CONSOLE

CONtract Solutions for Effective and lasting delivery of agri-environmental-climate public goods by EU agriculture and forestry

Research and Innovation action: H2020 - GA 817949

Synthesis report on the comparative analysis of improved solutions and synthesis of lessons learned

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Review of contents

To ensure the quality and consistency of this deliverable, we implied an internal review and validation process. The deliverable was drafted by the work package leader (BOKU), based on information delivered from WP-leaders and partners (Fabio Bartollini, Inga Berzina, Michael Cardwell, Riccardo D'Alberto, Pierre Dupraz, Emmi Haltia, Katri Hamunen, Alice Issanchou, Mikko Kurttila, Alexandra Langlais, Fanny Le Gloux, Jussi Leppänen, Dimitre Nikolov, Tania Runge, Stefano Targetti, Kristina Todorova, Daniele Vergamini, Esa-Jussi Viitala, Davide Viaggi, Matteo Zavalloni). The first and/or second draft of the deliverable were reviewed by Alice Issanchou, Matteo Zavalloni, Tania Runge, Alexandra Langlais and Davide Viaggi.

Acknowledgments

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1 Summary

This document represents deliverable 1.8 "Synthesis report on comparative analysis of improved solutions and synthesis of lessons learned" within work package WP1 "Development of end-users-led contractual framework" of the EU Horizon 2020 project CONSOLE. The project CONSOLE aims to investigate and further develop novel contractual solutions for the protection of social, environmental and climate-related goods and services from agriculture and forestry. A main result of CONSOLE is to provide a comparative analysis of four contract types for the improved provision of agri-environmental-climate public goods (AECPGs), namely 1.) result-based contract solutions, 2.) contract solutions fostering collective implementation, 3.) contract solutions along the value chain, and, finally, 4.) land tenure contracts with specific requirements for public good provision. The comparative analysis draws on CONSOLE research findings, namely surveys of farmers, foresters, and stakeholders, modelling exercises, and insights from real-world examples and expert discussions. Four SWOT illustrations present the aggregated findings and formed the basis for discussion in a workshop with key experts. The deliverable concludes with ten overall lessons learned derived from the SWOT analysis comparing the four contract types.

2 Introduction

2.1 Objective

The objective of this synthesis report is to provide a comparative analysis of four potential contract types for the improved provision of agri-environmental-climate public goods (AECPGs)

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within EUs agriculture and forestry systems. The aim of the report is to provide a quick guide to understanding the potential of each contract type.

The contract types under consideration are 1.) result-based contract solutions (RB), 2.) contract solutions fostering collective implementation (CO), 3.) contract solutions along the value chain (VC), and, finally, 4.) land tenure contracts with specific conditions for public good provision (LT).

The comparative analysis considers main **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats (SWOT) of each contract type. This so-called SWOT methodology is structured along a framework of specific criteria. The SWOT framework is based on the operational contractual framework developed in the CONSOLE project.

The SWOT analysis itself comprises the results and experiences gathered throughout the whole project. Based on the SWOT analysis, results are synthesised into overall lessons learned and enabling and hindering factors of the four contract solutions considered are described. For better illustration outstanding good practice examples are highlighted. In order to derive and reflect key lessons from the analysis, our results and lessons learned have been presented to, and discussed with international key experts in a dedicated workshop.

3 Methodology

In order to comparatively analyse the four contract types, we make use of the SWOT methodology. Based on the CONSOLE conceptual framework presented in deliverable 1.1 (see Figure 1), we assess strengths and weaknesses of the contract types by analysing the contracts' design attributes (the internal dimension of the contracts, the contract features). Opportunities and threats were assessed by considering the framework conditions in which the contractual solutions might operate (the external dimension/the system features).

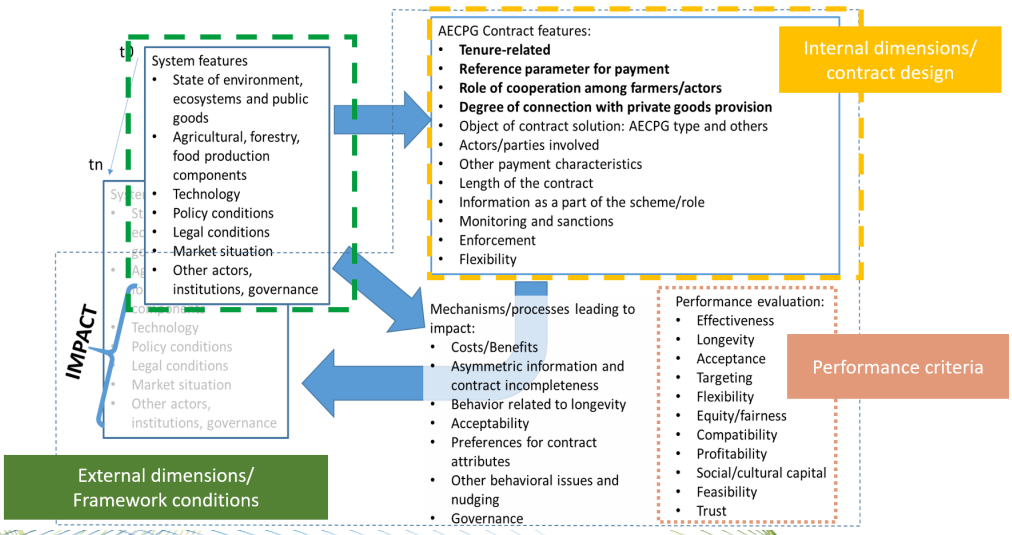

Figure 1: Conceptual framework

To derive the strengths, weaknesses, opportunities, and threats for each contract type CONSOLE research findings are structured along guiding SWOT questions:

Basic question to assess Strengths and Weaknesses of the four contract types:

- What are strengths and weaknesses of the contract types regarding the effective and efficient AECPG provision?

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- Which internal attributes of the contract type are helpful or harmful for the effective and efficient AECPG provision?
- Which strength/weaknesses has the contract type as regards its overall performance?

For answering the questions on strengths and weaknesses, on the one hand attributes are considered which characterise the contract type per se. For example, that a solution is result-based or collective, results in specific strengths and weaknesses per se.

On the other hand, we consider strength and weaknesses resulting from specific contract design attributes, which are normally common for the contract type but can be implemented individually.

In the presentation of the results, a distinction is made between these 2 types of attributes.

Last but not least, we also include general performance criteria, such as acceptance, into the analysis of strengths and weaknesses.

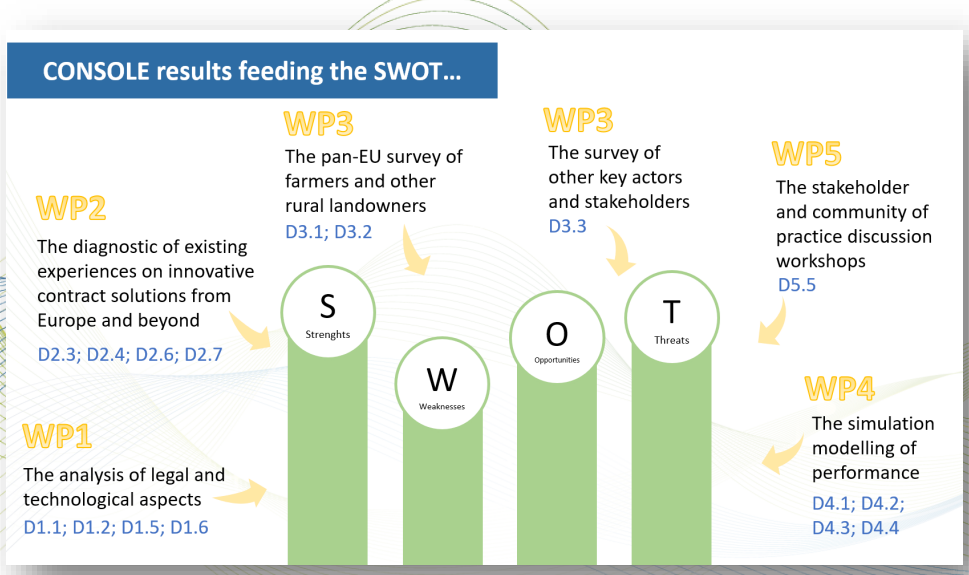
Basic question to assess Opportunities and Threats of the contract types:

- What are opportunities and threats for the effective and efficient AECPG provision of/by the contract solution?
- What external factors/framework conditions/system features are harmful or helpful for the effective and efficient AECPG provision

For answering the questions on opportunities and threats, external factors/framework conditions/system characteristics were collected, focussing on social, political, environmental, economic, legal, and technological aspects that could be helpful or harmful for the effective and efficient provision of AECPG.

SWOT - factors derived from CONSOLE research

The SWOT-analysis draws on CONSOLE research findings. CONSOLE results being integrated into the analysis are (1) the diagnostic of existing experiences on innovative contract solutions from Europe and beyond (2) the pan-EU survey of farmers and other rural landowners, (3) the survey of other key actors and stakeholders (4), the stakeholder and community of practice discussion workshops (5), the modelling of performance (6), the analysis of legal and technological aspects, (7) as well as CONSOLE partners' expertise.



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Connecting the SWOT-results with practice examples:

For a better illustration of the SWOT-results, as well as to connect the CONSOLE findings to real-world examples, we highlight practice examples representative for each contract type. We briefly summarise the scope and approach of these examples and provide a link to the in-depth description.

Presenting and discussing the SWOT results with key experts:

The aggregated findings of the SWOT analysis have been presented and discussed with selected international key experts. Therefore, a European Workshop (WEU1.4) was held on the 23rd of September 2022 via Zoom. 16 participants[1] contributed to the workshop and gave feedback to the presented SWOTs. The feedback of this workshop has been included to this report.

4 Results of the SWOT analysis

We present the SWOT results for the four contract types by starting with result-based contract solutions, followed by contract solutions with collective implementation, land tenure contracts with specific obligations and finally with contracts along the value chain. At the beginning of each chapter, a short definition of each contract type, mainly derived from the legal report (D1.5), is provided. Then, SWOT results are presented along the categories strengths, weaknesses, opportunities and threats. For each contract type we provide examples in a nutshell.

4.1 Result-based contract solutions SWOT

Definition

Result-based contract solutions specify agri-environmental or climate outcomes as the reference parameter for payments instead of prescribing management practices to farmers or forest owners. Result-based contract solutions therefore require reliable and measurable indicators for the provision of agri-environmental-climate public goods. Payments are issued when target indicators or related indicator thresholds are met or exceeded. While result-based contracts normally imply freedom of management decisions for the land managers, management decisions are often supported by recommendations or external advice (D1.5).

4.1.1 Strengths

Strengths resulting from attributes directly specifying result-based contract solutions

Strength 1 – Effective and efficient allocation of resources and funds. The design principle of linking payments to a measurable agri-environmental-climate outcome in result-based contract solutions, leads to a more effective and efficient allocation of resources and funds: In order to issue payments, measurable results regarding environmental conservation need to be achieved [IAE], while no payments are issued if AECPG are not maintained or improved [D3.1]. Insofar, ineffective payments for actions regardless their AECPG consequences are avoided, while indicator measurement ensures the AECPG effects [UNIFE; UNIPI]. It can be shown that the efficiency of payments can be higher in result-based schemes (implementation costs versus environmental results), which is also the case for transaction costs [INRAE]. Particularly, result-based contracts might induce land managers (farmers and forest owners) to undertake agri-environmental efforts where it is the most suitable [T4.3], and, consequently, enable farmers to

[1] The group of participants consisted of stakeholders from the sister project Contract2.0; partners from the CONSOLE project strongly involved in existing initiatives, as well as stakeholders involved in the design or facilitation of existing innovative contract solutions.

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commit in providing agri-environmental climate public goods more effectively [T3.2]. Last but not least, land managers are shown to be strongly motivated if result-based solutions include the element of tiered payments, meaning that the better the results are, the higher is the remuneration [ZSA, WP3, T3.2].

Strength 2 – Better integrability of AECPG provision into the core business decisions due to free choice of management practices – enabling entrepreneurship. The design principle of "looking at the results only", while leaving the freedom of management decisions to the land managers, leads to a better integrability of AECPG provision into their business decisions and, consequently, to a higher acceptance: Economic incentives are often an integral component of land managers' revenue and therefore attractive per se. Nevertheless, in action-based schemes farmers express to be forced to do something they don't believe in. In contrast, the freedom of management decisions assigned to land managers, allowing them to decide how, what and when to do in order to achieve the targeted results, is perceived as an attractive way to provide AECPGs, particularly fitting to many farmers' mind-set and self-perception of being an entrepreneur [IAE] [D2.7; D3.3]. This can lead to much more "ownership" and can result in a higher degree of innovation and satisfaction for the land managers [D2.4]. Moreover, the flexibility to choose practices and measures enables farmers to adjust the managing of the holding towards the most efficient production of AECPGs [T3.2¸IAE].

Strength 3 – Sound monitoring and evaluation of AECPG provision and improvement. The use of an indicator-based system of evaluating and "paying for" land managers' performance of maintaining and/or providing AECPGs in result-based contract solutions, makes the monitoring of the state and improvement of the AECPGs targeted imperative. The design principle of indicator measurement provides evidence whether agri-environmental-climate objectives are reached or not, and is the basis for adjustments towards more effective measures if necessary. Hereby, for guaranteeing the performance of the contractual solution as regards its effectiveness, it is however crucial that indicators are well designed. The measurement and evaluation of actual AECPG provision thereby strongly depends on how directly the indicator allows to measure the AECPG targeted [D3.1].

Strength 4 – Land managers are prone to adopt result-based contract solutions [LUKE; WP3; D3.2]. Result-based solutions are the scheme that many farmers favour. Within the criteria tested for the acceptability of new contractual solutions, it is the most preferred criteria and contractual solution among European farmers compared to the other three contract types [INRAE, WP3; D3.2]. In several countries good examples already exist with good results [ZSA, LV, WP2, CS]. In France for example the numbers of farmers adopting result-based AEMs have at least double compared to the last programming period [INRAE; WP4; D.4.1]. This strength was further supported in the workshop WEU1.4: on country level RB contracts ranked first and are perceived as a contract type with high potential for the future.

Strengths resulting from specific contract DESIGN attributes, which are normally common for result-based contracts, but can be implemented individually.

Design-Strength 1 – Self-monitoring can increase knowledge, efficiency and effectiveness. Self-monitoring, meaning the monitoring of result (indicators) by the land managers themselves, as a design attribute within result-based contractual solutions, can have a number of positive effects, such as the increase of awareness and knowledge and supports high efficiency and effectiveness [D3.2; D3.3; UNIFE; UNIPI]. By self-monitoring the progress and eventually the achievement of the targeted results, land managers can acquire and increase knowledge about the ongoing process of AECPGs provision. Eventually, self-monitoring enables land managers to adopt additional and/or modify current practices in order to provide the targeted AECPGs more efficiently [D2.7].

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Also, given the condition of measurable and understandable indicators as well as a good preparation in form of teaching and education, a (partial) shift of the monitoring from control authorities towards the land managers can imply less monitoring costs and further enhance the efficiency of result-based solutions [UNIFE; UNIPI]. On the other hand, self-monitoring can also be a weakness if the information provided does not reflect the reality, and self-monitoring may further also not provide a basis for an audit [CNRS].

>> outstanding good result-based contract solution <<

Click here for more information about this practice example!

Design Strength 2 – Advice, training and consultancy improves knowledge, awareness, expertise and the building of social capital among farmers. If the result-based contractual solutions include as a design attribute the support of land managers by advice/training/consultancy, they can considerably improve their awareness, knowledge and expertise in AECPG aspects [WP5] [IAE]. Due to the 'learning by doing' approach in many result-based schemes, farmers better understand the connection between their actions and influence on nature. This can help to build social capital and can, in the best case, result in a long-term behavioural change [D2.4]. Comparing the four contract types, the element of knowledge support is most often included in the design of result-based contracts [D2.4], by e.g. involving nature conservation advisors, ecologists or farm advisor, by including field-training and/or classroom-training, as well as by providing training material.

4.1.2 Weaknesses

Weaknesses resulting from attributes directly specifying result-based contract solutions

Weakness 1 – Higher entrepreneurial risk - risk of not achieving the expected result that triggers the payment. The basic principle of result-based contractual solutions, namely issuing payments only if predefined results are met, bears the entrepreneurial (financial) risk of having invested in measures but not achieving the expected result and, as a consequence, of not receiving

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remuneration [D5.5]. In agriculture and forestry, working in a non-protected environment, this entrepreneurial risk is considerably high as AECPG objectives might be strongly influenced by external factors such as weather, natural disasters, etc., which are not in the hands of the land managers [D3.3]. Modifying farming practices, or even changing the farming systems, often requires high and long-term investments. Therefore, insecurity of actual remunerations within result-based contracts can be critical and result-based solutions might not be the best instruments from this point of view [UNIFE; UNIPI]. Landowners' financial risk and uncertainty of income should also be taken into account when deciding time frames, and potentially these risks should be compensated [ZSA, LV, WP3, T.3.4]. In addition, there is a risk of an important increase in opportunity costs depending on market prices in the case where there is substitution between the production of the environmental and agricultural goods for feed, food or energy (a weakness due to the voluntary nature of the contract) [INRAE].

Weakness 2 – Focus on single AECPGs - no holistic AECPG approach. In practice, it can be seen that result-based contractual solutions mostly focus on the improved provision of a singular AECPG [D2.6; D2.4]. Consequently, result-based contract solutions normally do not take into account the holistic management of the broad bundle of AECPGs provided in agricultural/forestry ecosystems, leading to the risk of sub-optimization of single public goods not targeted by the contractual solution [D5.5; UNIFE; UNIPI]. Also, when result-based contractual solutions are designed as initiatives to activate private funds, buyers are often interested in one AECPG rather than multiple AECPGs (e.g. CO2 certificates). The result-based payment might therefore not compensate for the other AECPG delivered in synergy (e.g. soil quality, animal welfare) [D3.1].

Weakness 3 – High demands on the expertise and knowledge of land managers. Freely deciding which management practices might lead to an improvement of the AECPGs targeted, and measuring the related effects in the indicators selected for monitoring, places high demands on the education, knowledge and expertise of the land managers or requires intensive external support. Often the knowledge how to achieve environmental results is however insufficient [D2.7]. Consequently, the quality of AECPG results differs between land managers due to different skills, different levels of education and expertise [UNIFE; UNIPI]. When choosing what kind of practices to adopt, farmers may tend to choose those that are easiest to accomplish for them, but not necessarily the ones with the biggest environmental impact [IAE].

Weakness 4 – Potential time lags between actions and environmental effect may affect remuneration. The provision of AECPGs is often characterised by a considerable spatial and temporal mismatch between the location and time of implementing management measures targeting better AECPG provision and the actual effects on AECPG indicators. Consequently, in result-based contractual solutions this can lead to long periods between actions (implementation of management measures), measurable AECPG results and finally compensation [D3.3]. This is insofar critical as investments might have been made since the beginning of the contractual solutions by the land managers, while compensation only takes place far later, after observing results [D3.1] [UNIFE; UNIPI].

Weaknesses, which frequently appear in result-based contract solutions due to DESIGN characteristics

Design Weakness 1 – Everything depends on the indicators – identifying suitable ones is challenging. Result-based contract solutions require reliable and measurable AECPG indicators, as well as appropriate basic and threshold values, as the basis for remuneration. However, defining the right monitoring indicators is often highly challenging [D3.3] [D5.5] [ZSA, LV, WP3, T.3.4] and demands a good orchestration between scientific knowledge, comprehensibility and feasibility for land managers, as well as controllability for control authorities. Suited indicators

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need to measure and quantify robustly the improvement of the AECPG targeted while in parallel guarantee to be sensitive to management changes – in the best-case short term [D3.1, UNIFE; UNIPI]. If indicators, thresholds and eligibility criteria are not set properly, the measures are at risk to fail [D3.3]. Another challenge is the potential of trade-off between the provision of different AECPGs: one management action may achieve various environmental objective, therefore results should be comprehensively measured and carefully weighted to reflect synergies as well as trade-offs in AECPG provision [D5.5].

Design Weakness 2 – Result monitoring is often costly and sometimes conflictual. The concept of result-based remuneration places high demands on the monitoring of the result indicators. Often, the monitoring of AECPG indicators results in high monitoring costs compared to other remuneration approaches. [IAE][D3.3]. Also monitoring and control by independent authorities, though being inevitable to ensure the results, is not always welcome and might be perceived as an obstacle among land managers [D3.2]. The setting of the right monitoring approach (who, what, when, how often), is therefore challenging and must fit to the context [D5.5].

Design Weakness 3 – The calculation of the appropriate level of compensation, remuneration and/or finally the "price" for AECPG provision is demanding. The appropriate financial remuneration for AECPG provision is a challenge by itself in result-based schemes [D3.3] [ZSA, LV, WP3, T.3.4]. On the one hand, the problem exists that result-based contractual solutions implemented as public schemes can compensate land managers only for the implementation and opportunity costs. This means that often in (so-called) public result-based schemes, no value is given to the environmental result itself, but the farmers are tended to be paid for activities supposed to deliver the expected result. Hereby, since farmers are free to choose their practices, their opportunity costs are likely to be heterogenous and difficult to evaluate, due to information asymmetry [D3.1]. In addition, the entrepreneurial risk of the land managers implementing measures but being paid only for results is not taken into account. In order to address that risk, result payments would need to be higher than only the compensation, otherwise he/she has no reason to take the risk. In France for example, the low payments associated to these schemes, which are not correlated to the degree of contribution to AECPG provision, are not perceived attractive to the land managers [D.4.1]. On the other hand, for result-based contractual solutions as private mechanisms, only for few AECPGs "prices" can be derived on basis of existing mechanisms (e.g. carbon prices for emission certificates). For many other AECPGs, establishing the total economic value for public goods is highly complex [UNIFE; UNIPI].

This weakness was questioned in workshop WEU1.4 as the calculation of administration costs in pilot schemes is very challenging, based on experiences outside CONSOLE, cases reported rather low administrations costs [WEU1.4].

WEU1.4

Design Weakness 4 – High administration and implementation costs in practice examples reported – difficult to calculate. Result-based schemes are often highly articulated and complex [UNIBO; WP2; T2.3]. In some EU-case studies, high costs for the implementation and administration of result-based contracts are reported, which can limit the efficiency and, consequently, success of a scheme. Moreover, result-based contractual solutions can require the intensive involvement of intermediaries and institutions such as nature conservation advisors which often provide high levels of support to land managers. This is a reason for success but can

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also be resource intensive. The analysis of the in-depth studies revealed, that particularly the costs for setting up the programs and projects have been rather high. [D2.4; D2.3]. In addition, costs can be particularly high as often the action-based measures are maintained alongside the "new" result-based solutions, requiring two parallel approaches [D5.5].

Design Weakness 5 – Neglecting past achievements if current state of AECPG provision is set as benchmark. Result-based contractual solutions which are focussing on AECPG improvements by setting the state of the individual level of (farm/plot) AECPG provision as a basis level, instead of, for example, using a regional average as reference parameter, might fail to incentivise land managers which have been performing well in the past. In this case, actions beneficial for the environment / climate that were carried out previously are not awarded [D5.5]

4.1.3 Opportunities

Opportunity 1 - Political will to support delivery of ecosystem services. A general basic condition for the success of result-based schemes in improving AECPG provision is the existence of political will to support the delivery of AECPGs by envisaging a payment [D3.3]. In the WP3 stakeholder survey, within the PESTLE approach the class "Existence of political will to support the delivery of environmental goods and services by farmers" was mentioned 33 times as a topic affecting the adoption of result-based contracts [D3.3]. Currently, result-based solutions might benefit from the increasing attention given to payments for ecosystem services as policy instrument.

The question is: is there a political will to support result-based approaches at a national level, at EU level? In light of the next CAP reform, is there interest among political actors on national level to implement/support RB schemes? [WEU1.4].

WEU1.4

Opportunity 2 – Activate funding from private actors (e.g. emission certificates). Recently, an increasing willingness (and entrepreneurial need due to higher socio-environmental requirements for the sustainable management of companies) of the private sector in general, of food value chain actors, but also of private persons and stakeholders, to foster and pay for the measurable improvement of AECPGs, is noticeable: On the one hand, the involvement of private actors in the implementation of result-based solutions by using market mechanisms, enables the activation of additional funding [D2.4; D2.3]. On the other hand, the activation of private funds opens up the potential to offer payments that go beyond income foregone [D3.1 + CE; D5.5].

Opportunity 3 – Societal recognition of farmers' environmental performance. The monitoring of AECPGs in result-based approaches makes farmers' environmental performance more visible. On the one hand, monitoring of results makes payments to land managers more understandable for the public [D2.7] and can be used as a basis for good and trusted information used for the communication on the scheme [D3.1]. On the other hand, result monitoring may enhance the public appreciation of the work that land managers are already doing for AECPG and ecosystem service provision [D3.3]. Particularly as (agricultural) land management is increasingly perceived as a threat to nature and societal pressure on land managers gets stronger, result based solution can provide better publicity [ZSA, LV, WP3, T.3.4].

Opportunity 4 – Willingness and possibilities to co-operate (stakeholders, neighbours, farmer unions. Enhanced opportunities of co-design and collaboration can foster the success of result-based approaches. Having the possibility of collectively deciding and agreeing upon the practices

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to adopt, but also the targets to achieve, both can motivate the farmers in committing in the AECPGs provision [D3.2]. Here, additional allowances for cooperation with others could be considered [ZSA, LV, WP3, T.3.4].

Opportunity 5 – Social capital as a factor of resilience. Already at the start of their implementation, result-based approaches require higher levels of knowledge, experience and skills from the land-managers. However, result-based approaches are also perceived to be building up knowledge on management practices, cause effect chains and entrepreneurial decision making. This social capital might be an essential resource of farmers to adapt in periods of crisis or in phases of transition (e.g. climate change) [UNIFE; UNIPI].

Opportunity 6 – Use of technologies. While the experiences from the CONSOLE case studies showed that the use of technologies in result-based solution is still rare [D2.3], opportunities are seen in an ever increasing use of existing [D3.3], and the development of further innovative technologies (e.g. satellites and drones), particularly the use of Apps for monitoring and measuring results and for their reliable documentation. Based on a workshop conducted within D1.6, the participants expressed that Drones, Metabacording, LIDAR and Geo-Tagging are relevant technologies for result-based contracts, as each technology provides accuracy data and facilitates the monitoring of target variables [D1.6].

Opportunity 7 – Implementation of pilot projects. Making use of the possibility of pilot projects, also using the public funding possibilities within the CAP programming periods for piloting/testing [UNIFE; UNIPI] can be a suitable pathway towards the implementation of result-based schemes [D5.5] which has been taken often in the case of RB solutions in the past [D2.1; D2.4].

Opportunity 9 – Using result-based elements to improve existing contract solutions. In practice, result-based payments are often used as add-ons or top-ups to existing contractual solutions. Hereby, the merging with other contract solution types is partly perceived to be simple [ZSA, LV, WP3, T.3.4] and has been seen implemented with action-oriented and particularly collective schemes [UNIFE; UNIPI; D2.7]. The inclusion of result-based elements can help to provide 'stepping stones' for improving the contract even though the “result”, e.g. as a top-up, eventually represents only a tiny part of the payment [D2.7].

Opportunity 10 – Making use of the best available knowledge of contractual design. There exists increasing knowledge and experience on the design of effective and efficient result based payment approaches. Making use of this knowledge is key for sustainable and successful future solutions. Existing result-based schemes showed that involving monitoring agencies in the design of indicators in result-based programs can ensure integrability in RDPs [D5.5; D2.4; D2.3]. Sales guarantees on the holding's product(s), if produced by the use of agri-environmental practices could serve as an incentive in providing AECPGs more efficiently [D3.2]. Institutional monitoring of the practices adopted by the farmer and the ongoing process of PGs provision could serve as a boost for efficiency and effectiveness in AECPGs provision [D3.2]. Pre-payment for investments could reduce land managers’ entrepreneurial risk and enhance acceptance [ZSA, LV, WP3, T3.2].

4.1.4 Threats

Threat 1 – Enthusiasm neglects feasibility. Result-based solutions are currently much promoted. Nevertheless, it becomes obvious that result-based approaches are not suited in each context situation and for all AECPGs targeted. In some areas and farming types, traditional schemes are reasonably effective and improvements with result-based could be too little to justify the change [D2.7]. Moreover, too great enthusiasm for such innovative approaches might reduce the check

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for suitability and feasibility. Here the threat exists that contracts starts and fail due to wrong design, inappropriateness, wrong indicators, low acceptance etc.

Threat 2 – Using result-based approaches for inappropriate AECPGs. It is obvious that result-based contractual solutions are particularly suited for the improvement of specific (singular) AECPGs. As an example, result-based contracts are more applicable to environmental aspects like biodiversity (direct measurement) rather than e.g. water quality (indirect measurement, difficult to track sources of pollution) [IAE]. Nevertheless, also singular AECPGs must fit to this type of contract. For example, also result-based contracts that target biodiversity might be difficult to implement, depending on the biodiversity target. If for instance the target species are characterized by high mobility and hence require a large habitat, the biodiversity that can be found in a given plot depends on an area that is potentially larger than the one under control of a single farms. The effectiveness and also the individual rewards in such a context is then dependent on the enrolment and conservation decisions of a multitude of land managers. [UNIBO; WP4; T4.3]. So, the single plot design of result-based contracts, can limit the environmental effects requiring a certain area perimeter (threat of the result-based approach compared to collective approaches) [D5.5].

Threat 3 – Low level of ecological knowledge and expertise among land-managers. For the successful implementation of result-based solutions, high levels of knowledge on environmental processes as well as management skills might be required from land managers to take the appropriate decisions. If this knowledge, expertise and skills are missing, result-based scheme might perform low [D4.2]. Implementing such schemes in the wrong context might creating high expectations within land mangers which can be disappointed and lead to frustrations [UNIFE; UNIPI].

Threat 4 – Growing unpredictability of weather and climatic effects affecting the results. A general risk of RB approaches is the existence of external factors such as weather, climate, diseases, which are not within the hand of the land managers, but might essentially influence the result to the detriment of the farmer. With the proceeding of global deterioration of environmental systems, such factors can become even more unpredictable and enhance farmers' entrepreneurial risk of participation. Here, mechanisms will be needed for better risk distribution amongst contracting parties [WP5].

Threat 5 – Limited (time) resources on part of administration and land managers. The higher complexity of result-based approaches can imply high administrative demands and a high level of "bureaucracy". Normally such demands are due to the higher requirements of managing the monitoring process and on keeping records [IAE] [D3.3]. Hereby, limited or unavailable human resources to administer and manage these programs might represent a threat [D5.5] [ZSA, LV, WP2, CS].

Threat 6 – Economic factor - Lack of funding. As any incentive scheme, also result-based approaches depend on the availability of funding [LV, WP2, CS]. Therefore, a general threat is the loss of budget, or the change of eligibility criteria, which can lead to the loss or non-renewal of contracts for the land managers [INRAE; WP3; D3.1]. [D2.4].

Threat 7 – Risk of cheating in RB schemes build on self-monitoring. Particularly if result-based contractual solutions build on self-monitoring schemes, the threat of cheating is ubiquitous. For the success of such a solution, it is a prerequisite that farmers are aware and do not cheat regarding the autonomous quantification of the results [UNIFE; UNIPI].

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SWOT-results

Strengths

General strengths

- Effective and efficient allocation of resources and funds
- Better integrability of AECPG provision into the core business decisions due to free choice of management practices – enabling entrepreneurship
- Sound monitoring and evaluation of AECPG provision and improvement
- Land managers are prone to adopt result-based contract solutions

Design-related strengths

- Self-monitoring increases knowledge, efficiency and effectiveness
- Advice, training and consultancy improves knowledge, awareness, expertise and the building of social capital among farmers

Weaknesses

General weaknesses

- Higher entrepreneurial risk - risk of not achieving the expected result that triggers the payment.
- Focus on single AECPGs - no holistic AECPG approach
- High demands on the expertise and knowledge of land managers
- Potential time lags between actions and environmental effect may affect remuneration

Design-related weaknesses

- Everything depends on the indicators – identifying suitable ones is challenging
- Result monitoring is often costly and sometimes conflictual
- The calculation of the appropriate level of compensation and/or the "price" for AECPG provision is demanding
- High administration and implementation costs in practice examples reported – difficult to calculate
- Neglecting past achievements if current state of AECPG provision is set as benchmark

Threats

- Enthusiasm neglects feasibility
- Using result-based approaches for inappropriate AECPGs
- Low level of ecological knowledge and expertise among land-managers
- Growing unpredictability of weather and climatic effects affecting the result
- Limited (time) resources on part of administration and land managers
- Economic factor - Lack of funding
- Risk of cheating in RB schemes build on self-monitoring

Opportunities

- Political will to support delivery of ecosystem services
- Activate funding from private actors (e.g. emission certificates)
- Societal recognition of farmers' environmental performance.
- Willingness and possibilities to co-operate (stakeholders, neighbours, farmer unions)
- Social capital as a factor of resilience
- Use of technologies
- Implementation of pilot projects
- Using result-based elements to improve existing contractual schemes
- Making use of the best available knowledge of contractual design

Result-based contracts

4.2 Collective contract solutions SWOT

Definition

Collective action is an action undertaken by a group (either directly or on its behalf through an organisation) in pursuit of members' perceived shared interests. Here, they are acting together in order to tackle local agri-environmental issues. Two or more farmers/landowners/other actors working together towards the achievement of a common goal constitutes cooperation or collaboration. Collective contracts have developed to better address the needs of a specific region or ecosystem, where individual contracts have proven unsatisfactory due to fragmentation or unsuitable location of the measures.

Collective contracts targeting the delivering of AECPGs form the basis for formalised cooperation among farmers/landowners/other actors, these often being structured through a separate entity operating as an intermediary. But there may also exist cooperation between farmers/ landowners/other actors without any collective contracting to pursue 'shared interests'. (D1.5)

4.2.1 Strengths

Strengths resulting from attributes directly specifying collective contract solutions

Strength 1 – Targeting AECPG objectives at a level beyond the farm/field/plot can increase ecological effectiveness. Collective solutions enable the implementation of orchestrated measures characterised by high area diffusion [D2.4] [INRAE, WP3] [IAE] [UNIFE; UNIPI]. Therefore, functional collective arrangements [D3.3] and the accompanying collective implementation of measures are suited for biodiversity conservation objectives pursued at the ecosystem- or habitat-level [D5.5], or when the improvement of specific AECPGs necessitates measures, which go beyond singular fields and plots. For AECPGs provided in natural systems "across borders" (such as drinkable groundwater), collective approaches can reach ecological thresholds therefore more efficiently, since they allow for spatial coherence and coordinated efforts towards a similar objective among participants [INRAE; WP3; CE]. Also, contract solutions putting forward collective implementation or cooperative elements, are suited to target not only few, but broader bundles of AECPGs. [D2.7; D2.4].

Strength 2 – Increase social capital, longevity and effectiveness by sharing responsibilities, knowledge and information among farmers in the group. Collective solutions can foster the exchange among members of the collective and increase social capital [D2.7]: Farmers within the collective can have better opportunities to share not only responsibilities but experience and expertise (information, knowledge, experience, good practices, technique) [D5.5; IAE]. Also, working together toward a common target can activate peer effects [INRAE; WP3; CE), sustain the individual engagement of farmers [D3.2] and increase the confidence of the farmers to achieve the results [D2.7]. Last but not least, collective solutions might enhance farmers' bargaining power [D2.7].

Strength 3 – Collective solutions linked to a specific territory/region can increase the sensitivity of the territories with respect to environmental key issues and lead to stronger engagement and action. Collective solutions allow to target a whole territory/region/landscape [D5.5] and can involve also areas not being agriculture land itself [D5.5]. Being linked to a territory, collective solutions increase the sensitivity of these territories with respect to larger scale environmental key issues [UNIFE; UNIPI]. Often collective solutions are driven by regional initiatives and actors with strong engagement, also leading to strong motivations [D5.5].

Strengths resulting from specific contract DESIGN attributes, which are normally common for collective contract solutions but can be implemented individually.

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Design Strength 1 – Good and trustable intermediaries increase engagement and motivation, enhance effectiveness and ease administrative costs. An important design attribute of collective solutions is to make use of a person or organisation acting as an intermediary and coordinator. Intermediaries act between e.g. land managers and governmental agencies, and ensure the implementation particularly of more articulated contracts. Intermediaries organise and manage communication, coordinate and specify operations and ensure compliance [D2.4]. Intermediaries smoothen the collective character for land managers by ensuring their individual participation while simultaneously communicating and managing as one collective towards the regulators, therefore ensuring administrative facilitation. [D2.7; D3.3; UNIFE; UNIPI]. Particularly involving regional key actors as intermediaries, increases engagement and motivation [D5.5] [D3.3], as for land managers', dealing with trustable local intermediaries, who understand the local natural conditions, is a better option than with distant government [D3.3]. In addition, making use of intermediaries and coordinators may reduce the complexity of collective solutions for the individual farmer. Particularly the administrative burden is reduced if some of the administrative work is taken over by the coordination agent. (D2.4). From a legal perspective it makes a great difference if the intermediary can be internal (part of the group) or external (separated entity) of the collective (D1.5).

Workshop participants reported that a trusted intermediary for achieving environmental goals, reduces the competition (market competition) between the farmers. This might be due to the fact that the farmers are working together on a specific environmental aspect, farmers perceive themselves as "part of a team"

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Design Strength 2 – Allowing bottom-up decisions within collective solutions can lead to optimised allocation and implementation of measures and to more effective and efficient AECPG provision. If bottom up decision making is included, farmers are given the possibility to decide, collectively, what measures and practices should be adopted for the most efficient and effective provision of AECPGs. This can foster overall provision and might induce landowners to create clusters of habitats that are best suited to conserve biodiversity [T4.4] [T3.2; IAE].

Design Strength 3 – Bringing forward AECPG provision in disadvantaged areas and small district realities. Particularly in disadvantaged areas and small district realities, approaches of cooperation could increase impacts at the territorial level (ITP) [UNIFE; UNIPI] [WP5]. This is particularly true if also hobbyists or part-time farmers are included, who in these areas do crucial work for the objectives of landscape conservation, soil protection and biodiversity in the face of little or no economic contributions [D5.5]

4.2.2 Weaknesses

Weaknesses resulting from attributes directly specifying collective contract solutions

Weakness 1 – Higher complexity might lead to lower understanding. Collective solutions are often designed to deal with more complex questions of AECPG provision – either as they are directed to a larger spatial level (landscape/habitat/ecosystem) or to a broader bundle of AECPGs. Consequently, also the design of the schemes, the (territorial) organisation processes, as well as the distribution of payment are more complex [UNIFE; UNIPI] [D2.7]. This can lead to the perception of landowners that such solutions are not easy to understand [ZSA, LV, WP3, T3.2].

Weakness 2 – Strong requirements for design and coordination can make collective solutions costly. Aiming to reach higher level AECPG objectives by implementing collective solutions can place high demands on the planning and design of the schemes, the design of the distribution of payments, as well as the (territorial) organisation and management processes [UNIFE; UNIPI] [D2.7]. Often a strong (territorial) leadership/intermediate actors is needed, taking over the coordinating role to implement the contract, monitor results achieved etc. [UNIFE; UNIPI]. Particularly coordination and management (e.g. decision-making, benefit-distribution process) [WP5] is a complex [IAE] and often costly task [D4.3]. Therefore, collective solutions can be accompanied by higher transaction costs in general [UNIFE; UNIPI] as resources are needed for intermediaries and agents, which can decrease the amount of resources for land managers [D3.3]. In the paper Bareille et al. (2022) it is shown that coordination costs (subset of transaction costs) do not matter much for the overall effectiveness of collective scheme (agglomeration bonus), but higher coordination costs level require higher bonus level to keep the same level of biodiversity [Bareille et al. 2022[2]].

Weakness 3 – Payments to land managers might not reflect organisational efforts. In case of relatively low levels of payments and/or demand for AECPG collective solutions might not be attractive enough for farmers to take time and effort to better organize their collective provision of AECPG. [INRAE, WP3].

Weakness 4 – The condition of cooperation per se might lead to low levels of acceptance among land managers If collective solutions involve elements of collaboration among land managers, results show that this condition is largely met with scepticism. Hereby, scepticism is often

[2] Bareille, François, Matteo Zavalloni, and Davide Viaggi. 'Agglomeration Bonus and Endogenous Group Formation'. *American Journal of Agricultural Economics* n/a, no. n/a (online 2022). https://doi.org/10.1111/ajae.12305.

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influenced by personal attitudes and preferences such as distrust among farmers [WP5] or a general aversion to collaborate one with each other [UNIFE; UNIPI]. Also historical and/or personal experiences have an influence: On a personal level it was expressed that past experiences participants had with neighbouring farmers shaped their preferences. When such experiences were bad, a participant would consider co-operation a major issue/obstacle [WP5]. Also historical experiences can have an influence: For the case of Latvia for example, landowners prefer not to cooperate due to the past experience with collective farms of Soviet Union. Here forcing landowners to cooperate now is assumed not be successful [ZSA, LV, WP3, T.3.4]. Also in Poland a general reluctance to cooperate within groups as related to various sociological conditions was expressed, including a lack of trust and historical experiences (such results are observed in many other studies conducted in Poland) [WP5]. Also for Bulgaria a high level of distrust in collective action was stated [IAE].

Weaknesses, which frequently appear in collective contract solutions due to DESIGN characteristics

Design Weakness 1 – Collective payment is met with scepticism by land managers. The concept of receiving a collective payment places high demands on a transparent and fair distribution of the individual payments to land managers in the collective [D2.7], according to the measures they have taken. Otherwise, land managers easily experience that the benefits are not distributed equally (risk of free riding) [D3.3], which might inflict conflicts between individual farmers within the group [IAE]. Survey results correspondingly showed, that land managers are not interested in the feature of a common payment [D3.2].

Design Weakness 2 – Success depends on group dynamics and composition. In several of the case studies, it is described as advantageous if the group joining into a collective is rather homogeneous and has similar characteristics, while homogeneity can mean similarity in terms of farm size, orientation, farming practices, and attitudes to environmental issues of the farm. Furthermore, it is beneficial if the persons in the group pursue the same goals. However, often this prerequisite is not given [D2.4]. In this case, the heterogeneity of the farmers' preferences towards the collective scheme may make measures difficult to be implemented, since a minority of farmers can block the adoption of the whole group [INRAE; WP3; CE]. For the success of collective solutions, it is therefore essential that the group has clear objectives and the participant do not cheat on their activities [UNIFE; UNIPI].

4.2.3 Opportunities

Opportunity 1 – Building on existing form of grouping and cooperation (Legal, social). For collective solutions it was shown that experience is an important factor for acceptance. Having experienced such types of contracts (or very similar ones) in the past, makes farmers more inclined in adopting a collective solution [D3.2]. Already existing cooperation and existing good experiences between land managers is seen as good basis also to start also further common processes for the provision of AECPGs [D3.3]. To implement collective contracts for improved AECPG provision it can therefore be useful to build on existing forms of aggregation (farmers associations, farmers unions, farmers' districts, networks etc.) [D3.2] [UNIFE; UNIPI]. Also former cooperation in machinery rings or cooperatives are seen as a possible starting point for group approaches [D5.5]. It is to expect that having been part of an association enables farmers to better commonly agree on territorial measures, such the area's cropping systems for species' protection (FR5) [D5.5].

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Opportunity derived from the Workshop: Demonstration farms and leading farmers activate participation and reduce distrust. Including demonstration farms in a CO scheme is beneficial for activating the farmers to participate. Farmers can visit the demonstration farms, take a look on the scheme and learn how it works. In addition, farmers trust the opinion of the demonstration farmers. The word of mouth, the exchange is very beneficial, to promote the new schemes, and reduce distrust. Besides demonstration farms, also specific well known and respected farmers within the group, are influencing the other farmers.

WEU1.4

Opportunity 2 - Cooperation and solidarity between farmers can lead to overall more resilient systems. Collective contracts require some sort of cooperation between farmers thus creating AECPG production chains that can be compared to regular agricultural goods production chains. The cooperation and solidarity between farmers sharing a same objective (here of AECPG provision) can mitigate risks faced by farmers (economical, environmental, climatic…). This leads to more resilient systems in the long run [INRAE, WP3].

Opportunity 3 - Making use of the best available knowledge of contractual design can enhance acceptance, efficiency, effectiveness and longevity. To improve the acceptance, effectiveness and efficiency of collective contract solutions, opportunities are seen in specific additional contractual design features. One opportunity is to add bonuses for the expansion of the collaboration, such as agglomeration and/or sponsor bonuses. Agglomeration bonuses target the spatial connectivity of partaking area, and as such can accelerate individual land managers' motivation for stimulating co-operation with neighbours managing adjacent area [WP3]. So-called sponsor bonuses target the general acquisition of further participants and can increase the schemes' cost-effectiveness (lower individual payments). [INRAE; WP3; CE] The CONSOLE results of a choice model with northwest French farmers show that sponsor bonuses are perceived as an interesting option for land managers [INRAE; WP3; CE]. Actually, collective bonuses may have a negative cost: farmers are willing to accept a decrease in the fixed payment to have the bonuses [INRAE; WP3; CE]. Also adding a component of institutional monitoring of the practices adopted by the farmer and the ongoing process of PGs provision could serve as a boost for efficiency and effectiveness in AECPGs provision [D3.2]. Last but not least, to guarantee longevity particular knowledge on the composition of the collectives, such as common objectives and low heterogeneity across participants should be taken into account. It can be assumed that with the right participants these contracts can have a high life time to reach some results [UNIFE; UNIPI].

Opportunity 4 – Using collective implementation in combination with other types of contracts Instead of designing fully collective solutions, opportunities are seen in using features of collective contracts in other contract types [D3.3]. At this, particularly combinations of collective implementation and result-based payments are suggested [UNIFE; UNIPI]. When the result-based payment is established at the collective level by using collective implementation this might allow to share the risks of provision or failed provision [INRAE; WP3; CE]. Moreover, implementation of result-based solutions on larger spatial scales, as given in the case of collective implementation, might work as a multiplier for monitoring affordability [D2.7]. Another opportunity might be to combine collective implementation with supply chain contracts [D5.5]. It was seen that if there exists a strong and explicit AECPG demand by one operator (for instance water quality, with either private or public operators, investing in collective schemes might be more beneficial compared to individual contracts [INRAE; WP3; CE].

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4.2.4 Threats

Threat 1 – Lack of trust in other actors. A threat to the implementation of collective solutions is the often-mentioned general reluctance of land managers to cooperate within groups as related to various sociological conditions, including a lack of trust between e.g. land-managers themselves, between land managers, intermediaries and authorities and between providers and beneficiaries. Often this is driven by personal and historical experience. [D3.3] [D5.5; ZSA, LV, WP3, D.3.2, D3.3].

Threat 2 – Lack of trust in the fairness of the solutions. Particularly if no neutral / trustful intermediary is involved, land managers might mistrust the fairness of the distribution of collective payments which can be an obstacle to step into the contracts [D5.5].

Threat 3 – Participation of enough and/or crucial land managers is not given. If the collective solution aims at public good provision on a higher level (e.g. landscape, territory, ecosystem), participation of a specific minimum number of farmers, or participation of a specific spatial pattern of partaking farms (e.g. several neighbouring owners [D3.3]) is necessary. Therefore, if the number of farmers involved is not enough, or if the physical distance between the diverse partaking farms is too big [UNIFE; UNIPI], real environmental benefits might be threatened [WP5].

Threat 4 - Lack of knowledge. Lack of, respectively insufficient knowledge about collective solutions and their design might hamper the willingness of land managers to engage. Therefore, improved information about such solutions might be needed, e.g. via Public Relation-type communications, training activities for farmers, development of instructional videos and other promotional / information materials [WP5].

Threat 5 - Socio-cultural conditions might not fit to the solutions [T2.3] It becomes clear that collective solutions don't fit in each context situation, as they often demand high levels of experience and collaborative skills. Particularly traditions and mentality seem to play a big part in willingness or unwillingness to cooperate [ZSA, LV, WP3, T.3.4]. Consequently, the specific design of the contract solutions in combination with the cultural situation in different regions/countries might influence the acceptance [WP5]. Potentially, cooperation tradition will however develop over time [WP5] [ZSA, LV, WP3, T.3.4].

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SWOT-results

Strengths

General strengths

- Targeting AECPG objectives at a level beyond the farm/field/plot can increase ecological effectiveness
- Increase social capital, longevity and effectiveness by sharing responsibilities, knowledge and information among farmers in the group.
- Collective solutions linked to a specific territory/region can increase the sensitivity of the territories with respect to environmental key issues and lead to stronger engagement and action.

Design-related strengths

- Good and trustable intermediaries increase engagement and motivation, enhance effectiveness and ease administrative costs.
- Allowing bottom-up decisions within the collective solution can lead to optimised allocation and implementation of measures and to more effective and efficient AECPG provision.
- Bringing forward AECPG provision in disadvantaged areas and small district realities

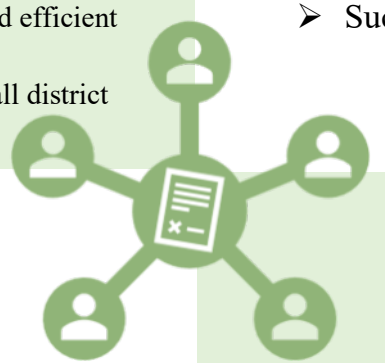
Weaknesses

General weaknesses

- Higher complexity might lead to lower understanding.
- Strong requirements for design and coordination can make collective solutions costly
- Payments to land managers might not reflect organisational efforts.
- The condition of cooperation per se might lead to low levels of acceptance among land managers

Design-related weaknesses

- Collective payment is met with scepticism by land managers
- Success depends on group dynamics and composition



Collective implementation

Threats

- Lack of trust in other actors
- Lack of trust in the fairness of the solutions
- Participation of enough and/or crucial land managers is not given
- Lack of knowledge.
- Socio-cultural conditions might not fit to the solutions

Opportunities

- Building on existing form of grouping and cooperation
- Cooperation and solidarity between farmers can lead to overall more resilient systems
- Making use of the best available knowledge of contractual design can enhance acceptance, efficiency, effectiveness and longevity
- Using collective implementation in combination with other types of contracts

4.3 Land-tenure based contract solutions SWOT

Definition

In land tenure-related contracts with environmental clauses for AECPG provision, the landowner as lessor agrees on particular management prescriptions with the lessee, the tenant. In return, the lessee usually receives a reduced rent for the additional environmental and/or climate efforts he/she undertakes. The inclusion of environmental clauses in land tenure arrangements leads to environmental and/or climate efforts going beyond mandatory requirements for the lessee. In principle, environmental clauses can be added to any rural lease and they have the capacity to modify the focus on production of agricultural commodities, either through management practices identified as being favourable to environmental protection or through prohibition of potentially harmful practices. (D1.5)

4.3.1 Strengths

Strengths resulting from attributes directly specifying land tenure-related contracts with environmental clauses

Strength 1 – Landowners can react to local environmental problems. Land tenure contracts are highly suited to be implemented in specific regions where environmental restoration is needed, for example, to target degraded and eroded soils [IAE], to protect a source of drinking water or to protect specific habitats [D1.5]. In principle, to any land lease contract an environmental clause can be added, thus having the capacity to modify its primary focus on production, e.g. either by means of agricultural practices identified as beneficial to the environment or by prohibition of potentially harmful practices [D1.5]. Our practice examples additionally showed that land tenure-based contract solutions are often used to support or maintain the extensive land use of areas, with a strong focus on maintenance or restoration of high-value pastures/grassland [D2.4].

Strength 2 – Land tenure related contracts can foster long-term nature protection. Two main arguments lead to the strength of land tenure contracts in providing continuity in the provision of AECPGs. First, land tenure contracts are in practice often long-term contracts that are designed to address a specific environmental target [D2.7]. In France for example a duration of 9-25 years for rural leases are prescribed [D1.5]. In practice cases, we also saw that land tenure contracts are included in the aftermath of LIFE + projects, in which land was bought and is now leased out to interested farmers who continue environmentally friendly management, to guarantee effectiveness beyond the end of the 'project lifespan' [D2.3]. Second, land tenure contracts enable land (farm) owners to be involved in the management of their land, which creates high motivation for long-term conservation [IAE], and, in addition, allows for continuity in the provision of the AECPGs across time and different tenants [INRAE].

Strength 3 – Highly flexible approach compared to other contract types. Even though national rules for land lease exist, compared to the other contract solution types, land-tenure based contract solutions are less complex and more flexible as regards involved parties and governance, as usually two parties agree on an individual basis [D2.3]. In addition, the handling of these contract can be very flexible, e.g. it is possible to incorporate environmental clauses not only when establishing a new contract, but also when renewing a 'classic' rural lease, or even during the term of a current lease through contractual amendment, given that tenant and landowner agree to the modification [D1.5].

Strengths resulting from specific contract DESIGN attributes, which are normally common for land tenure-based contract solutions but can be implemented individually.

Design Strength 1 – A reduced/affordable rent as economic incentive to adopt sustainable practices. In land tenure contracts with environmental clauses, landowners (public (state,

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communal), private, …) agree with tenants to certain environmental management requirements. In return, lessees (farmers, other land managers, nature protection organisations, …) usually receive reduced rents [D1.5; UNIFE; UNIPI], which gives an economic motivation for providing environmental public goods [IAE]. The idea of a lower rent for land in land-tenure contract solutions with environmental clauses, is clearly supported by the stakeholders sn some CONSOLE partner countries [ZSA, LV, WP3, T.3.3]. In general, a reduced rent, in accordance with the requirements connected to the provision of public goods is more likely if the land owner is a public party such as a municipality [D5.5]. Besides reduced rents, a further economic incentive can be the fact that lessees can claim financial support coming from AES for such land: in general, participation in AECMs and potentially future eco-schemes, is possible also on land rented with environmental clauses, regardless of the precise environmental obligations included. Some limitations are, however, set so as to avoid double funding [D1.5]. Is the reduced rent borne by the landowners solely, the regulator benefits from the AECPGs provision related to the contract without any cost [UNIFE; UNIPI]. Therefore, such contracts can be seen as a low cost approach for public institutions who otherwise has to pay for its provision [UNIFE; UNIPI].

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Design Strength 2 – High leeway for monitoring and control. The monitoring of environmental practices is usually not laid down in the contracts themselves, but is often a matter for agreement between the concerned parties. This gives the lessor some leeway to adapt his annual monitoring and control the different environmental practices demanded under the contract, or to just build on a foundation of trust [D1.5]. Monitoring costs in most cases are therefore low, in particular if the requirements are connected to implementation of specific practices and/or to (easily observable) actions to be undertaken [IAE]. Also, landowners might opt for the implementation of obligations to carry out actions under environmental clauses, because action-oriented approaches are perceived as more affordable and simpler to control and monitor [D1.5].

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Design Strength 3 – Land tenure contracts can be used as an instrument to support small and hobbyist farms. A positive side of land tenure contracts is that they can help to give small farms and hobbyist farmers access to land and funding, and/or that tenure contracts allow them to continue their traditional land management activities [UNIPI; UNIFE, IT; D3.3]. If focussing solely on productivity it is less likely that small farmers can make competitive offers, resulting in a risk that only a few players get access to the land. This might decrease the local diversity of crops and also prevent new farmers from entering [UNIPI; UNIFE, IT; D3.3].

4.3.2 Weaknesses

Weaknesses resulting from attributes directly specifying land tenure-based contract solutions

Weakness 1 – Land tenure related contracts require certain preconditions (access to land, appropriate ownership structure, etc.) and are therefore only suitable for specific contexts [D2.7]. Contractual solutions that regulate environmentally friendly management via land use contracts require certain preconditions in order to be considered a suitable contract type to foster AECPG provision. Various frames are hindering the introduction of land tenure contracts. Limited access and availability of land (for renting) in general is discussed as an issue in CONSOLE stakeholder workshops [D3.3], especially with regard to access to publicly owned land (e.g., state or municipality), where in principle land tenure contracts could be implemented more easily [WP5; D3.3.]. For the case of Finland, for example, it was shown that there may be no availability of forest areas [D3.3]. Moreover, based on insights from CONSOLE's practical examples, for the introduction of land tenure contracts it is essential that the location of area for AECPG provision is paired with a suited ownership structure, and that the agricultural system in the region, or at least the farming system of some farms, is suited to integrate the land tenure system into the farming concept (PL1, BG4, and FR1) [D2.4]. Finally, the land-offer needs to meet the demand for land by farmers [D2.3].

Weakness 2 – Land pressure and the financial interests of landowners determine the success of the land tenure contract with environmental clause. In contexts where landowners' financial interests dominate land use contracts, their willingness to engage in this type of contract is limited due to the resulting lower rent [UNIFE; UNIPI]. This is the case especially when the cost of providing AECPGs is borne entirely by landowners with their loss of income [UNIFE; UNIPI]. In regions with high land pressure, farmers may be forced to engage in such contracts as they are the only way to access land. On the other hand, in areas where the economic value of land is low, there are also land use contracts under which only little or no rent is paid to landowners. Thus, the design of reduced rent in land use contracts depends heavily on access to, and pressure on land.

Weakness 3 – Low level of awareness and experience among European farmers are hindering the willingness to enrol. Based on the land manager survey, land-tenure contracts with environmental clauses and the characteristics related to this contract type are seen as less popular among land managers [D3.2]. This result was also confirmed in the WP3 stakeholder workshops [D3.3]. One reason for low acceptance are the additional obligations in land lease contracts, which result in a less productive land use – at least short-term [UNIFE; UNIPI]. Besides the rather low level of popularity, the contract type is also not well known among land managers in several countries [D3.3]: e.g. in Italy there is a low presence of land tenure case studies and experiences [UNIFE; UNIPI], among forest owners from Finland, the idea of leasing out land is also new [D3.3]. Also,

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in the scientific literature, there have been only a few publications on land tenure contracts with environmental clauses [Olivieri et al. 2021[3]; D2.7].

A complementary discussion on this aspect araised in workshop WEU1.4. Participants reported from their discussions with farmers that at the beginning the idea of land tenure contracts seemed new to farmers but after presenting the land tenure contract concept, farmers realized that they already are involved in this type of contracts. In practice it is for example part of land tenure contracts to protect a specific tree or to not use glyphosate or sewage sludge. Such requirements already fall under the classification of land tenure contracts with clauses (environmental clauses) but farmers are not aware of the specific "contract type". Also, among CONSOLE partners land tenure contracts seemed uncommon at the beginning, however, over the course of CONSOLE it became clear that many actual land tenure contracts already exist in practice, far more than originally expected. It appears there is a distinctive knowledge gap about how much is this type of contract actually implemented in Europe.

WEU1.4

Weaknesses, which frequently appear in land tenure-based contract solutions due to DESIGN characteristics

Design Weakness 1 – Assessment of achieved environmental effects is challenging. Land tenure contracts are usually designed action-oriented with specific obligations being included in the lease contract. While the prescribed and specific management practices might be easy to be monitored, measuring real environmental improvement (e.g. increase in biodiversity) is rarely possible [D2.4]. This is mostly as neither the landowner nor the lessee has the necessary ecologic expertise, except in cases when the land is rented out by nature protection organizations [IAE].

4.3.3 Opportunities

Opportunity 1 – Experience as a driver for future participation. One result derived from the land manager survey revealed that having experienced land tenure contracts (or very similar ones) in the past makes the farmer more inclined to uptake them [UNIBO: WP3: T3.2].

Opportunity 2 – Including a form of institutional monitoring of the practices adopted by the farmers increases the willingness to enrol in land tenure contracts. To be able to launch land tenure contracts, on the one hand precise regulations of obligations and rights is needed. On the other hand, also a transparent system for controlling and monitoring of results could be an option to enhance the willingness of farmers to take part. [D3.3; IAE] Tenant farmers might also need further legal protection in tenure contracts (UK). Hereby, the involvement of an institutional monitoring actor can be seen as a supporting tool which showed to be well accepted among the land managers [D3.2].

In the CONSOLE WEU1.4 it was raised that currently land tenure contracts might be missing some stepping stones, for example the inclusion of an intermediary.

WEU1.4

[3] Olivieri, M., Andreoli, M., Vergamini, D., & Bartolini, F. (2021). Innovative Contract Solutions for the Provision of Agri-Environmental Climatic Public Goods: A Literature Review. Sustainability, 13(12), 6936. https://doi.org/10.3390/su13126936

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Opportunity 3 – Landowners interest in keeping the land in good condition [T2.3]. In the longer-term, including clauses for environmental improvement (e.g. better soil fertility, higher biodiversity) might represent a win-situation for land owners: Mostly, land owners are interested in maintaining or even enhancing the environmental status of their land. Potentially, also the value of land kept in good environmental condition could raise [UNIFE; UNIPI]. Therefore, the willingness to give out land tenure contracts and accepting a reduced income from renting might be enhanced.

Opportunity 4 – Publicly owned land as a privileged source for land tenure contracts. According to the results of the WP3 stakeholder workshop, publicly owned land is mostly suitable for introducing land tenure contracts [D3.3] as here societal demands can be implemented directly. For example, the public interest to improve soil fertility or biodiversity could be effectively fostered on such areas with such contracts of [WP5]. On the other hand, land tenure contracts with environmental obligations can activate private funds for the provision of AECPGs: if the land owners are large companies or private landowners, renting out land including environmental restrictions for the tenants while guaranteeing a reduced rent, the provision of AECPGs can be partially "paid" privately [UNIFE; UNIPI].

In the UK at least two types of land tenure contracts exist: one type are contracts on public land, including e.g. Nature conservation agencies renting land; the other type are market driven land tenure contracts, where there is a specific interest from a private market party to improve the quality of a specific area.

WEU1.4

4.3.4 Threats

Threat 1 – Imbalance in the negotiation power between landowner and tenant. For land tenure contracts with environmental clauses, there have been fears expressed by stakeholders that too much power of the landowner would disadvantage the tenants (FR, NL, UK). There is concern that if landowners have too much power, they may be rigid with environmental clauses and not open to tenant feedback (NL). This is particularly an issue if the lessee has to accept clauses in order to be able to pursue his farming activity (or to comply with legislation as in the case of manure management in Germany). Thus, too much power of the side of the landowner can lead to unfair conditions for the tenant [D3.3]. On the other hand, some actions for improved AECPG provision, such as planting hedgerows, might require landowners' permission, which limits farmers' ability to provide environmental services themselves (INRAE; FR).

Threat 2 – Unrealistic expectations from landowner side. For contracts where the land is publicly owned, there is concern that too many public actors want to have a say and that contracts get overloaded or less reasonable clauses are included in the contract [WP5]. So, farmers raised the concern of if too many different interests are included, management restrictions might become too complex, or even controversial, to be implemented in the cultivation of the land [WEU1.4]. Moreover, it is important to strike the right balance between the price for rented land and the efforts envisaged in the environmental clauses.

Threat 3 – High diversity of contractual formula - legal issues may arise. The law applicable to land tenure contracts is that of the member state concerned. As regards transferability, it might be difficult to create a frame for all EU member states in terms of contract formulation and to discuss possible legal issues [D1.5]. In France for example, the administrative regulation of agricultural lands markets and the capping of agricultural rents favour farmers renting high quality land.

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Overall, the regular agricultural land tenure contracts are quite in favour of farmers. Therefore, there are low opportunities to reduce the rent, and it is not interesting for farmers to change their contracts to more environmentally strict ones as in the case of farming the land with environmental restrictions, the reduced land rent is still likely to not cover the opportunity costs [INRAE; WP4; D4.1]. In addition, there is no legal clarity as regards double funding for land in public or institutional ownership and publicly funded AECM with same requirements (D1.5).

Threat 4 – Land tenure contracts with environmental clauses fit to extensive areas where the economic margin is already low. Adding clauses might be not attractive or push out tenants [T2.3]
A concern is that preference is given to less productive land for rural leases with environmental clauses so as to avoid the possible loss of output resulting from the environmental practices that have to be adopted. Even though these can be compensated by a reduction in the rent, the extent to which this can be achieved depends not least on the demand for land, and thus on the bargaining power of the landowners. The more productive the land, the weaker the economic incentive for lessors to use this option - which may undermine the efficacy of such rural leases in the provision of environmental goods and services, so indicating a role for the CAP as a source of support.

Threat 5 – Too much flexibility can lead to disparities and uncertainty. Normally, land tenure contracts imply no obligations for monitoring (or control). Monitoring of the contractually required environmental measures is not defined by law, but rather an issue for agreements between the parties. Usually, landowners can freely decide if and how he/she conducts the monitoring. This freedom can lead to disparities between the rigour of different leases with environmental clauses. The freedom given to the land owner may leave land managers unprepared for the mechanisms to be used, which may cause fears of poor-quality control [D1.5]. Finally, a low level of specifications regarding the measures and the requirements for their monitoring might lead to the risk that the farmers might "cheat" in implementing the measure [IAE].

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SWOT-results

Land tenure contracts with environmental clauses

Strengths

General strengths

- Landowners can react to local environmental problems
- Land tenure contracts can foster long-term nature protection
- Highly flexible approach compared to other contract types.

Design-related strengths

- A reduced/affordable rent as economic incentive to adopt sustainable practices
- High leeway for monitoring and control
- Land tenure contracts can be used as an instrument to support small and hobbyist farms

Weaknesses

General weaknesses

- Land tenure contracts require certain preconditions (access to land, appropriate ownership structure, etc.) and are therefore only suitable for specific contexts
- Land pressure and the financial interests of landowners determine the success of the land tenure contract with environmental clause
- Low level of awareness and experience among European farmers are hindering the willingness to enrol.

Design-related weaknesses

- Assessment of achieved environmental effects is challenging

Threats

- Imbalance in the negotiation power between landowner and tenant
- Unrealistic expectations from landowner side
- High diversity of contractual formula - legal issues may arise
- Land tenure contracts with environmental clauses fit to extensive areas where the economic margin is already low. Adding clauses might be not attractive or push out tenants
- Too much flexibility can lead to disparities and uncertainty.

Opportunities

- Experience as a driver for future participation
- Including a form of institutional monitoring of the practices adopted by the farmers increases the willingness to enroll in land tenure contracts
- Landowners interest in keeping the land in good condition
- Publicly owned land as a privileged source for land tenure contracts

4.4 Value-chain based contract solution SWOT

Definition / Setting the scope

In VC contracts, environmental prescriptions are attached to a contract for the provision of a private good. More precisely, in the case of this contractual solution, the production of environmental public goods is achieved through specific obligations included in the contracts between primary producers and processors or retailers. Primary producers are rewarded by the market, often receiving a premium price (on the assumption that consumers are willing to pay for the public good when purchasing the private one). This implies that consumers have clear information about the connection of the product with the environmental public good. Often these products have bespoke labels to identify the environmental added value. With particular reference to the CONSOLE project, in this contract type farmers commit to deliver environmental or climate benefits connected to the production of selected products, e.g. by carrying out management measures which contribute e.g. to water protection, landscape improvement, biodiversity or carbon sequestration (D1.5).

The understanding of the VC is very important and differs between CONSOLE and the sister projects. The question is: Do we include VC schemes which are already settled (like organic schemes, PDOs), or do we only include those going on the top of already settled initiatives. In CONSOLE we only look on the additional aspects, meaning the VC schemes must go beyond an already existing and well implemented scheme like the organic label. So, this is an issue we need to keep in mind and consider it in the interpretation and discussion of the results across projects. In addition, in CONSOLE we focus on the farmers side and the next stage of the value chain.

WEU1.4

4.4.1 Strengths

Strengths resulting from attributes directly specifying value chain-based contract solutions

Strength 1 – High acceptance among European farmers: allows farmers to link the production of private goods to public good delivery [IAE; UNIPI, UNIFE]. Out of the four contract types, value chain contracts are seen as second most accepted among land managers and stakeholders [D3.2]. One main reason for the high level of acceptance is, that value chain solutions allow the farmer to integrate environmental protection into the production of their agricultural goods and to be compensated for the provision of AECPGs through the final product price [INRAE, WP3; UNIFE; UNIPI]. In addition, farmers are used to product contracts (contractual farming) and specific production requirements (usually focusing on product characteristics inclusive quality). In the Netherlands for example, dairy cooperatives are already establishing contracts containing specific requirements for the provision of public goods [D5.5].

Strength 2 – Activates additional funds. Well-functioning value chain contracts might activate additional funding sources for the provision of AECPGs [D4.4] and therefore decrease to some extent the need for public funding [D3.3][UNIFE; UNIPI]. The disconnection from public intervention, by linking provision to a marketable product is then leading to a more direct remuneration by society, which is usually preferred by the farmers [D2.7].

Strengths resulting from specific contract DESIGN attributes, which are normally common for value chain-based contract solutions but can be implemented individually.

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Design Strength 1 – Farmers receive economic benefits through premium prices. In value chain solutions, farmers often receive higher producer prices for products produced more environmentally friendly [D2.4; UNIFE; UNIPI]. These premium prices are perceived as economic benefits [D5.5] and as a motivational factor for farmers to participate in value chain contracts [IAE]. In addition, farmers can have a secure remuneration on the contractual basis, stabilizing their income opposed to an increasing price volatility in the bulk market [UNIFE; UNIPI].

Participants in the WEU1.4 mentioned that based on their experience and research, besides price premium also other options exist to incentivise farmers: Incentives can take the form of external consulting services, or e.g. planting materials. So, price premium is not the only incentive option in this type of contract.

WEU1.4

Design Strength 2 – Labelling products, e.g. certifying them as environmentally friendly, increases farmers' willingness to participate. The CONSOLE farmers' survey showed that product labelling combined with specific product(ion) characteristics positively influences farmers' willingness to enroll in value chain contract solutions [D3.2]. This result was further confirmed by the CONSOLE Community of Practice [D5.5]. In most cases such labelling goes along with certification, that can be privately organized or – as in the case for organic products – in line with legislation (D2.6).

4.4.2 Weaknesses

Weaknesses resulting from attributes directly specifying value chain-based contract solutions

Weakness 1 – Depending on consumers' willingness to pay requires high consumers' awareness. In value chain contracts, the consumers' role is pivotal. The success of value chain contracts depends mainly on consumer awareness and consumers' sense of responsibility leading them to voluntarily contribute to the environmental costs of the production process [T2.3] [D5.5] [UNIFE; UNIPI]. Results particularly of the stakeholder process show that consumers' awareness is perceived to be different in different countries and contexts situations – and can sometimes be low. [UNIFE; UNIPI; ZSA; WP3]. To raise awareness and trigger consumers' willingness to pay proper information to the consumers is essential [INRAE].

Weakness 2 – Only suited for "saleable" public goods. Not all AECPGs are equally suited for value chain contracts, as not all AECPGs are well known to consumers and therefore "saleable". The CONSOLE practical examples showed that particularly AECPGs like animal health and welfare, or biodiversity are targeted, often combined with more generic public goods such as rural viability and landscape and scenery [D2.4]. However, value chain contracts rarely target public goods, which might be essential but not well known or liked by consumers, such as less popular species (snakes, spiders, etc.) or complex processes, such as nutrient cycling. Also, public good provision being characterized by time lags between effort and effect might be less suited for such contracts [D2.7; UNIFE, UNIPI]. In addition, it is not always sensible to convert the provision of an AECPG into a per kilo of product unit (e.g. reduced risk of flood within a kilo of meat) [INRAE].

Weakness 3 – Value chain-based contracts for AECPG provision are new ground. How to "produce" public goods alongside with commodities is not yet common knowledge. Therefore, to implement environmental-friendly value chains and guarantee a common understanding between all contracting parties requires careful discussion and explanation among primary

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producers and other value chain actors [D5.5]. The land manager survey showed that this contract type was not easy to understand for farmers and forester [D3.2]. The remuneration from private sources is often a new idea (with a lack of tradition) for many farmers or land managers [D3.3] who are rather used to agree contracts for the provision of AECPGs with public actors. Furthermore, the distinction between contract farming and engaging in a value chain approach for the provision of AECPGs is not so obvious for the land managers according to the Community of Practice, as more and more product contracts contain at least some provisions with environmental effects (e.g. IPM) [D5.5]. So, for supporting value chain solutions, stakeholders suggest a facilitation of land managers' access to the value chain. In addition, procedures need to be easily implemented, and more information about the new products, required quality or required varieties and breeds is needed [D3.3].

Weaknesses, which frequently appear in value chain-based contract solutions due to DESIGN characteristics

Design Weakness 1 – Longevity is rarely the concept - often designed as short-term incentive. Value chain contracts often provide only a short-term incentive rather than being designed to provide constant renumeration to farmers. Such temporary value chain contracts might hinder bigger investments and management adaptations, create uncertainty for farmers and are, therefore, not always attractive [D5.5].

Design Weakness 2 – Distribution of benefits, risks and responsibilities is perceived as unequal in practice. The results of the stakeholder consultations and workshops show that in practice the distribution of benefits, risks and responsibilities in value chain contracts is perceived as often unequal. Stakeholders mainly doubt, that such contracts lead to a fair distribution of additional income through the supply chain [D3.3, D5.5].

>> outstanding good value chain solution <<

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Design Weakness 3 – Private contributions to public goods are inefficient, and hence too much reliance on them might lead to sub-optimal outcomes. Private contributions to public good provisions are plagued by free-riding issues. In the private decision of contributing to the provision of AECPGs, only private (and not the social) benefits are taken into account and only such AECPGs are supported which are met by consumers' demand. Due to this inefficiency, private contributions to AECPG provision can surely help, but not fully substitute for public provision. In this sense, the CONSOLE modelling exercises showed, that private funding is never able to reach the social optimum of public goods provision as consumers with their consumption decision only try to optimize private benefits. While value chain based solutions are suited to activate additional funds, they bear the risk to lead to suboptimal public good outcomes if the reliance on them is too big. Therefore, the largest share of public good provision funding should be public. [D4.4].

Design Weakness 4 – The products supply cannot fully cover the demand derived from the contracts [UNIFE; UNIPI]. To place products in the premium market, a certain amount of homogenous final products is required. However, single farmers often only commit for a small share of production in such value chain contracts.

4.4.3 Opportunities

Opportunity 1 – Increasing interest in more environmentally friendly products on side of consumers and the private sector. The increasing interest of the private sector (food, retail and other companies) to realize its corporate social responsibility targets [D3.3; D2.4]) and to contribute to AECPG provision, as well as the private sector's access to sufficient resources, e.g. for compensation payments [D3.3], is seen an opportunity for value chain contracts particularly by the stakeholders. In addition to supporting sustainable products, for the private sector value chain contracts provide an opportunity to create additional value, choice and premium. In many practical cases, the value chain approach is part of food companies'/retail marketing strategies [D2.4]. This development is supported by recent EU policy (F2F, taxonomy), pushing companies to take steps towards more sustainable production [D3.3]. But also on the consumer side, the demand for environmentally friendly products has increased, leading to a potentially higher willingness to pay [D3.3]. Hereby, analyses show that AECPG provision can be increased if consumers are given access to full information on the public and private characteristics of the food product attributes, including environmental and health attributes [D.4.4].

Opportunity 2 – Potential to raise awareness of consumers. Being, on the one hand, dependent on societal awareness, value chain contracts can, on the other, raise awareness in society [D2.7]. By confronting consumers with an information strategy related to the production of the marketed good and its connection to public good provision, such initiatives contribute in the understanding of the process of production for environmentally friendly products and can increase the understanding of the costs [UNIFE; UNIPI].

Opportunity 3 – Experience helps; however, it must be a good one. Previous experiences with other forms of value-chain based contracts, such as contract farming, makes the farmer more inclined in adopting a value chain solution [D3.2]. In contrast, previous bad experiences of farmers may affect future participation in value chain solutions (certified products) negatively [UNIFE; UNIPI]. Besides experiences with these kinds of contracts, also experiences with organic farming and its close relation to the market can help: organic holdings can play a relevant role in providing AECPGs effectively and efficiently towards value chain contracts [D3.2] and can be an example of positive experiences among farmers.

Opportunity 4 – Building on pre-existing brands and official signs of quality (e.g. protected origin, organic farming). Value chain-based contracts might be especially successful, if they build

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on pre-existing brands and official signs of quality (e.g. protected origin). On the one hand such brands are already known to consumers, on the other facilities, experiences and, eventually, sales strategies already exist [D3.1].

Opportunity 5 – Making use of the best available knowledge of contractual design (labelling, sales guarantees, transparent communication, trust, etc.). There exists increasing knowledge and experience on the design of effective and efficient value chain based approaches. Making use of this knowledge is key for sustainable and successful future solutions. Design features increasing land managers' willingness to adopt value chain contract solution are e.g. labelled product, e.g., certified as environmental-friendly, and/or particularly the provision of sales guarantees for the products provided. The request for sales guarantees to be included in value chain contracts can be explained because farmers fear not being (always) able to comply with the additional requirements [D5.5].

4.4.4 Threats

Threat 1 - Consumer preferences and economic situation can change. Value chain solutions depend on consumers' preferences and behavior. As this is highly dependent on personal characteristics such as income (and awareness), a potential threat is that the willingness to pay is temporary and does not ensure stable funding [D4.4]. Thus, the demand for environmental-friendly production depends on the economic situation of consumers - and their awareness. In some countries, the environment is still not a priority [D3.3] and in others, consumers cannot afford the higher product prices and cover the costs of the measures [ZSA, LV, WP3, T.3.4]. There is also the risk that customers' perceptions and needs may change over the course of the contract [UNIFE; UNIPI].

Threat 2 – Risk of green washing with only limited effect on environmental improvement. Some funding organizations or companies may be interested more in creating the Public Relation image of the "funder", but in real effects in the AECPG provision. Nevertheless, as long as companies' PR activities are related to real achievements in delivering public goods by benefiting farmers, effectiveness could still be given. But also then the risk remains, that farmers might be more reluctant to sign contracts if they suspect being "manipulated" if the AECPG contract is to be perceived a subject to Public Relations policy [WP5].

Threat 3 – Power disbalance and not enough creation of trust [D2.7]. In value chain contract solutions there exists the risk that farmers might lack bargaining power compared to "the value chain", meaning large food companies and retailers. This risk can lead to mistrust by the farmers [D2.7]. If there is a lack of trust, good cooperation between the actors along the value chain is unlikely and, as a consequence, the success of value chain contract as a whole is unlikely. In this sense, it was expressed in four CONSOLE practice examples that trust between the actors in the value chain is an important factor for success and acceptance. In these practice examples, trust is created via meetings, good communication and fair and transparent rules. [D2.4].

Threat 4 – Balancing rules, requirements and control is a challenge. The right scale for setting requirements for farmers in value-chain based solutions is a balancing act. On the one hand, production rules and requirements must be transparent, strict and controlled enough to maintain consumers' trust. If the regulator doesn't adequately control the process, the participants in the contract could cheat on the environmental activity provided [UNIFE; UNIPI]. Therefore, it is essential that the farmer is obliged to respect a set of predefined requirements (e.g. using only specific seeds, ensuring a certain weight of animals for slaughtering). If those requirements are not fully met, no selling is possible, which again represents a potential risk for farmers [D5.5].

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On the other hand, the implementation of rules and requirements need to be feasible for the producers, otherwise it will restrict the number of potential participants.

Threat 5 – Competition might erode the innovation rent. The competition in a well-informed marked can reduce or even cancel the profits: the premium obtained while selling environmental attributes (provision of various AECPG) of an agricultural good will decrease, the more competitors with the same or a similar strategy enter the market. In this case, finally, this premium will decrease until its cancellation and there might no longer be an incentive to costly provide AEPG. One way to avoid such situation and to secure the rent is to use geographical indicators since they create monopoles [INRAE], limiting the entry of new competitors.

Threat 6 – Successful introduction of value chain contracts may require (re)organization of the sector. Value chain based solutions may require new outlets, storage facilities, or processing units, leading to additional costs along the value chain, and making such schemes more difficult and complex [D3.1].

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SWOT-results

Strengths

General strengths

- High acceptance among European farmers: allows farmers to link the production of private goods to public good delivery
- Activates additional funds

Design-related strengths

- Farmers receive economic benefits through premium prices
- Labelling products, e.g. certifying them as environmentally friendly, increases farmers' willingness to participate

Weaknesses

General weaknesses

- Depending on consumers' willingness to pay requires high consumers' awareness
- Only suited for "saleable" public goods
- Value chain-based contracts for AECPG provision are new ground.

Design-related weaknesses

- Longevity is rarely the concept - often designed as short-term incentive
- Distribution of benefits, risks and responsibilities is perceived as unequal in practice
- Private contributions to public goods are inefficient, and hence too much reliance on them might lead to sub-optimal outcomes
- The products supply cannot fully cover the demand derived from the contracts

Value chain-based contracts

Threats

- Consumer preferences and economic situation can change
- Risk of green washing with only limited effect on environmental improvement
- Power disbalance and not enough creation of trust
- Balancing rules, requirements and control is a challenge
- Competition might erode the innovation rent
- Successful introduction of value chain contracts may require (re)organization of the sector

Opportunities

- Increasing interest in more environmentally friendly products on side of consumers and the private sector
- Potential to raise awareness of consumers
- Experience helps; however, it must be a good one
- Building on pre-existing brands and official signs of quality (e.g. protected origin, organic farming)
- Making use of the best available knowledge of contractual design (labelling, sales guarantees, transparent communication, trust, etc.)

5 Comparative overall lessons learned

Acceptance

Lesson learned 1: When comparing the four types of contracts studied, result-based contracts are the most popular among land managers, closely followed by value chain-based contracts. Both contracts are seen as easy to understand, easier to apply, and potentially more economically beneficial. In contrast, land tenure contracts with environmental clauses and collective contract solutions are seen as more difficult to understand, apply, and less economically beneficial. These perceptions are also reflected in the responses to future willingness to participate.

Effectiveness

Lesson learned 2: In respect of actual environmental improvement, result-based contract solutions open up the possibility of measuring actual environmental improvement by means of indicators. Land tenure contracts with environmental clauses typically specify action-oriented measures with specific requirements, so measuring true environmental improvements (e.g., increases in biodiversity) is rarely possible. Collective approaches can reach ecological thresholds more efficiently, since they allow for spatial coherence and coordinated efforts towards a similar environmental objective (e.g. improve water quality) among participants.

Complexity

Lesson learned 3: Land tenure contracts with environmental clauses are less complex and very flexible in comparison to the other contract types, as often only two parties conclude an individual contract with each other. Moreover, this contract can be handled very flexibly, e.g. environmental clauses can be included not only when a new contract is drawn up, but also when a "classic" lease is renewed or during the term of a lease. In contrast, collective solutions are often focused on more complex issues of agri-environment-climate public goods provision - either on a wider spatial scale (landscape/habitat/ecosystem), or to a broader set of agri-environment-climate public goods. Consequently, contract design, the development of orchestrated measures, the (territorial) organizational processes, and the accumulation and distribution of payments are also more complex. The concept of result-based payments places high demands on the definition and control of outcome indicators and can be equally complex.

Targeting (region)

Lesson learned 4: Targeting the contracts to specific regions addresses regional criticalities and enhances the farmers' and foresters' interest and understanding of measures. Land tenure contracts with environmental clauses and collective contracts have often a stronger regional or local focus than value-chain and result-based contracts. Collective solutions allow to target a whole territory/region/landscape and can involve also areas not being agricultural land itself. Being linked to a territory, collective solutions increase the sensitivity of these territories with respect to larger scale environmental key issues. Land tenure contracts are highly suited to be implemented in specific regions where environmental restoration is needed, for example, to target degraded and eroded soils, to protect a source of drinking water or to protect specific habitats.

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Targeting (AECPGs)

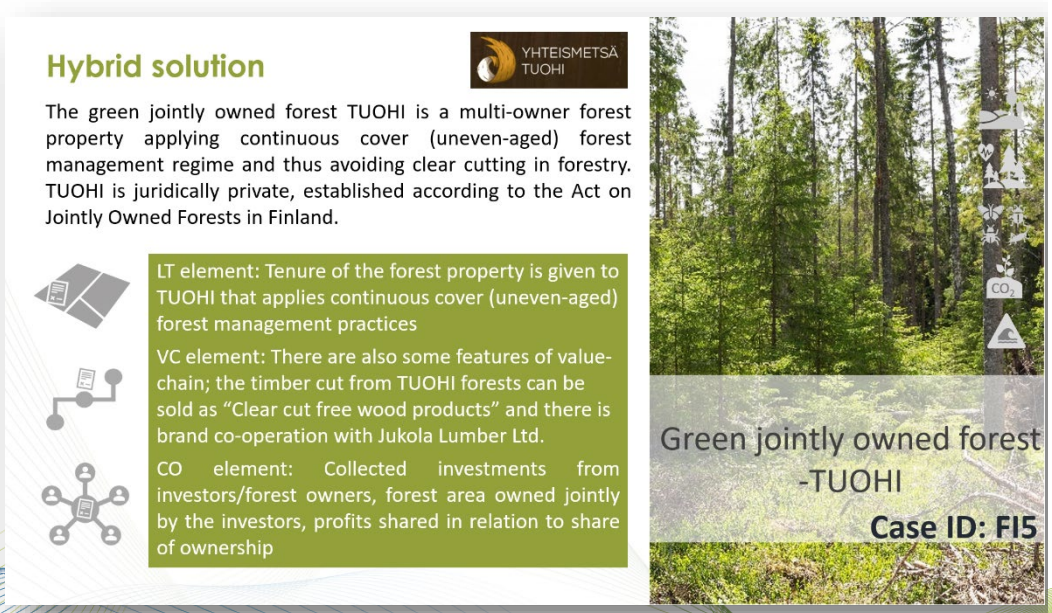
Lesson learned 5: Defining and setting clear AECPG targets, and designing management measures with high relation to AECPG improvement, enhances effectiveness. In practice, it can be seen that result-based contractual solutions on the one hand can focus well on the improved provision of a singular AECPG. On the other hand, result-based contract solutions normally don't take into account the holistic management of the broad bundle of AECPGs provided in agricultural/forestry ecosystems, leading to the risk of sub-optimization of public goods not targeted by the solution. Collective contracts are often targeted to a broader bundle of AECPGs, however, this is increasing the complexity of the solution and demands good targeting of individual measures/land management plans. In value chain solutions, not all AECPGs are equally suitable for this contract type as not all AECPGs are well known to consumers and therefore "saleable". Value chain contracts for example rarely target public goods which might be essential but not well liked by consumers, such as less popular species (snakes, spiders, etc.).

Experience

Lesson learned 6: Positive experiences with individual contract types in the past promote future willingness to participate. Negative experiences (e.g., failed contract solutions; problems in cooperation, power imbalance, etc.), on the other hand, can permanently inhibit future willingness to participate. In the process of developing innovative contract solutions, it is therefore essential to take into account findings on how contracts can be shaped via good design in order to prevent failure and negative experiences.

Hybrids

Lesson learned 7: Hybrid solutions: Each contract type has individual strengths and weaknesses. By combining characteristics of different contract types, individual weaknesses can be compensated. In practice, such hybrid solutions are used in many cases. >> Outstanding good hybrid example <<



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Process

Lesson learned 8: The development and introduction of innovative contract solutions represents a process in which adjustments are often necessary. Successful contract solutions are often customized, and adapted to the context (there is not "the one contract prototype"). In the case of public programs, pilot projects can provide the framework to test and adapt solutions.

Technology

Lesson learned 9: New technologies offer the opportunity to measure environmental outcomes more efficiently. In current contract solutions, technologies however still play a minor role. In the future, technologies may offer the potential to compensate for weaknesses particularly in monitoring the effectiveness of the current contract types (e.g., indicators development and measurement in RB contracts, traceability), e.g. through the use of drones, apps, and satellites.

Context

Lesson learned 10: Context and framework conditions play an important role in the implementation of novel contract types. For value chain-based contracts for example, awareness of environmental and sustainability issues among consumers is essential; for result-based contracts, farmers/foresters need to have a basic knowledge of ecological processes and their relationship with management; for collective contracts, land managers need to have some will to cooperate; and for land tenure contracts with environmental clauses, the land market must allow for the implementability of the contract.

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6 Reference list deliverables

Deliverable Number	Deliverable Title	WP Number	Lead beneficiary
Deliverable 1.1	Conceptual framework	WP1	UNIBO
Deliverable 1.2	Identification of potential improved solutions	WP1	UNIBO
Deliverable 1.5	Report on legal aspects and issues	WP1	CNRS
Deliverable 1.6	Report on technological aspects	WP1	Evenor
Deliverable 2.3	Report on European indepth case studies	WP2	BOKU
Deliverable 2.4	Report on WP2 lessons learned	WP2	BOKU
Deliverable 2.6	Catalogue of updated factsheets of European in-depth case studies	WP2	BOKU
Deliverable 2.7	Final report on experiences from outside the CONSOLE Countries	WP2	UNIBO
Deliverable 3.1	The participation of farmers in innovative contract solutions based on secondary data analyses	WP3	INRAE
Deliverable 3.2	Farmers and stakeholders opinions on implementation of suggested contract solutions based on survey results	WP3	UNIBO
Deliverable 3.3	Synthesis of farmers and stakeholders opinions to implement suggested contract solutions based on stakeholder discussions	WP3	LUKE
Deliverable 4.1	Reports on the role of land tenure and land dynamics in AECPGs provision	WP4	INRAE
Deliverable 4.2	Report on performance and design of resultbased/ outcomeoriented approaches for AECPGs provision	WP4	UNIBO
Deliverable 4.3	Report on performance and design of collective approaches to AECPGs provision	WP4	UNIBO
Deliverable 4.4	Report on performance and design of solutions for the provision AECPGs in value chain perspective	WP4	UNIBO
Deliverable 5.5	Report on ground truth testing of the framework in real life and lessons learned from testing	WP5	TI

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