

CONSOLE

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

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Deliverable D2.3

Report on European in-depth case studies

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3	CONSORZIO DELLA BONIFICA DELLA ROMAGNA OCCIDENTALE	IT
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8	INSTITUTE OF AGRICULTURAL ECONOMICS	BG
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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). The co-leader of task 2.1 and 2.2 (UNIBO), as well as all CONSOLE partners reviewed the draft D2.3 document. After implementation of comments and amendments by partners, the final draft version was submitted to the project coordinator, for final review and validation.

Acknowledgments

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1 Summary

This document represents deliverable D2.3 “Report on European in-depth case studies” within workpackage WP2 “Diagnostic of existing experiences on agri-environmental-climate public goods (AECPGs)” of the EU Horizon 2020 project CONSOLE.

The report on European in-depth studies gives a short introduction of the deliverable’s objectives and the tasks addressed. It describes the process of in-depth data collection and shortly introduces the criteria being the basis for performance assessment, as well as the types of contract solutions considered in the project.

The document then provides an in-depth insight into 26 CONSOLE in-depth studies: it describes the main contract features of 5 contract solutions qualifying as result-based/result-oriented contract solutions, 7 as collective implementation/collaboration contract solutions, 6 as contract solutions based on the value chain, and 3 contract solutions characterized by land tenure arrangements with environmental clauses. Moreover, 5 contract types representing combinations/hybrids of contract types are presented.

The report outlines how different agri-environmental-climate public goods (AECPGs) are addressed by the different contract types, revealing that differences exist in the numbers and the kind of AECPGs addressed. The analysis shows for example that biodiversity represents the AECPG most often addressed and indicates, that result-based and result-oriented contract solutions are mainly implemented to target single, specific AECPGs, while collective implementation focusses rather on the improvement of broader bundles of AECPGs on territorial levels.

The report analyses framework conditions and context situations under which contract solutions are implemented, particularly discussing 1.) environmental conditions, agricultural/forestry background and socioeconomic features, 2.) policy conditions, 3.) legal conditions, 4.) the role of institutions and formal structures and 5.) technology aspects.

The last part of the report is devoted to the analysis of contract specifications and performance of the contract solutions. Here, the results of the evaluation of the importance of performance criteria for the success of contract solutions are described, giving a deeper insight into the 10 performance criteria and how they are important for the success of the different contract types. A major part of the analysis is then devoted to the description of design principles for high performance. Here best practice examples out of the in-depth sample are provided.

The report concludes with an overview of the main findings, and gives an outlook on the further use of the results for scientific analyses and for practice.

2 Introduction

2.1 Objective

The overall objective of Deliverable D2.3 is to report the results of the qualitative diagnosis of the CONSOLE in-depth case studies. These results inform on framework conditions and contract specifications necessary to better fulfil environmental objectives and to efficiently address different types of performance, such as longevity, acceptance, etc. The results serve as basis for the further development of the CONSOLE framework in WP1, the quantitative analysis of the feasibility of new contract solutions for farmers, landowners and other stakeholders in WP3, and the simulation and modelling of the performance of innovative result-based/result-oriented, collective/ collaborative, as well as value-chain and land-tenure oriented contract solutions for the improved provision of agri-environmental-climate public goods (AECPGs) in Europe in WP4.

In order to achieve this objectives, D2.3 gives an insight into the process of in-depth case study qualitative data collection following milestone MS4 “protocol for data collection ready for use”. It provides a structured overview on the in-depth case studies, particularly detailing on types of contracts and public goods addressed. Moreover, this report presents the results of the diagnosis about framework conditions and contract specifications leading to high effectiveness in terms of reaching environmental goals and performance objectives.

2.2 Tasks addressed

Deliverable 2.3 reflects activities carried out in task 2.2 of the project:

Task 2.2 Data collection, selection and diagnosis of reasons for successes and failures of initiatives in Europe (M4-M11)

Leader: BOKU; Co-Leader: UNIBO; Contributors: ALL partners

Task T2.2 dealt with the data collection and the analysis of a broad number of selected, exemplary contract solution case studies in Europe. Data collection and data analysis were divided into two levels of diagnosis intensity, which have been defined in the DoA as “first-level analysis” and “second-level analysis”.

The second-level analysis was devoted to the in-depth assessment of a reduced number of selected contract solution case studies (up to 26), which specifically assess framework conditions and contract specifications of successfully implemented contract solutions for improved AECPG provision in Europe. The focus of the second-level assessment was on an in-depth description of the case-studies, a description of a set of performance criteria, as well as a final assessment of the single performance criteria and the overall performance of the single contract-solution case studies. (The results of the second-level analysis are reported in the Deliverable 2.3 “Report on European in-depth case studies” at hand.)

The first-level analysis aimed at providing a broad inventory of contract solution case studies throughout Europe and beyond. Aim, process and results of the first-level analysis have been reported in Deliverable 2.1 “Catalogue of descriptive factsheets of all European case studies” and Deliverable 2.2 “Catalogue of factsheets of case studies from outside Europe”.

2.3 Outline

Deliverable D2.3 is structured as follows: Chapter 3 gives an overview on the process of data collection for the in-depth case studies, Chapter 4 describes the in-depth studies particularly detailing on contract types and the public goods addressed. Chapter 5 gives insights into the

framework condition and context situations in which the contract solutions are set. Chapter 6 deals with individual contract specifications and contract design specificities leading to good performance. Chapter 7 gives an outlook on further use of Deliverable 2.3 for scientific analyses and for practice.

3 Data collection for in-depth case studies

The protocol for data collection (MS4) outlined the practical implementation of the second-level data collection by including a specific in-depth questionnaire (named part B of the protocol), divided into 3 subparts.

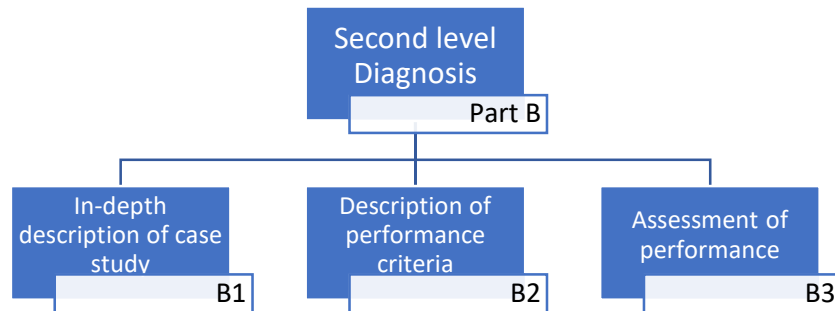


Figure 1: Structure of the questionnaire - Part B

The first subpart “In-depth description of case study” included 8 questions focussing on the description of *context features and framework conditions* which might impact on the implementation and effectiveness of the contract solutions. Context features and framework conditions to be assessed have been based on the CONSOLE preliminary framework (D1.1). The questions focused on environmental conditions, socioeconomic situation, technology, agricultural/ forest historical background, policy conditions, legal conditions, market conditions and institutional and formal structures. Moreover, the first subpart included 5 in-depth questions on *AECPG provision*. Mainly these questions were concerned with the current level, as well as the trends of provision of the AECPGs addressed by the contract solutions, the connection between agricultural/forestry management and AECPG provision, the functional relationships of the addressed AECPGs with other AECPGs and, finally, the beneficiaries of the provision of the AECPGs addressed.

The second subpart “Description of performance criteria” was based on a comprehensive literature review on performance parameters of agri-environmental programs/projects/-initiatives/contracts (see CONSOLE Deliverable D1.1). The aim of the questions in this part was to assess particularly the contract specifications leading to the fulfilment of environmental objectives and the efficiency in addressing different types of performance. The second subpart contained 29 questions, asking for detailed information on 10 performance parameters, namely the design parameters of *targeting, flexibility, equity/fairness, compatibility, profitability*, as well as the building of *social/cultural capital*, all impacting on the 3 higher level performance criteria of *longevity, effectiveness* and *acceptance* of the contracts. Moreover, a group of questions dealt with the context related performance aspect of *feasibility* of implementation. The questions to assess these 10 performance parameters all asked for the description of explanatory variables. An example of such explanatory variables for the exemplary design parameter of *flexibility* is *flexibility of payment conditions, contract length flexibility, technical, temporal, area wise application flexibility, indicator flexibility for result based approaches, and the voluntariness of implementation*.

The third subpart “Assessment of performance” included an evaluation exercise which had to be carried out by the partners’ research teams for the individual in-depth contract solution case study.

For the assessment, a simple scoring and weighting system was provided, where the performance of the single performance criteria had to be scored on a Likert scale ranging from 0 to 5, where 0 represented a very poor performance, while 5 represented an excellent performance. Finally, the research teams evaluated how important the single performance criteria appear for the contract solution carrying out a weighting exercise. For the weighting, a number of 100 points was distributed among the 10 performance parameters.

Selection of in-depth case studies:

The selection of in-depth case studies was in full responsibility of the individual research team of the CONSOLE partners, but supported by the coordinator and the WP leader. In general, second level diagnosis was carried out for a specified sub-set of the first-level case studies. Here, a number of 2 in-depth studies per country, covering all types of contract solutions emphasised by CONSOLE (see Box 1), were targeted. The requirement for in-depth CONSOLE case studies was that the contract solution was considered “successful” particularly in terms of acceptance and effectiveness.

CONSOLE focuses on 4 “types” of contract solutions:



Result-based/result-oriented contracts (RB/RO): Contracts specifying an environmental/ climate result as reference parameter (for payments)



Collective implementation/cooperation (CO, COP): Contracts implementing a formalised cooperation among farmers/actors in view of delivering AECPGs



Value chain-based contracts (VC): Contracts connecting the delivery of AECPGs with the production of private goods



Land tenure-based contracts (LT): Land tenure arrangements with environmental clauses

Also contract solutions representing combinations or hybrids are considered in CONSOLE.

Box 1: Contract solutions covered in CONSOLE

Means of data collection:

The means to be used to implement second-level data collection were literature reviews, and/or the exploitation of other local sources related to the contract solution. Additionally, the second-level data collection included a consultation of experts of relevant disciplines being involved in, or being well informed about the contract solution (coming e.g. from the environment, agriculture, forestry, tourism, regional development, local administration, business). The consultation of experts was carried out via workshops and/or expert interviews.

Implementation of data collection and reporting of results:

Data collection for the in-depth case studies was carried out by 17 CONSOLE partners, resulting in a collection of 26 in-depth case studies. Throughout the whole in-depth data collection process, more than 70 experts and stakeholders were consulted.

For reporting the results, the questionnaire had been programed in the form of a lime survey¹, which has been filled out by the partners for each in-depth contract solution case study.

¹ LimeSurvey (formerly PHPSurveyor) is a free and open source on-line statistical survey web app, which enables users using a web interface to develop and publish on-line surveys, collect responses, create statistics, and export the resulting data to other applications. (www.limesurvey.org)

4 Overview on in-depth case studies

4.1 Contract types

Table 1 shows the 26 CONSOLE in-depth contract solution case studies.

MS	ID	Title	Contract types*			
			RB/RO	CO/COP	VC	LT
AT	AT3	Result-based Nature Conservation Plan	X			
IRL	IRL2	The Results-based Agri-Environment Payment Scheme (RBAPS) Pilot in Ireland	X			
AT	AT4	The Humus Program of the Ökoregion Kaindorf (Carbon market)	X			
NL	NL3	Biodiversity monitor for dairy farming	X		X	X
FR	FR4	ECO-METHANE – Rewarding dairy farmers for low GHG emissions in France	X		X	
IRL	IRL1	BurrenLife Project	X	X		
BE	BE3	Wildlife Estates Label in Flanders	X	X		
FI	FI3	Carbon Market (Hiilipörssi) – a marketplace for the restoration of ditched peatlands	X	X	X	
IT	IT1	Incentives for collective reservoirs		X		
IT	IT6	Integrated territorial projects		X		
UK	UK1	Delivering multiple environmental benefits in the South Pennines		X		
UK	UK3	Building natural flood management knowledge and capacity in Wensleydale		X		
NL	NL1	Kromme Rijn Collective management		X		
LV	LV1	NUTRINFLOW		X		
BE	BE1	Participation of private landowners to the ecological restoration of the Pondarea Midden-Limburg/ the 3watEr project.	X	X		
PL	PL1	Natural grazing in Podkarpackie Region		X		X
FI	FI5	Green jointly owned forest TUOHI		X	X	X
BG	BG3	"The Wild Farm" organic farmers			X	
PL	PL4	BioBabalscy - Organic Pasta Chain Preserving Old Varieties of Cereals			X	
DE	DE5	Water protection bread (Wasserschutzbrot)			X	
IT	IT4	"Carta del Mulino" – Barilla			X	
ES	ES2	Organic wine in Rueda, Spain (Rueda)			X	
ES	ES4	Integrated production in the olive groves			X	
BG	BG4	Conservation and restoration of grasslands in Strandzha and Sakra mountains for restoring local biodiversity and endangered bird species				X
FR	FR1	Eco-grazing - Grazing for ecological grasslands maintenance in the green areas of Brest Metropole				X
LV	LV2	DVIETE				X

*Contract types: RB/RO: Result-based/result-oriented contracts; CO/COP: Collective implementation/cooperation; VC: Value chain-based contracts; LT: Land tenure-based contracts

Table 1: Overview on CONSOLE in-depth contract solution case studies

Out of the 26 CONSOLE in-depth studies 5 clearly qualify as result-based/result-oriented contract solutions, 7 as collective implementation/collaboration contract solutions, 6 as contract solutions based on the value chain, and 3 contract solutions characterized by land tenure arrangements with

environmental clauses. Moreover, there are combinations/hybrids. There are 2 case studies combining three contract types, namely 1 contract solution (FI3) combining collective implementation and market-based (value chain) financing, as well as result-oriented payment via the carbon market. The other 1 (FI5) represents a carbon market solution combining value-chain, as well as elements of collective implementation and result-orientation. 1 contract solution is a combination of collective/collaborative implementation and land tenure (PL1) and 2 contract solutions combine result-based and collective implementation/collaboration contract elements (IRL1, BE3). In the table, grey cells indicate elements of contract types that are present in the contract solution, while not shaping the overall contract design. In the following paragraphs, the in-depth case studies are introduced and sketched particularly considering the types of contracts.

Result-based/result-oriented contract solutions

3 of the result-based contract solutions represented by the CONSOLE in-depth case studies are publicly funded. 2 of these cases are integrated into the countries' Agri-Environmental-Schemes (AES), under the national rural development programs (AT3 and IRL2, while IRL2 solely represents a pilot for future integration.) 1 case study is publicly funded, however it is not part of the national RDP (IRL1).

The Result-based Nature Conservation Plan (RNP) (AT3) is a public-sector, national result-based measure, integrated into the Austrian agri-environmental-scheme (AES) of the national Rural Development Program (RDP) and implemented on level of individual farms. Basis for the result-based payments is to reach farm- and area-individual nature conservation objectives, measured via specific control criteria. Objectives and criteria are developed by ecological experts together with the individual farmer (facilitated by a private environmental agency), based on the status of the area. Area objectives are normally the basis for the management decisions of the farmers, while these decisions are fully flexible and only recommendations are given by the ecological experts to reach the objective. Control criteria are the basis for the technical control of compliance, carried out by AgrarMarktAustria (AMA) (Austrians National control authority for ÖPUL). Control criteria need to be fulfilled to be eligible for payment, while non-compliance leads to sanctions.

The "Results-Based Agri-Environment Payment Scheme (RBAPS) (IRL2) was a pilot for a public-sector, national, result-based AES integrated into the Irish Agri-Environmental-Scheme. It was implemented on 35 individual low-intensive beef cattle and sheep farms in two pilot regions. The farms were initially assessed, and specific and appropriate biodiversity targets were assigned to them. The performance of reaching the individual targets was scored on a scale ranging from 1 to 10 by the team of ecologists. Farmers were then paid accordingly a sliding scale. Payment rates for the low-medium quality scores were set at a level sufficient to cover costs, higher scores were incentivised by payment increments. The pilot was accompanied by trainings on scheme concept, comparison with management-based schemes and the RBAPS Pilot scheme aims, as well as field trainings for each measure on the use and understanding of the applicable scoring assessment, the rationale for the results indicators and discussion on optimal management to achieve the best possible outcome (and payment).

The case study IRL1 represents a public-funding result-based solution, which is however not integrated into the national RDP. The BurrenLife program (IRL1) was developed out of the Burren LIFE+ project (2006 - 2010), as part of the Burren After-Life Conservation Plan. The program has evolved over almost 20 years using various EU funding sources. Now it is a regionally targeted, farm-level contract solution, co-funded by the EU and the Irish Department of Agriculture. The program combines 2 main interventions, one rewarding environmental

performance by a result-based approach, one representing a fund to carry out self-nominated ‘conservation support actions’ to help to improve this performance over time. Participating farmers are offered 5-year contracts, outlining the baseline situation on the farm, and suggested individual priority actions to improve the farm environment. Environmental targets and the action plan are set by the farm advisor. Farmers implement the plan and perform along a scoring system to ensure payment, which depends on the score they receive on a per hectare basis. The payment system is designed to encourage improvements in management and site condition, rather than settling for the status quo: no payments are issued for scores less than 5, based on the assumption that this basic level of management is already covered under BPS and/or AES measures, and so a greater effort is required for payment under the Burren Program.

3 of the clearly result-based contract solutions represented by the CONSOLE case studies were brought to life by private and/or civil society initiatives, enabling private investors to enter an “AECPG” market. These examples are AT4, NL3 and FR3:

The Humus-Program of the Ökoregion Kaindorf (AT4) represents a private, plot-level, result-based contract solution, creating a carbon-market by enabling the trading of CO₂ certificates from medium-term carbon sequestration in agricultural soils. Farmers voluntarily enter the carbon market with their fields. At present the program attracts mainly arable land use, but principally also grassland plots can take part. The trading system is based on soil sampling, monitoring increases of humus content on the fields over a sequestration period of 3 to 7 years, and a control sampling 5 years after the sequestration phase. An “increase” is defined by enhancing humus content by at least 0,2%. Soil sampling is carried out by certified civil engineers, soil analysis for carbon content is carried out by the Austrian Agency for Health and Food Safety (AGES). Additionally, a private company analyses further specific soil parameters. Soil sampling is paid by the farmers. Management decisions on how to increase humus levels are fully free to the farmers, however recommendations are given by the initiator “Verein Ökoregion Kaindorf”. The measured increase of humus content during the sequestration phase is converted into amount of CO₂ sequestered, farmers are then paid a fee of 30€/t CO₂. The fee is financed over a carbon-market system where companies/private persons buy certificates for voluntarily compensating their unavoidable CO₂ emissions. The voluntary contracts with farmers as well as the soil samplings are organized and managed by the association “Verein Ökoregion Kaindorf”, CO₂ trading is facilitated by an Ltd.

The Biodiversity Monitor for Dairy Farming (NL3) resulted from an initiative of the three partners WWF-NL, Rabobank and Duurzame Zuivelketen (sustainable dairy initiative), in collaboration with scientists, experts, and stakeholders. The monitor is based on a methodology of measuring the biodiversity-enhancing performance of dairy farms, by analysing a set of 7 key performance indicators, linked to biodiversity, but also to soil, landscape, environment, and climate. Along these indicators dairy farms are scored and can then be benchmarked for their biodiversity performance. The monitor enables the private and public sector to establish farm-level contracts for incentivizing good performance: Performance results can be linked with contractual financial rewards from voluntary supply-chain stakeholders and/or other private/public stakeholders. Current contracting parties rewarding good biodiversity performance of farms are Friesland Campina (dairy cooperative) via the milk price, Rabobank via loan discounts and the province of Drenthe by providing subsidies.

In the private-sector Eco-Methane (FR4) program, enteric methane emissions of dairy cows are modelled. Modelling of methane emissions is based on a nationally and internationally well recognized technology, implying frequent analysis of feed components, milk yield and the profile

of fatty acids via (monthly) infra-red milk analysis. The modelled emissions of the individual farms are compared to a regional reference. Modelled methane emissions lower than the reference constitute the basis for rewards. Funds for rewards are collected by the Bleu-Blanc-Coeur fund for health-oriented agriculture, the payments are granted by the private association "Bleu-Blanc-Coeur". Donors to the fund are private and public sector e.g. companies, collectivities, private individuals, municipalities, etc. Rewards to the farmers take the form of vouchers or communication tools.

Another “form” of result-oriented contract solution is represented by the case study BE3, representing a European labelling initiative:

The Wildlife Estates Label (BE3) in Flanders is a result-oriented EU initiative, targeting the maintenance and development of high standards of wildlife management, with emphasis on habitats, involving all aspects of multifunctional estate management (www.wildlife-estates.eu). Participation is based on a voluntary commitment to the so-called WE Charter, and the WE label is awarded for a 5-year term to estates or territories. The label recognises landowners and managers for their commitment to voluntary sustainable wildlife management. The suitedness of a territory for the label is assessed according to a scientific based method, which has been adapted to national or regional specificities. Established infringements on the WE Charter can lead to suspension or revocation of the WE Label. Wildlife Estates regularly communicates about best practices and optimal management techniques that are developed and applied by members. It also informs the general public about the importance of estates in ecological, economic and social terms. The WE label involves no payment to farmers/landowners, rather a lump sum fee has to be paid by the individual estates and territories to be able to carry the label.

The hybrid contract solution represented by the case study FI3 is a private and carbon market sector oriented initiative, combining elements of collective implementation, value-chain activation, but also some form of result-orientation:

The Carbon market “Hiilipörssi” (FI3) is a private carbon-market initiative. It collects funds through an online donation service, owned by the Finnish Association for Nature Conservation (FANC). Compared to the result-based FR4 and AT4, both targeting climate regulation, Hiilipörssi is rather results-oriented than results-based, including collective elements and is strongly market-sector oriented. Also, Hiilipörssi addresses areas rather than individual forest owners: The Carbon market facilitates the purchase of carbon stock certificates for reducing greenhouse gas emissions and increasing carbon storage via peatland restoration. Carbon certificates are however not balanced by measured emissions actually mitigated, but are mirrored by ditched peatland area, which is voluntarily brought into the carbon market by individual landowner or collectively by several landowners (private persons/foundations) as a potential area for restoration. The suitability of the peatland for restoration is assessed by experts of the Carbon Market. If suited, the area is agreed by the landowners to be restored following an expert-based restoration plan and subsequently to be transformed into a private protected area. Private investors/donors buy certificates at fixed prices per ha (800€/ha), financing the areas’ restoration. The land remains in the property of the landowners, whereas they don’t receive any payment from Carbon Market as the peatlands are not productive and don’t typically result in economic returns.

Collective implementation/Cooperation

5 of the CONSOLE in-depth contractual solutions based on collective implementation or cooperation/collaboration are publicly funded and integrated into the national RDPs (IT1, IT6, NL1, UK1 and UK3). 1 case study representing collective implementation is publicly funded, but

not part of the national RDP though (PL1).

The public-sector collective program “Incentives for collective reservoirs” (IT1) has been introduced in the Italian RDP since 2007 – 2013. The program aims at ensuring a stable water supply for the agricultural sector, and at the same time the reduction of groundwater consumption. Financial support is granted for the collective construction of small-medium irrigation reservoirs, in the form of partial coverage of construction costs. For support, projects need to involve a minimum number of farmers and a minimum and maximum threshold for reservoir capacity.

The public-sector collective program “Integrated territorial projects (ITP)” (IT6) was developed within the Tuscan RDP 2014-2020. ITPs are projects that involve the aggregation of public and private subjects by joining a Territorial Agreement or contract aimed at solving specific environmental problems (hydro-geological risk, soil quality, biodiversity, water retention and landscape enhancement) and implementing strategies aimed at mitigating or adapting to climate change and increasing the value of the agricultural landscape, the green infrastructure to support fauna and enhancing the supply of local productions. ITPs aim at dealing with specific environmental problems at territorial level, by bundling incentive payments within the EU RDP funding scheme. To this aim, the ITP requires the establishment of a territorial partnership which aggregates public and private subjects. Once approved, the ITP allows the direct activation and funding from different environmental related sub-measures/operations of the current RDP. Key element of the ITP is a leading entity to coordinate the management of the proposal, to manage network activities, to monitor the progress of material investments, and to ensure the implementation of the project and its effectiveness/efficiency. The territorial agreement is signed by all involved private and public parties which, for at least three years, are linked to each other by contractual constraints regulating mutual obligations and responsibilities regarding the realization of investments aimed at achieving the territorial objectives set in the project.

The public-sector “Kromme Rijn Collective management” (NL1) is an example of a collective AES within the Dutch RDP. Under the collective AES, local cooperatives arrange and execute measures to improve the provision of AECPGs. The collective includes land-owners as members and organizes payments for specific nature management actions performed by farmers. Also, it brokers between land owners and organizations/companies that implement specific nature management actions and bears the responsibility for monitoring and control. The collective is certified by the national certification institute for agri-environmental management and has its own quality assurance controllers. In the collective AES, areas eligible for agri-environmental management as well as objectives are set by the provinces and defined in a regional management plan. The collective translates the province-level nature management plan into an operational agri-nature management strategy and –based on this – requests subsidy at the national government and the province. Provinces set a cap on the subsidy level for different sub-regions and different nature targets and provide the funding to the collective. The collective pays the actors that do the management (farmers, private companies). In the case of Kromme Rijn, the collective in charge has been established by four associations for nature in agricultural areas (ANV, agrarische natuurvereniging), the farmer’s organization (LTO), and the private land-owners’ organization Utrecht. A foundation that aims to connect landscape and cultural heritage (Landschap Erfgoed Utrecht) plays an advisory role.

The public-sector “Countryside Stewardship Facilitation Fund (CSFF)” (UK1 and UK3) was developed to support delivery of the UK’s RDPs through schemes such as the Countryside Stewardship Scheme and the Environmental Stewardship Scheme. Its purpose is to provide a focused targeting of environmental benefits across land holdings with AES agreements. It is

administered by the Rural Payments Agency (RPA) on behalf of the Department for Environment, Food and Rural Affairs (Defra). The governmental agency Natural England provides technical advice in support of the scheme. The CSFF provides funding to facilitators who interlink land managers (farmers, foresters, other land managers) to improve the local natural environment at a landscape scale. CSFF cooperative networks require a minimum number of 4 farmers, a maximum number of 80 members, and a minimum of private land of 2,000 hectares to be eligible for funding. Key element of a CSFF network is the employed network facilitator, facilitating meetings between, and training of, land managers, focusing on increasing the probability of delivering higher quality environmental public goods through better environmental management and by supporting knowledge transfer. CSFF groups' mean annual value of AES agreements by 2020 was between £12k and £27k according to Defra. The South Pennines CSFF (UK1) represents a network of 60-80 farmers/land managers aiming at delivering multiple environmental benefits in the area. The Wensleydale CSFF (UK3) represents a network of 34 farmers and land managers aiming at improving natural flood management. Both CSFFs were particularly successful in mobilising AES allocation and other funds in the direction of their environmental objectives.

The program “Podkarpacki Naturalny Wypas” (PL1) is a (local) government funding initiative to preserve, protect and restore biodiversity in valuable natural areas (as part of the Region Development strategy 2020) through extensive grazing of livestock in the meadow-pasture areas of the Podkarpackie Voivodeship. The program is coordinated by the Marshal's Office of the Podkarpackie Voivodeship (Local Government) and bases on an annual open call, in which non-profit organizations (e.g. foundations, associations, NGO cooperatives) and other eligible parties can apply, offering to arrange grazing on specific grasslands by subcontracted farmers (breeders of cattle, horses, sheep, goats and deer) who provide animals and grazing land. Rights of disposal of land and animals must be documented in the offer, animals must be registered in the database of the Agency for Restructuring and Modernization of Agriculture or the Horse Breeders Database and/or the regional veterinarian database. Moreover, the animals must be kept in compliance with animal welfare norms, they must stay on the farm throughout the entire pasture period, and stocking densities need to range only within 0.4 - 1.0 Livestock units (LU)/ha. As regards payments, they are provided to the contracted NGO organisations, which then transfer funds to the sub-contracted farmers. The program also includes the building of social capital: the contracted NGO organisations must organize at least 4 training courses for farmers, beekeepers, and school pupils concerning specific topics related to biodiversity and ecological awareness. The effectiveness, reliability and quality of implementation of the program as well as the correctness of spending public funds and properness of record keeping is controlled by the Voivodeship, at least 10% of beneficiaries are controlled.

Also publicly funded, however being characterised by a different type of implementation than the collective approaches above, the 2 in-depth case study examples *Nutrinflow* and *3WatEr* (LV1, BE3) are implemented in line with the European project funding schemes INTERREG and LIFE+

The collaborative public-sector funded project “NUTRINFLOW” (LV1) ran under the INTERREG Central Baltic Program 2014-2020. The project aimed at the introduction of good practice examples of environmentally friendly drainage systems. The project had a special focus on working with farmers and landowners, bringing them together with scientists, planners and technical consultants, technology developers and local authorities within local innovation groups. These groups searched for practical and low-cost innovations that could be used for flow and nutrient management, such as environmentally friendly ditch clearing, two-stage ditches, bottom

dams, sedimentation ponds, wetlands, adapted and integrated buffer zones and controlled drainage. The project funded and implemented concrete investments for the introduction of environmentally friendly elements on the drainage systems connected to the Ailes stream. Contracts with the landowners mainly allowed access to the Ailes stream and to manage the coastline (buffer zones) of their land for the construction of pilot elements. No payments have been issued to the farmers, while the benefit has been seen in the more effective use of nutrients and a better nutrient balance.

The “Triple E Pond area M-L project” (BE3) is a collective LIFE+ project implemented in the Midden-Limburg pond area. The project had mainly biodiversity objectives and was initiated by 10 local private landowners who, together with other stakeholders, created a private association (OVML vzw). Private, voluntary contracts were signed between OVML vzw and the landowners, detailing the implementation of the project on basis of an integrated management plan including concrete conservation actions. OVML vzw acted as “associated beneficiary”, therefore receiving the funds and further dispatching these to the participant landowners according to the terms of the agreements signed. Monitoring and evaluation of the impact of the actions on the selected habitats and species were subcontracted to an independent body. Monitoring referred to the expected results and contained the list of indicators, their values and the conservation status of habitats and species before and after the execution of project actions. After the lifetime of the project, an after-LIFE conservation plan consolidated all intentions and initiatives and guaranteed the maintenance of results.

Another hybrid solution, combining strong characteristics of collective implementation, but also containing elements of activating the value-chain and impacting on land ownership is the case study *Tuohi* from Finland (FI5):

TUOHI (FI5) is a 500 ha multi-owner forest property, representing a juridically private entity, established according to the Act on Jointly Owned Forests in Finland. The TUOHI forests are located in several provinces while the operating area is the whole of Finland. TUOHI has approximately 45 shareholders/contractees who invest into TUOHI with his/her own forest property by merging it into the jointly owned forest. After merging, the forest property is managed according to TUOHI's forestry regime, which implements a continuous uneven-aged forest management and thus avoids clear cutting. Cutting operations are performed by individual entrepreneurs. The shareholders of TUOHI are not participating on the operative level, but an agreed number of them are annually elected to TUOHI's administrative board. Jointly owned forests are principally privately financed. Private investments are received in form of forest property or invested money by the shareholders. The timber cut from TUOHI forests can be sold as “Clear cut free wood products” and there is a brand co-operation with Jukola Lumber Ltd. The profits from timber production are shared in relation to the share of ownership. Due to the accepted management regime, TUOHI has no specific external but rather internal control mechanism (e.g. annual partnership's meeting of all shareholders). However, the applied forest certification criteria must be fulfilled. In applied PEFC group certificate, controlling is focused more on areal and entrepreneur/contractor performance, and less on property level.

Contractual solutions based on the value chain

3 of the in-depth case studies represent value-chain approaches, mainly aimed at fostering the marketing of organic products. These cases are the *Wild farm*, BG3, *BioBabalscy* (PL4) and *Organic Wine from Rueda* (ES2)

“The wild farm” (BG3) is a private market-oriented value-chain initiative for the improved

marketing of organic beef and the implementation of nature-based farming beyond organic. “The wild farm” includes 4 organic farms situated in a high-nature value habitat with globally endangered species. The mission of the 4 organic farms is to implement as many conservation measures as possible beyond organic in order to support local biodiversity (e.g. maintenance of pastures consistent with the nesting regime of local bird species). Moreover, part of the animals of “the wild farm” are local rare breeds. Key element of the initiative is an own slaughterhouse being the first one certified for organic meat in Bulgaria and as that opening the Bulgarian market for national organic products. The distribution of the products is guaranteed by a contractual agreement between “the wild farm” and an organic distributor (Bio Balev supermarkets).

“Bio-Babalscy” (PL4) is a private, market-oriented value chain initiative for the marketing of organic grain products. Bio-Babalscy itself is an organic farm and a pasta producer, cooperating with about 90 certified organic farms as suppliers. Besides being organic, the supplier farms have to produce rare and old varieties of cereals as required by the processor. To enable farms to meet this requirement, the processing company provides seeds and advice. Products are sold at high prices at the market, while high prices are reflected in grain prices for suppliers. The specificity of the initiative is the distinctively close relationship between the company owner and the suppliers, which is described as a close partnership rather than a typical buyer – seller connection. The relationship is characterized by a high level of trust and almost equal bargaining power due to the fact that all partners in the chain are aware of their mutual interests and is reflected in mainly verbal agreements/handshakes as contractual basis. Farmers value assured payments and good prices, but also the possibility of selling large quantities of products.

The initiative “Organic wine in Rueda” (ES2) is based on the contracts between organic grape producers and the winery Herederos del Marqués de Riscal, S.A. The initiative is connected to specific labels, promoting organic wine products. The winery exclusively buys grapes from local individual organic grape producers and products, bottles and sells the wine under the 2 labels Marqués de Riscal organic and Marqués de Riscal Sauvignon Blanc organic. The Riscal brand is an economic factor for the whole region. It also immensely influences the tourism sector, since Rueda wine is very important in the local tourism and gastronomy. In the end the Riscal wine reaches the consumer in the form of high quality wine. The grape producers are not associated; however, they are integrated into the value chain by complying to the winery standards and have periodic controls on quality and residues, and have a strict protocol of organic production of high standards.

In contrast to the 3 contracts solutions above, all building up on organic production, the programs *Carta del Mulino* by Barilla (IT4), and the *Water protection bread* (DE2), represent private, market oriented value chain approaches defining own production standards, independent of public funding for the contractees.

The Barilla program “Carta del Mulino” (IT4) is a private-sector value chain contract solution targeting biodiversity, which has been introduced for farmers supplying Barilla’s bakery brand Mulino Bianco with soft wheat. The contract solution potentially covers several areas across Europe and beyond. Most of the contracts are however in Italy, France, Germany, and Austria. The contract itself represents an agreement between farmers, mills and/or agricultural elevators/storages/traders and contains ten rules of production (defined together with WWF, UNITUSCIA and UNIBO), defined in an ISCC PLUS certification for soft wheat, providing the assurance that mills, bakeries and farmers adhere to sustainability, traceability and no-deforestation requirements. For the specific production line “Carta del Mulino”, Barilla commits to sourcing 100% of the soft wheat from ISCC certified sustainable agriculture according to the

10 rules. Carta del Mulino encompasses the specific measures for improving biodiversity with payments to farmers to compensate for lower yields. Annual audits are carried out by an independent third-party control body to all subscribers to the “Carta del Mulino” project. 30% of the total farmers are tested.

The initiative "water protection bread (Wasserschutzbrot)" (DE6) has been initiated by the government of Lower Franconia with financing from the Bavarian Ministry of the Environment for project management/communication strategy. The initiative engages actors of the whole value chain and aims at the protection of ground and drinking water through a sustainable and regional wheat value chain. Based on voluntary commitment declarations of farmers, mills, bakeries and water suppliers, selected varieties of wheat are cultivated under specific fertilizer conditions (max. 160 kg N/ha, no late fertilisation). As a general rule, the mills pay a surcharge on voluntary basis in order to compensate for the lower protein content that usually leads to a price reduction. In addition, the participating farmers get 100 to 150 EUR/ha for the fields belonging to the water protection bread initiative if located in water protection areas as a compensation for reduced yields. Farmers commit to regular soil analysis from the participating wheat fields and a detailed field recording with all management practices. Mills separately process water protection grain and bakeries commit to use at least 50% of their annual wheat flour grown as water protection wheat. Annual controls for compliance are performed for all participants (by local water supplier/FiBL) and the participants are committed to provide relevant information (fertilizer amount/wheat yields/amounts of milled wheat/wheat flour used in bakery products/Nmin) from each of the concerned wheat fields. Consumers awareness is raised by a specific label and via information signs on the fields.

The last value chain based contract solution represented by the CONSOLE in-depth studies is the case of *integrated production* (ES4), bringing higher prices and competitive advantages on a highly competitive market:

“Integrated production (IP)” (ES4) in olive groves is a widely applied public certification contract solution in Andalusia with growing participation. Particularly due to the strong competition in the olive sector, IP constitutes a sustainability brand usually linked to a better market price. IP contracts are based on the IP regulation which establishes a series of prohibited, mandatory and recommended management practices. To enter the IP contract, area must be integrated into an IP association (APIs) and follow the management recommendations and requirements during the contractual period. Recommendations are advised by expert personnel, while the regional administration provides information on the use and application of different amendments based on expert knowledge and pest risk forecasts. Compliance with the requirements and consequently certification is monitored on an annual basis through the registration of documentation, control of the plot, etc.

Contract solutions based on land-tenure

2 of the case studies representing contractual solutions based on land tenure (BG4 and LV2) are implemented in the aftermath of LIFE + project, in which land was bought and is now leased to interested farmers who continue environmentally friendly management:

In Strandzha and Sakar mountains (BG4), a land-tenure contract solution guarantees the conservation and restoration of grasslands for restoring local biodiversity and endangered bird species. The contract solution follows the implementation of a LIFE+ project, which implied the purchase of a huge amount of area by the Bulgarian Society for Protection of Birds. Under the land tenure contract, the over 600 ha land bought is leased out at no charge to around 20 farmers,

with requirements to restore and maintain the pastures in an environmental way. The main requirements focus on the conservational maintenance of the pastures, incl. restoration of bushland pastures, removing unwanted vegetation to maintain mosaic habitat, sustainable management of grassland through livestock grazing or mowing and restoration of grassland by restoring grassland naturally or by sowing native grass species. Farmers mainly benefit by receiving grazing and haying for animal husbandry without payment. By covering the specific requirements set into the contract with the NGO they also can apply for AES.

In the Dviete floodplain area (LV2), during the implementation of the LIFE+ project "Restoration of Corncrake habitats in Dviete floodplain Natura 2000 site" (2010-2015), contracts on grassland restoration have been concluded between the Latvian Fund for Nature (LFN) and the landowners, who carried out the grassland restoration and got reimbursed for their activities. These contracts included also the requirement to maintain the restored areas after the implementation. Therefore, land lease agreements or agreements on grazing of biologically valuable grasslands have been concluded between the Dviete Valley Parish Association (DVPA) and the landowners. These contracts cover both grassland areas restored to pasture-land within the LIFE + project and areas pastured already before. Land leasing contracts were originally designed to last for 4-5 years, now for 10 years. When the cooperation agreement expires, a new contract is negotiated between the owner of the land and DVPA.











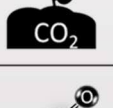



The 3rd case study representing a land tenure-based contract solution (FR1) is implemented on publicly owned land, which is leased out to a farmer for environmental management:

In Brest Métropole, a land tenure contract is in place to implement eco-grazing (FR1) for managing some of the Métropole's green spaces instead of the conventional mowing. Contractors are the Brest Metropole (Head of Green Spaces) and a professional breeder who practices eco-grazing on the green spaced against payment for providing the eco-grazing service. Green Spaces and the breeder agree on the management of the pasture on the plots, ensuring balanced feed availability and grass height. Management planning is based on weekly visual monitoring of the condition of the plots. The breeder's responsibility is to provide a herd, while the number of animals is jointly determined with Green Spaces (the breeder adjusts according to his own appreciation of the feed availability of each plot at a given time). The breeder is moreover responsible for the weekly movement of the sheep, the health management of the herd and the emergency interventions (escapes, diseases, etc.). Also, Green Spaces are responsible for the supply, installation and maintenance of the fences, the provision of water and the daily visit to the lots of sheep on the plots (counting, lame detection, sick animals). The contract takes the form of a public tender and has a length of 6-years, to guarantee a long-term vision for the breeder.

4.2 Agri-Environmental-Climate Public Goods (AECPGs)

As regards AECPGs considered in the in-depth case studies, except “air quality” all AECPGs from the CONSOLEs list (see Box 1) are covered.

CONSOLE considers 14 AECPGs:

	Landscape and scenery		Resilience to natural hazards
	Recreational access / Improvements to physical and mental health		Rural viability and vitality
	(Farmland) biodiversity		Cultural heritage
	Air quality		Quality and security of products
	Soil quality (and health)		Farm animal health and welfare
	Climate regulation- carbon storage		Water quality
	Climate regulation- greenhouse gas emissions		Water quantity (e.g. water retention)

Box 2: CONSOLE list of agri-environmental-climate Public goods (AECPG)

Fehler! Verweisquelle konnte nicht gefunden werden. gives an overview on the different AECPGs primarily addressed as the main focus of the individual contract solution (green), as well as the AECPGs secondarily addressed as subordinate AECPGs (yellow). From the combination between contract solutions and AECPGs addressed, some patterns become obvious:

Biodiversity is the AECPG most often addressed by the contract solutions investigated in the in-depth studies: 19 out of the 26 in-depth studies deal with the improved provision of biodiversity and habitats as a primary AECPG. 6 in-depth studies have improved provision of biodiversity/habitats as the sole main AECPG targeted. The AECPG following in frequency is landscape and scenery, being primarily and secondarily addressed in 15 in-depth studies, however always in combination with the provision of other AECPGs and never as the sole main PG targeted. Further AECPGs often considered in the in-depth studies are water quality, rural viability and vitality and cultural heritage, as well as soil quality. Climate PGs, such as carbon sequestration and GHG emission mitigation, as well as water related AECPGs are in parts addressed as sole, primary AECPGs by the contract solution.

It also becomes obvious that particularly result-based and result-oriented contract solutions are strongly targeted to the improvement of only selected, specific AECPGs. In contrast, particularly collective implementation/collaboration contracts, often taking a landscape/territorial approach and considering more dimensions of public good provision, often aim at broader AECPG objectives, targeting multiple AECPGs up to a maximum of 7 AECPGs (IT6).

Table 2: AECPGs addressed by the CONSOLE in-depth studies

Country	ID	Contract types*				AECPGs**													
		RB/RO	CO/COP	VC	LT	Landscape and scenery	Recreational access/Health	Biodiversity / Habitats	Air quality	Soil quality	Carbon sequestration	Mitigation of GHG-emissions	Resilience to natural hazards	Rural viability and vitality	Cultural heritage	Quality/security of products	Animal health and welfare	Water quality	Water quantity
AT	AT3	X																	
IRL	IRL2	X																	
AT	AT4	X																	
NL	NL3	X		X	X														
FR	FR4	X		X															
IRL	IRL1	X	X																
BE	BE3	X	X																
FI	FI3	X	X	X															
IT	IT1		X																
IT	IT6		X																
UK	UK1		X																
UK	UK3		X																
NL	NL1		X																
LV	LV1		X																
BE	BE1	X	X																
PL	PL1		X		X														
FI	FI5		X	X	X														
BG	BG3			X															
PL	PL4			X															
DE	DE5			X															
IT	IT4			X															
ES	ES2			X															
ES	ES4			X															
BG	BG4				X														
FR	FR1				X														
LV	LV2				X														

*Contract types: RB/RO: Result-based/result-oriented contracts; CO/COP: Collective implementation/cooperation; VC: Value chain-based contracts; LT: Land tenure-based contracts

**AECPGs: green box: Main AECPG objectives addressed by contract solution; yellow box: Additional AECPGs considered by the contract solution

Result-based/result-oriented contract solutions and AECPGs

In the CONSOLE in-depth sample, most result-based/result-oriented contract solutions (and combinations of contract types with a strong results-based component) address primarily biodiversity (AT3, NL3, IRL2, BE3) and climate regulation (AT4, FR4, FI3). Also in the contract

solution IRL1, where a broader bundle of AECPGs is addressed, the result-based element of the contract solution finally focuses on a small number of AECPGs, namely biodiversity and water quality.

Result-based/result-oriented contract solutions and the AECPG biodiversity

The results-based contract solutions *RNP* (AT3) and *RBAPS* (IRL2), in their current status both target farm-level biodiversity in connection to specific habitats worthy of protection: Austria's *RNP* (AT3) focuses on biodiversity in utilised agricultural nature conservation areas - mainly in Natura 2000 areas, biosphere reserves and other valuable landscapes or as habitats of species listed in Annex IV of the Flora Fauna and Habitats (FFH) Directive. Biodiversity objectives are developed plot-individually by ecologists together with the farmer, and can include flora and fauna targets. In IRL2, the *RBAPS* targets biodiversity of species-rich grasslands and high nature values settings, as well as lowland semi-natural grasslands, and Special Protection Area under the Birds Directive (79/409/EEC). *RBAPS* biodiversity targets are not defined farm- or plot-individually, but consist of a set of biodiversity objectives characterising the specific habitat targeted. Biodiversity objectives include sets of indicator key species, such as plants, but also further aspects such as vegetation structure, damaging activities, etc. which need to be assessed and improved on farm-level. Also, the *BurrenLife program* (IRL1), particularly in its result-based component targets biodiversity of a specific habitat, namely the high nature value farmland in the Burren. The Burren is an UNESCO Geopark characterized by the presence of exposed limestone and large areas designated as Special Area of Conservation (SAC). Besides biodiversity the program is also devoted to the improvement of water quality and water usage efficiency, and the maintenance preservation of landscape and cultural heritage. As regards biodiversity, every eligible field of species-rich Burren grassland and heath is assessed annually as regards 'habitat health'. Similar to *RBAPS* (IRL2), biodiversity is addressed via a set of biodiversity objectives targeted to the specific habitats of the Burren, that can be reached farm-individually. Besides biodiversity conservation aspects, such as the abundance and diversity of species, biodiversity objectives include also management aspects such as grazing/mowing regime, feeding of livestock, impacts of management on water and soils. In contrast to having a focus on specific habitats, the *biodiversity monitor in dairy farming* (NL3) targets biodiversity in the context of the specific dairy farming system. Biodiversity objectives are approached by 4 biodiversity pillars, being functional agrobiodiversity, diversity of landscape, diversity of species, and regional biodiversity, all being reflected in key performance indicators connected to farm-level agricultural management, such as percentage of grassland, regional protein input, nitrogen soil surplus, etc.

Result-based/result-oriented contract solutions and AECPG climate regulation

The private result-based program *ECOMETHANE* (FR4) and the *Humus program of Ökoregion Kaindorf* (AT4) both focus on climate regulation at farm-level, directly addressing GHG mitigation and carbon sequestration. The *ECO-METHANE* (FR4) program is devoted to lowering farm-level enteric methane (CH₄) emissions from dairy farming. CH₄ emissions are farm-individually addressed by a calculation based on 2 measured indicators, namely the profile of fatty acids of the milk collected, and the milk yield. The humus program of the *Ökoregion Kaindorf* (AT4) is devoted to farm-level soil carbon sequestration via humus accumulation on (currently) arable land. The climate-PG objective is CO₂ stored in the soil as carbon, over a minimum period of 3 years. Amount of CO₂ stored is assessed plot-individually by a standard process of soil carbon analysis via dry combustion, based on soil sampling. The Carbon market *Hülpörssi* (FI3) addresses carbon sequestration via peatland restoration. Rather than on the mitigation/sequestration of CO₂ itself, the climate PG objective is on restoration measures of peatland areas worthy of restoration, which *potentially* leads to CO₂ mitigation/sequestration. The

background of this PG objective lies in the functioning of peatland as carbon sinks under natural hydrologic conditions. Drainage alters the hydrology of mires and the cessation of peat accumulation, turning them from carbon sinks to sources of increased carbon emissions. Also, drainage destroys mire vegetation and leads to biodiversity loss. The restoration of the drained peatlands targeted by Hiillipörssi, e.g. by filling in and damming the ditches and removing the part of growing trees, aims to gradually restore natural mire hydrology and original mire vegetation, and turn the peatland back to a carbon sink.

Labelling biodiversity on territorial level

The *Wildlife Estates label (BE3)* addresses wildlife biodiversity on the superordinate level of territories, with a focus on fauna. At this, the label considers the environmental conditions of a territory, as basis for wildlife biodiversity from a multifunctional perspective: biodiversity objectives to be reached to obtain the label include a variety of 12 criteria, such as the presence of certain species, the status of the habitats, including the level of stillness/tranquillity/-surveillance, but also the existence of measures and plans settling the basis for wildlife biodiversity or actions related to communication, etc.

Collective implementation/cooperation contract-solutions and AECPGs

Contract solutions putting forward collective implementation or cooperative elements, often address a territorial/landscape level of AECPG provision and therefore mostly target a broader bundle of AECPGs. Beyond that, from the in-depth studies it becomes evident that such solutions are particularly applied to AECPGs being delivered “across field borders”, meaning AECPGs which can hardly be improved by measures on singular fields and plots. Besides biodiversity, which is also in the collective/cooperation in-depth case studies the most often addressed AECPG, this accounts particularly for water related AECPGs (quantity and quality) (IT1, IT6, UK1, UK3, LV1), and resilience to natural hazards (IT6, UK1, UK3, BE1, FI5), both being hardly addressed by any other of the contract solution types presented in the 26 in-depth case studies.

Collective schemes targeting multiple AECPGs

In most collective schemes embedded into national RDPs and organized as forms of tenders, rather comprehensive regional/landscape environmental objectives are the basis for the derivation of concrete and operational targets of AECPG conservation/provision/enhancement. These operative AECPG targets and related management measures are then mostly defined in an integrative process between the participants of the respective collectives. In the Dutch AES case of *Kromme Rijn collective management (NL1)*, the targets for nature management set by the province in the province-level annual nature management plan are on nature, landscape, agricultural nature and landscape management, while landscape management aims at fostering landscape diversity. Focus is on the maintenance of characteristic landscape elements such as levees with tree lines, small patches of forests, wooded banks, ponds, and small traditional orchards and on the maintenance of small patches of wet species-rich grasslands that are extensively managed through mowing, combined with tree lines and small fields. In the lower and wetter part of the region, the creation of habitats for specific amphibians is targeted as AECPGs objective, including the great crested newt, several owls, and several bat species.

In the development of the *Integrated Territorial Project (ITP)(IT6)*, for the area of the Tuscan archipelago the project consortium defined 2 classes of main environmental criticalities, being environmental and hydrogeological instability, and biodiversity. Derived from that, a broad variety of AECPG needs and objectives are addressed, ranging from the dissemination of good agricultural practices for the prevention of erosion and runoff and the uptake and increase of reservoir capacity, to the construction and restoration of traditional hydraulic-agricultural arrangements protecting against landslides and erosion (dry walls, bridles, embankments, water

streams), the construction and restoration of the connectivity network useful for the transit and proliferation of minor fauna in the agricultural sector (dry stone walls, ponds, plantations, wetlands), the diffusion of knowledge and awareness regarding the overall state of health of natural biodiversity in the agro-ecosystem, the development of an integrated and compatible strategy for crop protection, and the recovery of sites with high naturalistic value.

Also under the public *Countryside Stewardship Facilitation Fund (CSFF)* funding program in UK1 and UK3, under the broadly formulated RDP funding target of “improving the local natural environment at a landscape scale”, AECPG targets are comprehensive though specific for the landscapes covered by the respective networks: In the *South Pennines CSFF (UK1)*, where the group members’ land holdings are in the proximity of Special Protection Areas (SPA), Special Areas of Conservation (SAC) and the South Pennines Moor Site of Special Scientific Interest (SSSI), and characterised by a relatively high altitude, the interest of the CSFF network revolves around moorland restoration and enhancement, grassland habitat creation, and enhancing and expanding riparian habitats to benefit flood risk management and water quality, while considering afforestation practices as well. Interest is also on soil quality and acidity, as grass qualities are insufficient for sheep feeding. Derived from the overall interest, concrete goals of the network deal with the restoring of drystone walls to reduce soil erosion and sediment transfer and strengthen the landscape character. Further objectives are the enhancing of existing woodlands and the expansion of woodland to support landscape character, biodiversity, water quality and flood risk, in addition to wider climate change, economic and social benefits. Furthermore, enhancing and expanding the area of wetland and riparian habitats to benefit flood risk management, water quality, landscape character and biodiversity, and restoring or maintaining the South Pennine Moors and its co-joining, un-designated, low-input grassland habitats, to meet the needs of priority birds species, are AECPG objectives of the CSFF. The *Wensleydale CSFF (UK3)* network was set up to adapt part of the participating farmers’ land to be more resilient to flooding, and to improve the local natural environment and landscape. Concretely, targets were to foster the creation, restoration and management (with an emphasis to significantly improve water quality, air quality and natural flood management) of the top priority habitats of upland heath, blanket bog, flushes and fens, ancient and native woodland, purple moor grass and rush pastures, traditional hay meadows and the riparian habitat. Moreover, land management and capital works were focused on the support/protection of specific priority species (black grouse, red squirrel, native crayfish, river lamprey, Atlantic salmon dormice, woodland birds, breeding waders). As for improving water quality, focus was on the reduction of phosphate and sediment in the upper and middle Ure catchments and Semer Water SSSI and as regards water runoff and flood prevention, the maintenance and restoration of hedgerows and drystone walls, woodland planting, river bank restoration and the installation of instream structures and large woody debris were envisaged.

Also the initiative *Natural Grazing in Podkarpackie Region (PL1)* addresses multiple AECPG objectives on a broader landscape level. The initiative targets to support the realization of the Region Development Strategy 2020, where preservation and protection of biodiversity is one of the priority actions. Concretely the program is focused on the preservation, protection and restoration of the biodiversity in valuable natural areas, by stopping and turning around of the declining livestock numbers and the decreasing utilization of permanent grasslands in form of grazing pastures in a region with one of the highest shares of protected areas of high environmental value (44.9% of the total area) in Poland. The maintenance and restoration of grazing aims to halt the overgrowing of naturally valuable areas with expansive plant species and self-sown trees and therefore to preserve the traditional landscape and the natural and cultural heritage of the Podkarpackie region.

Collective schemes targeting single AECPGs

In the case study *incentives for collective reservoirs (IT1)*, the collective AES targets only 1 AECPG, namely water availability. Its objectives are to ensure a stable water supply for the agricultural sector, and to reduce the pressure on groundwater resources by investing in the establishment of water reservoirs. The AECPG targets are differentiated according to the pressure on water resources: In case the project is located in an area where the water sources are considered “not good” it must ensure a 50% water saving and must not lead to an increase in irrigated utilised agricultural area (UAA). In case the project is located in an area where the water status is “good”, it must ensure a potential water savings of at least 10%.

Collective approaches in LIFE+ and INTERREG projects and how they address AECPGs

In the in-depth studies devoted to larger scale implementation projects, AECPG objectives, as well as management actions are mostly clearly defined right from the start of the projects. The *LIFE+ 3watEr project (BE1)* aims to restore and enhance habitats and species of importance to the European Community in the Pond Area Midden-Limburg. For the implementation of the project, concrete AECPG goals, as well as management measures have been specified. For improving biodiversity in the area, the project has targeted unique species and habitats, such as bittern, tree frog, oligotrophic waters, oligotrophic to mesotrophic standing waters, northern Atlantic wet heaths with *Erica tetralix*, and European dry heaths. Connected to these goals, highly specific management actions have been elaborated, such as restoration and enhancement of habitats and natural living conditions for target species, establishment of filtration systems, blocking of areas from public access, etc. For landowners, the project mostly meant they need to agree to the measures established on their area, and to maintain them for a long-lasting period after the projects end (AfterLIFE management plans). The overall objective of the Interreg project *NUTRINFLOW (LV1)*, was to establish practical examples of win-win water management situations for agricultural producers, aimed at the retention of nitrogen and phosphorus. Derived from that goal, specific objectives were defined, such as controlling and reducing nutrient inputs into natural watercourses and water bodies, controlling soil erosion, enriching oxygen content in water, promoting natural self-purification processes in water. Objectives were further to increase the awareness among farmers, advisors, and municipal authorities and services on drainage techniques and approaches to integrate field and basic drainage measures, while lowering the barriers for the execution of sustainable drainage management and combination of environmental and production benefits.

Collectively owned forest area and AECPG provision

In the *multi-owner forest property TUOHI (FI5)*, rather than AECPG objectives, the management system of the continuous cover (uneven-aged) forestry regime is determined. However, connected to this forestry system, a number of AECPG objectives are envisaged: In uneven-aged forestry, clear cutting is avoided and the forest is regenerated naturally by harvesting mainly part of the biggest trees. The dispersed age class structure increases the features of a natural forest, biodiversity, scenery and recreation possibilities, as well as carbon storage and resilience.

Value-chain contract solutions and AECPGs

The 6 contract solutions pushed forward by the value-chain, or strongly integrating it, in parts target few specific AECPGs (IT4, DE2), in parts bundles of AECPGs. Particularly those examples supporting and marketing organic production (BG3, PL4, ES2) of course go along with a number of AECPGs addressed by this management system, while often even going beyond classical AECPGs touched by organic farming by adding specific components such as rare breeds and crop varieties (BG3, PL4). Amongst all in-depth studies, the value chain contract solutions are the only

examples directly addressing quality and security of products as AECPG objectives (BG3, PL4, ES2).

With the product concept of the *Bio-Babalscy (PL4)* company, AECPG objectives are primarily the enhancement of farmland biodiversity, but also the preservation of old traditions and recipes, cultural heritage and the quality and security of products. The core AECPG aspects covered by the *Wild farm (BG3)* are the conservation of local biodiversity and the application of high animal welfare standards, by perennial grazing of livestock (including a 6-month phase of grazing on alpine pastures), and with this system maintaining pasture habitats for a large number of rare and endangered bird species. Moreover, with the own organic slaughterhouse, high safety of organic products and the possibility of organic products to enter the Bulgarian market is envisaged. The support of *organic wine in Rueda (ES2)*, contributes to AECPG provision in the region particularly by the potential of increasing the share of organic grape production, and therefore the maintenance of regional wine production in general. Even if no additional conditionalities ‘beyond organic’ are envisaged, the organic production leads to the protection of endangered species of birds, the maintenance of the typical landscape and scenery and to benefits for rural viability and vitality.

Instead of building upon organic farming, the initiatives *Carta del Mulino* by Barilla (*IT4*), and the *Water protection bread (DE2)* define own production standards for improving environmental performance of the contracted (conventional) farms. The *Carta del Mulino* program focuses on the improvement of farmland biodiversity, but also water quality. The ISCC PLUS certification includes measures for more biodiversity friendly crop rotations, minimum percentages (3%) of soft wheat UAA allocated to flowers and pollinator habitats, specific variety selection, certified seeds, non-use of neonicotinoids and non-use of glyphosate, as well as measures guaranteeing segregation and traceability of the lots, lots’ storage separated from other production and added value distributed along the supply-chain. In the *Water protection bread (DE2)* initiative, the aim is the protection of ground and drinking water. The measure directly targets ground and drinking water protection and hereby exclusively the aspect of fertilization when growing quality wheat. Reducing the nitrogen load in groundwater is in the foreground, requirements include the cultivation of selected varieties with good baking properties regardless lower protein content while ensuring compliance with the required fertilizer amount (max, 160 kg N/ha) and no late fertilisation.

The *integrated production in olive groves (ES4)* in Andalusia aims at a bundle of AECPGs by establishing a series of detailed prohibited, mandatory, and recommended practices based on different threats. These measures are particularly devoted to erosion control (terraces, strip cultivation, plant cover, reduction of tillage.), plantation management (certified seeds/ seedlings, plantation framework of 200-300 olive trees/ha), use of fertilizers/amendments dose taking into account olive variety, age, density, cup volume, vegetative development, soil fertility level, nutritional status and contributions from rainwater, irrigation water, mineralization of organic matter, etc., phytosanitary practices (application following risk assessment) and drip irrigation, as well as measures concerning harvesting and training. The in-depth study however focusses strongly on the problems associated to soil degradation by olive crops (water contamination, soil erosion, etc) and the soil capacity for carbon sequestration in Mediterranean areas, by applying the Carbosoil model, developed with 16 soil types and more than 1600 soil profiles.

Land tenure and AECPGs

The 2 contract solutions in the CONSOLE in-depth study sample presenting land tenure contracts (FR1, BG4), both deal with AECPGs related to grazing. In both examples, biodiversity is a central

AECPG, while the starting point for biodiversity conservation in both studies is fundamentally different. With the *eco-grazing initiative (FRI)*, at the beginning mainly a reduction of noise, as well as a reduction of carbon costs related to 5 – 6 mowing events should be reached. The impacts of eco-grazing now reach further, as the grazed areas provide a richer diversity of flora in the meadows. In contrast, the *land tenure contracts for the conservation and restoration of grassland sin Stranzha and sakar mountains (BG4)* from the beginning had the main AECPG objective to restore former high-value pastures that have been turned into farmland and in this way to restore the natural habitats of important species – the European Soudlik as a main food source for Imperial Eagle, Booted eagle, Lesser spotted eagle, Long-legged buzzard. To this biodiversity objective, the main requirements for participation are for conservational maintenance of the pastures, incl. restoration of bushland pastures, the removing of unwanted vegetation to maintain a mosaic habitat, the sustainable management of grassland through livestock grazing or mowing and the restoration of grassland either by natural processes or by sowing native grass species

5 Framework conditions and context situation

As outlined in CONSOLE Deliverable D1.1, a number of system features related to agriculture, food and forestry or, more widely, bioeconomy systems, determine the processes that allow and shape the definition of contract solutions. Framework conditions and context situations, within which contract solutions are placed, have a decisive influence on their design, but also their performance (such as longevity, acceptance, effectiveness, etc.). Following Deliverable D1.1, the CONSOLE in-depth case studies put special emphasis on investigating specific framework conditions and context features having an influence on the design and effectiveness of the presented contract solution. Of specific interest are basic conditions for the implementation and acceptance of the contracts, namely environmental conditions, agricultural/forestry background and given socioeconomic features. Also, policy and legal conditions, as well as the role of institutions and formal structures are investigated. Last but not least, the technology aspects fostering implementation and operationalisation have been screened.

5.1 Environmental conditions, agricultural/forestry background and socioeconomic features

The CONSOLE sample of in-depth studies stands for a broad variety of environmental, agricultural/forestry and socio-economic basic conditions throughout Europe. Consequently, the prerequisites for successful and accepted implementation in each contract solution differ, nevertheless communalities become obvious across cases.

AECPG losses in production systems have negative effects - Counteracting pressures on (single) AECPGs decreases perceptible negative effects on agriculture

In some cases, contract solutions are set to *counteract massive pressures on (single) AECPGs* with a need for action. Particularly in cases where this pressure is felt by the agricultural sector itself, and the deterioration of the AECPGs has a felt, negative effect on production, acceptance is high. In the CONSOLE in-depth case studies, this framework condition is encountered by the implementation of collective contracts. An example is the case of collective reservoirs in IT1, where a highly specialised, highly water intensive and high value fruit sector is severely constrained by water availability and the enhanced risk of water scarcity and droughts due to climate change. Combined with the relatively high level of social capital and trust in the region, setting the basis for a successful response to a contract scheme that foresees the coordination among farmers, the collective scheme for water reservoirs, being the basic requirement for the maintenance of this form of agriculture, is particularly successful. Also in the case of the Wensleydale Countryside Stewardship Facilitation Fund (CSFF) network, where storm Desmond

in 2015 resulted in extensive flooding and damages in upland, lowland and heavily populated areas, better resilience to flooding was in the direct interest of the farmers, while it was obvious that only measures on a landscape scale and via collective implementation can lead to success. Another example is the case of the *integrated territorial projects (ITP)* (IT6) in the Tuscan archipelago. Here, some of the pressure on agriculture is caused by ungulates (in particular wild boar and mouflon, both alien species), damaging both crops and hydraulic and agricultural arrangements and slopes, seriously affecting productivity and causing losses for producers. Moreover, here the abandonment of traditional forms of agriculture, combined with changes in precipitation patterns due to climate change, causes landscape level effects such as landslides and valley flooding, but also widespread erosion phenomena particularly affecting agriculture and strongly increasing the necessity for farmers to enter a collective scheme to be able to (re)act on a level beyond their single farms.

Deteriorations on landscape level are felt and regretted - Attitude, will and a common understanding of the agri-ecosystems and AECPG benefits

In many successful contracts solutions investigated in the in-depth case studies, negative (economic) impacts of AECPG deterioration on agricultural/forestry production are not the main driver. It becomes obvious that particularly *land managers' and land owners' attitudes, will and a common understanding on the benefits of AECPG provision* are strong triggers to develop and step into contract solutions counteracting AECPG deterioration. Particularly this becomes obvious in special, or in specifically sensitive ecosystems and landscapes, where deteriorations are personally felt and (also emotionally) regretted: For example, in the case of the *3WatEr LIFE+ project (BE1)*, the deterioration and disappearance of the unique pond and heath landscape, as well as the related reduction of key habitats for especially the Bittern (*Botaurus Stellaris*), partly caused by strong urbanisation processes, but mainly by the abandonment of fish farming due to the regression of economic perspectives for this activity, was the principal motive for the 10 landowners to develop the LIFE+ project for the maintenance of the traditional and multifunctional countryside management, including forestry and local fish farming. Also in the *Wild farm (BG3)* initiative, the 4 partaking farms are aware of the high-nature value site with ornithological significant Egyptian vulture, which is a globally endangered species. Even if the organic and pasture-based farming system per se is well suited for the natural extensive grassland situation, and brings economic advantages, the Wild farm farming concept is moreover driven by an own "mission" to implement as many conservation measures as possible (beyond organic, maintenance of pastures consistent with the nesting regime of local bird species, etc.) in order to support the local biodiversity.

Besides attitude and will, a common understanding within the landowners' and farming community about the natural and agricultural ecosystem and the provision and benefits of AECPGs, are strong drivers too.

In the case of the *integrated territorial projects (IT6)*, a common understanding of drivers of AECPG deterioration, as well as of the wider effects, present distinctive drivers for the choice and acceptance of the collective instrument. Besides the direct (economic) effects of ungulates (see above), in the region the regional environmental criticalities are connected to very complex relationships between the growth of the tourism sector (being directly mirrored in urbanisation processes and other construction particularly for the development of touristic/accommodation facilities and infrastructures), the loss of natural as well as traditional cultural landscapes and cultural identity due to agricultural land abandonment and/or intensification, the related AECPG losses, and finally the interrelation of these processes with the agriculturally most important wine sector, being strongly affected by all of the developments described. Particularly the wine sectors' development in the past, setting up an DOC consortium and an umbrella association for the promotion of local products, adapting to the challenges by building strong producers networks

and collaborations with government and particularly research bodies, allowed the creation of a network of knowledge, skills and tools for the development of the sector itself, but also of actions aimed at greater sustainability. Based on these experiences and relationships, the collective planning with the ITP at a territorial level was developed, while it is still difficult to say whether this wealth of knowledge, contacts, and relationships will lead through an effective improvement of the local environment. Certainly, the climate of trust and the stability of the relationships already established has allowed the development and realization of such complex planning, reducing information asymmetries, search, transaction, and monitoring costs.

Also for the collective AES schemes of the Netherlands, here represented by the *Kromme Rjin collective management (NLI)*, a common understanding of AECPG situation and of the measures of improvement is the general basis for the scheme. In the Kromme Rjin region, the pressure of loss of extensive grassland and natural area, due to increases of population and infrastructure, but also due to the changes of agricultural management, are perceived by the collective. There is strong awareness of the landscape and environmental system, being differentiated into different landscape parts, characterised by very specific environmental and agricultural assets, specificities and needs. Only this broad understanding of the landscape system, enables the common elaboration of targeted measures, which are highly acceptable for the partaking farmers and landowners.

Environmental oriented management was already the basis - Jumping on an already moving train of environmental protection

Successfully introduced (new) contract solutions in the CONSOLE in-depth sample often “jumped on an already moving train” of environmental protection, improving what is already there, or supporting, enhancing and securing developments that already take form. New contract solutions can for example be direct successors of “classical” AES, replacing or improving them even on the same areas of implementation and consequently on farms already having an interest to devote their area to nature conservation/AECPG provision.

An example is the *RNP (AT3)*, being implemented on high nature value agricultural areas, which mostly have already been managed under the former area-based scheme of contractual nature protection. Here, the solution represents a clear improvement for the farmers managing the mainly very low-intensive grassland sites, as the result-based approach provides the same payment range, similar goals, but full flexibility in management decisions.

On the level of a landscape, the *Wildlife Estate Label (BE3)* in Flanders in parts rewards the past, and supports the continuing sustainable development of the regional agricultural system: In the case study area Flanders, the agricultural system has already made a transition from intensive monocultures and landscape mismanagement, leading to an impoverishment of soils and forest as well as to a loss of biodiversity, towards a more integrated and multifunctional estate management. This transition was particularly fed by the greening policy of the CAP and the adoption and promotion of agri-environmental measures by government agencies. The label now presents a validation of the successes reached.

Another example for building upon something that is there is the case of *water protection bread (DE5)*. This initiative is particularly interesting, as it is implemented on strongly market-oriented conventional arable farms, having a clear production target. Trigger for the initiative is a severe pressure on the groundwater quality in drinking water areas, where water is at risk to be costly treated with chemical removal of nitrates. Particularly natural site conditions, namely low precipitation and a low groundwater recharge rate, as well as high permeability of the soils and in parts very shallow soils, lead to nitrogen surpluses and nitrogen leaching from arable land. Aggravating to this natural predisposition, quality wheat production is of high importance for many farmers in the region, i.a. for export. Market price is heavily dependent on the wheat's

protein content, while protein content is dependent on the amount and timing of the nitrogen fertilisation. To obtain high protein contents a targeted late fertilisation is common practice, however being the main threat for groundwater quality. Against this background, a major reason for the success of the water protection bread initiative is, that voluntary cooperation and private contracts between farmers and water suppliers in the Bavarian drinking water areas, contracting voluntary management requirements around the drinking water extraction points, exists since many years. While up to now the focus was put on extensification measures or the growing of catch crops, the water protection bread initiatives on the one hand enables a targeted fair payment to renounce late fertilisation, and on the other creates the possibility of regional marketing of the wheat for bakery purposes, as well as the marketing of a good image of agriculture in drinking water areas, all representing additional assets to the farmers.

Low intensive agriculture, low income - agri-environmental contract solutions represent an important part of income

Particularly in regions characterised by sensitive habitats, often the agricultural production conditions necessary to maintain these habitats enable only low intensities of farming and in some cases set farmers under the economic pressure of abandoning, or intensifying farming activity. In such regions, successful contract solutions can be designed to significantly support and/or enhance the income of the partaking farmers.

An example of such framework conditions is the *BurrenLIFE+ program* (IRL1). Operating farms in the Burren are typically small-scale beef cattle farms with low levels of intensity, and typically low income which is mainly derived from direct payments rather than agricultural production output. The usual approach to increase income is the intensification of livestock farming, reclamation of lands, and substitution of silage for the traditional winterage pastures, all negatively impacting on biodiversity, the preservation of cultural and archaeological sites and led to an encroachment of scrub. With the advent of the result-based Burren program however, farm income could be boosted by providing additional payments for environmental performance.

A similar situation occurs in the 2nd Irish case study *RBAPS* (IRL2). The 2 pilot regions for RBAPS are particularly sensitive agricultural areas: In Leitrim, small fields predominate on the lowland, in a bog (mixed woodland and pasture) landscape with a high density of hedges. Grasslands are predominantly semi-natural or semi-improved. With average yearly rainfall in the region of up to 1250mm and slow draining clay and peaty soils, farming in County Leitrim is challenging. In Shannon, the Shannon Callows represent the largest unregulated floodplains in north-west Europe, providing numerous ecosystem services, including water storage, flood attenuation, carbon storage and biodiversity protection. The habitats on the Shannon Callows (derived from the Irish word *caladh* meaning river meadow) are composed of a mosaic of habitat types, which support a wealth of wildlife, including, plants, insects, birds and mammals. Many of these habitats depend on traditional agricultural practices to support the wildlife that flourishes there. The Callow floods regularly in winter and dries out in summer for use as pasture or hay. However, the land can be under-water for up to six months of the year and flooding can occur anytime depending on weather conditions. Summer flooding has become more prevalent in recent years. Under these preconditions, the small and low intensity suckler cow and sheep family farms generate rather low income, being 100% based on direct payments. The option of additional result-based payments in this context is a competitive way for boosting farm income.

Even more than in the 2 Irish studies, the collective contract solution for *Natural Grazing in Podkarpackie Region* (PL1) represents a contract solution able to halt and turnaround the abandonment of agricultural activity due to its boosting effect on agricultural income. In the low intensive region, particularly small farms with agricultural land area of 2-5 ha (42.3%) dominate, the average size of farms in 2016 was 4.36 ha. The share of permanent grassland, i.e. meadows

and pastures, constitutes about 40% of agricultural land in the region. Due to the low incomes from agriculture, during past decades, a progressive decline in livestock (cattle and sheep) numbers was observed as well as a decreasing utilization of permanent grasslands (below 50%). On the other side, the region is faced with comparatively low levels of GDP per capita and a high unemployment rate, leaving agriculture as a distinctively important sector, which still employs about 30% of working people in the region. Therefore, the possibility of financial remuneration for the collective use of land for grazing animals represents a clear support for farm income and the program is experiencing growing interest of farmers.

Another example of the success of collective contracts solutions due to income support is the *South Pennines CSFF* schemes in UK1. In the South Pennines CSFF (UK1), partaking farms carry out agriculture in the specific habitats of the Special Protection Areas (SPA), Special Areas of Conservation (SAC) and the South Pennines Moor Site of Special Scientific Interest (SSSI). The partaking farms are exclusively small sheep and beef farms (average size is 30 hectares), which need to sell their sheep elsewhere for fattening due to low grass qualities which results in lower market prices. From all farming activities in the wider Yorkshire area, the activities that the CSFF members partake (grazing livestock) is by far the least profitable one, generating a yearly income lower than the England average. To supplement farm income, farmers need to engage in other economic activities, also farmers are dependant in income from various environmental management schemes, mainly the Basic Payment Scheme. The option given by the CSFF to collectively initiate and target AES payments to the region, and therefore striving for a future free from the threat of financial constraints is the key motivator for the farmers. This has resulted in the group demonstrating the 5th highest mean area under AES agreements across all CSFF groups in the UK.

Low risk, negligible or positive income effects, easily integratable into the farming system and creating a nice picture/reacting on social pressure – creating win-win situations

Particularly under the framework condition of intensive farming systems, successful examples of contract solutions are result-based, being perceived by the farmers as additional (market) opportunities and a benchmarking system, with low risk, low income losses and, in the best case, income gains, as well as being easily integratable into the current farming systems. The *Humus-Program of the Ökoregion Kaindorf (AT4)* is open for any type of agricultural management, however, up to now mainly arable farmers take part in the program. The program itself comes without any risk for the farms during the humus accumulation phase, as farmers are fully free in their management decisions and there are no penalties if carbon content is not increased. Therefore, management decisions for humus accumulation can be integrated at own speed and intensity, and therefore be smoothly integrated into the existing farming system. Also as regards the 2 result-based contract solutions targeted to intensive dairy farming, namely the *biodiversity monitor in dairy farming (NL3)* and the *EcoMethane program (FR4)*, both monitoring systems enable the farmers to integrate beneficial farming practices at their own speed and intensity (e.g. changing ration of feed), to benchmark against other farmers, and, if positive results are reached, offer the potential and complementary source of income opens up for the farmers.

In all these 3 cases of implementing result-based solutions in rather intensive agricultural systems however, an important external driver enhancing the support of farmers for the contract solution, is obviously social pressure. In contrast to all other case studies, in these 3 cases the experts informing about context and framework situation brought up the topic of boosting the image of agriculture via result- and therefore indicator-based approaches. In the case of FR3, the expert referred to the current ‘agribashing’, motivating farmers to improve their image and their representation particularly with figures quantifying methane savings. In NL3, the expert referred to the current social and political discussion about the role of intensive animal husbandry in the Dutch nitrogen emission crisis, against which the biodiversity monitor is pushed as a highly

potential instrument to both measure actual emissions and impacts per farm, and at the same time provide a tool for interested supply-chain stakeholders to reward farms which perform environmentally well. Also, in AT4 the interviewed experts reported a strong push towards the program on side of the farmers as well as the buyers, since social discussion and pressure, fuelled by initiatives such as Fridays for Futures, get stronger.

A fourth study, being very special but to some point underpinning the argument of low risk and low adaptation effort as drivers of success, is the Carbon Market Hiilipörssi (FI3) in Finland. The contract solution is insofar exceptional, as land owners provide peatlands to the market without getting payments from the operator, allowing this peatland area to be fully restored. Then, it will be turned into a private nature conservation area. On first sight, it seems rather unlikely that any landowner would step into such solution, reversing “land melioration” and preventing future economic activities on the area. However, under the economic framework conditions of forest production on these sites, the measure presents no economic decline, while being in line with the general trend of peatland restoration on publicly owned lands: Though from 1960s to 1990s, more than half of the (original) mires in Finland were drained for forestry purposes, ditching efforts have not resulted in good growth of forests in some sites, since some of the drained peatland areas were not fertile enough for timber production purposes. Drainage of pristine mires was therefore given up in 2001 and since 2000, restoration has been an increasing habit in state owned conservation areas. In privately owned forests, many owners are multi-objective, which means that they give value to various products and services that forests are offering for them. The other values that the forests produce, such as recreation and biodiversity, become more important. Therefore, the mechanism of restoring peatlands at the expense of the certificate buyers, and the potential to receive future subsidy for the private nature conservation area, for some peatland owners is an attractive possibility.

The environmental option is just economically more feasible – environmental management pays off

The 2 Spanish in-depth contract solution case studies about organic wine in Rueda (ES2) and integrated production in olive groves (ES4) actually represent classical and well-know approaches. However, the success and acceptance displayed in the case studies directly result from the framework conditions of specific systems of permanent, work-intensive agriculture in specific agri-environmental systems, where the environmental option provided by organic farming and integrated production is just economically the most feasible solution for the farmers. The integrated production system in ES4 meets a highly competitive and intensive sector, having significant effects on a broad number of AECPGs, such as, particularly soil and water. With partaking in integrated farming, on the one hand, a higher value of the oil produced by the farmers and, on the other, an optimization in the use of inputs can be reached. The hallmark of the Integrated Production Guarantee of Andalusia in the competitive market provides distinction against products from other markets (national and international) that do not follow the same controls, and guarantees better demand and prices. Therefore, farmers voluntarily chose this management system as the one more competitive. In the system of organic wine production in Rueda (ES2), basically the natural site conditions offer the best possibility for organic production, since the limited summer rainfall guarantees low incidence of diseases (mildew), and therefore, if the crop is adequately managed, does not require pesticides. The Rueda region is one of the wine regions in Spain that is more profitable, but at the same time needs a lot of man work, so organic production is a clear alternative. The sales market provided by the winery Riscal is therefore a real opportunity for the producers to continue with the labour-intensive production of grapes under the premise of a guaranteed sale of organic products.

Producing for a company – Trust and the chance to market products

In the CONSOLE in-depth studies *Bio-Babalscy (PL1)* and *Carta del Mulino (IT4)*, 2 contract solutions are presented, where farms produce their products under AECPG production regulations/obligations of the value chain. Both initiatives address arable farming. In PL1 only organic farms can take part, while IT4 is devoted to conventional farming as well. In the case of Bio-Babalscy, the main driver for success is the close relationship between value chain company and producer, based on mutual trust and fair contract implementation, including farming recommendations and support. Here, the option of sales of large quantities of produce at fair conditions is the main trigger for success. In the Barilla initiative Carta del Mulino (IT4), partaking farms come from several areas across Europe and beyond. The high heterogeneity of the areas prevents from a proper assessment of environmental and agricultural conditions, most of the contracts are however in Italy, France, Germany and Austria. Unfortunately, relatively few is known about the framework conditions and context situation of the farms, explaining the success of the scheme. Up to now however more than 500 farms signed the contract, therefore it can be assumed that the compensation payments for the strict ISCC measures are fair enough to still create additional benefits from the possibility to deliver large amounts of wheat to Barilla.

Land seeks land managers - Land offered meets demand by farmers

Contract solutions contracting environmental-friendly management via land tenure contracts are only successful if the land-offer meets the demand for land by farmers. In the eco-grazing initiative in FR1, the Metropole of Brest took the decision to offer public green spaces for eco-grazing, due to reasons of noise-reduction, GHG-mitigation, social pressure, but also as a rather pragmatic (political) ecological strategy. The main goal was to outsource environmental services to external parties, to relatively low costs. In the case of Brest Metropole, the external partner is a breeder/farmer, not a landscaper, while competition exists between landscapers and farmers for grazing-area of eco-grazing. While landscapers follow an economic model which seems - especially in terms of the prices they charge - outdated, for the breeder eco-grazing offers the possibility to develop local breeding and supply of organic meat, while he states that eco-grazing is a welcome activity (“better than nothing”), but if it was only for the money he wouldn't do it. In the case of the land leasing contracts for the conservation and restoration of grasslands bought by the Bulgarian Society for Protection of Birds in line with a LIFE + project in Strandzha and Sakar mountains (BG4), since the beginning of the contract over 600 ha of pastures and meadows were restored and farmers were trained in nature-friendly pasture management. Here, farmers cultivate the land without paying rent. By meeting the certain environmental requirements coming along with the leasing contracts, they also become eligible for a governmental subsidy (compensations for practice-based efforts). The payments they receive cover their costs, while additional benefits like providing a feeding ground for their animals are received, which is classified as a win-win scenario by the experts.

What enables nature protection projects? Cooperation instead of confrontation.

The implementation of larger-scale nature conservation projects, such as Interreg or LiFE+ projects takes place in very heterogeneous agricultural basic situations, and also with very different objectives. Also the 2 Latvian projects *DVIETE (LV2)* and *NUTRINFLOW (LV1)* took place in very heterogeneous context situations. While Nutrinflow targeted the large-scale minimisation of nutrient leaching from agricultural fields into the waterbodies, Dviete aimed at the restoration of a defined floodplain area. The consequences of the 2 projects for farmers have been basically different: while in Nutrinflow mainly drainage systems have been altered, and management systems have been introduced to become more secure against leaching under the premise to keep up arable management, in Dviete the whole agri-ecological system has been transformed into a completely different land use system, namely floodplains and terrace

meadows, wetlands and the option of only restorative mowing and grazing. In both projects, the main driver for success was the timely information and integration of the landowners in the planning and implementation of nature management activities. In Dviète, actually preconditions were good as relatively few land-owners were affected and several active farms in the area, mainly on the banks of the Dviète Valley and the Ilukste Valley, are engaged in livestock farming and can use the Dviète floodplain meadows for both mowing and grazing livestock. However, it became obvious that refusal of cooperation of only few land-owners can set the whole project at risk, a problem that could be solved by the agreements on the implementation of the measures with the landowners already made before the start of the project. In NUTRINFLOW, where farmers mainly perceived the project as win-win situations, farmers solely needed to allow land access to the Ailes stream for the implementation of the agri-environmental measures. Moreover, the overgrowing of the plants in the ditches and in the flooding in the fields have been very good reasons to accept the activities and sign the contracts. Also here, for the experts the dialogue between the agricultural producers and environment protection authorities, to commonly find the best ways to develop environmentally friendly production, as well as mutual benefits for ecology and agriculture were the major keys for the success of the projects.

5.2 Policy conditions

Past or current policy conditions on European, national, or also regional level can have an influence on the development and success of novel contract solution or on the improvement of AECPG provision. Thereby agricultural policy, forestry policy, environmental policy, but also market policies might play a role. General policy pathways towards environmental and ecological transformation of the agricultural and/or forestry sector, as well as previous projects/programs/-contract solutions already in place, might have initiated/facilitated the implementation of the current contract solution or set the ground for the introduction of such schemes. To address the role of policy drivers for the introduction of contract solutions for AECPG provision, the in-depth studies investigated on influential policy conditions – in case such were influential for the specific contract-solution addressed.

The impact of the European Common Agricultural Policy

Many in-depth studies highlight the decisive role of the European Common Agricultural Policy (CAP). While of course the general framework of the CAP is the most relevant policy basis for agriculture in Europe, hereby particularly the Rural Development Programs with their individual national AES are mentioned.

Certainly the direct impact of the CAP accounts for the contract solutions cases being directly integrated into the national RDPs, namely organic farming in Rueda (ES2), organic farming for BioBabalscy (PL4), organic farming in the Wild farm (BG3), the establishment of collective reservoirs in Italy (IT1), the integrated territorial projects (IT6), the collective management in the Kromme Rjin region (NL1), the result-based nature conservation plan in Austria (AT3), and the Irish RDP pilot for result based payments schemes RBAPS (IRL2). Particularly for the collective and result-based cases, the aim to develop and elaborate of national RDPs towards more acceptable and innovative approaches were the main driver for initiation and implementation.

Besides this direct impact, the CAP also indirectly impacts on the implementation of innovative contract solutions outside RDP: Often, environmental developments introduced by the CAP, as well as long term experiences with RDP schemes are the basis for the development of measures implemented in new schemes. Moreover, the settled experiences of land-managers with RDPs enables them to deal with ‘innovative’ agri-environmental programs at all.

Direct impact of the CAP

For collective RDP approaches, the 2 in-depth studies IT6 and NL1 reveal that the RDP measure itself is orchestrated within a number of other policy strands and instruments: The RDP measure of *integrated territorial projects* (IT6) for example orchestrates three policies streams, namely the Tuscan RDP, the regional landscape plan and the regional legislation for integrated supply chain projects. While, in the past, these three tools have operated individually, each aiming to provide specific solutions to the various environmental issues, with the development of the ITP the region aimed at providing an integrated solution within a single operating tool. In particular, through the landscape plan, the main intervention objectives were provided and the most sensitive areas of protection were identified. With the RDP instead specific measures for the provision of AECPGs were designed and implemented. The integrated supply chain projects allowed the Region to experience the territorial aggregation around specific supply chains innovation (product and process) that aim to reach sustainable goals. In the collective management of the Kromme Rjin (NL1), as concerns the RDP, the respective provinces are responsible for the governance of agri-environmental measures, developing a catalogue listing all possible agri-environmental management measures and a spatially explicit nature management plan indicating nature targets. This RDP implementation is supported by another important regional policy instrument, namely the Agenda for a Vital Countryside (Agenda Vitaal Platteland, AVP) bringing together policy goals from different levels and is implemented under the responsibility of provinces.

As regards the role of organic farming, this RDP is perceived by the experts as the main policy incentive for general environmental and ecological development. In the example of the *Wild farm* (BG4), the successful adoption of organic practices has been mainly due to RDP support. Nevertheless, the bigger share of organic farmers was concentrated (and still is) in organic crop production, while organic husbandry is still not largely developed. The main reason is the lack of processing plants (slaughterhouses, dairy farms, etc.). However, the increasing conservation of meadows in high-nature value sites under the CAP stronger triggers conservational behaviour among farmers now. Therefore, building on the trend set by RDPS, implementing organic farming and conservation of meadows but additionally providing an own slaughterhouse and marketing strategy makes the Wild Farm such successful example of value chain contracts on top of RDPS. Similar findings can be derived from the case of *organic wine in Rueda* (ES2), where without the RDP, organic farming would most probably not be implemented, while the particular trigger for success are the marketing initiatives of the winery Riscal. As regards the organic grain production for *BioBabalscy* in Poland (PL4), the RDP support to organic farming by agri-environmental payments, is generally seen as a strong incentive for converting to organic production. Moreover, already in 1998 the Polish government introduced subsidies compensating the costs of organic farms control and subsidies per 1 hectare of organic crops for the period when farms were shifting to organic. The add-on of old grain varieties, the guarantee of fair prices, and the individual support by, and trust in the BioBabalscy company, therefore only represent final triggers for the success of the contract solution.

In the example of the result-based nature conservation plan introduced in the national RDP (AT3), particularly the preceding area-based RDP of contractual nature protection and the farm-level nature conservation plans were the basis for the development of a more targeted and more acceptable instrument, allowing for more flexible management decisions, better suited for the achievement of nature conservation objectives.

Indirect impact of the CAP

Also in many contractual solutions not being directly integrated into national RDPS, the developments of CAP and the 2nd Pillar play an important role. Often, this role is seen positively: In BG4, the land tenure option is indirectly supported by the RDP: Previous efforts for the

conservation of the bird farmland habitats by biodiversity experts, ecologists and farmers have led to the development of different conservational measures, some of which were implemented into the Rural Development Program. Therefore, rented land grazed under the specific land tenure management requirements for bird protection is now mostly eligible for RDP practice-based schemes for maintaining pastures in a conservational manner. In the cases of CSFF networking in UK1 and UK3, the long history in the area, with farmers being part of AES, has allowed for farmers to obtain better knowledge and training on how to better deliver on these various AES, given the farmers' increased reliance upon them. Countryside Stewardship and Environmental Stewardship schemes as well as the Basic Payment Scheme have been the main AES the farmers have been historically and currently been part of. Only this long involvement and process of knowledge creation enables farmers in the CSFF networks to develop their own agri-environmental area objectives and related management measures. The integrated production of olive groves in Spain (ES3), though currently not being an RDP program, has traditionally been supported through agri-environmental rural development aid and is therefore widely applied also by farmers, who just remain in the production system even if taken out of RDP. Moreover, integrated production is still a necessary requirement to access certain olive grove aid in high-slope areas (>8%) and located in Red Natura 2000 spaces or in the reservoir basin for human supply.

In the Burren program case study (IRL1), the developments of the CAP policies are seen more critical, though still actually supporting the development of the contract solution: The experts' point of view is that the CAP policies of the past encouraged, through direct payments and subsidies, intensification of farming practices, which were detrimental to the unique Burren landscape, and led to the abandonment of some traditional practices. In the late 1990s large tracts of the Burren were designated a Special Areas of Conservation (SACs) under the EU Habitats Directive. The nationally operated Rural Environment Protection Scheme (REPS) financially rewarded farmers for compliance with SAC restrictions. This was the first scheme that rewarded farmers for conservation rather than output. However, the standard nature of the REPS meant that it was not tailored to the unique agricultural or environmental circumstances of the Burren and farmers met these environmental programs with some frustration. The development of the more accepted result-based Burren program can be perceived as a direct consequence, developing key management interventions better suited to address key environmental challenges and to monitor the agricultural, economic and environmental impact of these interventions.

Development of environmental policy outside the CAP

Also political conditions and political pressure “outside” the CAP create momentum for the initiation and implementation of new contractual solutions. In the case of the Biodiversity monitor for dairy farming (NL3), as already indicated in the chapter above, major changes in nitrogen policies have been a trigger for the development of the solution. Here, the nitrogen policy PAS (Programma Aanpak Stikstof) has been declared invalid in May 2019 by the Dutch council of state and the European court of justice, as it was not in line with European nature conservation goals. The resulting strong pressure on particularly animal husbandry and the heated discussions within the agricultural sector and between farmers, nature organizations and policy gave a push for the development of the monitor as a highly potential instrument to both measure actual emissions and impacts per farm, and at the same time provide a tool for interested supply chain stakeholders to reward farms which perform well for nature. Despite the ongoing crisis, the Biodiversity monitor is more and more embraced, both by governments and businesses, to enhance the inevitable transformation towards more ecosystem-based agricultural production systems in the Netherlands.

A far less dramatically but steady political development strongly supported both initiatives in Flanders, the Life 3WatEr project (BE1), and the Wildlife estates label (BE4): Constantly, the

Flemish nature and forestry policy has evolved from the concept of single aspect management (nature only) to the one of integrated management (environment, economic and social aspects always are integrated). The new Flemish nature management plans (covering nature and forestry) are conceived and implemented accordingly. While the Life+3watEr project anticipated as a pioneer project on this evolution with its key 3 E's concept (Ecology, Economy, Education) and successfully implemented them through its contractual structure, the Wildlife estate labels directly profits from the environmental status quo and further development of natural wildlife resulting from this transition. Basically, the label now takes the credit of past and ongoing political development.

Also the Finish forest case study Carbon Market Hiilipörssi bases on a nearly 20-year long development towards forest and peatland protection: Here in the early 2000s, a voluntary forest protection model, the METSO forest biodiversity program, was developed, creating the ground for voluntary forest protection by landowners. Under the leadership of the Ministry of the Environment, a mire conservation program (supplementing the previous mire conservation programs of 1979 and 1981) was launched in 2015. The mires, whose nature values were of national importance, were selected for the conservation proposal. The interconnectedness and restoration of the peatlands was also important. The proposal covered a total of 747 nationally valuable wetlands with an area of 117,000 hectares. The Helmi-program to enhance biodiversity, initiated by the Ministry of the Environment in 2019, aims to restore 12,000 hectares of drained peatlands and to protect 20,000 hectares of nationally valuable wetlands on a voluntary basis during the current Government period in 2019–2022. Landowners get compensation for protection. The amount of compensation is based on the loss of economic value, which in the case of peatland, is the market value of the standing timber. This payment is tax free for the landowner. The Carbon Market model Hiilipörssi partially builds on this development by supporting the achievements of the Government's objective with a new instrument not depending on public money.

The role of regional political will

3 of the CONSOLE in-depth studies particularly reveal, how crucial “political will” is in implementing and supporting new instruments. In the German water protection bread initiative (DE5), it was the clear will of the Bavarian environmental ministry to amplify the activities in water protection. The government of Upper Franconia, section water management, has initiated the program as a contribution to a dedicated action on water protection that started in 2001 in Bavaria. Also the collective initiative of natural grazing in Podkarpackie (PL1) bases on a public initiative that was established in 2012 by the Podkarpackie Voivodeship (local) Government in order to support the realisation of the Region Development Strategy 2020, where preservation and protection of biodiversity is one of the priority actions (so called Strategic areas of intervention – SAI). The program is coordinated by the Marshal's Office of the Podkarpackie Voivodeship. As its implementation and effects were positively assessed, it was decided to continue financing it for the long term perspective, in 2016-2020. The program will be continued in the future. Funds for its implementation are secured in the Voivodship's budget. Last but not least, the French contract solution on eco-grazing in Brest Metropole (FR1) the “political framework” for the initiation of the initiative was not public policy, but rather the distinctive political will and of two elected officials, that led to the change in management and the implementation of eco-grazing.

5.3 Legal conditions

Besides policies, the feasibility and success of the implementation of contract solutions is driven by the legal framework in which they need to be embedded, or which needs to be created to support and enable the initiation and application of the contracts. Specific legal frameworks, such

as nature conservation laws, environmental directives, property rights (including land tenure and property transfer) and the distribution of property, etc., as well as specificities e.g. of the national contract laws may have an influence on the success of the contract solution and particularly on the transferability of contract solution approaches into other countries and/or context solutions. In parts, the orchestration of different legal aspects can be complex, though for the longevity and stability of contract solutions a sound legal basis is inevitable. In the worst case, poorly orchestrated, and highly complex legal frameworks can cause high transaction costs and cause trade-offs due to contradictory objectives. To address the role of the legal framework for the introduction of contract solutions for AECPGs provision, the in-depth studies surveyed legal specificities – in case such were influential for the specific contract-solution addressed.

Legal framework: What happens in protected areas

Relatively often, particularly in the case of contract solutions implemented in sensitive or very specific habitats, legal frameworks for protected areas have to be considered. For example, the implementation area of the Life+3watEr project (BE1) lies within the Flemish Ecological Network and the Natura 2000 territorial designations as conservation zones. The legal frameworks set for management in these areas, with a lot of intended management regulative constraints, may have compromised a series of traditional rural economic activities in the project area. Here, the Life+3watEr project and its contractual solution, integrating the wishes of private landowners as from the start, caused an instructive reflection on the content and interpretation of regulative constraints, as often the sole application of legal definitions and concepts do not serve the purpose they were intended to, as reality in nature management often takes precedence. Also the Burren program (IRL1) is implemented in a landscape under specific protection since already 30 years: In the late 1990s large tracts of the Burren, namely an area of 30,000 ha, was designated a Special Areas of Conservation (SACs) under the EU Habitats Directive. An additional 2,000 ha were designated as Special Protection Area under the Birds Directive (79/409/EEC) and, moreover, the Burren has recently been recognised through UNESCO Geopark Status. In case of the Burren, the protected area status is perceived as a driver for the current conservation measures as it laid ground for the BurrenLife Project and consequently the program.

Legal framework: Specific orchestration of legal frameworks for specific contract solutions

The 2 Finish case studies *Tuohi (FI5)* and *Hiilipörssi (FI3)*, as well as the Italian *ITPs (IT6)* reveal that national legal frameworks can shape the design and implementation of new contract solutions and, by implication, eventually prevent the feasibility of their implementation. The examples show that contract solutions can be touched by legislative coverage in every aspect, reaching from the objective of the program, to the administrative implementation and finally the environmental measures foreseen.

In the Carbon market *Hiilipörssi (FI3)*, the objective is that the restored peatland area already has, or will get a protection status. Basis for this status is the Nature Conservation Act of 1996 (also 1923), generally allowing for the establishment of a private protected area while the conservation agreement binds also the new owner in case of a change of ownership. In order to enable certificate trading, the Finnish legislation requires the Carbon Market (actually its host organization The Finnish Association for Nature Conservation (FANC)) to obtain a money-collecting permit, which is requested from the National Police Board (Money Collection Act 255/2006, new Money Collection Act 863/2019 becomes valid 1.3.2020). Money collection permits can be granted to non-profit organisations and foundations for the purpose of raising funds for non-profit causes. Last but not least, restoration measures may have an impact on the nearby areas as blocking the ditches may direct the water flows to unwanted areas. Thus, there might be a need to establish new ditches to control the water flow. In the case of the new ditching the

notification is given to Centre for Economic Development, Transport and the Environment (ELY Centre) according to Water Act (587/2011).

In the collectively owned forests *Tuohi* (FI5), the general basis of the instrument being legal and therefore operational at all, was the amendment of the Forest Act in 2014, legalizing uneven-aged forestry management. Without this change of the forest act, the management regime promoted by TUOHI would not have been legal to be implemented. Another fundamental reform laying the foundation for TUOHI was made for the Act on Jointly Owned Forests in 2003 and 2007. Jointly owned forests, have a long history in Finland as first legislation concerning them can be found already in the forest law of 1886. The background for these legal reforms was principally the concern about parcelisation of family forest ownership into smaller and smaller properties. Instead of reforming tax or inheritance legislation affecting forest ownership, the compromise was to enhance joint ownership by completely reforming the Act on Jointly Owned Forests. After the reform, forest properties could be fully merged into jointly owned forest as “ghost property”, where property owners only hold a share of the jointly owned forest areas.

In the case of the Tuscan *ITPs* (IT6), collective implementation is possible only by considering specific legislation on network building and cooperation, namely the legislation on Network Contracts (Law No. 179 of 18 October 2012) and the legislation on Cooperation Agreements (DD No. 5351 of 05.07.2016). Besides that, there are legal constraints related to the RDP regulation, as well as the Landscape plan regulation and the nature conservation rules that regulate the forests and the areas under the Tuscan Archipelago National Park (PNAT).

Legal framework: requirements within contract solutions

The case of *collective management in the Kromme Rijn region* (NL1) details the complex legal regulations within collective RDPs, which on the one hand is needed to secure the objectives of the program and the fair distribution of subsidies, but on the other hand can also hinder participation as well as transferability to other context situations: In the contract solution, the legal prerequisites for the collective is to operate in a specific area or region, where the members (farmers and other land managers) have the right for land use. Further, the participation in the collective has to be voluntary upon entering, the collective has to collect the subsidies and distribute them to the individual farmers, meaning the collective contracts each farmer individually. Finally, the collective bears the responsibility for monitoring and control. To participate in a collective, farmers (or other land managers) have to meet specific legal condition as well, of which the most important ones are that the participant has the exclusive right to manage the particular land parcel (short term lease cannot be included in the collective and that it is not permitted to receive additional subsidies for the same land parcel (e.g. EU subsidy for financially troubled farms. Particularly the latter requirement can limit the willingness to participate due to income loss. On top of to the legal regulations for collectives and participants in the RDP, the Dutch government installed the obligation to provide evidence when receiving any kind of subsidy (including tax returns and such). This means all documents related to the nature management practices have to be stored (and provided when requested) for a minimum of five years.

Similar legal requirements are in place in the collective initiative of *natural grazing in Podkarpackie* (PL1). Here, farmers have to prove that the animals grazed are registered in the database of the Agency for Restructuring and Modernization of Agriculture or the Horse Breeders Database and / or the regional veterinarian database and the area. Also, information about land ownership has to be provided, while farmers solely have to prove their right to graze animals in the area. For this they are not required to be the landowners or even its tenants but it is sufficient if they have the owner's written consent for grazing animals, a compromise which facilitates the program implementation and enhances the acceptance of the farmers.

Legal framework: If sound orchestration is missing

The importance of a sound and well-orchestrated legal framework as a basis for the implementation of contract solutions has been particularly mentioned by the experts interviewed in the NL1 and BE3 case studies. In NL1, criticism was mainly on the large number of regulations for nature conservation and management, to which farmers have to comply. Some of these can be just troublesome, as for many things one must apply for a separate permit, but others might even cause trade-offs due to their contradictory character. The examples given are predator animals, which are protected while in parallel they threaten bird species, which are also protected/vulnerable.

In BE3, the problem of contradictory and even missing legislative frameworks was brought up. While generally in Flanders, the regulatory environment is in favour of biodiversity, agricultural tenure represents an exception: legislation concerning agricultural lease is very imperative and protective of the tenant and does not allow for any ecological clauses, as is the case in other countries. According to the experts, lessor and tenant should be able to negotiate freely about this issue for the benefit of biodiversity. The condition description of the land in agricultural leases is often lacking or insufficiently used, so aspects as manure, erosion, the environment etc. are not covered. Moreover, agreements regarding agroforestry are unclear. While the government wants to encourage the planting of small landscape elements, under current law this is not possible unless agreements are concluded between both lessor and tenant. Last but not least, the experts call attention to the issue of grassland tearing. While freedom of cultivation is granted to the tenant, the condition in which the land returns to the owner after years is not guaranteed, which for example can affect historic grasslands that are torn.

“European” legislation as driver for action

European level legislation might not be perceived as a framework for the contract solution itself, but can function as a strong driver for the need for action and therefore the initiation of new solutions: In the *water protection bread* case study (DE5), the European Water Framework Directive (WFD), and hereby in particular the requirement to achieve or maintain the good quality of groundwater, the sensitive drinking water situation and the decentral water supply structures, were decisive for the start of the “Action Groundwater protection” in Bavaria, with the water protection bread initiative being part of it. Bavaria has decided to establish voluntary water protection cooperations with farmers in drinking water protection areas in addition to legally binding requirements. The water protection bread initiative builds upon such cooperations. Also in the *Biodiversity Monitor* initiative, European legislation has been a strong driver for action. As already indicated in the preceding chapter, the refusal of the Dutch nitrogen policy program Programma Aanpak Stikstof (PAS) by the Dutch council of state and the European court of justice was one of the triggers of the development of the monitor.

5.4 Role of institutions and formal structures

The success of contract solutions aiming at management changes in agriculture and forestry is driven by the institutions and formal structures involved in the implementation and management of the initiatives. Also, the governance system pursued has impacts on success factors such as acceptance, longevity, social capital, etc. The number and kind of institutions involved, as well as the *modus of governance*, strongly depend on the contract type. For more complex contract solutions, such as collective schemes, or schemes combining a number of different contract features, a larger number of institutions and actors is to be expected, while for relatively “simple” approaches, such as land tenure contracts, a less complex interplay of institutions seems sufficient. Nevertheless, particularly in the development of new solutions, always a broad number of institutions and stakeholders might be involved. To investigate the role of institutions and formal structures in the success and implementation of contract solutions for improved AECPPG provision

from agriculture and forestry, the CONSOLE in-depth studies tried to shed light on these aspects and the role of actors, institutions and governance in the design and implementation of such approaches.

Institutions, governance and formal structures in result-based contract solutions

In many of the result-based contract solutions investigated in the CONSOLE in-depth studies, a rather broad number of actors and institutions are involved. Partly this is due to the rather “new” character of such schemes, often demanding the development of the contract solutions from scratch, with the necessary input of expert/stakeholder/institutional capital. It becomes obvious that particularly within the process of the design of new solutions, important “actors” integrated are typically research, but also affected stakeholders and farmers, guaranteeing the operability of the programs particularly as regards result indicators. The result-based CONSOLE contract solutions also reveal that particularly the process of individual target setting, management support and also monitoring of results demands specifically trained experts/advisors/institutions, which in the best case are integrated right from the start.

Institutions, governance and formal structures in public result-based/result-oriented programs

In *the Burren Program* (IRL1), the Irish Department of Agriculture is the main funding body. Moreover, the program is overseen by an own program team which comprises 7 locally-based staff, some with extensive research experience in the Burren, which allowed the team, and the project, to get off on the right foot, with a good level of trust and credibility. The program team is led by a project manager with direct experience of working with local farmers and engaging in scientific research. Moreover, a project scientist is employed to oversee project monitoring and advise on planned works. Both project leader and project scientist have been involved in the project for many years. In the current round of the program, the project team is supported by 12 specially trained private farm advisors.

Also the Irish *RBAPS* pilot (IRL2) involved a large number of individual actors and institutions: co-ordinating partner for RBAPS in Ireland and Spain was the European Forum on Nature Conservation and Pastoralism (EFNCP). The EFNCP is a European network, providing a direct link between local projects involving low-intensity farming and policy-making processes at national and EU levels. The European Commission provided 70% funding for the RBAPS Pilot. Co-funding and support in Ireland were provided by different project partners, such as The Heritage Council, the Department of Agriculture, Food and the Marine, and the research institution Teagasc. The RBAPS Pilot project was administered by locally-based teams and comprised four full-time staff members and a project co-ordinator from the EFNCP. The team members were ecologists with considerable experience of working with farmers in High Nature Value areas and had a strong level of experience in local agricultural practices. Each team designed and implemented their respective scorecards (for assessment of ecosystem quality) and capital works programs, and was responsible for administering payments to farmers in that pilot area. The project in each pilot area was also supported by the input and advice from local stakeholder advisory groups, which comprised of local farmers, representatives from farming organisations, government bodies, and farm advisors. Thus, during the first year of the project, local farmers were instrumental in the design and development of the measures, which were then further refined during two years of farmer contracts.

Before being integrated into the Austrian RDP, the result-based nature conservation plan (AT3) was initiated as a pilot project by the Austrian Federal Ministry of Agriculture, Regions and Tourism. The design of the program was executed by an environmental consulting agency, identifying and engaging potential farms for the first implementation phase (together with the federal nature conservation departments), providing advice of ecological experts (flora and fauna), visiting farms and specifying nature conservation objectives on the fields, as well as supervising the implementation of RNP during the program period. Very importantly, an

institution being involved right from the beginning was the national control authority (AgrarMarktAustria; AMA), which particularly provided inputs for the design of measurable and, consequently, controllable indicators. AMA was fundamentally involved in designing the mixed approach of area and control indicators, which finally enables the integration into the RDP. The integration of the national control authority from the beginning is perceived as the main success factor of the RNP, in case of a transfer of such schemes to other countries, this integration is the basic recommendation of the experts.

Also the Biodiversity Monitor (NL3), even if representing a private instrument, has been initiated and designed by a rather large group of actors and institutions. Also in the current implementation phase the Biodiversity monitor is characterised by a rather large consortium of involved parties: only in 2020, the Biodiversity Monitor Foundation has been established, formalizing the long-term governance and development structure of the tool. Involved in the decisions about the entire concept and the design of the tool has been a larger group of initiating parties, including the NGO WWF-NL, the bank Rabobank, and FrieslandCampina, a sustainable dairy chain initiative for a responsible future-proof sector. Scientists, farmer organizations and other environmental organizations have had significant influence as well through research, pilots, consultations and stakeholder meetings. Dairy farmers themselves have had limited say in the entire process, except by their voice as a member of the cooperation FrieslandCampina. Decision making is however more equal now that the Biodiversity Monitor Foundation is established. The board and advisory council includes a wide representation of business, nature organizations, academics, and farmer organizations. It is suggested to establish a farmers' council to better retrieve experiences from practice.

Institutions, governance and formal structures in market based result-based/result-oriented solutions:

The result-based *EcoMethane* approach (FR4) was initiated in 2011 by the private association Bleu-Blanc-Coeur, in collaboration with the research institution INRA, mainly being responsible for the recommendations of ways for methane reduction. Bleu-Blanc-Coeur manages the eco-methane program with financial partners and farmers and performs the tracking and managing of the results. Another structure involved in the EcoMethane program is the fund to manage donations from companies or public or private structures. Within the fund, a specific governance system exists: a board of directors is referred to the fund (members of BBC-Orange, historical partner), deciding on the allocation of funding and the strategic conditions for the deployment of the eco-methane approach (followed by current raisers, or "marching").

Also the *Humus program* in Austria (AT4) was started by a private non-profit association, namely the Verein Ökoregion Kaindorf. The association is also the coordinator and main designer of the contract solution. Similar to the French fund managing donations, in the Humus program a special Limited company has been installed, organizing the process of humus certificate trading. Further involved actors are certified civil engineers carrying out soil sampling, as well as the Department for Soil Health and Plant Nutrition of the Austrian Agency for Health and Food Safety (AGES), evaluating soil sampling and determining CO₂ sequestration. Additionally, soil samples are analysed by an accredited national laboratory. Governance is rather top-down, farmers can voluntarily take part in the contract, however no specific extension service is given by the association. Nevertheless, farmers have an indirect say, as the association is supported by a steering group, including 2 farmers. Recommendations and education is provided in terms of seminars and courses, however these are fee-based.

The Carbon Market *Hiiipörssi* (FI3) was installed by the Finnish Association for Nature Conservation (FANC). FANC is the direct contract party with whom the landowner makes the contract for peatland restoration. Moreover, FANC owns the online donation service, managing the carbon market. Besides the restoration contract, the landowners sign an agreement with the

ELY Center (state institute) to establish a private protected area if the area has not been protected earlier. The Ely Center also gives permission to do the restoration work. Another involved party are the investors (typically individual consumer), who “buy” a piece of peatland from the Carbon Market and receive a certificate of how much carbon is stored annually. Unfortunately not much has been reported on the research involved in the design process, however it is clear that the approach is based on research backing the calculations of GHG mitigation due to restoration works.

Institutions, governance and formal structures in contract-solutions based on collective implementation

The contract solutions based on collective implementation involve a rather broad number of institutions and a high level of cooperation between contractors and contractees. The in-depth studies reveal that already the process of setting up the collectives can involve many players and that the implementation demands a high level of orchestration between institutions and their responsibilities. Moreover, the studies show that the individual program coordinators play a crucial role in collective implementation. Their engagement and steering skills, as well as their regional embeddedness are fundamental for the success of such contract solutions.

Institutions, governance and formal structures in collective schemes in RDP

In the case of the collective management in Kromme Rjin (NL1), the collective is in charge of the organization of agri-environmental measure implementation, as well as the organisation of subsidies. It has been established by four associations for nature in agricultural areas (ANV, agrarische natuurvereniging) together with the farmer’s organization (LTO), and the private land-owners’ organization Utrecht. A foundation that aims to connect landscape and cultural heritage (Landschap Erfgoed Utrecht) plays an advisory role. This foundation is a province-level organization that cooperates with counterparts in other provinces as well as province-level nature and heritage organizations (Provinciale Landschappen).

In the *ITP* in Tuscany (IT6), the main institution involved in the implementation of the RDP is DISPAA UniFi. It has the role of technical and administrative management of the ITP, monitoring the progress of material investments, managing network activities and innovation aimed at increasing sustainability, carrying out tests and trials, and disseminating the results of the project. Moreover, the ITP involves 34 direct private participants (farmers, wineries, wine growers), 5 direct public participants (PNAT, the Tuscany Coastal Reclamation Consortium - CdB, the Union of Municipalities of the Metalliferous Hills - UCCM and the Civic Uses Manager of Capraia Isola - UCCI). The two indirect participants are the Legambiente Arcipelago (environmental stakeholder) and BCC Banca dell’Elba that facilitates the access to credit. The ITP and the actions it develops, strongly depend on this institutional context, and in particular on the climate of cooperation and trust between the participants, as well as on the efficiency and quality of the relationships between the private direct participants and the public subjects involved (in particular the relationship with the Tuscany Region and the natural park). Finally, also the indirect participants (i.e. environmental association) can play an important role to ensure visibility and the adherence between the progress of material investments and benefit produced. In the second Italian collective implementation case study *collective reservoirs* (IT1), unfortunately the concrete orchestration of institutions was not reported. However, here it was stressed by the experts that local institutions are key to the success of the response to a measure that is otherwise targeting the whole region. The great majority of the projects applying to the measure were developed in collaboration with the Consorzio di Bonifica della Romagna Occidentale (CBRO) that works as a bridge institution both vertically (between farmers and the regional administration) and horizontally (among farmers).

Institutions, governance and formal structures in collective approaches outside RDP

In the collective approach for *natural grazing in Podkarpackie* (PL1), the imitator and funder of the program is the Local Government of Podkarpackie Voivedship. The collectives can be set up by NGOs - associations and cooperatives, churches, sports clubs, non-profit companies. The NGOs raise the funds for statutory activities and demonstrate activity in priority areas, however they also take the risk that the sub-contracted farmers will not fulfil the requirements of the contract, which might discourage them to participate in such initiatives. One of our respondents said that "It would be easier if farmers could be treated as direct beneficiaries of the program and not run the program through NGOs. This is difficult because organizations are less motivated and bear the risk".

Institutions, governance and formal structures in LIFE+ and Interreg

Also in the case of projects rather than programs of collective implementation, such as LIFE+ or Interreg, the number of institutions involved can be rather large. In the *3WatEr* project in Flanders (BE1), the European Landowners' Organization is the coordinating beneficiary, playing a key role in establishing contacts and maintaining sustainable collaboration between private landowners and public actors. The project involves all important local stakeholders including the Flemish Agency for Nature and Forest, the natural park Regionaal Landschap Lage Kempen, the city of Hasselt and the community of Zonhoven. A specificity of this project is the association of private landowners (OVML), being a key partner in the project. OVML was formed by a group of 10 land-owners, being the main initiators of the project. OMVL was formed mainly because a common partnership was assumed beneficiary of the project, now this structure is assumed to be a major reason of the success of the project.

Also the Interreg project *Nutrinflow* (LV1), involves a broad number of institutions across 3 countries. For the Latvian part of the project mainly 3 partners are involved, namely the "Real Estates of Ministry of Agriculture" of the Zemgale Region, the Union Farmers Parliament, and the State Rural Support Service. The State Limited Liability Company "Real Estates of Ministry of Agriculture" is the responsible partner for the maintenance of the drainage systems in Latvia, the Union Farmers Parliament has the objective to educate partaking farmers, and the State Rural Support Service represents the control authority.

Institutions, governance and formal structures in value chain-based contract solutions

Value-chain contract solutions stepping into the chain only on the level of seller-buyer contractual agreements are characterised by rather few actors involved. In contrast, value-chain contract solutions aiming at the whole chain and its transition to a more sustainable and fair construct, demand a high level of integration of the respective value-chain actors, as well as a distinctively good level of trust and fairness, while the latter element is also a reason for the success of good seller-buyer constructions.

Seller-Buyer relationships

In the CONSOLE in-depth studies displaying mainly seller-buyer relationships, actually only few actors are involved. In PL4, *BioBabalscy*, the contracting partners are the producers (farmers) and the BioBabalscy company. However, the relationship between farmers and the company is described as a close partnership rather, than a typical buyer – seller connections. One may say, thus, that both parties have almost an equal bargaining power due to the fact that all partners in the chain are aware of their mutual interests. Farmers appreciate assured payments and good prices offered by processor, but also possibilities of sales of large quantities of produce. Farmers declare that they "simply" like to sell their grains to Mr. Babalski. In the *Wild farm initiative* (BG3), the seller-buyer relationship is defined by the Wild farm and the BioBalev company, which is one of the most known and well-grounded on the Bulgarian organic market. Here, unfortunately, no information about the relationship and/or level of trust was reported.

Sustainable value chains

The CONSOLE in-depth studies on contract solutions integrating the whole value chain, show a more complex orchestration of actors, but also a relatively strict regulation of rights and obligations of the individual partners involved.

In the case of the *water protection bread* (DE5), the initiative integrates the Bavarian ministry of environment providing funding for project management and communication strategy, the water management section of Lower Franconia as project lead, the FiBL as external service provider, responsible for project coordination and for carrying out the compliance checks of the participating mills and bakeries, as well as the farmers. All value chain partners have to respect agreed management requirements. These are for the farmers: project signs to be installed along the wheat fields; cultivation of selected varieties with good baking properties regardless lower protein content; fertilisation of max, 160 kg N/ha, no late fertilisation; regularly soil analysis from the participating wheat fields; detailed field recording with all management practices; no desiccation treatment. Mills need to guarantee the separate collection, the analysis and storage of the wheat from the water protection fields, the separate processing to flour, and a quarterly reporting of the wheat / flour stocks of the wheat from the initiative as well as the amount of flour ordered by the participating bakeries. The partaking bakeries need to commit to replace at least 50% of their annual requirement of wheat flour by flour from the initiative. As entry-level variant in the first year the bakeries can alternatively commit to sell especially labelled bread containing at least 60% of wheat flour from the initiative.

Also in the case of the Barilla Initiative *Carta del Mulino* (IT4), the aim is on a sustainable transition of the whole chain producing under the label. Involved are therefore not only farmers, but also mills, elevators and bakeries, all having to comply to clear obligations. Besides the actors within the value chain, the development of the charter of ISCC regulation was supported by WWF. Moreover, the impacts, both economic and environmental, will be measured by the Universities of Bologna and Tuscia to ensure that the charter delivers real benefits. Unfortunately, in this case no information has been reported about the form of governance and/or the level of communication and trust between the single actors and institutions involved.

Institutions, governance and formal structures in land tenure contract solutions:

Compared to the other contract solution types, land tenure based contract solutions are relatively simple as regards involved institutions, as well as governance. This is also the case in the 2 land-tenure based in-depth case studies in CONSOLE: The *eco-grazing* approach in Brest Metropole (FR1) represents a contract between a public structure (Brest Metropole) and a private person, a livestock breeder. In the case of *conservation grazing* in BG4, contracting parties are the owner of the area, namely the Bulgarian Society for Protection of Birds (an NGO) and the farmers. The role of the NGO is leading as they manage the project, coordinate it, and perform the monitoring activities. Farmers maintain the pastures by providing grazing and haying for fodder.

5.5 Technology aspects

One of CONSOLE's objectives in the design of improved contract solutions is to address technologies available to support these solutions. Also, potential future developments shall be identified, in order to make sure that solutions are indeed potentially implementable, future proof, and/or can benefit from upcoming developments. To this aim, the CONSOLE in-depth studies aimed also to describe the influence and the use of technology on/within the contract solutions. Hereby three main aspects were addressed: 1.) Potential technologies/practices that can increase AECPGs delivery and/or which can affect the design of measures. 2.) technology, especially linked to digitalisation, monitoring, evaluation, and traceability of measures/contracts. 3.) information technologies, which might play a role in reducing transaction costs and information asymmetries in coordination and management.

The results of the in-depth studies revealed that technology is an aspect already “thought” in many solutions. However, unfortunately the sample of in-depth studies included only few cases where the use of distinctively innovative technology strongly influenced the implementation of the contract solution.

Technology for indicator monitoring and measuring

Particularly in result-based solutions, where output indicators are the basis for remuneration, the use of technologies can strongly support indicator measuring (and calculation). Thereby not only monitoring technologies are crucial, but also sound technological approaches of calculation and upscaling of results.

In the 2 CONSOLE result-based contract solutions aiming at the reduction of CO₂, namely the *Humus program* (AT4), and *EcoMethane* (FR4), the derivation of CO₂ amounts mitigated bases on a system of monitoring and evaluation, which is strongly technology-influenced. In *EcoMethane* (FR4), the basis for indicator assessment is automatized milk analysis and a calculation model of estimating methane emissions from the pattern of milk lipids, with a degree of reliability deemed credible enough to be certified to enter voluntary carbon mechanisms. The monitoring tool is implemented as a smartphone tool, giving direct access to the analysis, with the grams of methane emitted/litre of milk. Also, the tool enables further analyses, e.g. on the efficiency of the ration, reproduction, etc. Consequently, for the farmer the tool enables the controlling the ration in terms of impact on animal health as well as an environmental impact. For each dairy farm there is an *EcoMethane-meter* that shows the number of methane emissions and its level according to the feeding system. The tool is used both in external communication but also as a more technical monitoring tool by breeders, as methane emissions can be correlated to zootechnical aspects.

In the *Humus program* (AT4), the assessment of the amount of CO₂ stored via humus accumulation bases on GIS-supported soil sampling. GIS-supported soil sampling ensures that initial soil samples and soil samples for the measuring of results are located in the same spot. Soil samples are analysed for CO₂ contents by a standard process of soil carbon analysis via dry combustion. Also upscaling on field-level is based on soil sampling, informing about bulk density of the soils.

Also *the biodiversity monitor* (NL3) is obviously influenced by technological developments, particularly as regards digitalization, monitoring and evaluation of farm data as basis for the assessment of the key-performance indicators. Unfortunately, no detailed information about the concrete use of technology is reported, however the in-depth results reveal that improvements in the assessment and availability of farm data are necessary to establish a sound data basis: for two of the seven KPI (KPI herb-rich grassland and KPI nature & landscape elements on the farm) no nation-wide data registration system available. Moreover, the use of satellite monitoring for herb-rich grassland detection is currently developed.

Besides the 3 described studies, currently monitoring technology is still rarely used, even in the result-based in-depth contract solution case studies. Nevertheless, particularly for field monitoring, future technological solutions such as cameras and drones are met with high interest (IRL2, BE1, BE3). Also the development of scoring apps (IRL1), as well as apps to be used by farmers and advisors providing real time information on performance against targets are seen as highly welcome developments in the future (IRL2).

The use of platforms

The use of platforms is particularly applied in market oriented result-based contract solutions. In the *Hiilipörssi* (FI3), the emission trading is organised via an online service donation platform, additionally lowering obstacles and thresholds to donate. The website includes a carbon counter

to estimate how many hectares of peatland can be restored and how much carbon is stored by donating a certain amount of Euros. Furthermore, the website contains news and Youtube-videos about the restoration works. This information concretises the meaning of the donation and motivates to donate. Also on the side of potential land-owners, the platform is believed to motivate landowners to join the peatland restoration contracts. Also in the *EcoMethane* initiative (FR4), carbon funding is organised via an online platform through which individuals can make donations.

Management technology

Only 1 in-depth study informed about the technology used for management decisions, while here a rather simple technology is applied: In the Eco-grazing program of Brest Metropole (FR1), the rotation schedules of the plots are set on excel (from 5 to 7 rotations per week that need to be managed). As the rotation scheme must be known to many players (breeder, agents, town halls), the excel sheet is organised in form of a dynamic table on google sheets, which allows to modulate the schedule each week. This allows to be in perfect cohesion between the Head of the Green Spaces and the breeder, with an additional frozen page that can be sent to gardeners (more precise document) and town halls (less precise, presence or absence) respectively. The introduction of this way of sharing information was put in place in 2019 and is perceived as a plus in the management of the contract and the eco-grazing.

Communication tools

Particularly in collective and cooperative based initiatives, communication tools enabling better coordination and information between institutions and actors involved seem crucial. Nevertheless, only few of the collective in-depth studies report real technological solutions in this respect. In the *ITP* in Tuscany (IT6), the interviewed experts see many ways to use technology to improve the implementation and effectiveness of such schemes: For the experts, particularly relevant could be digitization as a tool to set up farmer-based environmental protection networks. The adoption of digital technology for data collection and real-time communication can ensure timely and effective implementation of the potential interventions, in case of the *ITP* e.g. on the hydrographic network. This technology could favour the action of the participatory network that has been developed through the contract for alert and intervention among farmers and the reclamation consortium. While such technology exists and has been implemented regionally, the *ITP* participants are currently discussing its potential application for the scope of the project. Notable from the technological side are the investments planned for the production of energy from renewable sources on farms. A note, with regards to an important development that probably will not cover the completion of the current *ITP* is the use of the digital book for monitoring land/crop operations. This tool is being tested in the current RDP and its future widespread use (therefore also in the measures activated with the *ITP* of the archipelago) would, (together with the current digital communication system on payments implemented through the Tuscan Regional Agency for agricultural payment (ARTEA) allow reducing transaction costs and information asymmetries in coordination and management. Furthermore, it would ensure an increase in the effectiveness of monitoring compliance.

Measure implementation

The last aspect of technology raised in some of the in-depth studies are specific technologies for the implementation of measures on the fields. In the initiative *Wildlife estate label* (BE3), the adoption of mechanical techniques in agriculture, forestry, etc., which are adapted to biodiversity improvement, might necessitate specific agricultural and forestry technologies and equipment. Examples are special equipment for mowing as strip-till and/or special techniques in the logging of wood. In the jointly owned forests *Tuohi* (FI5), the reorientation of forest management from clear-cutting to a system of uneven-aged forests requires new orientation by all parties in the forestry value-chain. Although principally the same technologies are applied in both even-aged

and uneven-aged forest management (i.e. harvesting planning and harvesting technologies), even-aged routines are currently considered to be simpler. In even-aged management, this has led to a major responsibility shift in the direction of harvesting operators/entrepreneurs in mechanical cuttings, instead of pre-harvesting field planning work. In contrast, in uneven-aged forestry so far more harvesting planning and work supervision is needed. However, emerging technologies like single-tree scanning by airplanes, drones and harvesting machines may offer increasing opportunities to apply uneven-aged forest management. These may also at least partly replace earlier compartment-based forest inventories and planning.

6 Contract specifications and performance

As outlined in CONSOLE Deliverable D1.1, a number of features define the performance of contractual solutions for AECPG provision. Most prominent are aspects of targeting, flexibility, equity/fairness, compatibility, profitability as well as the building of social/cultural capital, all impacting on further performance criteria such as longevity, effectiveness, and acceptance. Moreover, partly context related performance aspects such as feasibility of implementation are relevant. The main features of performance are characterised by underlying design principles/variables/sub-criteria realised in the contracts. For example is longevity, as one main performance aspect, driven by factors such as the length of the contracts, the stability of participation, but also by aspects related to education/advice/training/information and the related building of social/cultural capital, and/or the support by the farming community.

One aim of the in-depth analysis of existing examples of successful contract solutions in Europe was to evaluate their performance under a set of different performance criteria identified during the project, but covering at least longevity, effectiveness and enhanced delivery in a consistent way. Particularly an understanding should be reached, which contract specifications are necessary to better fulfil environmental objectives and efficiently address the different types of performance (such as longevity, acceptance, effectiveness, etc.).

In this Chapter, the results of the evaluation of individual performance criteria for the success and effectiveness of the contract solutions are demonstrated. Performance criteria wise, best practice examples of how performance can be altered by contract design are presented out of the in-depth case studies.

6.1 Evaluation of the importance of performance criteria for the success of contract solutions

Based on a broad literature review on performance features for agri-environmental programs/incentives, Deliverable D1.1 provides a framework of performance criteria that shape the success of contractual solutions. Based on this framework the performance criteria addressed in the in-depth studies mainly cover the following aspects and design principles:

- *Targeting*: The aspect of targeting involves questions of if the contract solution is directly targeted to improve the provision of specific AECPG(s), if targets are clearly defined, realistic and reachable, if the payments are spatially targeted to areas/topics where they are most needed (vulnerable, degraded or suitable lands), if the payments are targeted to the provider of the public good, and if the payments are targeted to the results (e.g. payments are combined with auctions or depending on performance (cost/benefit targeting). Moreover, the aspect of targeting involves the aspect of additionally, meaning that the contract solution causes direct changes in land/resources use compared to a baseline of “no contract solution”.
- *Flexibility*: The aspect of flexibility involves questions of if terms of payments in the contract are designed in such way that they can be adapted to the needs of the contracting parties, if the contract length is flexible and takes different conditions into account, if the contractual

solution is designed in a way that farmers have flexibility in the technical, temporal and also spatial implementation of the contract requirements, if indicators can be adapted to changing conditions (weather extremes, etc.), if there is a certain flexibility in the design of the indicators that improve the implementation of the contractual solution, and, if participation is voluntary or mandatory.

- *Equity/fairness*: The aspect of equity and fairness involves questions of if everyone who wants to join has access to the contractual solution, if procedural fairness within the contractual solutions' framework is given (equity in decision making), if the distribution of the contract solution outcomes, particularly the payments among contracting parties is fair and if economic viability for all parties involved is given, if the contractual is perceived as fair by the contractual partners, and if benefits, cost and risk is distributed fairly.
- *Profitability*: The aspect of profitability involves questions of if the contract solutions are directly profitable for the farmers/foresters as well as for other actors, or if it doesn't (or just) covers the costs of management changes (e.g. opportunity costs) and therefore reduces (or at least doesn't increase) the profitability of contracting actors.
- *Building of social/cultural capital*: The aspect of the building of social and cultural capital involves questions of if the contract solution leads to a changed perception of the environment and the preservation of ecosystems and environmental protection (awareness building), and if non-economical capital (status/ prestige/ knowledge) is increased e.g. by certifications from recognized farmers' organizations, by explicit teaching and by the perceived level of skills/learning effects.
- *Longevity*: The aspect of longevity involves questions of if there exist plans after the end of the contact solution, if the participation seems stable, if the contract solution is supported by the farming community, and, if education elements are part of the contract, if information material or any other opportunities for further training are offered to sustain the knowledge developed during the implementation.
- *Acceptance*: The aspect of acceptance involves questions of if the contract solutions fit to the actors' attitude to risk, environment and innovations, if interest exists in the contract solution and if there any perspectives which lead to a higher or lower acceptance. Moreover, acceptance is influenced by the question if the sense of the contract solution is visible to the participants and if the participants think that the performed tasks in the contract solutions are necessary and not morally questionable. Another important aspect for acceptance is if contracting parties trust each other and are convinced of all partners fulfilling the contractual conditions. Last but not least, acceptance involves the question of how good communication and exchange between the participating parties is and if a full disclosure of the information is given.
- *Compatibility*: The aspect of compatibility involves questions of if the contract solution is compatible with the business design of the farms/foresters/stakeholders, such as type of farming, management of the farms/forests, the business models, the business principles, etc., and if compatibility with the stakeholders' habits, attitudes, ecological intentions, etc. is given.
- *Feasibility of implementation*: The aspect of the feasibility of implementation involves questions of how feasible the program costs of the contract solution are, considering transaction and implementation costs, the cost of setting up the contract solution (from the idea to its implementation), as well as the cost for individual participation.

- Effectiveness: The aspect of effectiveness involves the questions of if environmental effectiveness is given, meaning the provision of AECPG's is successfully enhanced by the contract solution, and if the contract solution is cost-effective.

As already described in Chapter 3, the in-depth analysis of contract solutions included a light evaluation exercise by the project partners' research teams, which on the one hand aimed at weighting the general importance of the single performance criteria for the success of the individual solution, and, on the other, at assessing how well the individual performance criteria seems to be met (scored) in the individual contract solution.

Due to the low number of in-depth studies, particularly if addressed on the level of groups of contract types, the results of the weighting exercise are not statistically confirmed. The evaluations carried out by the project partners' research teams rather show, if the importance of some performance criteria is above average. The evaluations therefore reveal only trends in the importance of single performance aspects for the success of the different kinds of contracts. For the qualitative diagnosis in Chapter 6.1, the weighting results have been taken into account, however, also the qualitative descriptions of the in-depth studies have been considered when making statements on trends of importance. The results of the weighting exercise are shown in the table in Annex 1 to this deliverable.

The aspect of *targeting* has been evaluated above average particularly for the group of result-based solutions. For value-chain and collective solutions the weighting exercise's results show no specific trend in the importance of targeting. Interestingly, the aspect of *flexibility* was not weighted as specifically important for any of the contract types. Only single case studies, namely the result-based *RNP* (AT3) and the *Humus program* (AT4) in Austria put some emphasis on the importance of flexibility for the success of the contract solutions. Actually, flexibility is the criterion being assessed with the lowest average weight of all group-wise weights, namely in the contract type group of collective approaches. The importance of the criterion of *equity and fairness* has been evaluated particularly high for the success of the value-chain contract solutions, while being weighted clearly lower in result-based, collective, and land-tenure approaches. Particularly for collective implementation and cooperative approaches this result is surprising, as the high level of common planning and also common risk would let expect that equity in the decision making and also the (fair) distribution of benefits, costs, and risks is a strong factor for success. Also the criterion of *compatibility with the business design of the stakeholders* seems particularly important in the value-chain approaches, while in the other contract types this criterion is not addressed with high weights. Again, also the criterion of *profitability* is weighted with high average importance in the group of value-chain approaches, but also particularly in the result-based contract solutions and in the 2 case studies representing land-tenure initiatives. The *building of social and cultural capital* interestingly has not been weighted clearly above average for its importance for successful implementation for any group of contract types. However, in single contract solutions, such as *EcoMethane* (FR4), *BioBabalscy* (PL4) or the *CSFFs* (UK1 and UK3), the building of social and cultural capital is perceived as a very important factor and also the land tenure contract solution for the conservation and restoration of grasslands in Strandzha and Sakra (BG4) address some importance to the criterion. For this criterion the weighting moreover shows that particularly in the value-chain approaches, the building of social and cultural capital obviously doesn't play an important role for success. The weights for *feasibility of implementation* were rather low, only 3 case studies address this criterion as important for the success of the contract solutions, namely the Italian *ITP* (IT5), the *jointly owned forests Tuohi* (FI5) and the *water protection bread* initiative (DE5). The criterion of *longevity* is weighted as being of particular importance in result-based and collective contract solutions and the criteria of *acceptance* is – naturally – seen as a basis of success in all contract types. Last but not least, the

criterion of *effectiveness* particularly plays a role in contract solutions based on collective implementation and cooperation. Beyond that, also in the case of integrated production in olive groves (ES4), the criterion of effectiveness is given a weight above average.

6.2 Design principles for high performance – Practice examples

The CONSOLE in-depth studies represent particularly successful examples of implementation that can serve as role models for future development and that can give relevant insights into the contract specifications and design principles leading to success. Particularly to inform on these aspects, the CONSOLE in-depth studies put emphasis on gathering information about the contract solutions' design specifications leading to high performance. The evaluations of the project partners' research teams, on how the presented contract solutions perform in their single performance criteria, give valuable hints what to look at, and which design approach might be a solution for the improvement of other and/or the development of new initiatives.

In the following paragraphs, the single performance criteria are addressed one by one, showing individual best practice cases for these criteria and describing how the contract solutions' design contributed to high scoring. Also for the qualitative diagnosis in Chapter 6.2, the scorings carried out by the project partners' research teams' results have been taken into account by choosing the most interesting and successful examples, however, also the qualitative descriptions of the in-depth studies have been considered. The results of the scoring exercise are shown in the table in Annex 1 to this deliverable.

6.2.1 Targeting

The aspect of targeting is particularly important in the result-based schemes. As two result-based examples with excellent performance in targeting, the Austrian *RNP* (AT3), the *BurrenLife program* (IRL2) shall be highlighted. In the *RNP* (AT3), excellent targeting is mainly reached through the farm- and area-individual design of conservation objectives, carried out by an ecologist together with the individual farmers on basis of the ecological basis condition/situation of the individual fields. Conservation objectives are based on the presence of subjects of protection, and conservation recommendations are individually tailored to the protection of individual species and plants. As regards spatial targeting, the field-individual targeting enables to lay focus on areas within the fields, which are highly valuable from the point of view of nature protection. Actually, field plans are even subdivided into smaller areas with specific protection goals. Payments are dependent on whether the individualised objectives are reached. To ensure monitoring and the measuring of results, individual nature protection objectives are translated into a system of measurable area objectives, which could take e.g. the form of “this specific species needs to be present on 20% of the area”, or “this special plant on the field has to be cut before flowering”. A major success aspect in the *RNP* was the fine-tuning in the development of measurable objectives in close collaboration with the national control authority, so result-based payments within *RNP* became possible. This, in combination with the individuality of objectives, and the common definition of objectives integrating the farmers, leads to a distinctively high understanding of the protection objectives by the farmers and, consequently, high environmental effectiveness and acceptance. Nevertheless, it is clear that such approach is highly time consuming and costly, and demands a high level of expertise for ecologists/advisors. Therefore, the feasibility of implementation has to be taken into account when transferring the system to other context situations/member states.

Also in the *BurrenLife Program* (IRL2), payments to farmers are primarily based on the quality of the biodiversity targets. In the Shannon Callows, non-productive investment payments were also included in the available measures, to incentivise farmers in undertaking works which would lead to direct improvements in the biodiversity targets. Contracts and payments are directly targeted on the performance of biodiversity indicators. In order to implement this principle,

participating farmers' lands are assessed and given a quality score, which reflects the condition of the biodiversity on that land and determines the level of payments made to the farmer. The scoring is based on scorecards, which are individually designed for different typical landscape context in the Burren. Each scorecard is comprised of result indicators, which are surrogates for measuring the actual biodiversity. Just as each biodiversity target (e.g. habitat or species) must respond to agricultural practices, so must the result indicators. Each result indicator is comprised of categories (e.g. on a scale of good to bad) which reflect the extent to which each individual result indicator is achieved. A certain threshold must be achieved to attain each category. The higher the number and cover of positive indicator plants, the higher the marks and the payment to the farmer. To establish payment rates, the principal threats to the biodiversity targets are considered and the associated cost (including income foregone and additional costs) of achieving the biodiversity target is calculated in line with the World Trade Organisation and Common Agricultural Policy regulations. Up to 10% of transaction costs are also included under each measure. The payment structure aims to achieve a balance between incentivising farmers to deliver the highest possible score in their specific farm setting, while giving a clear signal that the delivery of higher quality also results in a higher reward. Payment rates for the low-medium quality scores were set at a level sufficient to cover costs of farmers' participation in the scheme, while creating payment increments to incentivise further progression towards delivery of higher quality outputs. Tiered payment levels provide a financial incentive to the farmer to deliver the highest quality environmental product in their particular farm setting. In some instances, in order to create, maintain or rehabilitate biodiversity features, an initial investment was required to enhance the biodiversity outcome. This is a non-productive investment for actions over and above what is covered in the costing of annual results-based payments and their inclusion gave rise to blended/hybrid model of delivery rather than 'pure' results-based where payment is solely based on quality as assessed by the scoring system.

Beyond the result-based approaches, also in other groups of contract types the design of the contracts enables excellent targeting. Examples for collective approaches with excellent targeting are the *CSFFs* (UK1 and UK3), the LIFE+ and Interreg projects *Nutrinflow (LV1)*, *Dviète (LV2)*, and the *3WatEr* project in Flanders (BE1), and *natural grazing in Podkarpackie Region (PL1)*. In the 2 LIFE+ projects LV1 and BE3, and in the Interreg project LV2, the design of the projects was fully targeted to reaching the clearly defined project goals. In BE3 for example, to reach AECPPG objectives, such as the protection of specific bird species, tailored actions (including a detailed plan on area of implementation, measures to be taken, etc.) were elaborated and carried out in the course of the project. In the cluster of value chain contract solutions, excellent targeting is addressed to the *water protection bread (DE5)*, to *Carta del Mulino (IT4)*, and to the *integrated production in the olive groves (ES4)*. In all three value chain approaches, excellency in targeting is reached by a clear set of obligatory measures to be carried out by the contractees, directly tailored to improve the AECPPG objectives, which are also clearly defined. In IT4, the basis is the list of ISCC criteria and the ten measures proposed, in DE5, measures directly prescribe fertilisation pattern and amount focusing on groundwater protection areas, and in ES4, the Integrated Production Regulation establishes a series of prohibited, mandatory and recommended practices directly addressing the main AECPPGs threatened.

6.2.2 Flexibility

The aspect of flexibility was not evaluated to be particularly important for the success of a certain group of contract types, and generally the importance of the criteria of flexibility in the success of the contract solution were evaluated below average in most schemes. Nevertheless, some contractual solutions report high performance in this criteria, for example the result based-schemes *Humus Program* in Austria (AT4) or the *Burren Life Program (IRL2)*. In these 2 result-based contract solutions, the main reasons for the good performance of flexibility are that no management requirements are prescribed to the farmers on how to reach the results that enable

payments, and that payments are flexible in their amount, as they are directly connected to the results. In AT3, the initiators of the humus program only provide partaking farmers with management recommendations on how to achieve increases in soil humus contents. Moreover, farmers are informed about possibilities of taking part in training events/seminars, etc. Nevertheless, the management decisions about how to increase soil carbon contents are fully free to the farmers. Also, farmers can freely choose the period and duration of the phase of carbon accumulation, while result measurements are offered within a period of 3 to 7 years after entering the contract. Farmers are always free to leave the program unless they have received payments. As soon as payments have been issued, farmers are bound to a period of 5 years, within which they need to maintain the level of carbon contents on the fields that was eligible for payments, otherwise payments need to be repaid. Farmers are also able to prolong their contracts after the result measurement, if they wish. The payment itself directly refers to the amount of CO₂ stored, while currently a fixed price of 30€/tCO₂ is paid. Also in the *Burren program* (IRL2), farmers are only given recommendations on what best practice to implement to reach high scores on the indicators defined in the scorecards. They are then free and flexible to implement the advice as they wish but they are not paid on the action but on the outcome in scores. Flexible, tiered payment structures that link the quality of outcome to the payment rate are used to incentivise change in farmer attitudes and management and bring about benefits for biodiversity targets. Payment rates reflect the value of the biodiversity being produced, the effort required to produce it and also the prevailing market concerns.

Also 3 value-chain approaches report excellent performance in the criteria of flexibility, namely the *water protection bread* (DE5), the *wild farm* (BG3) and *BioBabalscy* (PL4). In the *water protection bread* initiative (DE5), on first sight flexibility could be assumed to be low because of strict requirements for farmers on amount and timing of nitrogen fertilisation, actually several aspects provide flexibility: First, all actors of the value chain as well as the water suppliers engage on a voluntary basis in the initiative by signing the self-declarations. Moreover, while initially the growing, processing and selling of water protection bread and other baked goods were limited to Lower Franconia, today it is extended to Central and Upper Franconia and to Lower Bavaria. In addition, the initiative was opened to farmers that farm in water-sensible areas outside water protection areas. Farmers can partake irrespective of the wheat field being owned or rented by the farmer. Also, there are no particular requirements for the farmers regarding the applied technology or farming technique. There is a high degree of flexibility for all three parties as no one commits himself beyond one year, engagements last from harvest to harvest and the amount of the grown, traded and processed water protection wheat is subject of annual negotiation. After all the amount of flour from the water protection initiative purchased and processed by the participating bakeries defines how much water protection wheat is grown. Also in the 2 case studies BG4 and PL1, the high scoring of flexibility is mainly justified by the flexibility in terms of year-to-year arrangements concerning structure and volumes of grains (PL4) and the flexible, short term arrangements on quantities depending on the needs of the distributor and the consumer demand in the wild farm (BG4). In the *BioBabalscy* contract solution (PL4), moreover prices are usually discussed with the farmers on the annual gathering of interested producers.

6.2.3 Equity/fairness

Generally, the importance of equity and fairness for the success of contract solutions has been weighted particularly high for the value-chain contract solution case studies and low for the other contracts types. Looking at the performance of this criteria across all cases, however, this criterion has, together with the criterion of acceptance, with an average score of 4.4, the highest average performance score across all criteria, meaning that all of the contract solutions presented in the in-depth studies provide very high equity and fairness. In the group of value chain contract solutions, the *Wild farm* (BG3), *BioBabalscy* (PL4) and *Carta del Mulino* (IT4) all score with excellent performance. In the case of the *Wild farm* (BG4), the perceived fairness expressed by

all of the 4 involved farms results mainly from the shared mission and the collective decision-making as regards farmland. Also, common decisions as regards marketing of the meat, common stakes in the slaughterhouse and the fair distribution of benefits, costs, and risk lead to the high level of perceived fairness. Unfortunately, aside from the equity/fairness inside the collective group of the Wild farm farmers, namely in the contracts with the value chain partner, no detailed information has been reported by the experts. In the case of *BioBabalscy* (PL1), as already outlined earlier in this deliverable, a close relationship exists between the company and its producers. However, here also other factors lead to the high scoring in the criteria of equity and fairness. First, participation is open to all organic producers who are prepared to meet the processors' requirements may participate. Second, each year a meeting of all producers involved is organised, where arrangements are discussed, with some arrangements also being negotiated individually. The conditions defined by the processor are reasonably clear and acceptable. Third, prices offered by the processor are very attractive for farmers and processor report to gain a good profit. As regards prices every farmer has the same rules and same basic prices, although the final price may differ depending on the quality of grains supplied. Fourth, besides the natural production risk, resulting mainly from unfavourable weather conditions, there are no penalties for not fulfilling the contract in terms of supplying the agreed volume of grains. This is in line with the philosophy of the processor who leaves to the farmers the freedom to sell to the buyer they prefer. In the case of *Carta del Mulino* (IT4) unfortunately not too much has been reported about the contract specifications leading to the high score of equity and fairness, however, part of the high-performance results from the equity in access, as every farm producing soft can join the contracts and all parties involved perceive economic viability, the farmers by the price premium for the products, Barilla by the gain of market shares. The last point made by the experts is the (fair) distribution the value along the value chain, from Barilla, to the mills and finally to the farmers.

Even if equity and fairness in general has not been weighted as an outstandingly important criterion for the success of contracts of collective implementation and cooperation, some cases of excellency in this criteria shall be demonstrated. In the group of collective/cooperative, the *CSFFs* (UK1 and UK3), the *3WatEr* project (BE1), the *natural grazing in Podkarpackie* (PL1) and the *jointly owned forests Tuohi* (FI5) achieve excellent performance in the criteria of equity and fairness. In UK1 and UK3, equity of access in the CSFFs is high, as there is no boundary in the size of land aiming to take part in the group so small land managers are allowed equal rights as large land managers. Joining the group is free and has no transaction costs for the farmer or the network lead, furthermore there are no barriers to entry in the CSFF group for farmers or land managers or local stakeholders. As regards the equity of decision making, within the *Wensleydale CSFF* network (UK3), all farmers have a voice in the group and the steering group, ensuring that all sides (farmers, land managers, local representatives from charitable and land management organisations) are represented and actively decide for new events and policies. Also in the case of *South Peninnes CSFF* (UK1), equity of decision making is granted with the formation of the steering group: the power is devolved between the network lead and the farmers, leading to equity amongst farmers and land managers. Differences between the 2 CSFFs are found in the equity of the outcomes, which depends on the homogeneity of the farms involved in the group. While the South Pennines CSFF is made up by a very homogeneous farm group (small land holdings of sheep and beef farms) and farmers taking part should have rather equal benefits, in the *Wenslesdale CSFF* it seems that small and less well-off farms benefit even more than the bigger dairy farms in the group (who are also participating less), as for the smaller farms the collective access and power, the option to join up forces, mobilise other farmers, get information and training and have their voices been heard through the CSFF is a particular benefit. In the *3WatEr project* (BE1), actually the reasons for high scoring in the criteria of equity/fairness are the guiding principles of the founded association OVML vzw: all participants have their say about

the project achievements in the framework the association and the steering committees. Participants are entitled to information about the achievements of the other participants in order to verify all legal commitments are fulfilled in the long term, as contracted under the Life+ project. Also, all participants in the OVML vzw projects are subject to the same contractual structure. The contractual solution is particularly perceived as fair, as it was developed bottom-up, for the needs of private landowners wanting to develop nature in a Life+ project.

A very interesting contract solution as regards the contract specifications for equity and fairness are the green *jointly owned forests* (FI5). Actually, anybody can enter the contract solution, the restriction in access is a minimum investment, which is 10,000 Euros, either in of money or forest property. All shareholders of Tuohi have full rights to participate to decision making. The most important decision-making body is the annual meeting of the jointly owned forest. A shareholder's voting power depends on the number of shares she/he has. However, there is an upper limit in single shareholder votes. Particularly this upper limit in decision making is a contract specification contributing to high perceived equity and fairness: According to Act on Jointly Owned Forests (11 §) in decision making there is the upper 10% casting vote limit for a single shareholder, but the surplus division is made according to number of shares (32 §). So, increased wealth does not automatically increase power in a jointly owned forest. As regards equity in outcome, Tuohi has had, except for the very first years, a policy to pay the annual financial surplus to shareholders (certain reservations can be made for the forthcoming costs). The equity of this process is distinctively high due to the exact information on the shares. Also the distribution of benefits, costs and risks is done according to number of shares. In discussions with shareholders of Tuohi, due to all these contract specifications, perceived equity is high.

The last of the exemplary collective approaches to be presented in the connection to equity and fairness is PL1. Here, the high score in equity and fairness for the initiative collective grazing in Podkarpackie results not from the equity in decision making, as here the contracting organisation leading the program takes the decision while the farmers have to fulfil the requirements of the contracts. However, the procedures based on the contracts are fair and the rules and the payments are clear and equal for every farmer.

6.2.4 Profitability

The general importance of profitability for the success of the contractual solutions has been weighted highest for result-based and value-chain approaches. However, almost none of the contract solutions in the whole sample of in-depth studies scores excellently high in this criteria, and, with an average score of only 3.1 across all case studies, this criterion is the one with the lowest average performance. Actually, only the Humus program of the Ökoregion Kaindorf (AT4) and the collective reservoirs (IT1) are scored as excellent in the criteria of profitability. In both cases, profitability is not primarily grounded in the immediate price paid per ton CO₂ (AT4), or in the subsidies for the establishment of the reservoirs (IT1), but in the long-term effects on production. In AT4, long term profitability is reached by the increase of organic matter in the soils, leading to higher productivity. At the beginning of the transition process to “humus farming”, the price payed mainly covers the costs of management changes, while these costs decrease over time due to learning effects. Still, the payment is perceived by the farmers as a payment for “production” of carbon sequestration, additionally to the production of agricultural produce. In IT1, water availability is key for the maintenance of production. Indeed, the contract solution only covers a part of the total costs of the construction of the reservoir. Albeit reduced, the cost accruing to farmers can be substantial, e.g. several thousand euros per 1000 m³ of water stored, however the successful rate of response implies a perceived advantage from enrolling.²

² For the development of WP3 and WP4 activities, besides best practice examples also contract solutions scoring low on profitability will be considered to learn from that. Also the analysis of profitability will be expanded on the value chain approaches, as these weight profitability really high, but obviously do not perform well.

6.2.5 Building of social/cultural capital:

The building of social and cultural capital as an important element of success for the contract solutions has been evaluated with outstandingly high weights in the *CSFFs* in UK1 and UK3, in the *BioBabalscy* value chain initiative (PL4), in the case of *EcoMethane* (FR4) and in the land tenure approach of *conservation and restoration of grasslands in Strandzha and Sakra mountains* (BG4). In the first 4 cases, also the scoring for the criteria reveals excellent performance. In the UK1 *CSFF*, participation in the group has allowed farmers to have a collective voice and act as a lever to impact local decision making. Farmers have been able to understand better the interconnectedness of natural systems and better prepare themselves for changing climate and changing farming and land management practices. The group forming has also been a benefit when engaging with organisations such as the Woodland Trust, Environment Agency and Local Authority who are all keen to engage with farmers but unable to do so on an individual basis – working through the *CSFF* has given them a route for this engagement to take place. This resulted in the group having one of the highest number of meetings of all UK *CSFF* groups. In the UK3 *CSFF*, experts report that participation in the group has allowed farmers to understand both the available options to engage with natural flood management, but also the beneficial impact such activities can have to the environment. Farmers have been able to understand better the interconnectedness of natural systems and better prepare themselves for changing climate and changing farming and land management practices. In the case of *BioBabalscy* (PL4), the high performance in the criteria of building social and cultural capital is grounded in the perception of environment changes due to increased awareness of the growing number of organic farmers in the area. To some extent this changes in perception is addressed to the activities the BioBabalski company in the field of knowledge and skills sharing. In the *EcoMethane* initiative (FR4), the farmers involved could be classified as “already sensitized”, however the approach allows them to raise awareness of their own public: Thanks to the meter and the numbers obtained, the awareness of the society can be increased, and agricultural practices, different systems and efforts to reduce GHGs by farmers, can be communicated to the public, even if methane is not as easily noticeable as other elements or AECPGs, such as landscapes, animal welfare, clear water etc. The possibility to enhance public awareness in the contract solution is fostered by the provision of performance signs to breeders. These disclose the savings produced (translated in terms of car miles to be more telling). which can change people's perception of themselves and their practices. In addition, through the *EcoMethane* approach, communication tools (e.g. the smart phone app) are made available to farmers so that they can communicate about the approach and their results to a wider audience.

6.2.6 Longevity

The criterion of longevity has been weighted as particularly important in the result-based contract solutions and in the cases of collective implementation and cooperation. In the group of result-based contract solutions highest importance of this criterion for the overall success of the initiative are found in the *Burren Program* (IRL1) and the *RBAPS* pilot (IRL2), while the latter, due to its pilot character, unfortunately scores poor in this criterion. Also the 2 CO₂ initiatives *EcoMethane* (FR4) and the *Humus Program* (AT4) address high importance to the criteria of longevity. Here only the *Humus* program scores excellent, while *EcoMethane* reaches a rather poor performance, mainly due to the current lack of training for the farmers, and the still missing support from the overall farming community except the pioneers stepping into the solution.

In the *Burren program* (IRL1), the high score in the criteria of longevity bases on different pillars: The program provides a specific, and quite strict strategy of education and training in form of training workshops for all participants. The trainings consist of an introduction session in year 1 of participation and/or classroom and field sessions in subsequent years. The attendance at workshops is mandatory for program participants and failure to attend impacts on the payment received. Failure to attend 3 consecutive workshops leads to expulsion from the program. The

workshops focus on practical management issues such as identifying habitats, sustainable grazing regimes, approved feeding systems, etc. The training events are also used to explain the scoring structure and how scores can be improved through targeted management. Farmers are encouraged and facilitated to engage in a self-scoring exercise before their trained advisor visits to improve their understanding of the system. All training takes place in the Burren, mainly on the land and all resources (best practice guides, etc.) are locally focussed. Also, the Burren program has followed a continuous strategy of involving farmers. For example, in the current round of the project a phased approach to farmer recruitment, with calls for applications made over 3 years (2016-18). Competition for places was initially strong – there were over 400 applications for the first call, with 194 places taken up (3 of whom later withdrew), and 147 of whom had participated in an earlier version of the program. In 2017, a second tranche of 80 farmers joined, followed by a third tranche of 57 in 2018, giving a total of 328 farmers. The area currently managed by these farmers includes 71% of the Burren’s designated area and it is estimated that there is now only 20% of target farmers that have not participated. The Burren program in the meantime receives strong support of the farming community, also expressed by the attendance at public events by participant farmers.

In the Humus Program (AT4), participation of farmers is steadily increasing from initially 3 partaking farmers in 2007, to now over 250 farmers, while this increase has been reached only by word-of-mouth information and speeches of the representatives of the Ökoregion Kaindorf association on events visited by farmers. Besides being obviously economically interesting and attractive for the farmers, and therefore guaranteeing some inert longevity of an attractive business solution, the contract solutions longevity is supported by the creation and dissemination of subject-specific knowledge. So-called “Humus-days” are organised once a year, no having established as European networking events for experts and practitioners, with now more than 400 participants. Also a so-called “Humus-Academy”, with series of seminars about soil fertility, compose, intercropping, etc. has been established, to enable the continuous exchange of knowledge throughout the year. The main aspect for longevity in the Humus Program contract itself, is the specification for its duration. Due to the fact, that result measurements of soil carbon contents are possible only after a minimum time span of 3 years after entering the contract solution and starting with the process of humus accumulation, up to a duration of humus accumulation of 7 years, and, the 5-year phase of guaranteeing the stability of humus content after the result measurement and payment of the performance fee, the contract solution can be binding for up to 12 years – and therefore particularly longer than any public AES available. Also, contracts can be easily prolonged after the result measurement, continuing the process of humus accumulation.

Amongst the cases of collective implementation and collaboration, the criterion of longevity has been weighted particularly high for the success of the incentives for *collective reservoirs* (IT1), the *integrated territorial projects* (IT6), the *CSFFs* (UK1 and UK3), the *3WatEr LIFE* Project (BE1) and the *Natural grazing in Podkarpackie* (PL1). However, of these 5 contract solutions, only IT1, IT6 and BE1 perform excellent in the criteria of longevity, particularly the CSFFs only poorly. In the CSFFs the low score is somewhat unexpected, as the CSFFs put a lot of effort into training and education therefore some point shall be described here anyway: The CSFF training takes place through visits in farms of CSFF members or of neighbouring CSFF members’ farms and through events with invited speakers. These speakers come from various backgrounds, from practitioners in the farming industry to academics and consultants who deliver talks and training for topics of interest to farmers (e.g. NFM practices talks, carbon capturing and sequestration in soils, woodland creation and management, etc.). Also, member numbers are stable and increasing, even if starting and getting the farmers together obviously was difficult. Nevertheless, bigger number increase hasn’t taken place in the CSFFs as it is difficult for the group lead to manage very large groups given their limited time to devote to the activities (one day a week). Another

reason for the low scores in the criteria of longevity in the CSFFs might be that there are no plans available yet guaranteeing the persistence of the program.

In IT1, the longevity of the program is given by the subject and kind of subsidy, being a one-shot transfer supporting the building of the water reservoirs, which are per se long-term infrastructures. Also, representing a win-win situation, support for this contractual solution in the farming community is high, moreover the Consorzio di Bonifica della Romagna Occidentale (CBRO) provides the technical skill for the project design and the subsequent management of the reservoirs. In the *ITPs* of Tuscany (IT6), no specific contract specifications have been reported by the experts that grant longevity. Nevertheless, it becomes clear that obviously a part of the solutions will be continued after the end of the program. Also, given the substantial support for the realization of specific and necessary investments for the arrangement of the territory, the community responds with much interest and enthusiasm with respect to the possibilities given by such kind of projects. Specific training meetings are also planned, whereat dissemination and training activities are managed by the coordinator together with the participants involved for the specific tasks and an indirect participant, whose main task is to ensure knowledge and acceptability of the proposed interventions.

The excellent score in the criteria of longevity of the *LIFE+ 3WatEr project* (BE1) on the one hand bases on the continuity and the coordination of the project's environmental objectives with the Flemish natural management plan, which will persist after the end of the lifetime of the project. Also, as being a *LIFE+* project (and this also accounts for the Burren Program (IRL1) and Dviete (LV2)), the so-called *AfterLife* plan is focused on guaranteeing the maintenance of the effectiveness beyond the end of the "project". In the *3WatEr* project, excellent scoring in longevity is moreover seen in the fact, that education is at the centre of the realization of the *Life+* project and its aftermath. The overall objectives of the project indeed covered not only the restoration of the *3watEr* project area but put emphasis particularly on the expansion of educational activities and opportunities throughout the project area. The ecological and educational actions in the project have all been designed with economic use in mind – allowing landowners to be financially viable as well as economically responsible, with forestry and fish farming forming a long-standing economic staple of the area. The educational tools developed by the project such as the educational package for schools, the documentary, and the training of the *Wijers-Guides* (local volunteers trained by the project who can be asked to accompany walks in the area) will help ensure that existing and coming generations will know the area and its challenges much better – this will greatly help with public acceptance.

The last example of a contract solution putting high weight on the criteria of longevity for its success, while simultaneously scoring excellent in this criterion, is the initiative *Carbon Market Hiilipörssi* (FI5). The major reason for the high score is the long-term objective of transforming restored peatland areas into private protected areas in line with the Finnish Nature Conservation Act of 1996 (also 1923). Within all *CONSOLE* in-depth studies, this is indeed the most permanent approach to guarantee a basically "forever" status of protection, as the conservation agreement binds, in the case of a change of ownership, also the new owner to the regulation to not reversing the restoration measures done. As regards the interest in the project, from side of the donors' longevity seems currently granted as the number of donors interested in funding and buying certificates has been increasing sharply, meaning that there is a massive demand for such solution on the side of the buyers. However, as the initiative is rather new it is still difficult to assess the willingness of landowners to participate. During the past decades in the *METSO*-protection program, forest owners have been quite willing to voluntarily protect parts of their forests. However, many of them want to avoid the permanent and official protection status, since they don't want to make decisions on behalf of the next generation i.e. inheritors inside the family.

6.2.7 Acceptance

The criteria of acceptance – as to be expected – was weighted as important for the success of all groups of contract solutions. Particularly in the group of result-based cases this criterion is weighted high for *RBAPS* (IRL2), *Burren Program* (IRL1) and, being a mixed instrument, for the Carbon Market *Hiilipörssi* (FI3), in the group of collective approaches for the *collective reservoirs* (IT1), the *Kromme Rjin collective management* (NL1) and the *green jointly owned forests Tuohi* (FI5), in the group of value-chain approaches for the cases of the *water protection bread* (DE5) and the case of *integrated production in the olive groves* (ES4), and in the group of land tenure approaches for both the *EcoGrazing* (FR1) and the *conservation of grassland in Strandzha and Sakra mountains* (BG4). Though, for these cases importance and actual an excellent scoring only match in the cases of collective reservoirs (IT1), water protection bread (FI5) and the 2 land tenure cases (FR1 and BG4). As acceptance however is a basic principle for implementation, and a higher-level performance criterion, the analysis in this sub-chapter focusses not only on best practice examples being matches between importance and performance, but will take an approach of highlighting most interesting cases throughout all groups of contract types with very good and excellent performance – due to certain contract specifications.

From the analysis of the contract solutions scoring very well or even excellent in the criteria of acceptance, it became clear that an important driver is the understanding of the sense of the measures and outcomes. On the one hand, this understanding is based on the recognition of objectives and the measures leading to the enhancement of AECPGs, on the other, it is based on the understanding of the “moral” sense of the contract solutions. From the in-depth descriptions on the question it became obvious that particularly result-based approaches as well as cases of collective implementation contain special design elements that enhance the understanding of the sense of the contract solutions: For example in the case of the result-based initiative *EcoMethane* (FR4), which scores excellent in the criteria of acceptance, the approach of lowering methane emissions via adaptations in the dairy cows’ feed ration itself is clear, based on scientific elements, recognized at the state and United Nations level and therefore understandable and credible to the farmers. Moreover, a shared environmental awareness of the partaking pioneer farmers leads to a high moral understanding that the objectives of the contract “make sense”. One of the interviewed farmers stated that *EcoMethane* finally brings what our grandparents have instilled in us for years: a methodology to have a better future and transmit a planet where we have limited the damage, and it makes us want to talk about it and that society recognizes it.” Also in the result-based initiatives *RNP* (AT3), *Burren Program* (IRL1), *RBAPs* (IRL2) and the *Humus Program* (AT4), the clear indicators, the transparent technical procedures of their measurement and upscaling, and, finally, the direct relationship between management and results, strongly enhance the understanding of the sense of the recommended (not obligatory) management measures. In the *RNP* (AT3) for examples, the elaboration of protection objectives and management measures together with the farmers, as well as a certain response to the personal interest of protection objectives of the farmers on their own fields, guarantees “technical” understanding as well as the moral conviction of the farmers that the subject of protection is worth it. In the *RBAPS* (IRL2) and *Burren Program* (IRL1), the initial assessment of the farm-individual status quo of environmental assets by means of the easily understandable scorecards and the management recommendations are the basis of a good understanding of what can why and how be achieved. Likewise, in the result-based *Humus Program* (AT4), the comparison of the results of the initial soil sampling, and the soil sampling for result measurements directly show changes in the AECPGs to the farmers, while the technical process of analysing carbon contents is transparent, not doubted and understandable for the farmers. Additionally, for the *Humus Program* the experts report that the partaking farmers are convinced about the sense of accumulation soil organic matter for a broad variety of soil functions, in parts due to the fact that they have been entering the program inspired by soil related scientific events, where they learned about the program.

However, the experts also perceive that in general the sense of enhancing soil carbon contents is not clear yet to most farmers outside the scheme. In the cases of collaboration and collective implementation, the understanding of the sense of the measures often results from the collective design and elaboration of the landscape development plans. For example, in the *ITPs* (IT6), all actions and interventions were planned in concert with all participants under the conditions established by the Tuscany region as regards the presentation of applications and the selection of ITP projects. Moreover, the type of actions that can be financed are established through the PSR Regione Toscana, therefore the pack of available measure is a familiar tool for the participants. For the ITP, the experts believe that for the sake of common planning, there are no reasons for the participants to consider the contractual conditions unreasonable or morally questionable. Also, the participants proposed within a clear set of possible actions/interventions that could bring benefits and be realized within an established participation scheme. Also in the bottom-up approach of the *3WatEr* project (BE1), the contract solution was commonly developed for achieving project actions suggested by each participant to be realized on parcels under their own management. Naturally, the own bottom-up development of objectives and measures per se involved an understanding of the necessity and sense of the measures.

In the value chain approaches, it became clear that a major element for acceptance is trust. In the 2 value chain case studies scoring excellent in the criteria of acceptance, namely *Biobabsky* (PL4), and the *Wild farm* (BG3), the trustful relationship is mainly due to a long-lasting and very close, personal relationship between on the one hand the producers and processor in PL4, and the well-established trust among the participants because of previously build trustful relations in BG3. In the initiative *water protection bread* (DE5), the high level of trust mainly bases on mutual respect of all project participants in combination with a great public relation work and the transparency within the initiative. Here, annual meetings offer the possibility to get insights into the activities of the other actors of the value chain, but it also allows exchanging news. The visits of a water utility, a farm, a bakery and a mill were important for the team spirit and contributed to strengthen the sense of community. In several cases there are long-term trade relations between farmers and mills as well as between mills and bakeries, so that some actors knew each other before participating in the initiative. The water suppliers and their cooperation farmers are collaborating since many years, too. The initiative benefited from this basis of trust. The larger the group of participants become, the more it is difficult however to keep a personal contact between the members. This difficulty is enforced by the fact that the initiative has been extended beyond Upper Franconia. Showing participants faces on the website of the water protection bread, but also opening the farm for activities in connection to the initiative as well as exchanges with the press requires trust between the participants including the project lead. On the other side – if successful – they can contribute to further strengthen acceptance.

Throughout all types of contract solutions, communication within the contract solution plays a role in enhancing trust, understanding of the sense of the contracts and therefore acceptance. In some cases, communication is even an important factor of implementation feasibility. A good example is the case of *EcoGrazing* (FR1). Here, the partners are in constant contact (via WhatsApp) and every Tuesday when moving animals, with very frequent exchanges. Particularly in the collective approaches, communication is essential for the orchestration of measures and mostly an integrative part of the contract solution itself. In NL1, the *collective management in Kromme Rjin* for example, the board of the collective meets bimonthly and a general assembly takes place annually. In the *CSFFs* (UK1 and UK3), communication and exchange is the basic objective of the whole contract: Monthly meetings ensure that there is good communication and participation across the group while it takes a lot of effort from the facilitator to bring all members together and steer the direction of the group. Therefore, in the future, a new steering committee is expected to assist this process. In the Tuscan *ITP* (IT6), the communication process is managed by the project leader, who has the task of keeping the Tuscan region informed and ensuring

effective and timely communication between all participants. For example, in the initial phase, the project leader was the organizer and promoter of public conferences carried out as an animation activity, on-site, in close collaboration with the Tuscan Archipelago National Park Authority. Then, the lead partner has the task to ensure communication between the participants and the Region. Finally, communication includes meetings and conferences with the wineries participating in the ITP, supply of web and paper materials in order to make them as expert and operational as possible in the use of the "Smart Alert System" as well as guarantee the diffusion of good agricultural practices and projects results.

6.2.8 Compatibility

The importance of the criteria of compatibility of the contractual solution with the business design of the contractees and with the interest and attitudes of stakeholder has been weighted relatively low for the success of result-based, collective/collaborative and land-tenure approaches. In contrast, for the value-chain approaches, this importance of this criterion is weighted as clearly above average, and also the performance of all value chain contract solutions as regards this criterion is either very well or even excellent. In the case of *BioBabalscy* (PL4), high compatibility with the business design of the farmers results from the fact that the partaking organic arable farmers in the region already grow cereals within their crop rotation. Therefore, the possibility of selling grains to Babalscy Company at good prices makes the cultivation of cereals represents a more profitable win-win situation for them. The same situation applies to the farmers producing for *Carta del Mulino* (IT4). Here the contract is highly compatible with the business design of the stakeholders, as it is linked to regular agricultural production, even though additional costs can be foreseen by the compliance with the ten rules. In the case of the *water protection bread* (DE5), a basic knowledge about the real movements of the produced and processed goods was decisive for the success and a precondition to engage the different actors at regional level. In addition, it made it possible to set the framework conditions of the initiative in such a way that they fit for business operators and to obtain the desired product properties. For the production of wheat for the water protection bread, the participating farmers do not need to change their farming practices in general: they only adapt their management practices on the single fields where they grow wheat according to the specifications of the initiative. For the mills, too, there is no need for general modifications: the separate collection, storage and milling can be integrated into usual business procedures. The possibility for the bakeries to participate as "water protection bakeries" with at least 50% of the processed wheat coming from the fields of the initiative, allows a good integration into the business activities. One bakery decided to use at least 80% of its wheat flour originating from the initiative – covering all the bakery products. It was reported that this was done for the harvests 2017-2019 where even 85% of the wheat flour came from the water protection bread initiative. The participating bakeries got the wheat flour in the qualities they needed alongside with all important analytic parameters. The preparation of the dough nevertheless requires some extra effort as the baker needs to look "how the dough reacts" at any new delivery.

For all these 3 value-chain solutions one can conclude, that the value-chain contract does not require a real restructuring of management, but only adds some specificities that are integrable without the need of e.g. changing technologies or business management. In the last case of value chain solutions to be exemplarily reported here, namely the Wild farm, integration goes even further. Here, the contractual solution and the whole business design around it has been designed and build-up by the farmers, so the solution is perfectly harmonized with the farming system and the farm management of the partaking farms.

6.2.9 Feasibility of Implementation

The criterion of feasibility of implementation was not evaluated to be particularly important for the success of a certain group of contract types. Also, only 4 contract solutions report excellent

performance in this criteria, namely the 2 land tenure contract solutions (BG4, FR1), the value chain initiative *Carta del Mulino* (IT4) and the *Wildlife Estates label* (BE3). Nevertheless, especially when considering the transfer of functioning contract solutions to other context situation, or in the case of considering the replacement of existing approaches, such as area-based, farm-individual subsidies by collective or result-based schemes, or by initiatives of the value chain, the question of feasibility of implementation should be raised. Particularly important in this respect is information about program costs, considering transaction and implementation costs, as well as costs connected to the design of the (new) programs. To gather a more general view on the differences in the program costs of different kinds of contracts, also in this sub-chapter the analysis of the in-depth studies focusses not only on best practice examples, but will take a contract-type wise approach of highlighting most interesting statements about the feasibility of the single contract solutions investigated.

Most of the result-based initiatives investigated in the CONSOLE in-depth case study sample report that particularly the costs for setting up the programs and projects have been rather high. Often this is due to the fact that such approaches have to be developed from scratch. In the case of the *biodiversity monitor for dairy farming* (NL3) for example, the conceptualization costs are estimated to be “relatively high”, because much time and research are invested for the development of this new conceptual tool. A similar statement accounts for the *RNP* (AT3) and for *EcoMethane* (FR4): In the *RNP* (AT3), a lot of effort has been spent in setting up the overall design of the program, the reporting tools for the farmers, as well as in training the farm advisors, as well as the controllers from the control authority. In the *EcoMethane* approach (FR4), the program itself has been perceived by the experts to be “very expensive” in terms of building the device. For the *Burren Program* (IRL1), the BP team estimates that about 15% of overall project cost is spent on delivering the program.

As regards running costs of result-based schemes, these differ particularly for the different ways of monitoring: in result-based schemes with rather technological assessment and measurement of fixed performance indicators, such as in *EcoMethane* (FR4) and the *Biodiversity monitor* (NL3), running costs are comparably “low” or “medium”. For example, in FR3, the *EcoMethane* device is not expensive for the farmers and also the transaction costs are estimated to be relatively low. Running costs for the initiator *Bleu-Blanc-Coeur* consist in activities of engaging funding (communication costs, approaching funders). The *EcoMethane* approach is managed by *Bleu-Blanc-Coeur* employees. Current costs of the process are particularly operating costs of the platform, costs of analysing the milk and the operating costs for *Bleu-Blanc-Coeur* personnel. Also for the *Biodiversity monitor* (NL3), implementation and running costs are expected to be “medium”. For the implementation of the monitor, some infrastructure and organizational elements had to be/are being built (e.g. the *Biodiversity Monitor Foundation*, and a new central database for the registration of nature & landscape elements on farms), however, for running the monitoring only minimal costs limited to some extra administrative burdens are expected.

In contrast to these “technological” solutions, result-based programs with “on-field” monitoring of results by ecological advisors and/or controllers are estimated to have comparatively high running costs. In the Austrian *RNP* (AT3), these costs stem mainly from the farm-individuality of the objectives and measures: The most intensive cost position is estimated to be farm-individual advice, however this individuality is perceived as the key factor of success and the investment seems more sustainable due to learning effects/awareness building, etc. Also in the *Burren Program* (IRL1) and in the pilot planning for *RBAPS* (IRL2), implementation is evaluated to be rather complex and also costly, and requires investments in project teams as well as in specially trained farm advisors. Nevertheless, in the *Burren program* the result-based component of funding, namely the scoring intervention is estimated to cost 3 times less than the conservation works element of the program. Therefore, it is suggested that the result-based element is a more

cost-effective scheme to operate. In the Irish pilot *RBAPS* (IRL2) for a result-based RDP, resources required to implement the project were estimated to mirror those required for higher tier management-based schemes. It was assumed that the managing authority will have (or has access to) the relevant staff required (scientific experts, inspectors, financial, administrative, IT systems and data control), likely supported by a national farm advisory service. The establishment of local support offices, with the relevant expertise (agri-ecological scientists and administrators), may help to embed the scheme in the regions where they are being targeted. Here it was anticipated that the local office provides support, training and advice for farmers and farm advisors and acts as the liaison point with the managing authority (where this service is provided by an external agency).

As regards contract solutions aiming at entering the carbon market, also here partly high costs for setting up the programs have been reported. In the case of the *Humus program* (AT4), particularly the costs of setting up the software and the farm data base have been evaluated by the experts as being high. Additionally, it was mentioned, that during the first 5 years of the program, the project had to be financed “without income”, as only after the end of the first accumulation phase first sales of emission certificates could start to finance the costs of the program (as well as providing payments to the farmers). For the Finish *Carbon Market Hiilipörssi* (FI3), it is reported that of the money invested in the project, 70% is devoted to restoration work, 10% to Carbon Market maintenance and other climate actions, 10% to development and marketing, and 10% to scientific and artistic activities supporting peatland restoration. According to this, the cost of setting up the contract solution are some 20% of the total cost which is not very much. According to the Carbon Market calculator, with 800 Euros donation it is possible to restore one hectare of peatland. From the perspective of producing AECPGs these costs are not high since the peatland area will permanently accumulate CO₂ and produce additional PGs such as specific peatland biodiversity and habitats. However, it has also be mentioned that it is difficult to estimate whether these costs are high or low.

For the case of contractual solutions fostering collective implementation or cooperation, mainly 2 cost positions are discussed, namely transaction/overhead costs, and costs of coordination: In the *collective management of Kromme Rjin* (NL1), the collective agri-environmental management was introduced because the overhead in the previous funding system was with 41% particularly high. However, implementation costs have now shifted from governments to collectives, where for example the implementation budget in the Utrecht Oost collective accounts for 20%. Also for the *collective reservoirs* (IT1), transaction costs are reported to be relatively low for the public administration. Nevertheless, the coordination costs among farmers are expected to be normally very high, while in this specific case they are largely absorbed by the Consorzio di Bonifica della Romagna Occidentale (CBRO). Also in the *ITP* (IT6), coordination costs and other transaction and implementation costs that arise for the development of the contract, as well as costs of research and monitoring of the interventions are mentioned as important cost positions, without giving indications of their height. However, the main cost part of this 1.800.000€ program is devoted to the carrying out physical-structural interventions (investments) that involve a high cost in terms of materials, skilled labour and transport. In the 2 *CSFF* case studies UK1 and UK3, coordination costs and costs for consultants at networking events are the only occurring cost positions, mainly devoted to the compensation of the network lead and in a lesser extent to compensation to farmers for partaking to the monthly meetings. The offered compensation for such activities is considered to be sufficient and several times spending the full available funds is not possible due to meetings not always taking place. In total, UK3 members’ land includes more than £60k of value from different AES options under the Countryside Stewardship and Environmental Stewardship AES.

In value-chain based contract solutions, the height of the program costs is determined by the complexity of the solution, meaning there are differences in solutions representing improved seller-buyer relationships, and solutions representing approaches along the whole value chain. For the cases of *BioBabalscy* (PL4) and the *Wild farm* (BG3) for example, no specific costs are reported by the experts. In *BioBabalscy*, the experts note that extra costs are covered by the premium prices paid by the producers, in the *Wild farm* (BG3), transaction costs are estimated as negligible and the participation costs are considered by the farmers to be very low.

The more complex value chain approaches of *Carta del Mulino* (IT4) and the *water protection bread* (DE5), involve cost positions along the whole chain. In *Carta del Mulino* (IT4), costs are expected to be substantial both from the point of view of the farmers and for the whole supply chain. An important feature that has been highlighted is that, in contrast to e.g. *BioBabalscy*, the increase in the costs due to the compliance to the rules by farmers, but also mills and bakeries, is not reversed on consumers but absorbed by Barilla, e.g. there is no increase in the price for the consumers. In the *water protection bread* initiative (DE5), besides the cost for the management of the initiative itself, there are costs occurring at the level of the water suppliers resulting from the voluntary agreement with the participating farmers in the water protection areas. The mills offer a guaranteed purchase and commit to pay prices taking into account the market prices for quality wheat regardless the lower protein content, complemented by a price increase for the water protection wheat. Without the payments of the water suppliers and the mills the farmers would not renounce to grow quality wheat with high protein content.

Last but not least, from 2 cases of land-tenure solutions no major commonalities on cost positions and their different height could be derived. However, in the case of *EcoGrazing* (FR1), according to the initiator (head of Green Spaces), the feasibility of implementation is given as the costs of the program are reasonable for Brest Metropole mainly because the tenant is a producer breeder and no landscaper. The breeder has two sources of income, namely eco-pasturing and the sale of his sheep production, which has allowed to reduce the payment per ha of eco-pasturage compared to the fees that would be demanded by a landscaper, which have been reported to be 3 times as high. In the case of conservation and restoration of grasslands in Strandzha and Sakra mountains (BG4), at least the initial contract transaction costs were described as high due to the negotiation phase. High costs also occurred for the implementation of restoration measures involving a conversion of arable land into pastures. However, the activities connected with the maintenance of the pastures in a conservational way are fully covered by the subsidy payments, so for the farmers they do not impose considerable costs.

6.2.10 Effectiveness

The importance of the criterion of effectiveness for the success of the contract solutions was weighted above average only for the group of cases fostering collective implementation and cooperation, while a broad number of cases across all groups of contract types report excellent performance in this criteria. From the point of view of programmers, but also practitioners, of course effectiveness is a major reason for the implementation of measures, while not only environmental effectiveness, that is the enhancement of the AECPGs targeted, but also the criterion of cost-effectiveness, relating the environmental outcomes to the costs involved, such as program-costs, transaction costs, farm level implementation costs etc., is envisaged. Being aware of the importance of this subordinate criterion, likewise for the criterion of feasibility of implementation and acceptance, the following analysis of the in-depth studies focusses not only on best practice examples, but will take an approach of highlighting most interesting findings about the effectiveness of the single contract solutions.

Environmental Effectiveness

In the group of contract solutions fostering collective implementation and cooperation high weight is put on the criteria of effectiveness, while only 3 case studies (LV1, BE1, PL1) out of the 9 contract solutions in this cluster perform excellent in this criteria. The main reason for the relatively low performance is that the measuring of environmental results is obviously often not in the foreground of collective approaches, so no data supports the actual enhancement of the public goods targeted. Many case studies therefore report, that environmental effectiveness of the programs is difficult to be estimated. Also, some programs are very new, and effects on AECPG production are long term, so effects cannot be foreseen yet (e.g. FI5). However, most collective contract solutions in the CONSOLE in-depth case study sample are estimated to have positive environmental effects.

E.g. in the case of the *collective reservoirs* (IT1), even if environmental effects are difficult to be estimated, the program is evaluated to at least reduce the trade-offs between environmental goals and farm viability. In the *ITP* (IT6), based on the integrative assessment of regional criticalities and the development of measures directly targeted to the problems identified, it is assumed that the interventions should be effective. However, also here most investments have not yet been made and it is currently difficult to forecast the results achieved. Also preliminary reporting for the *CSFF* initiative in UK3 show that lands that is part of the CSFF group have higher uptake of AES focusing on option richness and option diversity compared to nearby land that is outside of the CSFF group. These preliminary reports also show that CSFF participation leads to an enhancement of AECPGs because of the networking activities farmers are more informed about policies, alternative ways of farming that improve provisioning of AECPGs and future changes in funding. Also, farmers are more connected with one another and more information from peer-to-peer learning is available. In the case of *collective management in the Kromme Rijn* (NL1), some more concrete results can already be reported: Here, the area of environmentally-friendly managed agricultural land increased and more measures are taken. However, the additionality of the program is not fully clear as also without the collective, this specific region seems to be fairly active in this regard. Nevertheless, the measures introduced by the collective are relevant for ecosystem services important to the area, including recreation. Also in the case of the *3WatEr* project (BE1), positive results are reported in terms of environmental effectiveness, as the very concrete project objectives have been reached. Here, it seems clear that without the Life+ 3watEr project and the OVML vzw contractual structure, no such enhancement on private land would have been realized. The success of the Life+ 3watEr project also had the effect of creating a positive dynamic with public authorities, NGO's and other rural sectors for further developing the Midden-Limburg region, called "The Wijers" into an attractive landscape for tourism and the delivery of lots of different ecosystem services. In the case of *natural grazing in Podkarpacie* (PL1), the "environmental" objective was to maintain grazing pastures in the region, as a landscape system providing a great number of AECPGs. Therefore, the environmental effectiveness can be measured by the participation of farmers, which has more than doubled since the implementation of the program in 2012 (715 farmers, 15,1 thousand hectares in the year 2019). Besides contributing to the protection of biodiversity in valuable natural areas, the grazing activities enrich the landscape and agricultural scenery. Additional environmental benefit of the program is moreover seen in improved soil quality (and health) through grazing, which promotes grass propagation, prevents soil erosion, and trampling and leaving droppings stimulate turf development. The program also contributes to social benefits and increases recreational access. The presence of animals on pastures increases the aesthetic value of the landscape, which contributes to increasing the tourist attractiveness of the region and rural viability and vitality.

In the group of result-based contract solutions, the importance of the criteria of effectiveness has on average been weighted the lowest compared to the other groups of contract types. Also this

weight is astonishing, as particularly result-based approaches allow for actually measuring results, and therefore enable a more concrete statement about environmental effectiveness. However, as already pointed out earlier, result-based schemes in parts appear costly, so overall, effectiveness might be weighted lower. As regards only environmental effectiveness, for most result-based cases studies a good effectiveness is reported. In the *Wildlife Estates Label* in Flanders (BE3), the label is evaluated to be even very effective, as only few instruments in Flanders guarantee multifunctionality in favour of biodiversity. Multifunctionality integrates all aspects linked to biodiversity. Here, more than 8500 hectares have been labelled in 3 years' time. Also the *EcoMethane* initiative (FR4) is evaluated to be an effective initiative in that it targets one of the main polluters of livestock farming. However, there is the limitation that for the time being, it is rather pioneers who invest in the process, and therefore farmers with rather virtuous practices, who already have a high environmental commitment. At the moment, this focus on pioneers limits additionality. For reaching overall environmental effectiveness it would take more committed breeders to have a significant aggregate effect. Nevertheless, as regards environmental effectiveness it is highlighted that through the *EcoMethane* approach, other public goods are also be provided, notably in terms of animal welfare, landscape maintenance and biodiversity – and as regards the target objective, namely the reduction of methane emissions, in 2017, the *EcoMethane* approach reduced the rate of methane emissions by about 10.9% per farm. However, also this rate could be further enhanced by allowing a greater increase in unsaturated fat in the rations, via a stronger financial incentive. In the *Burren Program* (IRL1), environmental effectiveness can on the one hand be proved by the changes achieved in the landscape: Physical outcomes from the BP include the area of scrub cleared, stone walls repaired, traditional gates installed, water and feeding systems upgraded and so forth. On the other hand, the review of the scores of a subgroup of 147 farms that have participated revealed that the average score over an area covering 7,300 hectares has increased from 6.6 in 2010 to 7.4 in 2018, meaning an increase of the environmental quality on the partaking farms and agricultural area. For the biodiversity monitor in dairy farming (NL3), evaluations on the actual effects on biodiversity are not yet clear: Even though the KPI are selected with care because of their scientific relationship with biodiversity (and several other sub-criteria such as healthy soils), the actual effect of KPI performance with biodiversity recovery is yet unknown. Monitoring of the casual relationships is highly necessary and therefore scheduled in future trajectories. Research proposals for several 'living labs' are currently reviewed and implemented soon.

For the Carbon Market solution *Hiilipörssi* (FI3), it has been reported that before the era of the carbon market, restoration of private peatland areas has been very rare. So it can be assumed that if the peatland areas, especially outside the present protected areas, are restored and protected with the aid of the Carbon Market, provision of AECPGs is successfully enhanced. As regards the technical measures of peatland restoration, environmental effectiveness is evident: Restoration speeds up the succession process back to natural state, or close to natural state, and in some cases restoration is the only way to enable this succession. However, both the recovery of the ecological processes towards natural state is slow and also the process of restoration (initiation from landowners, hearing neighbours, planning etc.) is slow. To increase the efficiency, there should be more restoration processes going on in Carbon Market.

As regards the value-chain related contract solutions, all case studies investigated focus on the implementation and control of implementation of targeted and clear measures beneficial for the environment, rather than the assessment of the actual environmental outcomes. However, as regards the implementation of the measures, the value chain contract solutions are evaluated as rather effective: E.g. in the Barilla *Carta del Mulino* (IT4) example, the additional management requirements are considered as clearly suited to enhance environmental effectiveness. Also in the *Wild farm* case (BG3) environmental effectiveness is enhanced covering all of the directly addressed public goods of farmland biodiversity and animal welfare due to the extensive grazing

carried out by the farm. Here, moreover indirect provision of other public goods is reported, such as water quantity (e.g. water retention), soil quality (and health) and the public good of scenery and recreation enabling new forms of ecotourism. In the *BioBabalscy* case study (PL4), effectiveness is even evaluated to be extraordinarily good as it is profitable for both parties and generates environmental benefits without specific costs. Also here the role of the indirect enhancement of other public goods not directly targeted by the contract solution was emphasized: According to the experts, the *BioBabalscy* initiative (PL4) not only contributes to the biodiversity and environment protection in valuable natural areas, but also to social benefits, mainly through the building social capital. The last value chain initiative to be highlighted in the context of environmental effectiveness is the *water protection bread* (DE5) initiative. The initiative concerns single fields and therefore the environmental effectiveness is limited to the fields involved. Even though the positive effect of reduced nitrogen fertilisation is undeniable (and can be proved with the help of the Nmin values in autumn showing a decrease of 30 kg N / ha on average), a direct, measurable effect on the ground and drinking water is until now not verifiable. The concerned surface with its dispersed distribution is too small, in addition wheat is grown in rotation, so that only every few years' water protection wheat is grown on the same field. But the reduction in nitrogen fertilisation does not only reduce the risk of nitrate leaching over winter into the groundwater, at the same time N-emissions can be reduced. This contributes to climate protection, with N-fertiliser savings around 70 kg N/ha.

For the contract solutions focusing on land tenure, expectations on environmental effectiveness are mixed. In the case of conservation and restoration of grasslands in Strandzha and Sakra mountains (BG4), positive effects are reported that result from by targeted restoration of pastures and grasslands, providing a minimum level of maintenance of natural habitats allowing for mosaic-located single trees or groups of trees and shrubs and/or hedges. In the case of EcoGrazing (FR1) environmental effectiveness cannot be evaluated yet as the results are not monitored by measuring.

Cost-effectiveness

The last aspect to be included in the evaluation of the performance of the contract solutions in the CONSOLE in-depth case study sample is the aspect of cost-effectiveness. For the result-based contract solutions, cost-effectiveness is mostly impacted by high costs of setting up the schemes, and, in the case of farm-individual solutions, for advice and on-field monitoring. Nevertheless, as regards payments made to farmers, these are highly cost-effective, as they are only issued if a result is generated allowing for payment. Also, for the farmers the normally free choice of the selection of measures to reach objectives make it possible to choose such measures, which are most cost-effective in the framework of the individual farming systems and farm structure. In the *EcoMethane* approach (FR4) for examples, the breeder interviewed, evaluated the program to be profitable and particularly the measures taken in ration changes as beneficial also for animal health, therefore leading to the reduction of other costs coming along with intensive dairy husbandry. Nevertheless, the initial costs of developing the approach and the device was high, also it is difficult to estimate the exact time of BBC employees working on the *EcoMethane* approach, but this seems relatively light. If the approach can reach a critical number of breeders, it could be profitable. Also, *EcoMethane* is estimated to become more profitable when more donors can be found to pay the farmers. As it stands, BBC considers that the expected environmental benefits are worth the costs incurred, and would be worth more precisely to gain efficiency, especially since the approach targets the first GHG-emitting station in a dairy farm. In the *biodiversity monitor for dairy farming* (NL3), a recent study estimated that costs for the 70% lowest performing farms which want to achieve the KPI levels of the 30% best performing farms, could be on average 22 eurocents per litre milk, or 417 euro per hectare. These costs could partially be renewed from higher-valued produce (such as certified milk) and a redistribution of

public financial resources (such as CAP). However, probably not all costs can be marketed, and some will have to come from extra investments – ideally proportionally covered by all relevant supply chain stakeholders (businesses and governments). When approaching the issue from a more holistic perspective however, rather than purely financial, it could be argued that this model is cost-effective in the long-term because the sustainable supply chain and ecosystems services are enhanced. The current system also creates many external costs for climate, nature and human health, which could be severely reduced or even turned into societal profits when transitioning to a more sustainable dairy production system. Without the interference of programs like Biodiversity Monitor to promote sustainable production, the sector would face risks of losing the ‘license to produce’ (societal acceptance) and a thriving future perspective of the sector. The *Burren Program* (IRL1), as the last example of cost-effectiveness in result based schemes stands for the cost-effectiveness of payments to the farmers: While there has been no official value-for-money analysis conducted, the Burren program in its scoring system guarantees that no payments are made on scores from 0 to 5, meaning that funding is used very effectively, making the measures very cost effective.

In collective approaches, one important aspect impacting on cost-effectiveness is transaction costs – which can be significantly lower in such schemes. For example, in the case of *collective reservoirs* (IT1) it has been reported that the inclusion of the collective conditionality constraints enables to reduce the transaction costs for the regional administration. Moreover, the program enables to benefit from the economies of scale that aggregating efforts entail. However, the implementation and the success of the solution seems to be possible only through the presence of a bridging institution. Also in the *collective management of Kromme Rjin* (NL1), due to the fact that the overhead has decreased, and that environmental effectiveness has increased via to the bundling of agri-environmental measures, cost-effectiveness is evaluated as positive. In the meadow bird areas, results are becoming obvious already, demonstrating a clear increase in meadow bird-friendly management with a better focus on where it is effective or not. Also this stronger focus on quality fosters an increase in cost-effectiveness. In the case of the collective initiative *Natural Grazing in Podkarpackie Region* (PL1), cost-effectiveness is evaluated positively mainly due to the fact that here a relatively small fund enables the coverage of a large area and a large number of animals, while implying only small transaction costs within a very simple governance structure.

For the *Tuohi* (FI5) and for the *ITP* (IT6) limited scientific evidence on the cost-effectiveness is available and further analyses on cost-effectiveness are recommended. In *Tuohi* (FI5) at least public costs are estimated to be rather low: The initiative represents a voluntary and market-based contract solution that does not directly rely on public financing, except for those financial instruments which are specific for jointly owned forests in Finland. These instruments relate to some tax benefits and legal cadastral surveys. *Tuohi* may also receive state aid and compensations similarly to family forest owners. In the *ITP* (IT6), at a theoretical level, the paying agency carries out a control/monitoring of costs, so the participants are obliged to present the interventions carried out transparently. However, a certain degree of information asymmetry remains and at the collective level, it leads to a loss of effectiveness if the declared costs are superior to the effective sustained during the intervention.

In the group of value-chain related contract solutions, unfortunately not too many details have been reported allowing for general statements on cost-effectiveness across this type of contracts. From farmers’ perspective, from an interview with a partaking farmer in the *water protection bread* (DE5) it can be reported that the initiative seems cost-effective for the farmers, as they receive a price comparable to conventionally produced quality wheat as well as a compensation for fields inside water protection areas from the water suppliers, so no financial disadvantages occur. In the *Carta del Mulino* case study (IT4), in the context of cost-effectiveness again the role

of implementation costs has been highlighted. These can be substantial and a proper cost effective analysis would be required for assessing the cost-effectiveness of the program.

The last example to be discussed in the context of cost-effectiveness is the land-tenure case of *EcoGrazing* (FR1). The initiator of the program considers Eco-grazing as cost-effective even if the cost of it is higher compared to the mowing system that was carried out before the implementation of the program. However, in terms of the social and environmental gain, of raising awareness of the living and nature of people who do not necessarily have access to it, this is certainly compensated. On the “balance sheet”, EcoGrazing for the project initiator is therefore beneficial compared to a measured extra cost (approximately 100-200€/ha counting the investment amortized over 10 years in a context of relatively strong financial constraints). Nevertheless, while the program in itself seems very effective, for the breeder the ecograzing itself is not economically sustainable.

7 Conclusions

In Deliverable D2.3, an ex-post qualitative assessment of existing and implemented contract solutions for the improved delivery of AECPGs in the EU has been carried out. Aim of this analysis was, on the one hand, to provide successful role-model examples to support the development of improved contract solutions in the further lifetime of the project, particularly providing a basis for further quantitative analyses in WP3 and WP4. On the other hand, focus of the analysis was on understanding, which framework conditions and contract specifications are necessary to make solutions successful and to better fulfil environmental objectives and efficiently address different types of performance.

The qualitative analysis in Deliverable D2.3 is based on a set of 26 in-depth studies, namely 5 contract solutions qualifying as result-based/result-oriented contract solutions, 7 as collective implementation/collaboration contract solutions, 6 as contract solutions based on the value chain, and 3 contract solutions characterized by land-tenure arrangements with environmental clauses. Moreover, 5 contract types represent combinations/hybrids of contract types. The analysis reveals that the investigated contract solutions have rather different mechanisms of implementation: As regards result-based solutions, 3 case studies are publicly funded (AT3, IRL2, IRL1), while 2 of these cases are even integrated into the countries’ AES under the national RDPs (AT3, IRL2). 3 of the result-based contract solutions were brought to life by private and/or civil society initiatives, enabling private investors to enter an “AECPG” market (AT4, NL3 and FR3). Another “form” of result-oriented contract solution represents a European labelling initiative (BE3). As regards contract solutions based on collective implementation/cooperation, 6 in-depth studies are publicly funded (IT1, IT6, NL1, UK1, UK, PL1). 5 of these are integrated into national RDPs (IT1, IT6, NL1, UK1 and UK3), 1 receives regional public funding (PL1). Also publicly funded are 2 case study examples implemented in line with the European project funding schemes INTERREG and LIFE+. As regards value chain approaches, 3 of the in-depth case studies represent value-chain approaches mainly aimed at fostering the marketing of organic products (BG3, PL4, ES2). 2 contract solutions (IT4, DE2) represent private, market oriented value chain approaches defining own production standards, independent of public funding for the contractees. The last value chain based contract solution represented by the CONSOLE in-depth studies is the case of *integrated production* (ES4). As regards land-tenure approaches, 2 case studies represent contractual solutions implemented in the aftermath of LIFE + projects (BG4 and LV2), in which land was bought and is now leased to interested farmers who continue environmentally friendly management. One land tenure-based contract solution (FR1) is implemented on publicly owned land, which is leased out to a farmer for environmental management.

The analysis of the AECPGs targeted by the 26 in-depth case studies showed that biodiversity is most often addressed, followed by landscape and scenery. However, it became clear that

landscape and scenery is addressed always in combination with the provision of other AECPGs. Further AECPGs often considered are water quality, rural viability and vitality and cultural heritage, as well as soil quality. Climate PGs, such as carbon sequestration and GHG emission mitigation, as well as water related AECPGs are in parts addressed as sole AECPGs by the contract solution. It became obvious that particularly result-based and result-oriented contract solutions are strongly targeted to the improvement of only selected, specific AECPGs. In contrast, contract solutions putting forward collective implementation or cooperative elements, often address a territorial/landscape level of AECPG provision and therefore mostly target a broader bundle of AECPGs. Beyond that, it becomes evident that such solutions are particularly applied to AECPGs being delivered “across field borders”, meaning AECPGs which can hardly be improved by measures on singular fields and plots. Besides biodiversity, which is the most often addressed AECPG also in the collective/cooperation in-depth case studies, this accounts particularly for water related AECPGs (quantity and quality), and resilience to natural hazards. The contract solutions pushed forward by the value chain, or strongly integrating it, partly target few specific AECPGs, partly bundles of AECPGs. Particularly those examples supporting and marketing organic production naturally go along with a number of AECPGs addressed by this management system, while often even going beyond classical AECPGs touched by organic farming, by adding specific components, such as rare breeds and crop varieties. Amongst all in-depth studies, the value chain contract solutions are the only examples directly addressing quality and security of products as AECPG objectives. The 3 contract solutions based on land tenure all deal with AECPGs related to grazing, while in all examples, biodiversity is a central AECPG.

The analysis of framework conditions and context situations, influencing the design and implementation of contract solutions, focused on environmental conditions, agricultural/forestry background and socioeconomic features. Moreover, policy conditions, legal conditions, the role of institutions and formal structures and technology aspects have been taken into account.

As regards basic conditions, the in-depth study sample stands for a broad variety of environmental, agricultural/forestry and socio-economic basic conditions throughout Europe. Consequently, the prerequisites for successful and accepted implementation in each contract solution differ, nevertheless communalities became obvious. The studies revealed that environmental conditions, where AECPG deterioration has negative effects on the production systems, trigger the implementation of innovative contract types in order to mitigate these perceptible negative effects on agriculture. Particularly in cases where the pressure of AECPG deterioration is felt by the agricultural sector itself, and the deterioration of the AECPGs has a felt, negative effect on production, acceptance is high. Also it became obvious that particularly land managers’ and land owners’ attitudes, will and a common understanding on the benefits of AECPG provision are strong triggers to develop and step into contract solutions counteracting AECPG deterioration. Particularly this becomes obvious in special, or in specifically sensitive ecosystems and landscapes, where deteriorations are personally felt and (also emotionally) regretted. Besides attitude and will, a common understanding within the landowners’ and farming community about the natural and agricultural ecosystem and the provision and benefits of AECPGs, are strong drivers too. Another catalyst for the implementation of new contract solutions turned out to be an already existing and sound basis of environment-oriented management: Successfully (new) introduced contract solutions in the CONSOLE in-depth sample often have “jumped on an already moving train” of environmental protection, improving what is already there, or supporting, enhancing and securing developments that already take form. New contract solutions can for example be direct successors of “classical” AES, replacing or improving them even on the same areas of implementation and consequently on farms already having an interest to devote their area to nature conservation/AECPG provision. Another framework condition being a strong trigger for the implementation of agri-environmental programs are low agricultural incomes in systems of low intensive agriculture: Particularly in

regions characterised by sensitive habitats, often the agricultural production conditions necessary to maintain these habitats enable only low intensities of farming and, in some cases, set farmers under the economic pressure of abandoning, or intensifying farming activity. In such regions, successful contract solutions can be designed to significantly support and/or enhance the income of the partaking farmers. Similarly, but not fully the same framework condition can occur, when the environmental option is just economically more feasible for farmers and foresters, and is therefore perceived as a win-win situation that is chosen voluntarily. In the in-depth sample this situation occurred in the 2 Spanish case studies, where the better marketing possibilities provided by organic farming and integrated production meets a specific systems of permanent, work-intensive agriculture in a specific agri-environmental environment, which is well suited for organic/integrated farming. Another context situation, in which new schemes are gladly accepted occurs if the risk taken to implement the contracts, are low, if income effects are negligible or positive, and if the measures are easily integratable into the farming system. Particularly under the framework condition of intensive farming systems, successful examples of contract solutions are result-based contract solutions, being perceived by the farmers as additional (market) opportunities and benchmarking system, with low risk, low income losses and, in the best case, income gains, as well as easily integratable into the farming systems.

As regards policy conditions, many in-depth studies highlight the decisive role of the European Common Agricultural Policy (CAP). While of course the general framework of the CAP is the most relevant policy basis for agriculture in Europe, hereby particularly the Rural Development Programs with their individual national AES are mentioned. Certainly the direct impact of the CAP accounts for the contract solutions cases being directly integrated into the national RDPs. Particularly for innovative collective and result-based cases, the aim to develop and elaborate national RDPs towards more acceptable and innovative approaches were the main drivers for initiation and implementation. Besides this direct impact, the CAP also indirectly impacts on the implementation of innovative contract solutions outside RDP: Often, environmental developments introduced by the CAP, as well as long term experiences with RDP schemes are the basis for the development of measures implemented in new schemes. Moreover, the settled experiences of land-managers with RDPs enables them to deal with 'innovative' agri-environmental programs at all. Besides the CAP, also other political conditions and pressures create momentum for the initiation and implementation of new contractual solutions. Some of the cases reported that changes in national but also EU policies, such as for example major changes in national nitrogen policies, or implementation of the water framework directive have been a trigger for the development of new solutions. Last but not least, some of the in-depth studies revealed that "political will" is a crucial trigger in implementing and supporting new instruments.

The analysis of the role of legal conditions for the implementation of contract solutions showed, that particularly in the case of contract solutions implemented in sensitive or very specific habitats, often legal frameworks for protected areas have to be considered. These legal frameworks are in some cases perceived as a driver for the implementation of contractual solutions. On the other hand, new solutions can start a process of rethinking legal frameworks: One case reported that new contractual solutions, integrating the wishes of private landowners as from the start, can cause an instructive reflection on the content and interpretation of regulative constraints, as often the sole application of legal definitions and concepts do not serve the purpose they were intended to, as reality in nature management often takes precedence. The analysis further revealed that specific contract solutions sometimes require a specific orchestration of legal frameworks. Vice versa, legal frameworks can shape the design and implementation of new contract solutions and, by implication, eventually prevent the feasibility of their implementation. The 2 Finish case study examples show that contract solutions can be touched by legislative coverage in every aspect, reaching from the objective of the program, to the administrative implementation and finally the environmental measures foreseen. In parts legislation

changes/adaptations are necessary for contract solutions to be able to take place, e.g. legalising uneven managed forests in Finland (FI5). The importance of a sound and well-orchestrated legal framework as a basis for the implementation of contract solutions has been mentioned several times. It became obvious that large numbers of regulations for nature conservation and management, to which farmers have to comply might cause trade-offs due to their contradictory character. Already addressed in the above paragraph, the case studies revealed that also European level legislation can function as a strong driver for the need for action and therefore the initiation of new solutions, such as the European Water Framework Directive having triggered the *water protection bread* initiative (DE5).

Looking at the role of institutions, formal structures and governance in the implementation of contractual solutions revealed that their success is driven by the institutions and formal structures involved in the implementation and management of the initiatives. Also, the governance system pursued has impacts on success factors such as acceptance, longevity, social capital, etc. The number and kind of institutions involved, as well as the modus of governance, strongly depend on the contract type. For more complex contract solutions, such as collective schemes, or schemes combining a number of different contract features, a larger number of institutions and actors is active, while in relatively “simple” approaches, such as land tenure contracts, a less complex interplay of institutions seems sufficient. The in-depth studies showed, that particularly in the development of new solutions, always a broad number of institutions and stakeholders is involved. This is for example the case in the result-based contract solutions investigated in the CONSOLE in-depth studies. Here, a rather broad number of actors and institutions are involved, which is partly this is due to the rather “new” character of such schemes, demanding the development of the contract solutions from scratch, with the necessary input of expert/stakeholder/institutional capital. It becomes obvious that particularly within the process of the design of new solutions, important “actors” integrated are typically research, but also affected stakeholders and farmers, guaranteeing the operability of the programs particularly as regards result indicators. The result-based CONSOLE contract solutions also reveal that particularly the process of individual target setting, management support and also monitoring of results demands specifically trained experts/advisors/institutions, which in the best case are integrated right from the start. The case study AT3 revealed that the integration of the national control authority in the design of measurable and, consequently, controllable indicators is a major success factor. In case of a transfer of such schemes to other countries, such an integration is the basic recommendation of the experts. Also the contract solutions based on collective implementation involve a rather broad number of institutions and a high level of cooperation between contractors and contractees. The in-depth studies reveal that already the process of setting up the collectives can involve many players and that the implementation demands a high level of orchestration between institutions and their responsibilities. Moreover, the studies show that the individual program coordinators play a crucial role in collective implementation. Their engagement and steering skills, as well as their regional embeddedness are fundamental for the success of such contract solutions. Last but not least, the value-chain contract solutions show that if such solutions step into the chain only on the level of seller-buyer contractual agreements, rather few actors involved. In contrast, value-chain contract solutions aiming at the whole chain and its transition to a more sustainable and fair construct, demand a high level of integration of the respective value-chain actors, as well as a distinctively good level of trust and fairness, while the latter element is also a reason for the success of good seller-buyer constructions. Compared to the other contract solution types, land tenure based contract solutions are relatively simple as regards involved institutions, as well as governance.

The CONSOLE in-depth studies also aimed to describe the influence and the use of technology on/within the contract solutions. The results of the analysis of technology aspects revealed that technology is an aspect already “thought” in many solutions. However, unfortunately the sample

of in-depth studies included only few cases where the use of distinctively innovative technology influenced the implementation of the contract solution. A field of integration of technology naturally is indicator monitoring and measuring. Particularly in result-based solutions, where output indicators are the basis for remuneration, the use of technologies can strongly support indicator measuring (and calculation). Thereby not only monitoring technologies are crucial, but also sound technological approaches of calculation and upscaling of results. In the cases of AT4, NL3, FR4 technology is used to carry out e.g. soil sampling, milk analyses, CO₂ determination. However, besides these 3 studies, monitoring technology is still rarely used, even in the result-based in-depth contract solution case studies. Nevertheless, particularly for field monitoring, future technological solutions such as cameras and drones are met with high interest. Also the development of scoring apps, as well as apps to be used by farmers and advisors providing real time information on performance against targets are seen as highly welcome developments in the future. The in-depth results also revealed that the use of platforms is an option in market oriented result-based contract solutions (emission trading). As last technology aspect are communication tools: Also here, the in-depth studies showed that such tools are still rarely implemented. However, particularly in collective and cooperative based initiatives, communication tools enabling better coordination and information between institutions and actors involved seem crucial.

Another major aim of the in-depth analysis was to evaluate the performance of the individual contract solutions under a set of different performance criteria identified during the project. Also, the analysis aimed to pinpoint most important design features for successful implementation. Derived from the CONSOLE framework (D1.1), most prominent aspects in this context were questions of targeting, flexibility, equity/fairness, compatibility, profitability, as well as the building of social/cultural capital, all impacting on further performance criteria such as longevity, effectiveness, and acceptance. Moreover, partly context related performance aspects such as feasibility of implementation were considered.

The results of the analysis of different performance aspects for the success of the in-depth contract solution revealed that the aspect of *targeting* is particularly important in the result-based approaches. Excellent performance in this criteria is first and foremost reached, when conservation objectives are farm- and plot-individually elaborated, in the best case in direct collaboration with the farmers (AT3, IRL2). Additionality can be achieved by integrating tiered payment levels, providing financial incentives to the farmers to deliver the highest quality environmental product in their particular farm setting. In the other contract types, excellent targeting is achieved by setting clear sets of objectives and measures, guaranteeing a high degree of relation between management measures and AECPP improvement. As regards the performance criteria of *flexibility*, interestingly, this aspect was not evaluated as specifically important for any of the contract types. Only single result-based case studies (AT3, AT4) put emphasis on the importance of flexibility for the success of the contract solutions. Highest performance in the criterion of flexibility is mainly achieved in schemes, where no management requirements are prescribed to the farmers. Also flexible contract lengths, such as in AT4, where farmers can freely choose the period and duration of the phase of carbon accumulation, stand for high flexibility. As regards the criteria of *equity and fairness*, this criterion has been weighted particularly high for value-chain contract solution case studies while being rather “unimportant” for the other contract types. Particularly for collective implementation and cooperative approaches this result seems surprising, as the high level of common planning and also common risk would let expect that equity in the decision making and also the (fair) distribution of benefits, costs, and risks is a strong factor for success. High levels of equity and fairness are first and foremost achieved, if producers are involved in the discussion of contract arrangements, or if close and long-standing relationships exist between producers and retailers. Beneficial for perceived equity and fairness are reasonable, clear and acceptable contract conditions, and the

same rules and basic prices for all partaking producers. In contractual solutions based on collective implementation or cooperation, a key aspect for equity and fairness is contribution to and equity of decision making, which can be implemented via steering groups or other institutional arrangements. From the evaluation of the criterion of *profitability* it became obvious that profitability has been weighted highest for the success of result-based and value-chain approaches. However, almost none of the contract solutions in the whole sample of in-depth studies scores excellently high in this criteria, and, with the lowest performance evaluation across all case studies, this criterion is the one with the lowest average performance. The results reveal that in cases performing well in the criterion, profitability is not primarily grounded in the immediate price paid for the provision of an AECPG (e.g. AT4), or in the subsidies for the establishment of the reservoirs (e.g. IT1), but in the long-term effects on production. For the example of AT4, long term profitability is reached by the increase of organic matter in the soils, leading to higher productivity. In the example of IT1, water availability guaranteed by the reservoirs is key for the long-term maintenance of production. For the criterion of *longevity*, the evaluation showed a particular importance for result-based contract solutions, and for the cases of collective implementation and cooperation. Good performance is based on different aspects: Many studies show, that offering local/regional possibilities for education and training on the values of AECPGs and the implemented measures are assumed to be the most important driver for longevity. Beyond that, contractual arrangement with long project durations such as the Humus program (AT4) can manifest implemented measures and lead to changes in attitudes and awareness. Measures establishing protected areas, such as in the Finish Hiilipörssi (FI5), guarantee long term maintenance of protection status. Last but not least, long-term leasing contracts in protected areas, and long term management plans after the implementation of nature conservation projects, enable farmers for long-term planning and maintaining their extensive farming systems. The criterion of *acceptance* was weighted as important for the success of all groups of contract solutions. From the analysis of the contract solutions scoring very well, or even excellent, in this criterion, it became clear that an important driver for acceptance is the understanding of the sense of the measures and outcomes. On the one hand, this understanding is based on the recognition of the objectives and the measures leading to the enhancement of AECPGs, on the other, it is based on the understanding of the “moral” sense of the contract solutions. From the in-depth studies it became obvious that particularly result-based approaches, as well as cases of collective implementation contain special elements that enhance the understanding of the sense of the contract solutions: In result-based solutions, clear and easy indicators, transparent technical procedures of their measurement and upscaling, and, finally, the direct relationship between management and results, strongly enhance the understanding of the sense of the recommended (not obligatory) management measures. In cases of collaboration and collective implementation, the understanding of the sense of the measures often results from the collective design and elaboration of the landscape development plans. In value-chain approaches, as already indicated, a major element for acceptance is trust, achievable by long-lasting relationship between the producers and processor and/ a spirit of equity and fairness, in combination with high levels of transparency. Throughout all types of contract solutions, communication within the contract solution plays a key role in enhancing trust, understanding of the sense of the contracts and therefore acceptance. The importance of the criteria of *compatibility* of the contractual solution with the business design of the contractees and with the interest and attitudes of stakeholders has been weighted relatively low for the success of result-based, collective/collaborative and land-tenure approaches. In contrast, for the value-chain approaches, the importance of this criterion is weighted as clearly above average, and also the performance of all value chain contract solutions as regards this criterion is either very well or excellent. In the value chain cases, high compatibility with the business design of the farmers mainly results from the fact that the partaking farmers already implement the crop rotations necessary for producing the products demanded by the value chain. Therefore, the participating farmers do not need to

change their farming practices in general but only adapt their management practices according to the specifications of the respective initiative. For most value-chain solutions presented in the in-depth studies it can be concluded, that the value-chain contract does not require a real restructuring of management, but only adds some specificities that are integrable, without the need of e.g. changing technologies or business management. In the Wild farm, integration goes even further. Here, the contractual solution and the whole business design around it has been designed and build-up by the farmers, so the solution is perfectly harmonized with the farming system and the farm management of the partaking farms. When considering the transfer of functioning contract solutions to other context situation, or in the case of considering the replacement of existing approaches, such as area-based, farm-individual subsidies by collective or result-based schemes, or by initiatives of the value chain, the question of *feasibility of implementation* should be raised. Particularly important in this respect is information about program costs, considering transaction and implementation costs, as well as costs connected to the design of the (new) programs. The analysis of the in-depth studies revealed, that most of the result-based initiatives investigated report that particularly the costs for setting up the programs and projects have been rather high. As regards running costs of result-based schemes, these differ particularly for the different ways of monitoring: in result-based schemes with rather technological assessment and measurement of fixed performance indicators, such as in EcoMethane (FR4) and the Biodiversity monitor (NL3), running costs are comparably “low” or “medium”. In contrast to these “technological” solutions, result-based programs with “on-field” monitoring of results by ecological advisors and/or controllers are estimated to have comparatively high running costs. The high effort for on-field monitoring stems mainly from the farm-individuality of the objectives and measures: The most intensive cost position is estimated to be investments in project teams as well as in specially trained farm advisors. As regards contract solutions aiming at entering the carbon market, also here partly high costs for setting up the programs have been reported. For the case of contractual solutions fostering collective implementation or cooperation, mainly 2 cost positions are discussed, namely transaction/-overhead costs, and costs of coordination: in many collective in-depth studies transaction costs are reported to be relatively low for the public administration while costs of coordination could not be numbered by any of the in-depth studies. In the value-chain based contract solutions, the height of the program costs is determined by the complexity of the solution, meaning there are differences in solutions representing improved seller-buyer relationships, and solutions representing approaches along the whole value chain. In the case of sole buyer-seller relationships, for the in-depth studies costs are estimated to be low/negligible and mainly covered by the high prices for the products. In the more complex value chain approaches however, cost positions along the whole chain are involved which are in parts expected to be substantial both from the point of view of the farmers and for the whole supply chain. The analysis of the performance of the last criterion assessed in the in-depth studies, namely *effectiveness*, reveals, that this criterion is especially important for the success of cases fostering collective implementation and cooperation. Nevertheless, only few case studies in the cluster of solutions with collective implementation perform excellent in this criteria. The main reason for this result might be that either the measuring of environmental results is often not in the foreground of collective approaches, or that the programs are new and effects cannot be forespoken yet. As regards cost effectiveness in collective approaches, some in-depth studies reveal that at least transaction costs can be significantly lower in such schemes. In the group of result-based contract solutions, where measuring results actually enables a more concrete statement about environmental effectiveness, the importance of the criterion has been weighted the lowest compared to the other groups of contract types. The reason might be that result-based schemes in parts appear costly, so overall, effectiveness might be weighted lower. For result-based contract solutions, the sub-criterion of cost-effectiveness is mostly impacted by high costs of setting up the schemes, and, in the case of farm-individual solutions, for advice and on-field monitoring.

Nevertheless, as regards payments made to farmers, these are highly cost-effective, as they are only issued if a result is generated allowing for payment. Also, for the farmers the normally free choice of the selection of measures to reach objectives make it possible to choose such measures, which are most cost-effective in the framework of the individual farming systems and farm structure. As regards only environmental effectiveness, for most result-based cases studies a good effectiveness is reported. As regards the value-chain related contract solutions, all case studies investigated focus on the implementation and control of targeted and clearly defined measures beneficial for the environment, rather than the assessment of the actual environmental outcomes. As regards the implementation of the measures, the value-chain contract solutions are all evaluated as rather effective and therefore all report good environmental performance. Overall the analysis of the aspect of effectiveness across the in-depth studies reveals, that many new schemes might have limited additionality, as rather pioneers, already having a high environmental commitment, dare to step into new programs, perceiving a low risk of failure. In contrast, for reaching high overall environmental effectiveness it would take also farmers/foresters with still low environmental performance to step into such contracts.

8 Outlook on further use of Deliverable 2.3 for scientific analyses and for practice

8.1 Further scientific exploitation

Operationally, Deliverable D2.3 will support task 1.2 and 1.3 towards the development of the operational framework to be developed in the CONSOLE project and tested with practitioners. Moreover, D2.3 informs tasks 1.5 and 1.6 in the analyses of legal and technological aspects. Finally, the results of the scientific analyses from deliverable D2.3 informs particularly WP3 in the development of farmers and stakeholder survey on the feasibility of new contract solutions in tasks T3.2 and T3.3.

8.2 Use of the in-depth diagnosis for practitioners

Agricultural and forest management has a strong influence on the provision of agri-environmental-climate public goods (AECPG). Support provided under Europe's Common Agricultural Policy (CAP) for more environment-friendly approaches in agriculture (but also for forestry) is increasingly discussed, as current agri-environmental measures are often unsatisfactory in terms of longevity, effectiveness and efficiency, and the deterioration of ecosystem services and public good provision in Europe is ongoing (Peer et al., 2019³). Reacting on strong societal pressures, under the premise of the legislative proposal for the next CAP programming period and the recently published European Green Deal, it is therefore foreseen to pursue the path towards the provision of public goods in rural areas far stronger. Improvements may come from a flexible mix of promising new contract types, such as results-based payments or collective approaches, as well as by novel value chain strategies and land tenure contracts with environmental clauses.

The presented diagnosis of 26 in-depth contract solution case studies details the knowledge of successful contract solutions in the EU. The diagnosis provides practitioners and programms with in-depth information about the framework conditions and context situation in which promising and innovative contract solutions for the effective and lasting delivery of AECPG by agriculture and forestry can be set. Moreover, it provides insights into design features leading to successful

³ Pe'er, G., Zinngrabe, Y., Moreira, F., Sirami, C., Schindler, S., Müller, R., ... Lakner, S. (2019). A greener 439 path for the EU Common Agricultural Policy. *Science*, 365(6452), 449-451. doi: 440 <https://doi.org/10.1126/science.aax3146>.

implementation and good performance in respect to criteria such as effectiveness, acceptance and longevity. The diagnosis serves as a knowledge basis for the development and design of future contract solutions to foster the provision of AECPGs by agriculture and forestry in the European Union and beyond.

8.3 Dissemination

Deliverable D2.3 will be published on the webpage of the CONSOLE project (www.console-project.eu) in the category “Resources”

9 ANNEX 1: Results of the Evaluation exercise

Ctry	ID	contract types				Scoring of performance of criterion on a scale from 1 -5										Weighting of importance of criterion for success of contract solution (100%)									
		RB/ RO	CO/ COOP	VC	LT	Longevity	Effectiveness	Targeting	Acceptance	Equity	Feasibility	Social cultural capital	Compatibility	Flexibility	Profitability	Longevity	Effectiveness	Targeting	Acceptance	Equity	Feasibility	Social cultural capital	Compatibility	Flexibility	Profitability
AT	AT3					3	5	5	4	4	3	4	4	4	4	5	10	15	10	5	10	5	10	15	15
IRL	IRL2					0	1	4	4	4	4	0	1	3	3	20	10	20	20	5	5	0	0	5	15
AT	AT4					5	3	4	4	4	4	4	4	5	5	15	10	10	5	5	5	10	12,5	12,5	15
NL	NL3					3,5	4	4	3	3	4	3	4	4	4	10	10	10	10	10	10	10	10	10	10
FR	FR4					2	4	3	5	4	3	5	5	5	0	15	10	15	5	5	5	20	0	5	20
IRL	IRL1					5	5	5	4	4	3	4	5	5	2	20	10	12	12	10	3	10	10	10	3
BE	BE3					5	5	5	4	5	5	4	5	3	3	10	10	13	10	10	10	13	10	7	7
FI	FI3					5	3	3	3	5	3	2	3	1	0	20	5	15	15	10	5	5	15	5	5
IT	IT1					5	4	4	5	4	5	5	5	4	5	20	5	0	25	5	3	10	4	3	25
IT	IT6					5	4	4	5	4	4	5	4	3	2	20	20	10	10	5	20	1	4	5	5
UK	UK1					2	3	5	4	5	4	5	3	4	1	15	15	5	5	5	5	40	4	3	3
UK	UK3					2	3	5	4	5	4	5	3	4	1	15	15	5	5	5	5	40	4	2	3
NL	NL1					3	3	3	4	4	2	0	4	2	3	10	12	8	17	5	10	5	10	5	18
LV	LV1					3	5	5	5	4	4	4	4	5	4	5	5	5	5	5	5	5	5	5	4
BE	BE1					5	5	5	5	5	3	5	5	3	3	15	15	15	7	5	7	10	9	7	10
PL	PL1					4	5	5	5	5	4	3	5	2	3	20	20	10	10	5	10	5	10	0	10
FI	FI5					5	3	3	4	5	3	4	4	3	3	7	11	7	15	13	13	8	8	8	10
BG	BG3					3	4	4	5	5	4	2	5	5	4	5	10	10	10	10	10	5	15	10	15
DE	DE5					4	4	5	5	4	3	4	4	5	3	5	10	10	15	15	15	5	10	10	5
PL	PL4					5	5	3	5	5	4	5	5	5	4	10	15	10	10	10	10	15	5	5	10
IT	IT4					2	5	5	4	5	5	0	4	0	4	5	2	3	5	20	5	0	30	0	30
ES	ES2					5	5	4	4	5	5	5	5	4	4	10	15	5	15	10	15	10	5	5	10
ES	ES4					4	5	5	4	4	4	4	5	4	4	5	15	5	15	5	10	5	15	10	15
BG	BG4					4	5	5	5	5	5	4	4	3	4	7	13	15	15	7	7	15	7	7	7
FR	FR1					4	4	4	5	3	5	5	5	3	1	5	10	5	20	5	10	10	5	10	20
LV	LV2					4	5	5	4	5	5	5	5	5	5	10	10	10	10	10	10	10	10	10	10

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