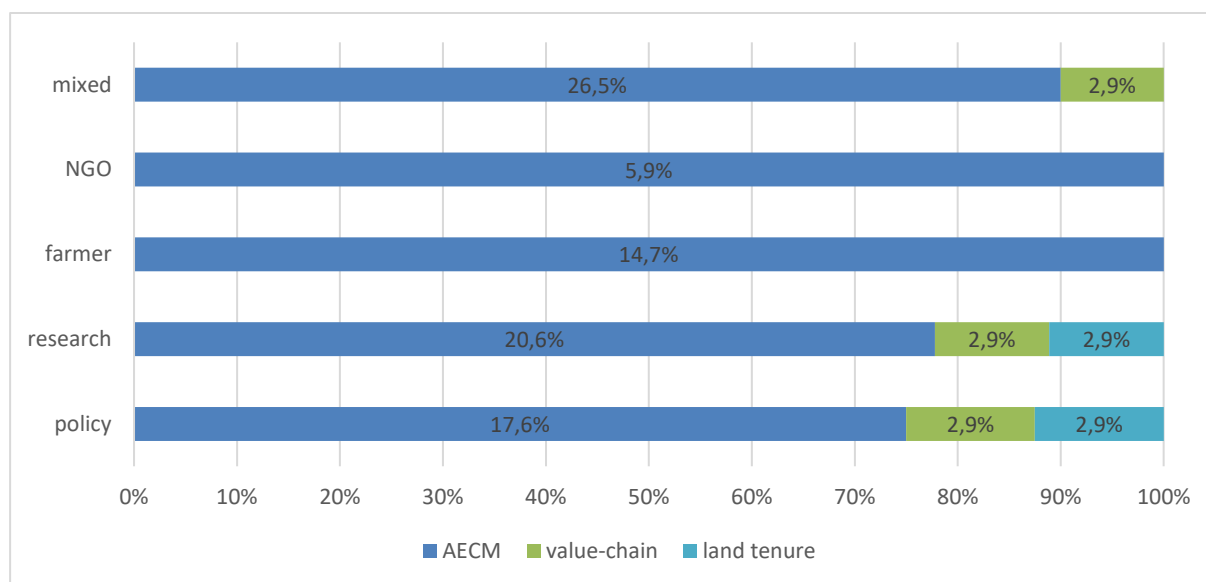


Figure 11. On selected contract types for the ideal contract model (N=34). *Source: own compilation based on the 1st round of the Delphi survey.*

As the figure shows the AECM is far the most popular contract type, and it is worth noting that farmers and representatives of NGOs did not even choose the remaining two types, the value-chain or the land tenure contracts.

After selecting the contract type, participants were asked to select the most important contract characteristics: the elements (result-based, action based), the length of the contract (short, medium or long term), and the signatories of the contract (bilateral or collective). According to our results the participants think that the contract most appealing to farmers and more effective in terms of achieving the biodiversity goals are mixed regarding the length of the contract and the payment method.

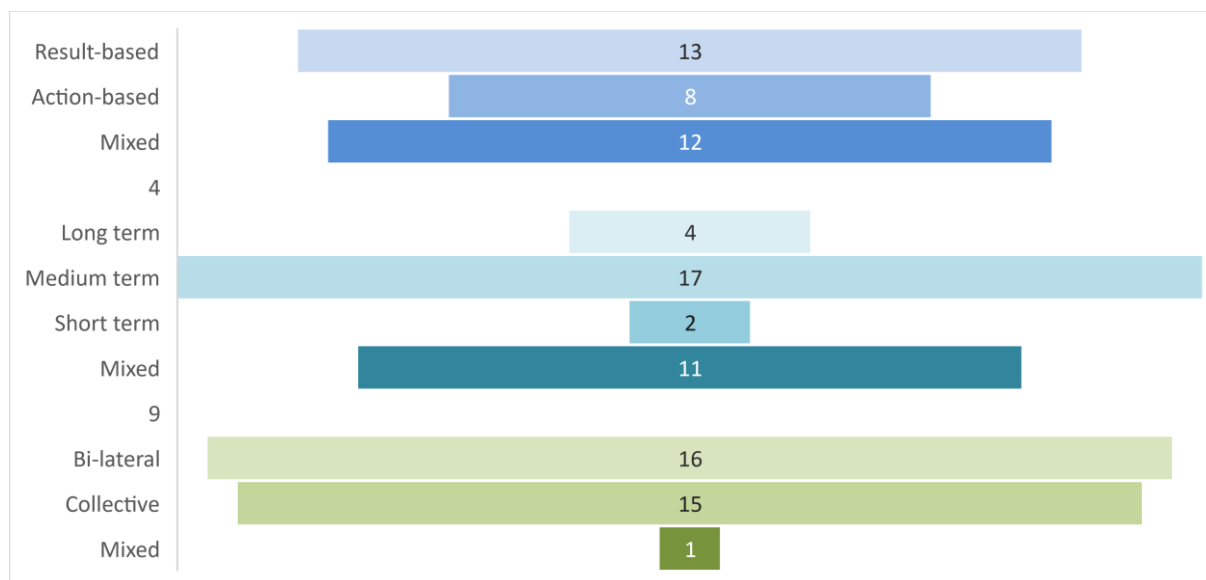


Figure 12. Characteristics of the ideal contract (N=34). *Source: own compilation based on the 1st round of the Delphi survey.*

The above figure presenting the preferred contract elements does not show the preferred diversity of contracts. Combining the different elements, the most popular contract would be an AECM using both result-based and action-based elements, with a medium long contract signed by individual farmers; five respondents selected these characteristics together. All other combinations had lower occurrence. If we focus on the result based/action based character and the signatories of the contracts, we find that mixed bilateral contracts (with medium-term and mixed length) are the most popular (10 cases), followed by result-based collective contracts (mainly long and medium term length) (7 cases), according to it the innovative, result-based contract element and the collective element seems to appear together, while the more cautious elements (both action based and result based and bilateral contracts) tend to appear together.

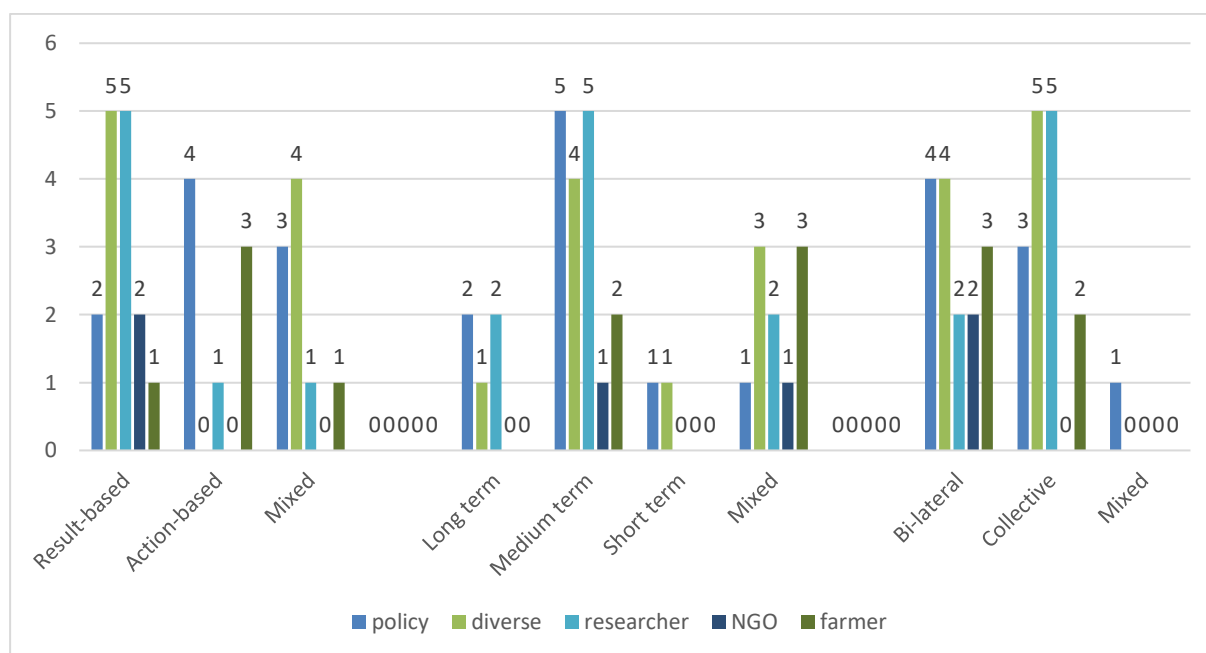


Figure 13. Differences of the characteristics of the ideal contract according to the background of the respondents. *Source: own compilation based on the 1st round of the Delphi survey.*

According to the figure above innovative contract elements - result based approach and collective solutions - are more popular amongst researchers and participants with diverse professional background. More established contract elements: action-based approach and bi-lateral contracts were selected by policy makers and farmers. There seems to be a greater consensus around the length of the contracts: both policy-makers and researchers prefer medium term contracts, also among actors with diverse backgrounds it is the most popular contract length, while farmers prefer mixed or medium term contract length. Having a look at the textual explanations we can have a clearer view on the ideal contract.

We also asked the participants to briefly explain how the ideal contract looks like. After coding and analysing the 18 answers, the following word cloud could be drawn.



Figure 14. Keywords emerging from the ideal contract types analysis. Source: own compilation using the Mesydel platform.

The deeper analysis of the codes and facets enforces what can be seen from the figure. The most important facet is the **contract characteristics** facet (43 codes, 39% of the codes), followed by the **process facet** with 16 codes (14.5% of the codes). As we asked the participants to describe the ideal contract, it is not surprising that most of the codes refer to it. Looking at the codes we see that half of the responses mentions mixed approach (12 mentions). The advantage of the mixed contracts can be illustrated with the following quotations: *“combines certainty (payment for actions) with freedom (payment for results). Farmers could choose one or other depending on what they value most.”*

The responses discussed also the role of flexibility, timing, regional differentiation and measurable outcome of the contracts. Some participants argued that the length of the contract should be flexible: *“Flexible contract lengths but with payment premiums for longer lengths (would be useful).”*

Also, **social aspects** and **external factors** were discussed, but less extensively, and surprisingly financial aspects and knowledge-related issues were almost neglected in the responses about the ideal contract type. A possible explanation for this was also that the participants became tired by the end of the questionnaire.