CONSOLE

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

Research and Innovation action: H2020 - GA 817949

Catalogue of updated factsheets of European in-depth case studies

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Project Consortium

N°	Participant organisation name	Country
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2	REGIONE EMILIA ROMAGNA	IT
3	CONSORZIO DELLA BONIFICA DELLA ROMAGNA OCCIDENTALE	IT
4	UNIVERSITAET FUER BODENKULTUR WIEN	AT
5	Ecorys Brussels N.V.	BE
6	EUROPEAN LANDOWNERS ORGANIZATION	BE
7	ASSOCIATION OF AGRI-ENVIRONMENTAL FARMERS	BG
8	INSTITUTE OF AGRICULTURAL ECONOMICS	BG
9	JOHANN HEINRICH VON THUENEN-INSTITUT, BUNDESFORSCHUNGS-INSTITUT FUER LAENDLICHE RAEUME, WALD UND FISCHEREI	DE
10	EVENOR TECH SL	ES
11	ASOCIACIÓN AGRARIA JÓVENES AGRICULTORES DE SEVILLA	ES
12	UNIVERSIDAD POLITECNICA DE MADRID	ES
13	LUONNONVARAKESKUS	FI
14	ASSEMBLEE DES REGIONS EUROPEENNES FRUITIERES LEGUMIERES ET HORTICOLES	FR
15	ASSOCIATION TRAME	FR
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17	INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE	FR
18	UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK	IE
19	UNIVERSITA DI PISA	IT
20	ZEMNIEKU SAEIMA	LV
21	STICHTING VU	NL
22	STICHTING HET WERELD NATUUR FONDS-NEDERLAND	NL
23	SZKOLA GLOWNA GOSPODARSTWA WIEJSKIEGO	PL
24	UNIVERSITY OF LEEDS	UK
25	UNIVERSITY OF FERRARA	IT

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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 2.4 (UNIBO), as well as all CONSOLE partners reviewed the draft D2.6 document. Also, all partners got access to all factsheets. After the updated factsheets had been put together by the WP leader, contents of own factsheets were checked by the individual partners, as well as validated by experts/stakeholders representing the individual case studies.

Acknowledgments

We thank all CONSOLE partners for carrying out task 2.4 and delivering the data necessary to compose the updated factsheets and therefore this deliverable. Moreover, we thank all partners for reviewing the deliverable and supporting us with comments and amendments. Last but not least we thank all external experts and stakeholders for providing time and information and supporting the validation process.

1 Summary

This document represents deliverable D2.6 "Catalogue of updated factsheets of European in-depth case studies" within work package WP2 "Diagnostic of existing experiences on Agri-Environmental-Climate Public Goods (AECPGs)" of the EU Horizon 2020 project CONSOLE.

In its first part, the document describes the process of updating the factsheets from D2.1 "Catalogue of descriptive factsheets of all European case studies", whereby updates have been carried out in the case that major changes/ strong developments in the case studies took place in the last two years (2020-2022) and/or in the case that further knowledge on the cases has been gained within the project (WP3, WP4). In its second part, the document contains the catalogue of 61 (updated) factsheets.

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The updated factsheets illustrate 59 European (EU) case study examples of contract solutions for the improved provision of AECPGs. Also, the catalogue contains 2 examples beyond Europe, of which 1 comes from the USA and 1 from Guadaloupe (FR).

2 Introduction

2.1 Objective

The main objective of Deliverable 2.6 is to provide an updated catalogue of implemented contract solutions for the improved delivery of Agri-Environmental-Climate Public Goods (AECPGs) based on the factsheets presenting case studies in Deliverable 2.1 "Catalogue of descriptive factsheets of all European case studies". The updated catalogue particularly includes information on strong developments within the contract solutions that occurred over the course of the project (from the publishing date of D2.1 in 2020 to June 2022) and integrates knowledge gained within the project from WP3 and WP4 in 26 in-depth case studies.

To achieve this objective, the following steps were taken:

1) All CONSOLE case studies (published in D2.1) were checked for strong changes and developments.

2) Case studies that reported changes/developments were updated based on the new information.

3) The 26 in-depth CONSOLE case study factsheets were all updated integrating the knowledge gained from WP3 by including an additional page with information about external factors influencing the success of the contract solution.

4) Case studies, on which further analysis was conducted within CONSOLE, were also complemented by an additional factsheet page. On this page, background/context of the research, research idea, method, main findings, and recommendations for the case study are presented.

5) One additional case study was included as a factsheet into the deliverable.

2.2 Tasks addressed

Deliverable 2.6 reflects activities carried out in task 2.4 of the project:

Task 2.4 Update of diagnostic factsheets

Leader: BOKU; Co-Leader: UNIBO; Contributors: RER, ELO asbl, AAEF, IAE, TI, EVENOR, ASAJA, UPM, LUKE, AREFL, TRAME, INRA, UCC, UNIPI, UNIFE, ZSA, VUA, SGGW, UoL

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Task 2.4 is a follow-up on task 2.2 and its resulting deliverable D2. in WP2. In task 2.4, in-depth case study factsheets were updated by integrating all relevant knowledge gained within the project, taking into account also the results of WP3 and WP4 when relevant. Moreover, all case study factsheets were checked for strong developments within the contract solution that might have occurred over the course of the project, and, if this is the case, were updated as well. The task feeds the final AECPG contractual framework and the practical solutions catalogue in task 1.4. It will also allow key experts involved in the case studies to comment the factsheet of their case.

2.3 Outline

Deliverable D2.6 consists of two parts, namely the descriptive part and the catalogue of 61 updated factsheets.

In the *descriptive part*, we describe the updating process of the case studies (Chapter 3) and present an overview of the contents and structure of the presented factsheets (Chapter 4). We give an outlook on the further use of this deliverable for scientific analyses and practice (Chapter 5).

The *updated catalogue of factsheets* (Chapter 6) presents all 61 factsheets in alphabetical order of the partner countries.

3 Updating process of the factsheets

To process of updating the factsheets took place in six main steps:

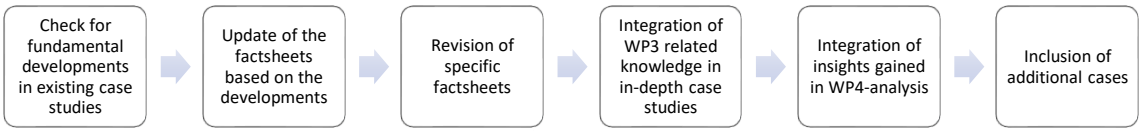

Figure 1: Process of updating the factsheets

(1) To get an overview of the developments in the case studies since 2020 (the submission year of Deliverable 2.1. "Catalogue of descriptive factsheets of all European case studies"), partners were asked to contact the experts/stakeholders representing the individual case studies, in order to clarify if fundamental changes (e.g. changes that greatly alter the message, changes from success to failure, strong quantitative changes, etc.) have been taken place within the case studies. The partners reported the information back to BOKU via a short survey (conducted via *limesurvey*) and commented on the potential changes.

(2) Of the original 60 case studies, 35 cases reported no major developments or fundamental changes, the related factsheets were directly transferred from D2.1

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to D2.6. Case studies with fundamental changes in the last two years were sent to the partners for an update. Depending on the nature of change, several possible modifications took place. The aim was to include the updates in a way that the factsheets are still clear and easily readable. Some changes were directly incorporated into the original factsheet (changes in participation number, etc.), in this case the date of the factsheet was updated (from May 2020 to June 2022). Other developments were indicated with a note on the last page next to the SWOT-illustration including further information on the nature of the development.

(3) In a revision process, the factsheets of the case studies in Italy (IT1; IT3; IT4) and Latvia (LV3; LV4) have been elaborated in more detail and their comprehensibility has been improved. As regards the factsheets of UK, They have been heavily restructured to make it clearer that we are presenting several interesting implementation examples of one single scheme (the Countryside Stewardship Facilitation Fund). We have therefore created a "starter" that is the same across all 5 UK factsheets, and then use the individual information to describe the case studies. For the UK1 and UK3 factsheets (the in-depth studies), a final page has been added describing the external factors that influence the success of the system in each case. For Factsheets UK1, UK3, and UK5, on the last page a box has been included that lists the changes that the contract has undergone over the last three years.

(4) In addition to the general update of the case studies, we updated the 26 in-depth case studies (see table 1) with insights gained from WP3. To include insights from WP3 an additional page for all 26 in-depth case studies was created. The basic idea was to include main external factors influencing the success of the case study. Based on the WP3 PESTLE approach we highlighted three to four main external factors for each case study which are fundamental for the success of the contract solution. The chosen external factors provide further insights for practitioners for the future implementation of the contract solutions in other countries/ other contexts. The external factors include **P**olitical/governance, **E**conomic/market, **S**ocial, **T**echnological, **L**egal and **E**nvironmental (PESTLE) factors. Based on the in-depth analysis conducted in WP2 selected factors of specific importance were highlighted.

(5) In three of our case studies, case study-related analysis took place within WP4.

- In the French case study, FR4, INRAE researchers have conducted an analysis based on the idea of the "Ecomethane" case study to gain further insights about the payment design and its possible implications.
- In the Spanish case study, ES4, Evenor-tech researchers have conducted a study to reveal the usage of digital soil mapping and its importance in predicting and spatial distribution of soil organic matter at three depths using machine learning techniques.

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- In the German case study DE5 "Water protection bread" the residual nitrate of the *water protection wheat* and *conventional wheat* was measured and compared.

In the factsheets related to this three cases, the background/context of the research, the research idea, the method, the main findings and the recommendations for the case study are presented on an additional page.

(5) The update of the catalogue of descriptive factsheets within Task 2.4 provided an opportunity for the partners to include additional case studies from their country. The catalogue was extended by one new case study, namely PL5 "Top Farms Group – cooperation in the supply chain in the „Symbiotic Model". This additional factsheet can be found on page 220 (PL5) in the deliverable.

Table 1 gives an overview of all conducted changes/developments and additions in the factsheets in alphabetic order.

Table 1 Factsheets and indicated changes made

Country	ID	Changes (Update)	In-depth PESTLE page	WP3/4 analysis	New case study
AT	AT1				
AT	AT2				
AT	AT3	✓	✓		
AT	AT4	✓	✓		
BE	BE1		✓		
BE	BE2				
BE	BE3		✓		
BE	BE4				
BG	BG1				
BG	BG2				
BG	BG3		✓		
BG	BG4		✓		
DE	DE1	✓			
DE	DE2	✓			
DE	DE3	✓			
DE	DE4				
DE	DE5	✓	✓	✓	
DE	DE6				
ES	ES1				
ES	ES2		✓		
ES	ES3				
ES	ES4		✓	✓	
FI	FI1				
FI	FI2	✓			
FI	FI3	✓	✓		
FI	FI4	✓			
FI	FI5	✓	✓		
FI	FI6				
FR	FR1	✓	✓		
FR	FR2				
FR	FR3				
FR	FR4	✓	✓	✓	
FR	FR5				

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Country	ID	Changes (Update)	In-depth PESTLE page	WP3/4 analysis	New case study
IRL	IRL1		✓		
IRL	IRL2		✓		
IRL	IRL3	✓			
IRL	IRL4				
IT	IT1	✓	✓		
IT	IT2				
IT	IT3	✓			
IT	IT4	✓	✓		
IT	IT5				
IT	IT6		✓		
LV	LV1	✓	✓		
LV	LV2	✓	✓		
LV	LV3	✓			
LV	LV4	✓			
NL	NL1		✓		
NL	NL2				
NL	NL3		✓		
NL	NL4				
PL	PL1		✓		
PL	PL2				
PL	PL3				
PL	PL4		✓		
PL	PL5				✓
UK	UK1	✓	✓		
UK	UK2	✓			
UK	UK3	✓	✓		
UK	UK4	✓			
UK	UK5	✓			

4 Contents and structure of diagnostic case studies' factsheets

The factsheets prepared on basis of the data collection consist of 4 main clusters of information (case study description, contract information/data and facts, context features, and analysis of success), including 12 main content elements, which are detailed below:

Case study description:

- The case study in a nutshell
- Summary of the case study
- (Environmental) objectives and initial situation
- Problem description/statement

Contract information/Data and facts:

- Contract type(s)
- Public goods addressed (AECPGs and further)
- Data and facts on the contract solution (including e.g. participation, management requirements, controls/monitoring, conditions of participation, risks/ uncertainties, funding/payments)

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Context information:

- Location
- landscape and climate
- farm structure/system

Assessment of success factors:

- Reasons for success and failure
- SWOT analysis, bullet points for strengths, weaknesses, opportunities and threats

In the in-depth factsheets in the process of updating the factsheets an additional page describing the main external factors was included:

Description of main external factors influencing success:

- The external factors include **P**olitical/governance, **E**conomic/market, **S**ocial, **T**echnological, **L**egal and **E**nvironmental (PESTLE) factors.

4.1 Information at a glance

In order to enable a quick overview of the contents of the contract solution, the factsheets contain the following elements:

Heading

The name of the case study, often derived from the national language, allows clear identification of each case study.

Contract solution in a nutshell

Each factsheet starts with a very short paragraph, informing the reader on the main aspects of the case study and the contract solution presented.

Infoboxes

The factsheets contain infoboxes placed along the page margins. These infoboxes enable a fast understanding of the contract type(s) as well as the features it is based on, the public goods addressed, and some main information about payment mechanisms, contract conclusion, start, end and length of the program/initiative/project presented as case study. Depending on the individual case study, the infoboxes might include additional information.

The four main ***contract types*** emphasised in CONSOLE are displayed in the infobox on the first page using the symbols shown in Figure 2. It has to be highlighted, that single symbols are used for case studies clearly representing one contract type. Multiple symbols are used if the contract types show features belonging to more than one type (e.g. a result-based contract solution combined with a collective approach of implementation would display the symbol for result-based as well as collective). Also, the contract type symbols are used even if the contract solution described in the case study does not fully

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qualify for it – or is not (yet) implemented, but has – or will have – features strongly directed towards one contract type (e.g. a strongly result-oriented solution where farmers monitor biodiversity, but payments are still granted per area).

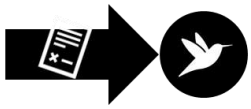
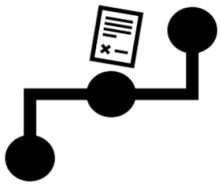
Result-based/ Result-oriented	Collective/ Cooperative	Value chain	Land tenure
			

Figure 2: CONSOLE symbols of contract types

Also, the fourteen ***AECPGs*** addressed in CONSOLE are displayed using symbols (see Figure 3). Normally, AECPGs displayed in the info boxes are those directly addressed by the contract solution. However, it is clear, that contract solutions for the improvement of one specific AECPG can have impacts on the provision of another. Particularly when these effects are strong or obvious, also indirectly addressed AECPGs might be displayed in the info boxes.

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

Figure 3: CONSOLE symbols of AECPGs

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4.2 Description of contract solution case study

The factsheets aim at giving short but precise descriptions of the contract solution case study, as well as information on its design and effects. To this aim, the following content elements are covered:

Summary (of contract solution)

The summary includes the main case study features and describes aspects such as which public goods are addressed, which parties are involved, which payment mechanisms are applied, and which region/area/agricultural system/forestry system is covered. As such, the summary provides the reader with an overview of the contract solution and hints at its innovative elements.

(Environmental) objectives

The factsheets display specific environmental objectives and the AECPG(s) targeted by the contract solution in a textbox usually placed in the middle of the first page. In most cases, the objectives are presented as bullet points.

Problem description

The problem description outlines the basic conditions/problems/issues that led to the implementation of the contract solution, considering the state/history of the agricultural/forestry system as well as that of the environmental conditions. In doing so, the problem description indicates the driving forces behind the development and establishment of the contract solution.

4.3 Contract information/Data and facts

A major part of the factsheets is devoted to giving insights into how the contract solution actually works. Information is given on:

- Participation: Informs on who are the participants implementing the contracts solution (e.g. farms/foresters/contractees), what is the number of participants, and what is the geographic expansion/area of implementation.
- Involved parties: Informs on the parties involved in the conclusion of the contract and the benefits they derive from the contract solution.
- Management requirements: Informs on the land use requirements along with the implementation of the contract solution, such as specific techniques or measures to achieve environmental objectives, etc.
- Controls/monitoring: Informs on the implementation of monitoring and controls.
- Contract conclusion: Informs on the way the contract is technically concluded, such as written agreements, verbal agreements, etc.
- Conditions of participation: Informs on specific conditions to be fulfilled to be able to enter the contract solution.
- Payment mechanism: Informs on the type of payment and/or payment mechanism (e.g. auctions, tradable emissions certifications, incentive payments, product prices, etc.).

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- Funding/payments: Informs on the system of payments, the origin of funding, payment modalities, etc.
- Risks/uncertainties for the participants: Informs about potential risks arising for the contractee when implementing the contract solutions (e.g. price risks, delivery quantity, investments, husbandry risks, risk of not reaching objectives).
- Duration of contract: Informs on the duration of single contracts, as well as on the overall length the contract solution existed or is foreseen to exist.

4.4 Context information

The descriptive part of the factsheets ends with a description of the context and basic conditions, under which the contract solution is implemented. The main aspects addressed are natural conditions of a country/ a region like landscape and climate, as well as the farm/forestry systems targeted by the contract solution:

- Landscape and climate: Informs on landscape and the climate of the region where the contract solution is implemented including a description of specific scenic and ecological characteristics (habitat, landscape elements).
- Farm/forestry system targeted: Informs on the farming system and/or type of farming/forestry, which is targeted by the contract solution. Descriptions may include information on agricultural/forestry practices such as management form, average farm/forest size, share of organic farms, intensity of farming/forestry (e.g. frequency of cutting), shares of land use, ownership structure, full-time/part-time farmers/foresters).

4.5 Assessment of success factors

All factsheets end with a final page containing an assessment of the success (and failure) factors of the contract solution case study presented. The focus is put on the effectiveness of the contract solution in reaching the (environmental) objectives targeted. Thereby, the contract solutions can be classified as "successful", "failure" and "unclassifiable".

Definition "successful": In CONSOLE the term "success" is directly related to the term "effectiveness". A contract solution is successful, if the case is "environmentally effective", which means it reports improvement of the AECPG´s (in the best case, long-term improvements). Moreover, if AECPG´s improvements are not foreseeable yet (e.g. due to short running time of the program etc.), also successful implementation could be an indicator. Matzdorf et al. 2014 define successful PES as follow: "A successful PES would achieve a clearly defined environmental objective effectively and efficiently".

Definition "failure": If the case reported a clear failure in environmental improvements or even deteriorations (based on Cox et al. 2010)

Definition "unclassifiable": The contract solution can neither be called as a success or as a failure. For example, situations where for one reason or another the participation is much lower than the potential, or for example situations where there are trade-offs between various public goods, or where the case is ongoing and results are not yet reported / available.

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Moreover, the assessment includes an identification and description of the main reasons for either failure or success.

Finally, this section is concluded with an analysis of strengths, weaknesses, objectives and threats of the case study, displayed in an easy-to-read textbox format.

Case studies where strong developments have taken place in the period from 2020 to 2022 also include a note (next to the SWOT figure) regarding the nature of the developments.

4.6 Description of main external factors influencing success

In addition to the main information in each fact sheet, up to two additional pages were included for the case that they were updated:

All factsheets representing in-depth case studies (in total 26) now end with a page describing the main external factors influencing success. **P**olitical/governance, **E**conomic/market, **S**ocial, **T**echnological, **L**egal, and **E**nvironmental (PESTLE) factors can all have a strong impact on the success of contract solutions. Based on an in-depth analysis for each in-depth case study we selected factors of specific importance and presented them in boxes on an additional page.

Figure 4: PESTLE illustration for factsheets - main external factors influencing success

The boxes are pointing to a specific external factor in the PESTLE illustration. Information is presented descriptively, including a headline and a short text.

4.7 CONSOLE scientific analysis – results and recommendations

In three of our case studies, case study-related analysis took place within WP4. On the additional factsheet page "CONSOLE scientific analysis – results and

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recommendations", the results and recommendations are provided in a structured way along with several info boxes.

Background/context of the research/ research idea: Informs on the context/background of the research and the research idea/question.

Methodology: Informs on the methodological approach used in the study in simple words.

Main results: Informs on the key results gained (which are relevant for the case study).

Recommendations: Provides a link directly to the case study presented in the factsheets, with an interpretation of the results and recommendations.

5 Outlook on further use of the factsheets for scientific analyses and for practice

5.1 Further scientific exploitation

Task 2.4 and particularly Deliverable 2.6 will feed the final AECPG contractual framework and practical solutions catalogue in task 1.4. In addition, the D2.6 will also feed task 1.7 "*Comparative analysis and synthesis of lessons learned*" by highlighting outstanding good practices as examples of solutions in Deliverable 1.8.

5.2 Use of the factsheets for practitioners

The use of the factsheets for practitioners remains the same as already described in Deliverable 2.1:

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., 2019[1]). 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

[1] Pe'er, G., Zinngrebe, 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.

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payments or collective approaches, as well as by novel value chain strategies and land tenure contracts with environmental clauses.

The catalogue of factsheets presented below sheds light on the "hidden" knowledge about such innovative contract solutions from local experience in the EU and beyond. The factsheets can therefore provide practitioners as well as programmers with an easy-to-read / uniformly structured overview of a broad range of promising and innovative contract solutions for the effective and lasting delivery of AECPG by agriculture and forestry. It can serve as inspiration and knowledge basis for the derivation of new ideas to develop and improve future contract solutions to foster the provision of AECPGs by agriculture and forestry in the European Union and beyond.

The additional pages in the updated fact sheets provide practitioners with further information on external factors that influence the success of contract solutions, offering important insights into the implementation and rollout of contract solutions in other contexts.

5.3 Dissemination

The updated factsheets will be distributed, among the community of practice activated in WP5 and the dissemination and communication activities in WP6. In addition, all updated factsheets will be available on the CONSOLE website.

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6 Factsheets in alphabetic order of the partner countries

Table 2: Overview on CONSOLE diagnostic case studies

Page	Country	ID	Title	Contract type*	Contact (scientific)	Email
1	AT	AT1	ALMO - alpine oxen meat from Austria	VC		
4	AT	AT2	Biodiversity monitoring	RB	BOKU: Lena Schaller;	lena.schaller@boku.ac.at
7	AT	AT3	Result-based Nature conservation Plan (RNP)	RB	Theresa Eichhorn	theresa.eichhorn@boku.ac.at
12	AT	AT4	The Humus Program of the Ökoregion Kaindorf	RB		
17	BE	BE1	Participation of private landowners to the ecological restoration of the Pond area Midden-Limburg through a close participation of private and public landowners and a triple E-approach in the 3watEr project.	CO/RB	ELO: Micaela Cosgrove; Alice Budniok;	micaela.cosgrove@elo.org legal@elo.org;
22	BE	BE2	FLANDERS – Flemish Forest Group	CO	Landelijk Vlaanderen:	alec.van.havre@landelijkvlaanderen.be
25	BE	BE3	Wildlife Estates Label in Flanders	RB/CO	Alec van Havre	
30	BE	BE4	Flemish Nature Management Plan	RB+		
34	BG	BG1	"Conservation of grasslands and meadows of high natural value through support for local livelihoods"	OT		
37	BG	BG2	"Organic honey from Stara Planina mountain sites"	VC	IAE: Dimitre Nikolov;	dnik_sp@yahoo.com;
40	BG	BG3	"The Wild Farm" organic farmers.	VC	Kristina Todorova	christalina22@gmail.com
44	BG	BG4	"Conservation and restoration of grasslands in Strandzha and Sakra mountains for restoring local biodiversity and endangered bird species"	LT		
48	DE	DE1	Viticulture on steep slopes creates diversity in the Moselle valley (Steillagenweinbau schafft Vielfalt – Das Moselprojekt)	RB +		
51	DE	DE2	Organic farming for biodiversity (Landwirtschaft für Artenvielfalt)	RB +		
54	DE	DE3	Collaboration for sustainability between institutional land owners and tenants farmers (Greifswalder Agrarinitiative)	LT	TI: Tania Runge	tania.runge@thuenen.de
57	DE	DE4	Agro-ecological transition pathways in arable farming	RB +		
60	DE	DE5	Water protection bread (Wasserschutzbrot)	VC		
65	DE	DE6	Forest conversion from coniferous to deciduous stands - an eco-account case	CO		
68	ES	ES1	Cooperative rice production in coastal wetlands in Southern Spain	VC	UPM: Ana Iglesias	ana.iglesias@upm.es
72	ES	ES2	Organic wine in Rueda, Spain (Rueda)	VC		
76	ES	ES3	Beneficial practices monitoring in Olive crops in the framework of the new eco-schemes	OT	EVENOR: Francisco Jose Blanco Velazquez;	fj.blanco@evenor-tech.com;
79	ES	ES4	Integrated production in olive groves	VC	ASAJA: José-Fernando Robles del Salto	josefernando.robles@asajasevilla.es
84	FI	FI1**	Forest Bank (a forest conservation program in Indiana and Virginia, US)	LT	LUKE: Mikko Kurttila;	mikko.kurttila@luke.fi;
88	FI	FI2	Protected areas of private forests as tourism destination in Kuusamo	RB +	Katri Hamunen; Harri	jussi.leppanen@luke.fi;
92	FI	FI3	Carbon Market – a nonprofit compensation service for restoring ditched peatlands	VC +	Hänninen, Jussi	oili.tarvainen@luke.fi;
97	FI	FI4	Pasture bank - a platform for pasture leasing	LT	Leppänen; Oili	esa-jussi.viitala@luke.fi
100	FI	FI5	Green jointly owned forest - TUOHI	LT+	Tarvainen, Esa-Jussi	emmi.haltia@luke.fi
105	FI	FI6	Nature value bargaining (Luonnonarvokauppa)	RB	Viitala; Emmi Haltia	
108	FR	FR1	Eco-grazing - Grazing for ecological grasslands maintenance in the green areas of Brest Metropole	LT		
113	FR	FR2	Terres de Sources - Public food order in Brittany, France	RB +	INRA: Pierre Dupraz;	alice.issanchou@inrae.fr;
117	FR	FR3**	Esprit Parc National - Food and services in the national park of Guadeloupe	VC	Alice Issanchou	pierre.dupraz@inrae.fr
121	FR	FR4	ECO-METHANE – Rewarding dairy farmers for low GHG emissions in France	RB		
127	FR	FR5	HAMSTER – Collective AECM to restore habitats of the European Hamster in Alsace	CO/RB		
131	IRL	IRL1	BurrenLife Project	RB +	UCC: Thia Hennessy;	thia.hennessy@ucc.ie;
136	IRL	IRL2	RBAPS - The Results-based Agri-Environment Payment Scheme (RBAPS) Pilot in Ireland	RB	Noreen Byrne; Olive	N.Byrne@ucc.ie;
141	IRL	IRL3	BRIDE - Biodiversity Regeneration in a Dairying Environment	RB +	McCarthy; Tracy	o.mccarthy@ucc.ie;
145	IRL	IRL4	Carbery Greener Dairy Farms™ CGDF	OT	Bradfield	tracy.bradfield@ucc.ie
149	IT	IT1	Incentives for collective reservoirs	CO	UNIBO: Davide Viaggi;	matteo.zavalloni@unibo.it;
152	IT	IT3	Rewilding of detention basin in Massa Lombarda	LT	Meri Raggi, Matteo	davide.viaggi@unibo.it;
154	IT	IT4	"Carta del Mulino" – Barilla	VC	Zavalloni	meri.raggi@unibo.it
156	IT	IT2	Cooperation in Natura 2000 area benefiting biodiversity (Measure 16.5)	CO	RER: Lucio Botarelli; Gianfranco de Geronimo	Lucio.Botarelli@Regione.Emilia-Romagna.it; Gianfranco.DeGeronimo@regione.emilia-romagna.it
159	IT	IT5	Farmers as Custodian of a Territory	RB	UNIPI: Fabio Bartollini;	fabio.bartolini@unipi.it;
163	IT	IT6	TERRITORIAL INTEGRATED PROJECTS - (PIT) /territorial agreement	CO	Daniele Vergamini; Matteo Olivieri; Maria Andreoli	daniele.vergamini@agr.unipi.it; matteo.olivieri@phd.unipi.it; maria.andreoli@unipi.it
168	LV	LV1	NUTRINFLOW	CO		
173	LV	LV2	DVIETE LIFE	OT		
178	LV	LV3	Bauska Nature Park	RB +	ZSA: Inga Berzina	inga@zemniekusaeima.lv
181	LV	LV4	Forest Management	OT		
185	NL	NL1	Kromme Rijn Collective management	CO	VU: Nynke Schulp	nynke.schulp@vu.nl
190	NL	NL2	Green Deal Dutch Soy	VC		
193	NL	NL3	Biodiversity monitor for dairy farming	RB +	WNF: Anne de Valença;	avalenca@wwf.nl;
199	NL	NL4	Biodiversity monitor for arable farming	RB +	Jacomijn Pluimers	jpluimers@wwf.nl
203	PL	PL1	Natural Grazing in Podkarpackie Region	CO/LT		
208	PL	PL2	Program "Sheep Plus" - Provincial Program of Economic Activation and Preservation of the Cultural Heritage of the Beskids and Kraków-Częstochowa Upland	CO/LT	SGGW: Edward Majewski; Agata Malak-Rawlikowska	edward_majewski@sggw.edu.pl agata_malak_rawlikowska@sggw.edu.pl
212	PL	PL3	Program "Flowering meadows" - contracts for protection of biodiversity and water resources by regular mowing of meadow	VC		
215	PL	PL4	BioBabalscy - Organic Pasta Chain Preserving Old Varieties of Cereals	VC		
220	PL	PL5	Top Farms Group – cooperation in the supply chain in the „Symbiotic Model"	VC		
224	UK	UK1	Delivering multiple environmental benefits in the South Pennines	CO		
228	UK	UK2	Using natural flood management to achieve multiple environmental benefits in Wharfedale	CO	UoL: Emmanouil Tyllianakis; Poppy Leeder; Duncan Fyfe E.Tyllianakis@leeds.ac.uk;	P.Leeder@leeds.ac.uk; D.Fyfe@leeds.ac.uk
231	UK	UK3	Building natural flood management knowledge and capacity in Wensleydale	CO		
235	UK	UK4	Natural Flood Management in the River Swale catchment in Yorkshire	CO		
238	UK	UK5	Environmental improvement across a whole catchment: Esk Valley	CO		

* RB: Result based; CO: Collective implementation; VC: Value chain; LT: Land tenure ** Example outside Europe

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement GA 817949

ALMO – alpine oxen meat from Austria

Under the ALMO brand, a meat processing company, a foundation for animal welfare, and 400 farmers, organised in an association and managing alpine pastures around the Austrian Teichalm and Sommeralm, work together to produce and market alpine oxen with higher animal welfare standards.

Summary

With the ALMO-initiative a value chain contract solution has been introduced to secure the economic viability of the farms in the "Almenland nature park", and to preserve landscape and scenery of the Almenland region: In 1988, 45 oxen farmers joined forces to establish a brand and produce high quality alpine oxen meat with higher animal welfare standards. The initial number of 45 farmers increased to about 400 farmers in the last 30 years, organised in the association ALMO. At the beginning, oxen meat was marketed by small butcheries. 2001 a strong expansion took place as the meat processing company "Schirnhofer" joined the ALMO-program. The animal protection association "VIER PFOTEN" developed additional animal welfare criteria to guarantee high animal health and welfare standards on the farms. Since 2014, farms can be certified based on these criteria. The farmers get fixed prices for the oxen, which are on average 23% higher than the market price. ALMO products are sold using diverse points of sales, including some large companies of the Austrian food chain. Additionally, the meat production company sells the meat products via an online store.

Objectives

1. Marketing of oxen meat from alpine pastures in Austria
2. Preservation of alpine/mountain pastures by grazing.
3. Secure economic viability of the farmers in the Almenland region.
4. Secure high animal health and welfare standards in oxen meat production.

Data and Facts - Contract

Participation: Now, about 400 farmers take part in the ALMO-initiative, producing about 4000 alpine oxen per year (about 10 per farm). The area involved in the ALMO-program is the "Almenland nature park", covering 253 km².

Involved parties:

- Farmers: The farmers are organized in an association (ALMO-Verein) founded 1988. The association consists of 500 members (mostly farmers).
- Meat processor: The living oxen are delivered to the meat processor Schirnhofer, which organises the slaughtering of the oxen and the processing and selling of meat under the brand ALMO. A part of ALMO-meat is also sold directly to the gastronomy. Since 2016 the delivery of the gastronomy is conducted through the company "Kröswang".
- Animal welfare organization: The animal welfare organization "VIER PFOTEN" exists since 2003. Since 2014, ALMO-farms can be certified according to the animal-protection-criteria developed by "VIER PFOTEN" together with the University of Natural Resources and Life Sciences Vienna.
- Citizens: The ALMO-brand is an economic factor for the whole region. It also influences the tourism sector; Because of ALMO, the region is a declared culinary region "Genussregion". In the end the ALMO ox reaches the consumer in form of high quality meat.

VALUE CHAIN

farmer – slaughterhouse – meat processing – distributor - store – consumer

PUBLIC GOODS

Farm animal health and welfare

Landscape and scenery

Rural viability and vitality

LOCATION

AUSTRIA

The region "Steirisches Almenland" is located about 40 km northeast of the federal capital Graz in the district Weiz. It comprises the Teichalm-Sommeralm area. It is the largest contiguous alpine pasture area in Europe.

Almochsenfleisch aus Österreich

CONTRACT

ALMO involves a market sector oriented contract type between farmer and meat processor.

Contract conclusion:
Written agreement

Payment mechanism:
Payment for product – more money then for equal products – fixed price.

Funding/Payments:
Schirnhofer company pays farmers for the selling of living oxen. About 23% higher than market price.

Length of participation in scheme:
Some farms participate since 30 years, some farms are new in the program.

Start of the program:
1988
End:
still running

Alpine oxen?

- Castrated male cattle
- 26 months old
- 750 kg living weight
- Value of about €2.000
- Higher meat quality, because of feed and way of husbandry

Management requirements for farmers: The ALMO-program requires certain husbandry conditions. During the summer months (May – September) daily grazing of the oxen on an alp or pasture in the mountain area is obligatory. In total, the oxen must be grazing on Alpine pastures for at least 150 days per year.
During winter, tethering of oxen and fully slatted floors are prohibited, also more space than in conventional husbandry must be provided. Since December 2006, feedstocks have to be GMO-free. Feeding mainly includes grassland, pasture grass, grass silage, hay (min. 75% grass in the annual ration). Energy supplementation is possible especially in the final fattening (grain meal). The castration of the oxen is necessary, but a 3-fold pain elimination is required (sedation, local anaesthesia and post-operative pain treatment with NSAIDs). The same requirements need to be met for dehorning.

Controls/monitoring: The ALMO – farms get controlled and certified by agroVet GmbH.

Each farm is checked at least once a year. Costs of inspection are borne by the meat processor.
The following points are checked:

- alpine pasture and pasture management, stables, space
- animal health, treatment
- feeding, GMO-free
- assessment of animal welfare on the basis of animal-related parameters (Welfare Quality)

Problem description

Due to the rapidly increasing motorization in agriculture, the ox has long since been replaced as a draft animal. The domestic demand for ox meat was not significant, so the only way out was to export the Alpine oxen via trading companies with subsidies, in some cases as far as North Africa. In 1988 the idea of founding a brand was born. The ox farmers wanted to produce quality oxen on their alpine pastures for the Austrian market.

Context features

Landscape and climate: The "Almenland Nature Park" is the largest contiguous alpine pasture area in Europe, with 125 alpine meadows and pastures. The alpine meadows are located up to 1500 m above sea level and registered in the alpine pasture register. The area is characterized by flat slopes, lush alpine pastures and numerous spring streams. The special cultural landscape was formed by centuries of alpine pasture management, which largely prevented the overgrowth of bushes and forests. The 12 municipalities located in the area have formed the Leader region "Almenland".
The macroclimate is mainly influenced by continental climate, especially in the south of the Eastern Alps. The winters are cold and the summer is moderately warm. Precipitation is high. Nevertheless, there are many microclimates and different soil conditions in the Almenland with various plant communities at different altitudes. These plants serve as the feeding basis for the oxen.
Farm structure: The cultural landscape and the sustainable, extensive farming provided a good basis for a long tradition in tourism. 17,7% of the population is working in the agriculture and forestry sector. 10 Percent of the oxen farms are organic. ALMO-farms on average keep 20 oxen, 9 to 10 are slaughtered every year. The average agricultural area is 17 hectares per farm, of which 15 hectares are grassland. All member farms are registered in the National Register of Mountain Farms. Many farmers work on a part-time basis.

Information/contact: www.almo.at

SUCCESS OR FAILURE?

The ALMO-program presents a **successful** contract solution. The contract solution is judged successful, as the number of participants increased over the years. The ALMO-program started 1988 and is still running. The ALMO-ox is kind of an symbol for the region. The acceptance of farmers is high (some of them participate since 30 years). The animal health and welfare increased on the oxen farms.

Reasons for success:

- The ALMO-program provides an alternative for the farmers.
- The oxen farming in the region has a long tradition and the area is very suitable for this type of farming.
- The initiative for the ALMO-program was from the oxen farmers themselves and they organize themselves by means of an association (ALMO-Verein).

SWOT analysis ALMO-program

Main Strengths

1. Farmers organize themselves in an association (ALMO-Verein) since 1988
2. Oxen husbandry fits well into the region and agriculture.
3. The brand continues to develop and responds to the animal welfare requirements of the population.
4. The brand continues to develop (e.g. online sales platform)

Main Weaknesses

1. All products are delivered to one buyer. Disadvantage for small local butcheries
2. Contrary to the original objective, many of the grazing areas on the mountain pastures are now grazed by suckler cows rather than by alpine oxen
3. The quality criteria of the meat processor are difficult to achieve with pure grazing (final fattening with energy supplementation)

Main Opportunities

1. ALMO can be marketed as a symbol of the region and the Almenland Nature Park.
2. Tourism is very strong and therefore the preservation of the landscape is of great interest.
3. Increasing societal awareness for animal welfare

Main Threats

1. Dependence on a single large meat processor
2. Development of the demand of oxen meat in Austria.
3. Increasing risk of water shortages on Alpine pastures.

Horizon 2020
European Union Funding
for Research & Innovation

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Biodiversity monitoring with farmers

Around 700 farms throughout Austria monitor rare plants and animals on their meadows and pastures in order to better understand the link between abundance of species and different farming practices.

Summary

About 700 farmers throughout Austria, as well as students from 14 agricultural and forestry schools are observing the diversity of plants and animals on their own meadows and pastures. The program “Farmers keep an eye on plants and animals!" is part of Austria’s program for rural development since the period 2007-13 and also in 2014-20. The program stands for the annual monitoring and documentation of plants and animals, as well as for the willingness to care for and sustain the extensive grassland. The program is part of the education measures of the rural development program, with the aims to raise awareness, to build knowledge among farmers about biodiversity on their meadows as well as to inspire them for biodiversity monitoring. This helps to better understand the relationship between grassland management and the abundance of certain indicator species Regulations are not part of the program but only monitoring activities. Monitoring observations and management measures are reported on an online reporting portal. Farmers are paid a compensation for their monitoring activities, if they take part in further measures of Austria’s Agri-Environmental-Program ÖPUL, namely CODE WF (€39/ha with a maximum of 3ha) or biological farming (lump sum of €57).

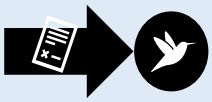
Objectives

1. Biodiversity monitoring, conservation and protection of extensive grasslands by farmers , monitoring of 200 plant and 50 animal species throughout Austria
2. Awareness raising and knowledge about biodiversity among farmers via the observation and documentation of the development of plant and animal species and recognition of connections between management practices and abundance of certain species
3. Environmental consciousness raising among farmers
4. Citizen Science in order to gain knowledge about the effects of different land management practices

Problem description

Since 1995, a huge number of farms within the framework of Austrian Agri-Environmental Program (ÖPUL) have adhered to the agreed management requirements of the nature conservation measure (WF) in the use of their species-rich meadows. However, it is assumed that only if farmers really understand why they are implementing certain management measures a long term effect will be the result. For nature conservation measures to work sustainably, more is needed than incentive payments and contracts designed as simple as possible. The sole advise of ecologists is not enough to achieve long-term awareness. This is where the project sets in and tries to generate long-term understanding among farmers by counting and observing the abundance of animal and plant species themselves and setting them in relation to management.

RESULT-ORIENTED



The payment is not result-based but the contract solution can be defined as result-oriented.

PUBLIC GOODS

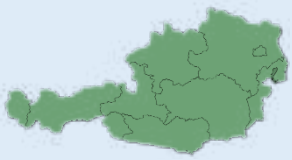
Farmland biodiversity

INDIRECT EFFECTS

Landscape and scenery

LOCATION

AUSTRIA



Participation is possible in whole Austria.

CONTRACT

It is a private-public contract between the farmers and the financing party under the framework of 2nd Pillar payments. Funding comes from the government (with and without EU-funding).

Contract conclusion:
Written agreement

Payment mechanism:
Incentive payment

Funding/Payments:
Participating farmers receive expense allowance for monitoring. Farms participating in the ÖPUL nature conservation measure "Code WF" receive the so-called "monitoring surcharge" of € 39/ha. In total, participation is possible with a maximum of three field. For organic farms and other farms the fee is an annual flat rate of € 57 (gross)

Start of the program:
2007
End: ongoing

Data and Facts - Contract

Participation: About 700 farmers throughout Austria, as well as students from 14 agricultural and forestry schools participate in this project.

Involved parties:

Farmers. The observation is carried out independently by the farmers, usually once or twice a year, and for some animals (birds, reptiles) also continuously throughout the year. In the monitoring process, farmers experience their meadows in a completely new way. The focus is not on profitability of the management, but on special features that haven't been considered before and which can only be preserved by farming.

Regional project representatives. All over Austria farmers particularly committed to biodiversity monitoring are available to answer questions by other participants and introduce and advertise for the project in their region. The representatives organize guided tours on their own meadows or on other farms and they organize lessons in schools in their federal state.

Students. Currently 14 agricultural schools take part in biodiversity monitoring. The project team holds specially designed teaching units on the topic of "rough meadows" at these schools.

Ecologists. Ecologists train the farms at the beginning of participation in grassland biodiversity monitoring, they demonstrate to the farmers rare plant and animal species worthy of conservation on their farmland. They train the farmers to observe, count and document according to a certain monitoring design.

Project team. The implementation of the project includes a wide range of measures such as support for participating farmers, public relations work, the production of illustrative accompanying materials or the evaluation of in-depth observations of the farmers on animals and plants. To address these demands a project team consisting of different partners (project lead: Austrian Council for Agricultural Engineering and Rural Development, environmental consultancy, landscape planners, ecologists,) are responsible for the professional execution of the project.

Management requirements for farmers:
No obligatory management requirements

Conditions of participation: All farms cultivating meadows with rare animal and plant species can participate. In most cases, participation in the measures "Conservation and development of areas of high nature conservation value (Code WF)" or "Organic farming" within the framework of the Austrian Agri-environmental Programme (ÖPUL) takes place simultaneously.

Registration: If farmers want to participate, they must get in contact with the project team and register.

Enrollment: An ecologist visits the farm and demonstrates which special and valuable species can be found on the meadows.

Observe: The selected indicator species are observed and monitored annually.

Reporting: The observations are entered on the reporting platform.

Receive premium: Farmers receive an expense allowance for monitoring

Evaluation: The observations are used anonymously to evaluate the development of nutrient-poor grasslands and the ÖPUL nature conservation measures.

Context features

Landscape and climate: No specificities; Participation is possible throughout the whole country.

Farm structure: Mostly grassland farms with valuable nature conservation areas.

Information/Contact: www. biodiversitaetsmonitoring.at

SUCCESS OR FAILURE?

The Biodiversity monitoring presents a successful contract solution: The number of participants increased over the years. Right now around 700 farmers participate.

According to an evaluation of educational effects of the project carried out in 2018 (n=114 farmers), around 89 % of the participating farmers reported that they gained deeper understanding and appreciation for flora and fauna on their farmland. 94% of all participants quoted that they are more aware of the dynamics between agricultural management practice and biodiversity. More than 75% of all participants of the evaluation report that they are more motivated to continue extensive farming in order to protect biodiversity.

Reasons for success:

- Farmers learn about the biodiversity on their meadows and pastures and develop an own interest to care for it
- The monitoring and also the reporting on the platform is easy and can be carried out without much effort
- The program bears no risks for the farmers as no consequences occur if the target species is not observed.

SWOT analysis

Main Strengths

1. Flexible management
2. Knowledge and awareness building
3. Long term changes of awareness
4. The observations from the farmers are used to evaluate the development of nutrient-poor grasslands and the ÖPUL nature conservation measures.
5. Network of farmers, who share knowledge

Main Weaknesses

1. No obligation to maintain (or increase) biodiversity
2. The financial incentive is very low.
3. The majority of the farms that take part in the project are already carrying out nature conservation measures on the farm, thus reaching fewer farms that have no prior interest.

Main Opportunities

1. The importance of biodiversity is increasing among the population.
2. Long-term awareness building on biodiversity
3. Capacity building of future farmers (students)
4. Citizen Science in order to gain knowledge about the effects of biodiversity and management practices

Main Threats

1. No continuity of the project

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Result-based Nature conservation Plan (RNP)

Result-based approach introduced and integrated into the Austrian Agri-Environmental Program (ÖPUL) to pursue nature conservation objectives (biodiversity).

Summary

In the period 2014-2022, under the Austrian Agri-Environmental-Program ÖPUL, a sub-measure "Result-based Nature Conservation Plan (RNP)" has been integrated into the measure "Nature conservation". In contrast to conventional ÖPUL measures, the RNP defines environmental objectives to be reached as basis for 2nd Pillar payments, and not management measures. The approach allows farmers to make own decisions about management measures and implement them at their own discretion. The RNP represents a dual system of 1.) environmental area objectives, on the basis of which farmers primarily orientate their farming methods and 2.) control criteria, which are used primarily as a control instrument for the technical control service. Both types of environmental objectives are farm-individually developed by ecologists together with the farmers, and fixed in a farm-individual logbook, containing information on objectives, illustrations of species, maps of appearance, suggestions of management measures as well as a section for documentation of management measures and progress as regards the objectives. Besides the documentation by the farmer, control of RNP control criteria is carried out by specially trained staff of the national control body (AMA).

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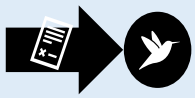
Objectives of RNP

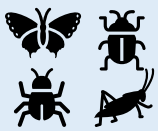
- Results-oriented implementation of the ÖPUL conservation measure;
- Definition of specific nature conservation area objectives (species and habitats) on the farm;
- Increase farmers' understanding of the needs and conservation of valuable species and habitat types;
- Enabling decision-making autonomy and room for manoeuvre in the implementation of management measures;
- Raising awareness of the objectives of the Habitats Directive, the Birds Directive and the Natura 2000 network, and knowledge expansion about the life requirements of the target species.

RESULT-BASED



The contract is distinctively result-oriented, the payment depends on the achievement of environmental objectives.

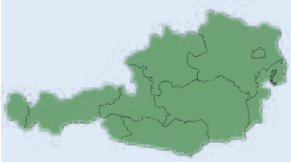
PUBLIC GOODS



(Farmland) biodiversity
Species and habitats

LOCATION

AUSTRIA



The farmers who are allowed to participate can come from all over Austria.

CONTRACT

The financing party is the government (with and without EU-funding, co-financed funds). The contract is concluded between the department of the province responsible for nature conservation (project confirmation).

Contract conclusion: Written agreement

Payment mechanism: Incentive payments

Start of the program: 2015 (after pilot phase)
End: still ongoing

Length of participation in scheme:
Length of contract: Normally 5 years; depends on ÖPUL program period (e.g. 2014-2020)

Problem description

"Classical" contractual nature conservation is predominantly designed to be action-oriented. Concrete management measures are defined on valuable areas by authorities in coordination with the farmers. The farmers are often not well informed about the protection objectives on the area and the expected results. This means that farmers do not necessarily understand why certain measures are taken and no process of learning can settle. In 2014 the first concept of the result-based nature conservation plan was developed and piloted. Here, the focus lies on the nature conservation objectives on the contractual areas. These objectives are developed together with the farmers. Management measures to reach objectives are not prescribed and can be determined by the farmers themselves. Besides reaching the environmental objectives, in this way the RNP intends to increase farmers' flexibility, supports awareness building and the building of social capital.

Data and Facts - Contract


© Josef Hinterleitner (Farm Schmiedberger)

Participation: At the time of this report 143 farmers participate in the RNP-program.

Involved parties:

Farmers. The RNP concept was piloted on 16 farms; after integration into ÖPUL an upper limit of 150 farms was set. In the next program period the upper limit might be up to 700 farms.

Consulting agency

Implementation of the RNP was supported by an environmental consultancy agency identifying and engaging potential farms for the first implementation of the RNP (together with the Ministry of Agriculture, Regions and Tourism and the federal nature conservation departments), providing advice of ecological experts (flora and fauna), visiting farms and specifying nature conservation objectives on the fields, supervising the implementation of RNP during the program period

Federal nature conservation departments and Ministry

The Ministry of Agriculture, Regions and Tourism and the federal departments introduced the RNP into the nature conservation plan

National control authority (AgrarMarktAustria; AMA).

AMA is Austrians ÖPUL controlling unit, checking compliance with control criteria

Requirements for farmers: In the RNP a dual system of control criteria and area objectives was developed to guarantee a better risk distribution.

- *Control criteria:* The control criteria have to be reached to be eligible for payment. They also act as an early alarming system for undesirable developments in the fields. The control criteria are indicators, which show early nature conservation related mistakes. The connection to management measures is high. Control criteria and their indicators are sanctioned in the event of non-compliance.
- *Area objectives:* Besides the control criteria, on basis of the ecological initial situation individual objectives are defined for each field. The objectives are understandable and influenceable by the management measures of the farmers. Nevertheless, it cannot be excluded that in some years or under certain conditions the influence of the farmers regarding the achievement of the objectives can be low. Therefore, the fail of the area objectives does not lead to a sanction for the farmers.
- *Additional requirements:* For all nature conservation areas there are general conditions, irrespective of the area-specific stipulations in the project appraisal, even if they are no longer explicitly mentioned in the project appraisal for the respective area. These are, for example, no new drainage, no mechanical pitting and no terrain corrections, deposits and fillings and no spreading of sewage sludge and sewage sludge compost etc.

Controls/monitoring: The control of RNP farms is carried out by the national control body (AMA). It is done under the same conditions as for other measures of the Austrian Agri-Environmental Program (ÖPUL), but the inspectors have previously received additional training for the RNP. The control criteria are checked by the technical inspection service and, if necessary, sanctions are taken. There is a documentation obligation in this contractual measure. Farmers commit themselves to document management measures and observations regarding the objectives, this is done in the so-called RNP-logbook. Also documentation is checked during the inspection. Furthermore, the non obligatory area objectives are evaluated by ecologists. This is done on selected farms and there are no sanctions for non-compliance. The check of area objective is used as an additional support for the farmers.

Conditions of participation: The maximum number of participants in the program period 2015-2022 is 150 farms, in the next program period the maximum number might be up to 700 farms. Only farmers which already participate in the measures "Environmentally friendly and biodiversity-enhancing management" or "Organic farming" or "Organic farming - partial farm" of the Austrian Agri-environmental scheme ÖPUL are allowed to participate in the RNP. The first farmers to participate were contacted and selected by the environmental agency together with the nature conservation departments of the Federal Provinces and the Federal Ministry. Farmers interested in deepening their knowledge on nature conservation were selected for participation.

Links to other contractual relationships: In addition to the RNP areas, it is not possible to apply for areas under the "Nature Conservation" (WF) or "Nature Conservation Valuable Maintenance Areas" (WPF) measures of the Austrian Agri-environmental scheme. (see conditions of participation).

Risks/uncertainties of participation: There is a risk that the control criteria will not be met, but the risk is reduced by the non-sanctioned area objectives.

Funding / Payments:

Eligible areas are grassland (excluding alpine pastures) and arable land. The amount of payment is individually determined for each area on the basis of the objectives and the cost for theoretically most potential management measures. Payments are recorded in the project confirmation. The upper payment limits are 700€/ha for arable land and 900€/ha for grassland. Fallow land on arable land is eligible for a maximum of 25 % of the total area of the farm. In combination with the measures "Environmentally friendly and biodiversity-enhancing farming" or "organic farming" only landscape elements are compensated in addition to the ENP premium.

Context features

Landscape and climate: The project focuses on utilised agricultural nature conservation areas in Austria - mainly in Natura 2000 areas, biosphere reserves and other valuable landscapes or species listed in Annex IV of the Flora Fauna and Habitats (FFH) Directive. These valuable areas are distributed throughout whole Austria and therefore no specific area is in the contract solution involved.

Farm structure: Participation is possible throughout the whole country. Currently, 143 Austrian farms participate. The nine Federal States are represented to varying degrees: about 1/3 of the farms are located in Styria, about 20% each in Tyrol and Lower Austria. While the farms are not evenly distributed throughout Austria, but regional clusters exist. This is mainly due to the fact that farmers have been informed about RNP via word of mouth recommendations of individuals. Both part-time and full-time farms take part, and a wide variety of farm types and sizes are represented. Nevertheless, participation of grassland farms exceeds the number of arable farms in the RNP. About 85 % of RNP farms have previously participated in the “ÖPUL nature conservation measure (WF)” and have switched to the RNP. 44% of the participating farmers in the RNP have a very good and 53% have good ecological knowledge. The ecological knowledge was an important factor in the selection of the farms so that they were not overstrained with the RNP measure at the beginning.

SUCCESS OR FAILURE?

The RNP-program presents a successful result-oriented contract solution. The contract solution is judged successful, as the RNP allows pursuing nature conservation objectives for habitats and for endangered species at the same time. The educational aspect for the farms is very high and this leads to a long-term behavioral change. On the other hand, the number of farmers participating is quite low in the pilot project phase, but it will shall be expanded to around 700 farmers in the next period.

Reasons for success:

- Farmers see and record the results of their management in the fields and can decide which management activities they choose; the flexibility rises and farmers better understand the connection between their acting and the influence on nature.
- Advisory and educational activities are an important part of this contract solution.
- A clear improvement of nature (biodiversity) through the targeted definition of objectives on the individual areas with the help of ecologists.

SWOT analysis

Main Strengths

1. Clear goal definition on each field, together with farmer and ecologist.
2. More flexibility in choosing and implementing management activities.
3. Good and continuous support for farmers through advisors.

Main Weaknesses

1. Only farmers with high ecological interest are in the contract solution.
2. The implementation required a great deal of administrative effort and high costs for administration, but this is also due to the fact that it is a pilot project and the costs will decrease significantly as the project progresses.
3. The premium calculation is not really results-oriented; the premium is calculated on the basis of fictitious measures derived from the nature conservation measures.

Main Opportunities

1. Well suitable mainly for agri-environmental measures, in which visual results are achieved on a definable area, which can be traced back to specific management activities and which are thus comprehensible for the farmer and can be identified as success resulting from his/her management activities.
2. The RNP is well suitable for AEC measures that are focused and highly training-oriented.
3. Achieving a long-term change in behaviour through the character of the RNP.

Main Threats

1. In a broader approach where not all of the farmers are interested in biodiversity and ecology, farmers may fear that they will not be able to achieve their goals due to a lack of knowledge.
2. The definition of the indicators and goals costs a lot of time and effort and may not be suitable for a broader approach. However, in the further course of the project it is planned to simplify the indicators and target definition in order to ensure a broader approach.

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

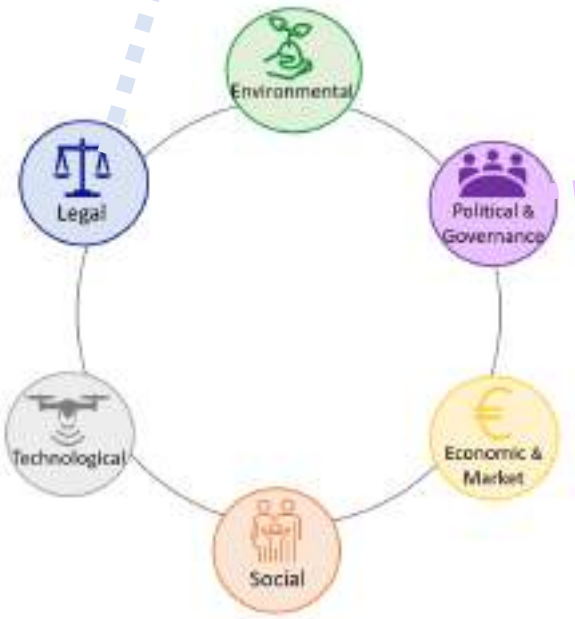
Include the control authority right from the beginning:

An institution being involved right from the beginning in the introduction of the *RNP* 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.

In case of a transfer of such schemes to other countries, this integration is the basic recommendation of the experts.



Jumping on an already moving train of environmental protection

The RNP is implemented on high nature value agricultural areas, which mostly have already been managed under former public incentive schemes, in this case the 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**.

Future of the RNP: In the upcoming CAP-period the RNP will be included as a separate intervention in the Austrian Agri-environmental Programm (ÖPUL) under the new name "Ergebnisorientierte Bewirtschaftung" (EBW) which means "Results-oriented Management". It is scaled up to from approx. 150 to up to 700 farmers taking part. There is still a dual systems of indicators that are being controlled by the control authority ("control criteria" in RNP, now called "indicators") and additional indicators not being controlled ("area objectives" in RNP, now called "additional indicators"). The list of area objectives and indicators was shortened and harmonized. Also an incentive mechanism for farmers to improve the conservation status of their nature conservation areas was included - premiums for areas which are in conservation status A is higher than premiums for areas in conservation status B or C.

Like in the RNP also in the new intervention EBW documentation is mandatory for participating farmers. To give farmers support in documentation work an app for mobile devices was developed. More information about the intervention EBW can be found on www.ebw-oepul.at.

Additional page added June 2022

HUMUS+ Modell Ökoregion Kaindorf

Result-based contract solution - farmers follow recommended measures to build up humus (=soil organic matter) in soil, sequester CO_2 and receive a fee per ton of stored CO_2. Companies finance humus build-up and soil carbon storage by buying CO_2 certificates.

Summary

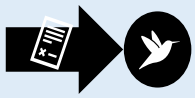
The HUMUS+program is a contract solution developed for voluntary trading of CO_2 certificates: Based on an initial soil sampling at the start of the contract (by a certified civil engineer and accredited national laboratory), farmers set own measures to increase the humus content in their soils. After a period of five to seven years (according to the farmers needs), humus content is determined again by a second soil sampling. An increase in humus content is converted into additional tons of CO_2 stored in soil. Farmers receive a success fee of 30€ per additional ton of CO_2 stored, which is financed by companies who voluntarily compensate their unavoidable CO_2 emissions. The amount of CO_2 purchased by the companies cannot be traded. After the payment, farmers must guarantee that the increased humus content remains in place for at least five years. This requirement is verified by a third soil sampling taken five years after the payment. Decreases in humus levels lead to partial or complete refunding of the success fee. Everything from contracts and the carbon verification to the emission trading is organized and managed by an Ltd belonging to the association HUMUS+. The association itself is responsible for an education program set up to educate and advice HUMUS+farmers on the measures set by them.

Objectives

- Main objective: humus (soil organic matter) accumulation and soil carbon sequestration
- Higher soil fertility – soil organic matter supports life in the soil, which is the basis for vital crops and reduces the need for mineral fertilizers and pesticides
- More reliable harvests through resilient crops – living soil supports resistant plants in the face of global climate change
- Keeping the soil in place – humus-rich soils rich are more resistant against erosion by heavy rainfalls, flooding or wind
- Humus-rich soils store lots of water, which helps to maintain stable yields during droughts
- Keeping the groundwater clean – soils rich in humus can fix more nitrate and prevent groundwater pollution
- Climate change mitigation through CO_2 fixation – soil organic matter contains about 60% carbon, hence building up soil humus removes CO_2 from the atmosphere and helps to mitigate global overheating

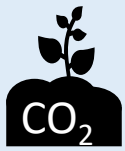
(A) HUMUS+farmers receive their success fees in a public ceremony.
(B) On-site know-how transfer during a field day. (C) Year-round education for HUMUS+farmers through the "HUMUS+Academy" workshops.

RESULT-BASED



The payment depends on a defined result (stored CO_2 as humus per hectare, measured)

PUBLIC GOODS

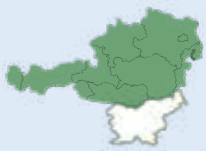


Climate regulation-carbon storage

Soil quality (and health)

LOCATION

AUSTRIA (Slovenia)



Participation in the contract solution is open to all farmers across Austria and Slovenia

CONTRACT

The result-based contract is concluded between individual farmers and the association HUMUS+ (The sales contract for emission trading is concluded between companies or private persons and an own Ltd. belonging to HUMUS+).

Contract conclusion:
Written agreement

Payment mechanism:
non-tradable emission certificates

Funding/Payments:

- The HUMUS+farmer receives a success fee of currently **30 € per ton of CO_2** sequestered in humus (i.e. two thirds of the certificate price, for legal reasons the absolute price per ton is not guaranteed).
- Companies pay **45 € per ton of CO_2**. The difference of 15 € (before taxes) remains with the Ltd. for administration of the contract solution.
- As of 2022, the association paid **500.000 €** to participating farmers.

Data and Facts - Contract

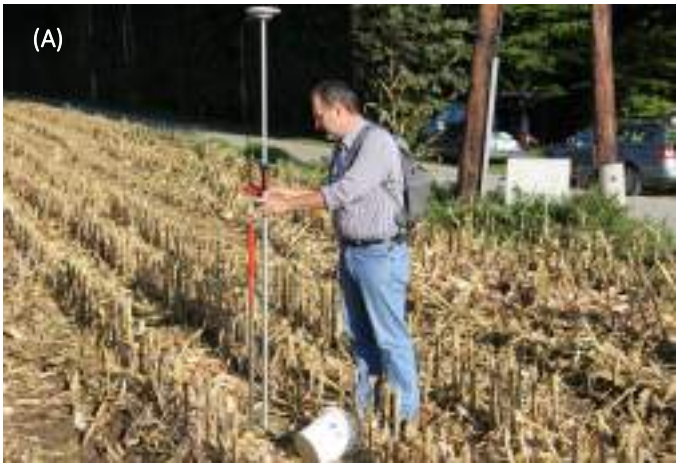
Participation:

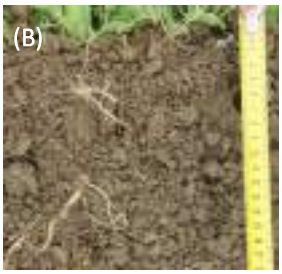
- Number of farms: approx. 380 farmers (June 2022)
- Area of implementation: 5.100 ha (June 2022)

Involved parties:

- **HUMUS+:** The non-profit association is coordinator of the humus built up program. It was a project amongst others implemented by the association Ökoregion Kaindorf and became its own association in 2021 due to its growth and success.
- Certificate trading: is handled by a Ltd. owned by the association. The Ltd. organizes the HUMUS+certificate trading and everything connected to it. All other aspects of the HUMUS+program (education program, consulting services) are handled via the association.
- Farmers**:** The program started in 2007 with three farmers. As of 2022, 380 farmers are participating. Farmers participation is now the restraining factor, as demand is higher than provision and certificates are currently sold out.
- Companies and private persons**:** HUMUS+certificates are bought by companies and private persons who aim to compensate their unavoidable CO_2 emissions.

Management requirements for farmers: HUMUS+ provides practical principles for humus accumulation in soil and suggests best-practices including use of cover crops, no-till practices, intercropping and compost application. However, there are no obligatory requirements such as mandatory management measures. Farmers are free in their choice of how to increase humus content on their fields.





(A) GPS-located soil sampling. (B) Crumbly soil structure after 3 years of humus build-up. (C) Traceable CO_2 storage is visualized via online field maps.

Controls/monitoring: The participating farmer commits himself only to pay for the first soil sampling. He/she can leave the program at any time up until a success fee has been payed after the second sampling. Then, the third sampling becomes mandatory. Each field registered for the Program is thus subject to a minimum of one soil sampling, which is carried out by a certified civil engineer. Soil samples are analysed for soil organic carbon, total nitrogen, pH_{CaCl2}, CAL-extractable phosphorus and potassium by the Department for Soil Health and Plant Nutrition, Austrian Agency for Health and Food Safety (AGES). In addition, samples may be analysed according to the method of Albrecht/Kinsey for exchangeable cations, total sulphur, available and total phosphorus as well as a range of trace elements (not mandatory). The first soil sampling determines baseline humus levels (25 GPS-located samples per field, mixed and analysed as a compound sample). A second sampling (success sampling) is conducted in the same manner five to seven years later to quantify changes in humus content. From the increase in humus, the total amount of CO_2 sequestered is calculated. The farmer can then claim a success fee of 30 € per ton of CO_2 sequestered (i.e. two thirds of the certificate price, for legal reasons the absolute price per ton is not guaranteed). After receiving the fee, the HUMUS+farmer has to guarantee the level of build-up humus for five years. This is controlled by a third sampling (control sampling). In case an increase in humus above levels from the success sampling is measured, farmers can claim further success fees and the program is prolonged for another five years. Decreases in humus content can lead to partial or complete refunding of the success fee. Farmers pay for all soil samples.

CONTRACT

Length of contract: Initially five to seven years; depending on the farmer's decision. If humus-build up is measured at the second sampling, the contract runs for additional five years when a third soil sampling takes place. Total length: ten to twelve years.

Length of participation in contract solution: In general, participation is open end. If there is a further increase in humus measured at the third sampling, the farmer can voluntarily renew/extend the contract and apply for a further success fee for the additional increase of humus content.

Start of the program: The HUMUS+program started in 2007.
End of the program: The program is still running.

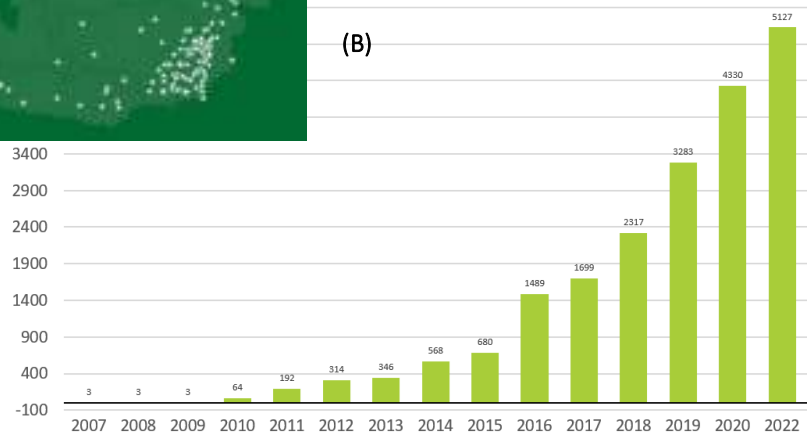
Renewal / termination:

- **Renewal of the contract:** The option of renewal is regulated in the contract solution; the contract can be renewed easily.
- **Termination:** Termination is always possible, except in case a success fee has been payed after the second sampling. Then, the third sampling becomes mandatory.
- **Conditions of participation:** Farmers may take part with one or more fields, each between 1 and 5 ha in size. The farmers have to pay the initial soil sampling. Other than that, the farmers do not agree to any liabilities.
- **Risk/uncertainties of participants:** The main risk for farmers is not building up humus and therefore not receiving the success fee, even if there might have been investments and changes in management style. Another risk might arise from reduced demand in CO_2 certificates. However, this does not seem likely as demand has by far exceeded supply for years. In any case, the farmer is guaranteed two thirds of the certificate price as a success fee.
- **Links to other contractual relationships:** There is no direct link with other contractual solutions, and farmers are free to participate in other agro-ecological programs (e.g. CAP, ÖPUL, AMA, …). The farmers are bound to the HUMUS+Program though, meaning they cannot take part in a similar, privately organized program of humus build-up and emission certificate trading.

Context features

Landscape and climate: The HUMUS+program is not restricted to a special region in Austria, all farmers throughout Austria can participate. Through recent collaboration there are now also HUMUS+farmers in Slovenia and efforts are being made to expand the program further across Europe.

Farm structure: In general, the HUMUS+program is free for any agricultural management (except forestry), however up to now most of the farmers are arable farmers. There is no specific business type taking part regarding intensity, size, age of farmers, etc.



(A) Map of participating HUMUS+farmers all over Austria. (B) The total area enrolled in the HUMUS+program has risen to over 5100 ha up to mid of 2022

Problem description

The coordinator of the contract solution is the association HUMUS+ which is located in the Ökoregion Kaindorf. The whole region has set itself the goal of significantly reducing its CO_2 emissions to achieve net CO_2 neutrality. The change in agriculture towards monocultures, increased use of pesticides and intensive tillage in the last decades has led to a major loss of humus and thereby to the release of CO_2 into the atmosphere. There is a strong need for action to prevent the progression of climate change and to better prepare our soils for future climate effects.

Information/contact: www.humusplus.at

SUCCESS OR FAILURE?

The HUMUS+program represents a successful contract solution. The number of participants clearly increased since its initiation in 2007 and is still increasing. On the demand side, the demand for certificates currently exceeds the provision by the farmers. Except for the payment for the initial sampling, there are no obligations for the famer in the program. Via the HUMUS+program, farmers moreover get access to educational events and network meetings to exchange with other farmers on the subject of sustainable soil management. There is huge potential for climate-regulation via soil carbon storage. Results so far show that humus accumulation and carbon sequestration removes CO_2 from the atmosphere in relevant quantities (on average 6 tons CO_2 per hectare and year). Through the result-based character of the payment, only the measured environmental success (CO_2 stored as humus) is paid.

Reasons for success:

- Farmers are free in their management decisions, the program only provides best-practice suggestions
- No liabilities for the farmer, except payment for the initial soil sampling
- Program is accompanied by educational measures and helps to connect farmers into a humus community
- Payment for the farmers comes from the private sector. Demand for certificates has greatly exceeded provision by the farmers for the last years.
- In addition to CO_2 sequestration, humus formation has further benefits for the farmer (soil fertility, etc.)

SWOT analysis

Main Strengths

1. The contract solution is easy to understand.
2. Possibility of an additional income for farmers
3. Implicit social component (awards, networking, training, image..)
4. No prescribed and obligatory management measures; Farmers can freely and flexibly decide on management measures to achieve the Program goals (i.e. increase humus content)

Main Weaknesses

1. Full flexibility in the management measures can lead to wrong decisions (e.g. application of organic and synthetic fertilizers not based on plant and soil demand procure high N losses)
2. Farmers risk to not achieve changes in humus contents even if management changes and/or investments have been carried out
3. Considerable costs for setting up the program;

   Need to bridge the gap between project start and the first sales of emission certificates
4. Up to now implemented on only a small area; high potential of growth.

Main Opportunities

1. Raising climate awareness of society
2. Result-oriented approaches in the new CAP
3. Humus accumulation as an adaptation to climate change
4. Increasing demand for emission certificates e.g. from the private sector

Main Threats

1. Slow process of humus accumulation, binding period in contracts for farmers quite long.
2. Climate change might affect rates of humus accumulation
3. Companies might lose interest in certificates
4. Unharmonized carbon prices can lead to a poor competitiveness against other emission traders
5. Risk of trade offs and discussions, if measures for humus accumulation result in effects on other public goods, (e.g. quality of groundwater, biodiversity, etc.)

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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Online field maps as a supporting tool:

CO_2 storage is visualized via online field maps. The documentation of the plots is supported by a specifically developed database.
The database contains information about

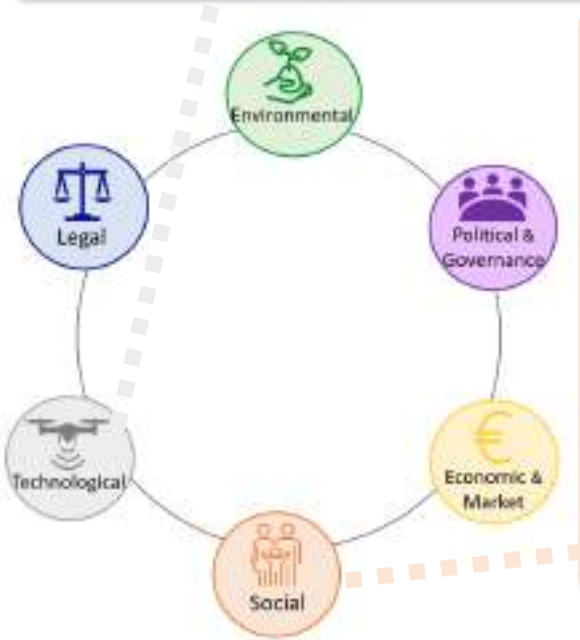
- the farm,
- the humus plots,
- soil samples and certificates.

It enables georeferencing of the humus plots.

GPS-supported soil sampling:

Soil sampling is GPS-supported which ensures that initial soil samples and soil samples for the measuring of results are located in the same spot.

online field maps



Implicit social components are included in the case study:

(1) HUMUS+farmers receive their **success fees** (via a cheque) in a **public ceremony**. A picture of the farmers is published in local newspapers, which increases social recognition.

(2) The program helps to network farmers into a humus community by hosting a **regular meeting** "HUMUS+Stammtisch", where farmers exchange their knowledge and experiences with humus accumulation.

(3) The program fits the recent social discussion on climate change, e.g. driven by initiatives such as Fridays for Futures. Entering the program is perceived as being "part of the solution" for both farmers and buyers.

Developments in the HUMUS+Program since 2020:

- Due to growing interest of farmers as well as companies, HUMUS+ became its own association in 2021. The new program manager now is Mag. Jochen Buchmaier who has a strong background in permaculture and regenerative measures such as agroforestry and key-line design.
- A collaboration with Slovenia was successfully built and around 30 local HUMUS+farmers are already working according to the suggestions of HUMUS+ to successfully build up humus and regenerate soils in Slovenia. A lot of interest is also coming from other countries in Europe to collaborate and extend the HUMUS+program.
- The area included in the program rose to more than 5000 ha of land that is now managed sustainably aiming to regenerate the soil, build up humus and store CO_2 in the ground.
- A new advisory program was developed to supply HUMUS+farmers with in-depth-knowledge over the course of a whole year.
- Due to the growing number of similar programs, it is becoming necessary to define quality standards and improve cooperation between stakeholders. HUMUS+ is therefore initiating a Consortium for regenerative agriculture and carbon farming.

Additional page added June 2022

Participation of private landowners to the ecological restoration of the Pond area Midden-Limburg through a close participation of private and public landowners and a triple E-approach in the 3watEr project.

10 private landowners set up a specific association OVML vzw (Ontwikkeling Vijvergebied Midden-Limburg vzw) for participating together to a Life+ project (3watEr project) and ensuring collective implementation on the basis of voluntary agreements by private parties and an integrated management plan.

Summary

When confirmed as a participant and member to the OVML vzw association and the project, each private landowner has signed up to an agreement stipulating the following: that he agrees to the actions performed on his parcels, that he will do the necessary preparations so that works can effectively be performed (including studies, permissions, consultations, and tenders). In this regard, the landowner in question is always able to call on unlimited technical and administrative support from OVML vzw. Further, the landowners also contracted that they will respect the budget of the project, and that they will conserve and maintain the actions in the field for the coming 20 years.

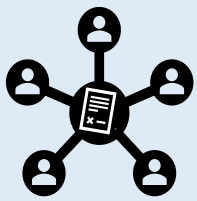
Objectives

The Triple E Pond area M-L project aimed to conserve or restore the following species and habitats of Community importance in the Natura 2000 network site 'Vijvergebied Midden-Limburg' ('Pond area M-L'): bittern (Botaurus stellaris); tree frog (Hyla arborea); 'Oligotrophic waters…' (3120), 'Oligotrophic to mesotrophic standing waters…' (3130), 'Northern Atlantic wet heaths with Erica tetralix' (4010) and European dry heaths (4030). The project aimed to secure the ongoing participation of private landowners and other stakeholders in habitat management, to establish a sustainable basis for the conservation of species and habitats by enhancing synergies between Ecology, Education and the local Economy ("triple E-approach"), to enhance public awareness of Natura 2000 and to demonstrate best practices for involving private landowners as partners in the management of Natura 2000 sites. Private contracts for implementation of the LIFE project; integrated nature management plan for the implementation of the nature management goals.

Problem description

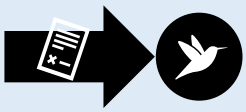
Private landowners were not structured to realize nature management projects, as this until 2014 was rather a monopoly of nature NGO's in Flanders. As in the Midden-Limburg area, private landownership was crucial to realizing specific nature management objectives, 10 local landowners took the initiative to start a Life+ project with other stakeholders. For doing so they created a private association (OVML vzw) assuming a common partnership in the Life+ project as associated beneficiary of the project. Private contracts were signed between OVML vzw and each of the 10 landowners for the further implementation of the LIFE project, also through an integrated nature management plan.

COLLECTIVE



OVML vzw structure and individual agreements plus integrated management plan for collective implementation.

RESULT-ORIENTED

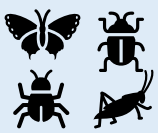


Result-based monitoring of implementation of every action of the 3watEr project.

PUBLIC GOODS

Landscape and scenery

Recreational access / improvements to physical and mental health



(Farmland) biodiversity

Resilience to natural hazards

Rural viability and vitality

Cultural heritage

INDIRECT EFFECTS

- Climate regulation - carbon storage,
- Water quality
- Water quantity (e.g. water retention)

CONTRACT

Contract conclusion:
Written agreement

Payment mechanism:
Project payment mechanism

Financing party:
Government (with EU-funding and own funding)

Length of participation in scheme:
24 years

Start of the program:
2009
End: 2023 (Renewal possible)

Data and Facts - Contract

Participation:

- Number of farms: 10 participant landowners
- Area of implementation: Vijvergebied Midden-Limburg

Involved parties: The contracting partners are the 10 landowners as being members of the private association OVML vzw for participating to the Life+ 3watEr project (2009 to 2013), as signatories to separate agreements for the financing and implementation of the project and partners to the integrated management plan for further follow-up after the realization of the Life+ 3watEr project.

Advantages of participation: Specific private sector oriented and motivating approach towards the participating landowners through the working and support of private association OVML vzw. administrative simplification. Benefit of being able to participate to a Life+ nature project, adapted to the private landowner sector philosophy and needs.

Management requirements : The landowners are held to the method and objectives of the Life+ 3watEr project, as approved in the project contractual documents.

Controls/monitoring: During the lifetime of the project, the monitoring and evaluation of the impact of the concrete conservation actions on the selected habitats and species was subcontracted to an independent body by means of public tender. This was done in two stages: from the first monitoring it was expected to get a clear overview of the conservation status of the habitats and species targeted at the start of the project. For the second monitoring the objective was to get a clear picture of the achieved results after the execution of the actions. The second 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, it was very important that all improvements made within the framework of the project would last for a longer term. A clear After-LIFE Conservation Plan consolidated all intentions and initiatives which must guarantee this. That included (1) a shared long term vision for the project area, signed by all associated beneficiaries, (2) a realistic action plan for fundraising, to support the recurring management actions, (3) signed contracts with the majority of the (larger) landowners to conserve the restorations for the long term, (4) to have proposals for additional projects and improvements and (5) to have a long term plan on communication and education inside (and outside) the area involving the different beneficiaries. The monitoring is effected once or twice a year, as indicated by the steering committee of the After-LIFE process, by way of expert visits on the grounds, for assessing the project realizations according to individual planning schemes for implementation.

Conditions of participation: No limitation on number of participants. Original number of participants are the landowners participating to the realization of the Life+ 3watEr project. One of the objectives of this project was the further association of additional landowners for achieving the overall goals of the project at their own cost. Requirements and standards are defined precisely and comprehensibly, as specified in the project description of Life+ 3watEr. Consequence of non-compliance: contractual responsibility under the Life+ nature project contractual framework.

Risk/uncertainties of participants: Implementation risk of the project objectives. If objectives are not reached or maintained, project monies can be reclaimed through OVML vzw.

Links to other contractual relationships: Links to the contractual framework of the Life+ 3watEr project.

Funding/payments: Money came from the approved Life+ project. OVML vzw acted as "associated beneficiary", therefore received the funds and further dispatched these to the participant landowners according to the terms of the agreements signed.

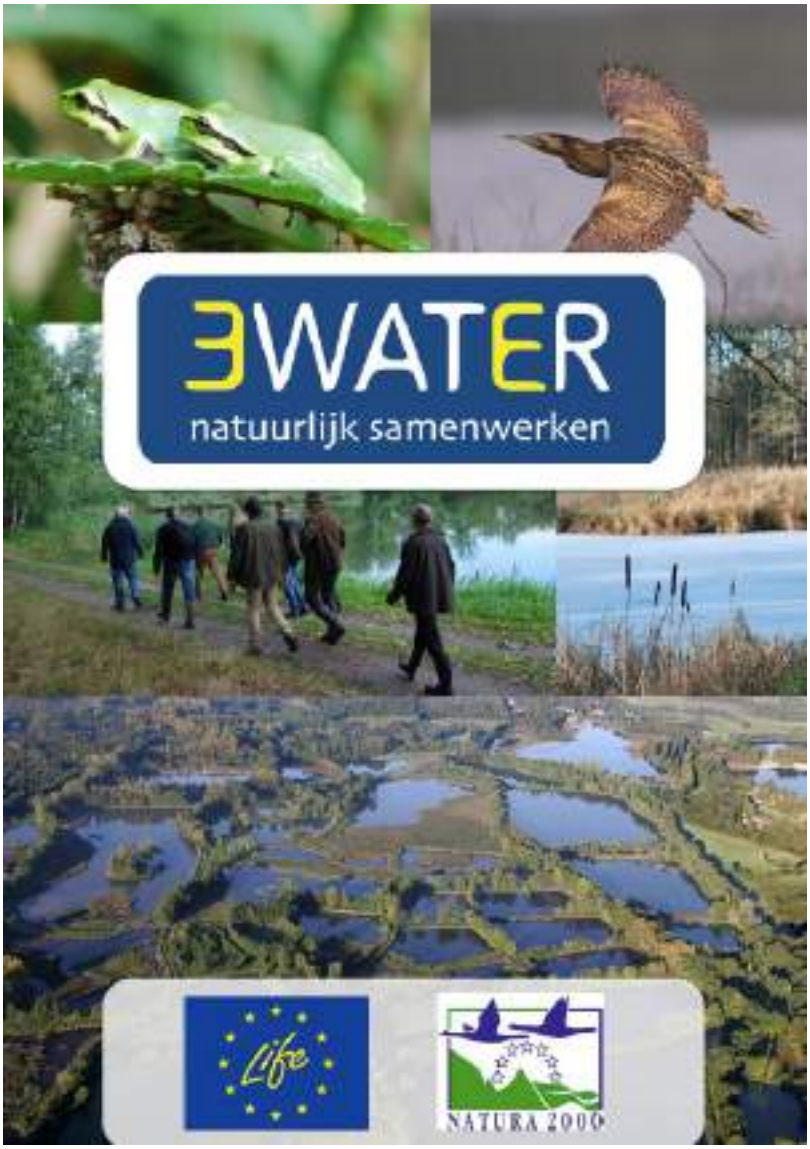
Contract partnership: The formal contractual elements are Private-Private: signatories are private parties.
The object of the contract could be qualified as Public-Private-Civil society, as it concerns the realization and implementation of a Life+ nature project, which involves public funds used by private parties for the benefit of civil society aspects.

Information / contact: www.3water.eu/site/

LOCATION

BELGIUM

BE221 Limburg – Arrondissement of Hasselt



Context features

Landscape and climate: The Vijvergebied Midden-Limburg area is located in the North-East of Belgium, in the province of Limburg, and is especially important and most known for its unique number and variety of pond ecosystems, bird species and wet to dry heath gradients. For 6 of 9 Directive species the project area is essential for their maintenance in Flanders. For the remaining 3 species this project area is very important. These 9 species are indicators of habitats in which a greater number of threatened species in Belgium live. Especially ponds with a natural indigenous fish density, a good water quality and accompanying reed lands or marches are the most important habitats for these species. Other important habitats are wet and dry heaths, hygrophilous tall herb fringe communities and hayfields. Main land uses and ownership status of the area:

- Fish farming: 13% or 330 ha fish ponds, 75% in use of fish farmers, 25% nature reserve. - Forestry: 40 % or 1.033 ha;
- Farming: 20% or 515 ha;
- Other (urbanization, tourism, etc.): 27% or 692 ha.

Farm structure: Landowners' profile is traditional multifunctional countryside management, including forestry and local fish farming.

SUCCESS OR FAILURE?

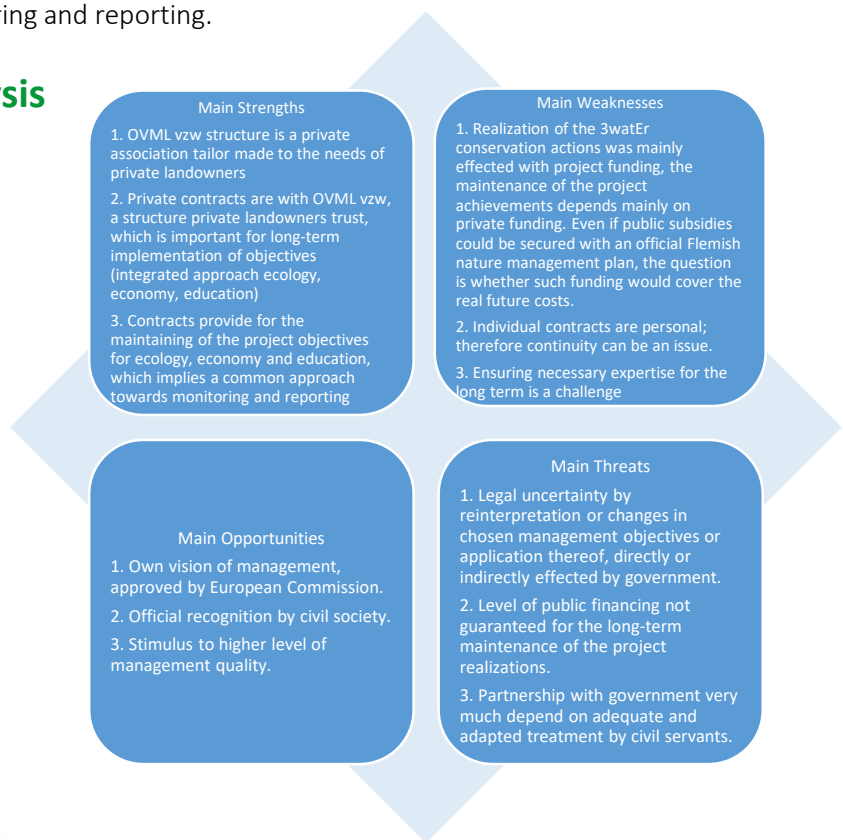
The structure of participation of private landowners to the 3watEr project presents a successful contract solution, as it was very effective in these aspects:

1. The establishment of strong relations with and participation of a group of committed private landowners in the project area, who would participate as full partners in the project and perform works and management on their own grounds.
2. Generating strong and open relationships with the other partners could be sought effectively, leading to obtaining a Natura 2000 award.
3. To demonstrate to an (inter)national audience a best practice method on how to target, reach, and convince local private landowners to become full and reliable partners in the further development of Natura 2000 goals.
4. To further the sustainable conservation of target species and habitats, as well as the general wellbeing of the target area, through the development and implementation of the Triple-E approach that balances Economy, Ecology, and Education. The enhancement of awareness of Natura 2000 and local biodiversity at local, regional, national, and international levels.

Reasons for success:

1. OVML vzw structure is a private association, tailor made to the needs of private landowners;
2. Private contracts are with OVML vzw, a structure private landowners trust, which is important for long-term implementation of objectives;
3. Contracts provide for the maintaining of the project objectives, which implies a common approach towards monitoring and reporting.

SWOT analysis



Horizon 2020 European Union Funding for Research & Innovation

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Main external factors influencing success

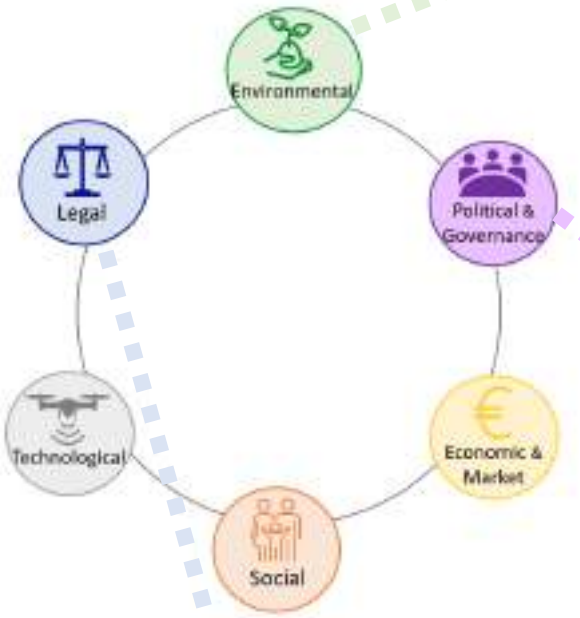
Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Environmental deterioration as a principal motive to become active:

The main reasons for the ten landowners to develop the LIFE+ project were based on the following:

- deterioration and disappearance of the unique pond and heath landscape, and
- reduction of critical habitats for especially the Bittern (Botaurus Stellaris),

The abandonment of fish farming partly caused solid urbanisation processes due to the regression of economic perspectives for this activity.



Policy moving to integrated management:

Flemish nature and forestry policy have evolved from the concept of single aspect management (nature only) to 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.

The Life+3watEr project anticipated as a pioneer project on this evolution with its key **3 E's concept** (Ecology, Economy, Education).

Give priority to reality in nature management:

The implementation area of the Life+3watEr project 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 many intended management regulative constraints, may have compromised a series of traditional rural economic activities in the project area.

Here, the Life+3watEr project integrated the wishes of private landowners from the start causing an instructive reflection on the content and interpretation of regulative constraints.

The sole application of legal definitions and concepts often does not serve the purpose they were intended to, as reality in nature, management usually takes precedence.

Additional page added June 2022

FLANDERS – Flemish Forest Group

A Forest Group is a voluntary partnership between both public and private forest owners. Through this cooperation, an attempt is made to provide an answer to problems caused by the fragmentation of the forest. Forest Groups offer a comprehensive service that helps the many forest owners manage their forest parcels.

Summary

Due to the fragmented nature of forest ownership, groups of private forest owners and managers (Forest Groups) have been established. These forest owner associations oversee voluntary co-operation between the large number of private forest owners and sometimes public forest managers. Their objective is implementation of improved and more coherent forest management practices. The 11 active Forest Groups in Flanders cover the whole territory and have almost 13.000 members (about 13% of all forest owners). The interests of the owners contracting membership are vested in the coordinated management of their forest parcels and the professional expertise and service they receive from the Forest Group. This represents i.a. administrative support, coaching and technical support, organization of joint wood sales, voluntary participation to projects or the setting up of combined management plans.

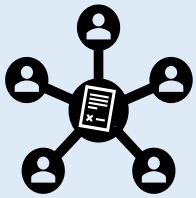
Objectives

- Realization of afforestation and activation of forest compensation
- Development of profitable resilient forests
- Achievement of conservation objectives in Natura 2000 areas
- Management of fragmented forests
- Promotion of neighborhood and play forests
- Support of local production and processing of a climate-friendly raw material
- Support the livability of the local timber sector
- Ensuring support in Flanders for sustainable multifunctional forest management
- Appreciating private forest owners for their social commitment
- Support not only private forest management, but also public forest management

Problem description

Forest ownership in Flanders is very fragmented. Most forest owners often have very little knowledge of forest management and little trust in government handling as such. They do have faith in the Forest Groups. Within these Forest Groups, the aspects of trust and voluntary approach are predominant, giving the forest owner the necessary freedom of decision. They allow forest owners to incorporate the management of their forests in a larger project. Most owners are proud to be part of a process towards better forests. Many forest owners are also quite happy with the support they receive to manage the forests in a better way. In this sense, the Forest Groups act as promoters and facilitators of a global forest policy. Small forest owners, who have no obligation to produce a management plan, often have an 'ad hoc' management, using felling applications and permits. They are stimulated by the Forest Groups to participate in joint management plans.

COOPERATION



Flemish Forest Groups allow forest owners to incorporate the management of their forests in a larger project. Furthermore, the Forest Group provides assistance: the coordinator is a skilled forester who gives both coaching and technical support to the members and helps organizing joint wood sales and management plans. Members of the Forest Group are stimulated to participate in joint management plans.

PUBLIC GOODS

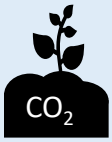
Landscape and scenery

Recreational access / Improvements to physical and mental health

Biodiversity

Air quality

Soil quality (and health)



Climate regulation - carbon storage

Rural viability and vitality

Resilience to natural hazards

Cultural heritage

CONTRACT

Contract conclusion: Membership of legal entity (association without lucrative purpose under Belgian law, *vereniging zonder winstoogmerk*)

Payment mechanism: No specific mechanism, membership of the association suffices

Financing party: Government (sometimes with EU-funding)

Length of participation in scheme: Duration of the membership

Start and end of the program: Membership of the Forest Group

Data and Facts - Contract

Contract feature combination:
The membership of the Forest Groups makes possible to participate to management plans or projects, of which terms are further specified in additional contractual documents.

Participation:

- Number of members: almost 13.000
- Area of implementation: Flemish Region of Belgium; each of the 11 actual Forest Groups have a specific working area. A forest owner/manager can become member of the Forest Group in which working area his forest parcels are situated.

Involved parties: The Flemish Forest Group is a private association of forest owners and managers. Their interests are vested in the management of their forest parcels and the expertise service they receive from the Forest Group.

Advantages of participation:

- The private association is one of forest owners and managers
- Forest owners and managers maintain control over property
- Free advice without engagement
- Respect for the objectives of owners and managers
- Neutral and independent approach
- Voluntary and easy membership
- Reduce the elements that remove motivation (administration (for free), costs (fees for collective sale of timber only 5-10-15%) , paternalism of state management).

Management requirements: Specific requirements for foresters depend on specific management plans or projects they contract to.

Controls/monitoring: A Forest Group coordinator and his team follow up on the specific projects or objectives agreed upon by the different forest owners, members of the Forest Group. The content of the projects or objectives to be monitored depends on what objectives or project has been agreed upon.

Conditions of participation: Conditions of participation are specified in the articles of association. Minimum of participants is the minimum number of members for legally constituting a private association.

Risk/uncertainties of participants: Risk of participants depend on the quality of advice and service delivered by the Forest Group team.

Links to other contractual relationships: Forest Groups aim at having members participating in projects and nature management plans. Such participation is then linked to membership.

Contract partnership: Government provides the funding of a private association if such association is recognized as a Forest Group; forest managers and owners contract the goals of the Forest Group through membership; civil society goals are served by the working of the Forest Group.

Funding/payments: The funding organization is the Flemish government acting through the Flemish provincial authorities, as well as diverse project funding the Forest Group can generate. Membership of the Forest Group is free and does not require a specific payment.

Context features

Landscape and climate: Atlantic climate. In Flanders, forest covers only about 11% of the total area. Forests are often originating from plantations on former heathlands and wet grasslands: pine and poplar plantations make up almost half of the forest area, while only 1⁄3 of the forest area consists of broadleaved stands of indigenous species (oak (Quercus spp.), beech (Fagus sylvatica L.), mixed deciduous stands). Forests in Flanders are clearly part of an urbanized and industrialized region. In this context, forest goods and services are mainly related to socio-cultural and ecological services. This is comparable to regions like the Netherlands, parts of Denmark and southern UK.

Structure: More than half of the forest in Flanders is privately owned and ownership is spread over thousands of small properties. Average private properties are not larger than 1 ha. A majority of these private owners are not active forest managers.

LOCATION

BELGIUM

Participation is for the whole of the Flemish Region (*Vlaams Gewest*, region of Belgium)

Information/Contact: www.debosgroepen.be

SUCCESS OR FAILURE?

The Flemish Forest Group presents a successful contract solution. The Forest Groups have been delivering good results for more than 15 years. With more than 13.000 members who together have more than 35.000 hectares of forest under management, the respectful collective approach of the Forest Groups represents more than 1/3 of the private forest owners in Flanders. That number continues to rise year after year. More than 80% of this group manage a forest surface smaller than 5 ha and more than 60%, a surface smaller than 1 ha.

Reasons for success:

The Flemish Forest Group presents a successful contract solution. See Main Strengths under SWOT analysis.

SWOT analysis

Main Strengths

1. A Flemish Forest Group is a private association tailor made to the needs of forest owners and managers; forest owners and managers maintain control over their property
2. Contractual commitments for management plans and projects are made to a structure forest managers and owners can trust; this is important for a long-term implementation of objectives (integrated approach ecology, economy, education)
3. Free advice without engagement; neutral and independent approach; voluntary and easy membership. Reducing the elements that remove motivation (administration (for free), costs (reduced fees for collective sale of timber), paternalism of state management)

Main Weaknesses

1. Fragmentation of interests; common implementation is a constant challenge
2. Management plans and projects often depend on individual relationships; therefore continuity of implementation can be an issue
3: Ensuring a collective approach sustained by a sufficient and qualitative level of expertise for the long term is a challenge without direct funding from membership

Main Opportunities

1. Own management vision of forest owners and managers is respected
2. Official recognition by civil society
3. Stimulus to higher level of management quality. A sustainable implementation of multifunctional forest management at relative low cost

Main Threats

1. Legal uncertainty by reinterpretation or changes in chosen management objectives or application thereof, directly or indirectly effected by government
2. Dependance on public financing
3. Balance between economic and non-economic aspects of forest management need to remain of interest for forest managers and owners

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Wildlife Estates Label in Flanders

The Wildlife Estates (WE) Label has been developed to acknowledge exemplary management of European territories. It targets (mostly private) landowners and managers of such territories and encourages them to join the WE initiative to acquire recognition for their commitment to sustainable wildlife and habitat management. This commitment is continuous and formalized in the WE Charter.

Summary

Estates and territories adhere on a voluntary basis. They commit to maintain and developing high standards of wildlife management, with emphasis on habitats. This involves all aspects of multifunctional estate management. They are assessed according to a scientific based method (www.wildlife-estates.eu), which has been adapted to national or regional specificities.

Aspects covered are:

1. Level of stillness/tranquility/surveillance
2. Existence of measures that help the sustainable balance between agriculture, silviculture, cinegenic management, pisciculture/fishing
3. Natural, semi-natural and intensive hunting or fishing grounds
4. Biodiversity surface
5. Food availability
6. Water availability
7. Presence of restoration measures and improvements to habitat holding capacity for wildlife Presence of prey species
8. Presence of valuable species of fauna
9. Treatment and destination of venison
10. Implication of local actors
11. Conservation of cultural and historic heritage
12. Communication program

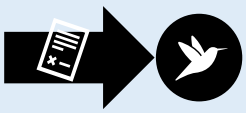
In the Flemish Region of Belgium, more than 8500 hectares have been labeled. Monitoring is part of the assessment and the label is awarded on a 5 years basis. After this period, management goals and achievements need to be re-evaluated and WE Charter commitments renewed.

Objectives

Participation in the WE Label takes place on a voluntary basis by landowners and managers to work on sustainable management, conservation of biodiversity and development of fauna and flora, based on their own integrated vision of ecological, economic and social functions. 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.

LABELLING MECHANISM

RESULT-BASED



Implementation based on voluntary agreements (charter-based) for continuous practice. The label is awarded on the basis of a scientific method and assessment.

COLLECTIVE

The label is awarded to individual estates, but the WE organization develops a wildlife management network for responsible wildlife management according to multifunctional practice.

PUBLIC GOODS

Landscape and scenery

Recreational access / Improvements to physical and mental health

Biodiversity

Resilience to natural hazards

Rural viability and vitality

Cultural heritage

Soil quality (and health)

Farm animal health and welfare

INDIRECT EFFECTS

- Air quality
- Climate regulation- carbon storage
- Climate regulation - greenhouse gas emissions
- Quality and security of products
- Water quality

LOCATION

BELGIUM

Whole countryside of Flanders, i.e. the Flemish Region of Belgium.

Data and Facts - Contract

Contract feature combination: Voluntary commitment to the WE Charter. The WE Charter refers to further commitments.

Participation:

- Number of farms/foresters/contractors: 27 estates have obtained the WE Label.
- Area of implementation: Estates or territories in the Flemish Region of Belgium.
- Other participants: The labels are awarded to the managers of estates or territories.

Involved parties: Wildlife Estates organization (national and European level) on the one hand and the individual estates and territories on the other, organized as a network at a country level. In casu, 27 labeled WE Estates for the Flemish Region of Belgium.

Advantages of participation:

1. To be recognized as a front-runner - Labelled estates are committed to, and accredited for, promoting the best management and conservation practices, and are recognized as managing their wildlife resources sustainably in full consideration for the natural environment.
2. To improve and develop - The WE Label provides a framework that facilitates development and implementation of new and innovative management techniques. WE enable its members to address and efficiently resolve conflicts in order to ensure an effective balance between voluntary actions, incentives, and regulation.
3. To engage - WE encourage communication between Wildlife Estate managers with the aim of sharing ideas and management strategies that help improve the standards substantially. The initiative seeks to reach a global agreement between managers of Wildlife Estates, to identify good practices, and promote innovative activities and techniques.
4. To be supported - The activities of land managers, hunters and fishermen are under pressure. By adhering to the WE Label Commitments, they will be taking the necessary precautions to anticipate themselves from European legislation regarding the management of their land, as far as rural activities such as hunting, shooting, and fishing are concerned. Moreover, WE aim to anticipate new requirements in order to always be in line with the Birds and the Habitats Directives, which make up the Natura 2000.
5. To be informed - Having acquired the WE Label, the member is invited to become a part of WE network. Each territory manager will then have access to relevant and up-to-date articles and documents and details of upcoming events through the WE Newsletter.

Management requirements for farmers: Voluntary commitment to the WE Charter. http://www.wildlife-estates.eu/tartalom/ten_commitments.pdf

Controls/monitoring: The WE Label is self-monitoring and on a voluntary basis. Established infringements on the WE Charter can lead to suspension or revocation of the WE Label.

The renewal of the WE Label is on a 5-year basis. The complete scientific-based approval method with field visits is re-applied for renewal.

Conditions of participation: The WE Label has been developed to acknowledge exemplary management of European territories. It targets landowners and managers of such territories and encourages them to join the WE initiative to acquire recognition for their commitment to sustainable wildlife management.

All estates are welcome to apply. There are no restrictions in terms of hectares, location or activity. The only expectation is for applicant estates to have a uniform management on their territory.

Risk/uncertainties of participants: No Risk/uncertainties of participants. The Label involves a commitment on an objective best-efforts basis.

Links to other contractual relationships: No direct links to other contractual relationships.

Funding/Payments: Lump sum fee paid by the WE Label applicant, once the WE label has been awarded.

Contract partnership: WE Label organization (civil society) and estate landowner or territory manager (private).

Since its creation, the WE Label has been facilitating collaboration between private and public actors in order to illustrate that the work undertaken by land managers is very much in line with the central tenets of biodiversity conservation. This has involved the creation of National Delegations to engage with both private and public actors, such as NGOs, administrative bodies, universities, independent scientists, and even companies.

The WE Label is currently represented in 19 European countries, mostly through a decentralized network. The Wildlife Estates secretariat is situated in Brussels, Belgium, where it coordinates the activities of the National WE-Delegations.

Information/Contact: www.wildlife-estates.eu

CONTRACT

Contract conclusion:
Written agreement - Signature of the WE Charter

Payment mechanism:
Lump sum fee for label

Financing:
Market sector-oriented

Length of participation in scheme:
WE Label is awarded for a 5-year term. Renewal is possible after 5 years. Re-application process.

Start of the program:
The WE Label is available in the Flemish Region of Belgium since the start of 2018.
End: The WE Label is awarded for a 5-year period.

Context features

Landscape and climate: Atlantic climate. In Flanders, forest covers only about 11% of the total area. Forests are often originating from plantations on former heathlands and wet grasslands: pine and poplar plantations make up almost half of the forest area, while only 1⁄3 of the forest area consists of broadleaved stands of indigenous species (oak (*Quercus spp.*), beech (*Fagus sylvatica L.*), mixed deciduous stands). Forests in Flanders are clearly part of an urbanized and industrialized region. In this context, forest goods and services are mainly related to socio-cultural and ecological services. This is comparable to regions like the Netherlands, parts of Denmark and southern UK.

Agriculture: Over the last ten years, the total arable area has remained relatively stable (-1.7%). 46% of the Flemish arable area, or 622.738 ha, is utilized for agriculture and horticulture. Meadows, pasturelands and fodder crops account for 56% of the total area. The arable surface is 36% owned, the rest is on lease.

The agriculture is characterized by a strong degree of specialization. Almost nine out of ten companies specialize in one of three subsectors. 54% of the companies have a specialization in cattle breeding, 21% in arable crops and 13% in horticulture.

Structure: Farm and forestry types which business model is respectful of the environment and biodiversity. This is an open category as far as the WE Label is concerned, but real practices need to be established for obtaining it. In Flanders, the practice of agri-environmental measures in farming and the application of the Criteria Integrated Nature Management for forestry activities are the main indicators for describing the types of farming and forestry targeted by the Label.

Problem description

Traditional multifunctional estates (*landgoederen*) and territories managed by hunting management associations (*wildbeheereenheden*) are major contributors to biodiversity in Flanders, although their action often is very private and not communicated at all.

This can only be achieved through the voluntary engagement of and intense cooperation between the many (mostly private) managers of the outlying areas such as farmers, estate managers, nature and forest managers, hunters, fishermen and others, all of whom are very important but often play an ignored role in preserving fauna and flora. They form the most important link in the realization of sustainable rural development.

Where good results for biodiversity on private estates are already being measured, this is very often due to a well-balanced balance between the ecological, economic and social functions of management. The WE Label uncovers the quality of caring stewardship for the benefit of nature conservation to the outside world. The land managers who endorse the principles of the WE Label do so on a voluntary basis, not because it is imposed by the government.

It is their healthy, conservative attitude that is bearing fruit for biodiversity. Where good practices are used that consider both economic and ecological aspects, landowners and managers produce biodiversity, in other words: the natural support on which unique habitats and species can thrive. The added value that is offered here is enormous, also social. The WE Label wants to make this known and raise the expertise that comes with it as standard, so that many land managers can benefit from this expertise and refer to it.

SUCCESS OR FAILURE?

The Wildlife Estates Label presents a successful contract solution. In Flanders, since February 2018, 27 estates have obtained the label, representing more than 8.500 ha.

Reasons for success:

See Main strengths under SWOT analysis.

SWOT analysis

Main Strengths

1. Support of the largest and unique network for private land and nature conservation management in Europe and in Flanders
2. Recognized by the EU Commission as instrument for achieving biodiversity strategies
3. Stimulus by example and peer recognition

Main Weaknesses

1. Lack of direct material or financial benefit linked to the label status
2. Not yet integrated as official Flemish instrument
3. Communication about the WE Label is low

Main Opportunities

1. Recognition of estate management merits by civil society and other stakeholders
2. Cross-blending expertise between labeled estates and territories and higher quality management
3. Gains in management efficiency

Main Threats

1. The value of a label stands with credibility, no other threats known to the WE Label in Flanders

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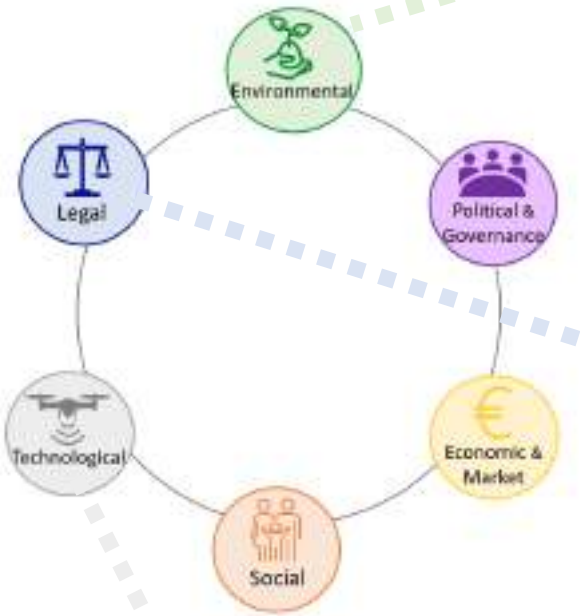
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Wildlife Estate Label in Flanders in parts rewards the past and supports the continuing sustainable development of the regional agricultural system: In the case study area of 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 mainly 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."



Using specific technologies for the implementation of measures in the fields:

For the Wildlife estate label, adopting mechanical techniques in agriculture, forestry, etc., adapted to biodiversity improvement might necessitate specific agricultural and forestry technologies and equipment.

Examples are **unique equipment for mowing as strip-till** and **special techniques for logging wood.**

Agricultural tenure as a hindering factor: The regulatory environment, in general, is in favour of biodiversity, except for agricultural assignment.

In Flanders, legislation concerning agricultural leases is imperative and protective of the tenant and does not allow for any ecological clauses, as in other countries.

The condition description of the land in agricultural leases is often lacking or insufficiently used, for example:

- manure,
- erosion,
- the environment
- agroforestry
- small landscape elements.

Agreements about fauna and wildlife, landscape and other elements should be rendered possible through free negotiations without constituting a limit to the freedom of cultivation of the tenant.

Additional page added June 2022

Flemish nature management plan

Different owners and managers develop common and differentiated management goals for their respective territories for developing sustainable nature and forestry; integrated management, according to the Flemish Integrated Management Criteria (ecology, economy, social and heritage dimension aspects).

Objectives

The nature management plan describes the most important values of an area for its ecological, social and economic function and makes well-founded choices about the important objectives for this area. The plan must also clarify which measures are required for this, and how and where they are implemented. One also wants to know whether the area under management is actually evolving in the right direction and, where necessary, adjusting management is needed. A nature management plan has a term of 24 years, unless determined otherwise when approved. In addition, the nature management plan is an administrative document. It is a contract between the government and the manager in which certain fees stand against certain commitments. The nature management plan is also a way to test whether the planned goals and measures are in accordance with policy preconditions, such as N2000 management plans, species protection programs or protected landscapes. This requires that the goals and measures are formulated unambiguously and according to an agreed terminology.

Problem description

In the region of Flanders forests and nature legally are managed through one type of plan – the nature management plan. This plan replaces all previous management plans:

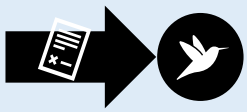
- basic forest management plan
- extended forest management plan
- management plan for forest reserves
- management plan for nature reserves
- management plan for verges
- management plan for parks

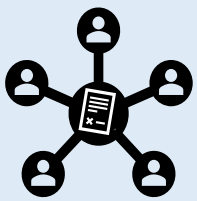
The nature management plan is a voluntary contract under administrative law between the Flemish government and the manager(s) of nature and forests.

Advantages of the nature management plan:

- single approval procedure for all types of nature (forest, heath, open green space, ...)
- transparent and organized
- linked to subsidies
- nature and forest management plan is valid for 24 years – evaluation every six years, no further administrative approvals needed
- public bodies, NGO's and private owners use the same system and get equal opportunities
- a nature management plan is a constructive tool for the long term planning of a plot of forest or nature

COLLECTIVE and RESULT-ORIENTED





Voluntary participation. Collective implementation and differentiated monitoring of results, benefits are handled and paid per nature management plan, but calculated according to the differentiated participating owners/managers.

PUBLIC GOODS

Landscape and scenery

Recreational access / Improvements to physical and mental health

Biodiversity

Resilience to natural hazards

Rural viability and vitality

Cultural heritage

Soil quality (and health)

Water quality

Water quantity (e.g. water retention)

INDIRECT EFFECTS

- Climate regulation- carbon storage
- Climate regulation - greenhouse gas emissions
- Air quality

Data and Facts - Contract

Participation: The number of participants, i.e. forest and nature managers and/or owners, is open.

Involved parties: Agency for nature and forest on the government side; nature and forest managers on the other side.

Management requirements: There are four categories of nature management plans, with different implications as far as commitments, subsidies and tax benefits are concerned.
With type one nature management plans, the manager ensures that the current nature value and quality and natural environment are maintained and that the duty of care is observed: in the event of interventions in nature, destruction or damage is prevented, limited or repaired as much as possible. Nature management plans under type one are not entitled to subsidies except those related to accessibility.
Nature management plans of type two have as objective enhanced nature quality (25% of the surface reserved for nature objectives). A partial exemption from inheritance tax and gift tax is linked to this type as well as various subsidies: subsidies for accessibility for visitors, for development of a nature management plan, nature management subsidies, ...
Nature management plans of type three have as objective the highest quality of nature (on the whole of the plan surface, with a possible 10% exemption) A partial exemption from inheritance tax and a total exemption of gift tax is linked to this type, as well as various subsidies: subsidies for accessibility for visitors, for development of a nature management plan, nature management subsidies, ...
Nature management plans of type four have the status of nature reserves and the objective of the highest quality of nature (easement created by law on the whole plan surface). They entitle to the same subsidies as type three and provide the benefit of total exemption of inheritance tax, gift tax, sale tax, property tax.

Nature management plans for sites of type two, three and four also need to meet the criteria for integrated nature management. They form a guideline and serve as a guarantee for sustainable management tailored to the nature or forest area.

The criteria for integrated nature management are grouped in 3 themes:

1. achieving an increased or the highest quality of nature;
2. taking into account the social role of the site;
3. dealing with the economic delivery of various goods and services in a sustainable manner.

These criteria must be met in a reasonable and technically responsible manner, without any of the criteria having to be met all the time on the whole site. Deviation is possible, provided motivation is given in the nature management plan, whereby it is demonstrated that the relevant criterion is not applicable or not relevant and to the extent that the deviation does not impede the realization of the management objectives.

The management objectives and measures in a nature management plan must also be checked against the following approved plans and programs:
• the European nature objectives in the context of Natura 2000 and the provisions of the Natura 2000 management plan
• the species protection programs
• the nature guidelines already established.

Controls/monitoring: Provisions are made in the nature management plan on the extent and ways in which the manager will need to reach the objectives and how this will be monitored and reported to the agency. The agency performs a management evaluation based on these data every 6 years, checking whether the management is on track to meet the management objectives. If necessary, the agency will propose deviating management measures in its evaluation report. If it turns out that the management objectives themselves are not feasible, the agency can ask the manager to submit a request to change the management plan.

Information/contact: www.natuurenbos.be/natuurbeheerplan

CONTRACT

Contract conclusion: Administrative contractual instrument, official nature management plan approval

Payment mechanism: Subsidies and tax benefits

Financing party: Government (without EU-funding)

Length of participation in scheme: 24 years (participation is transferable)

Start of the program: The Flemish nature management plan has a duration of 24 years, depending on the official approval date.

LOCATION

BELGIUM

Flemish Region of Belgium (five provinces, half of country).

Risk/uncertainties of participants: Risk of not reaching objectives (subsidies are linked to the evaluation of the objectives); risk of financing (if government subsidies are reduced); risk of change of regulation during the course of the nature management plan, which can imply legal uncertainty.

Links to other contractual relationships: The participant landowners/managers need to adapt their other contractual relationships applicable to the area or site concerned to conform to the nature management plan. Otherwise their responsibility for not meeting their commitments will be engaged.

Funding/payments: Government subsidies type of payment on an annual basis. Agency for nature and forest is paying agent. Amounts are fixed per nature objective and following their realization (cfr. monitoring), with inflation correction. Per nature management plan, one legal or natural person has been chosen by the participants to be the official intermediary towards the agency. Funds are channeled through that intermediary to the participants.

Contract partnership: Public-private - The nature management plan is a voluntary contract under administrative law between government and the manager of nature and forests.

Context features

Landscape and climate: Atlantic climate. In Flanders, forests cover only about 11% of the total area. Forests are often originating from plantations on former heathlands and wet grasslands: pine and poplar plantations make up almost half of the forest area, while only 1⁄3 of the forest area consists of broadleaved stands of indigenous species (oak (Quercus spp.), beech (Fagus sylvatica L.), mixed deciduous stands). Forests in Flanders are clearly part of an urbanized and industrialized region. In this context, forest goods and services are also related to socio-cultural and ecological services. This is comparable to regions like the Netherlands, parts of Denmark and southern UK.

Structure: All forest or nature managers can apply for this administrative contractual instrument, if legal conditions are met. The contractual solution is not directed to a specific profile of managers, but is intended to guarantee equal access to nature management status to all managers.

SUCCESS OR FAILURE?

The Flemish nature management plan presents a successful contract solution. In Flanders, a third of the total area under effective nature management comprises forests owned by third parties (not owned or managed by government or NGO's) with an approved management plan. This category increased in area by 2,097 ha in 2018 (compared to a total increase of all categories of 4,748 ha in 2018). This is evidence that the model of integrated nature management plans introduced in 2014 and 2017 has the necessary appeal amidst private nature and forestry managers, for whom participation to such a plan is on a voluntary basis.

Reasons for success:

See Main Strengths under SWOT analysis.

SWOT analysis

Main Strengths

1. Voluntary approach, own project approved by government.
2. Integrated approach: ecology, economy and social and heritage.
3. Equal approach: government financing depending on level of objectives, secured in a same way for all categories of managers.

Main Weaknesses

1. Tax benefits for natural persons (residing in the Flemish region of Belgium) only, not legal persons, scope reduction.
2. Only nature and forest and heritage management can be combined in same plan. Not a complete multifunctional management plan.
3. Differences between real costs and level of government subsidies.

Main Opportunities

1. Own vision of management approved by government.
2. Official recognition by civil society.
3. Stimulus to higher level of management quality.

Main Threats

1. Legal uncertainty by reinterpretation or changes in chosen management objectives or application thereof, directly or indirectly effected by government.
2. Level of financing depending on government budget.
3. Partnership with government very much depends on adequate and adapted treatment by civil servants.

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

Conservation of grasslands and meadows of high natural value through support for local livelihoods

The agri-environmental measures are maintaining pastures and meadows, by mowing in a timetable throughout the year and limited mowing, affecting endangered breeding birds, European ground squirrel and raptors (King Eagle and Long-legged buzzard).

Summary

The project began in 2007 with the idea to cover one of the most important public goods - biodiversity. It included 54 farmers in the region, whose lands were in NATURA 2000 sites. The leading organization is the Bulgarian Society for Protection of Birds, which is an NGO. They financed the project through the mechanism of the Global Environmental Fund. The area covered is the Besaparsky Ridge, which is in South-central Bulgaria. The main activities which were initially funded by the project were for pasture maintenance (payments per ha) and for buying machinery (lawn mowers, tractors, balers). The goal is to maintain and conserve the pastures throughout the year by limited mowing and in a timetable that is directly connected with the breeding birds; and for maintaining the grass for the European ground squirrel. The monitoring includes quarterly checkups by the team for certifying that the farmers are covering the requirements. After the project ended in 2010 the farmers were able to keep the machinery bought under the projects and to continue using it. A side activity of the project was the organization of an annual festival called the "Red pepper" which main goal is to popularize the biodiversity and traditions in the region, to provide place for the local farmers to present their production, and to increase the knowledge of the locals on the importance of the endangered bird species in the region. The festival takes place every year for 10 years now.

Objectives

1. To protect the local biodiversity in the area: breeding birds, European ground squirrel and raptors.
2. To encourage the involvement of farmers into schemes for biodiversity conservation.

Problem description

The main driving force for this project was the need to assess which agri-environmental measures can be suitable in High-nature value pastures, so that farmers would be motivated to initiate their implementation. The need comes from the fact that there is a seriously high risk of destruction of the habitats of important breeding birds and European ground squirrel with direct effect also on predatory birds. The most serious problem leading to the loss of valuable habitats is the gradual conversion of pastures and meadows into vineyards.

LAND-BASED

It is land based, because choosing the land is based on its conservational importance (which farm should be included in the contract). Some of the land is owned, some is rented. However the implemented measures are practice-based.

PUBLIC GOODS

Farmland biodiversity

Landscape and scenery

Rural viability and vitality

Further public goods

Cultural heritage by organizing the festival «Red pepper» the main goal of which is to popularize the biodiversity and traditions in the region.

LOCATION

BULGARIA

The Besaparsky ridges - Plovdiv municipality in the Southcentral region of Bulgaria.

CONTRACT

The payments came from the Global Environmental Fund, but the contract was between the farmers and the NGO.

NGO-private

Contract conclusion:
Written agreement

Payment mechanism:
Incentive payments

Funding/Payments:
The farmers receive subsidies by the government under one of the agri-environmental measures.

Length of contract:
3 years

Start of the program:
2007
End: 2010

Advantages of participation

- Benefits - association: financial payments for managing the project. Fulfilling organizational mission and vision for biodiversity conservation.
- Benefits - farmers: financial payments, receiving equipment; increasing the popularity of the livelihood and typical local foods.

Data and Facts – Contract

Participation: In this case study 54 farmers are involved.

Involved parties: The contracting parties are the Bulgarian Society for Protection of Birds and the farmers. The role of the association is leading because it manages the project, coordinates it, performs the monitoring activities and it is the main source of popularization about the importance of the biodiversity conservation in the region.

Management requirements for farmers: The maintenance of the pastures includes several requirements: the farmers can't use mineral fertilizers and plant protection products; it is forbidden to plough the permanent grassland or to build new drainage systems. Farmers must perform manual mowing or with slow mowers, mow from the centre to the periphery or from one end of the mower meadow to the other at low speed. The cut grass is dried and harvested. Farmers maintaining permanent grassland through grazing must maintain the stocking density.

Controls/monitoring: The monitoring is done by biodiversity experts several times per year. The farmers must keep the requirements connected with the mowing timetable and the techniques for slow mowing.

Renewal/termination: After the project ended the farmers were eligible to apply for government subsidies for the same activities for 5 years.

Conditions of participation: The main requirement is the agricultural land to be part of NATURA 2000 sites. The monitoring of the requirements is done by the Bird association which also determines the payments for the efforts done by the farmers. The requirement is to take part in the project for 3 years. The consequence for non-compliance is termination of payments.

The system of payment: The financing at first was from the Global Environmental Fund via the Bulgarian Society for Protection of Birds as a contractor. The main requirement for the farmers was their lands to be within the NATURA 2000 sites and to engage for a period at least of 3 years to conserve pastures and the population of European ground squirrel and nesting birds. The payments were in two directions – payments for the efforts made per/ha and for buying machinery which is used for maintenance of the meadows. Currently the farmers receive subsidies by the government under one of the agri-environment measures.

Framework conditions

Landscape and climate: Besaparsky ridges are a protected area - part of the Bulgarian and European ecological network Natura 2000, announced by an order of the Ministry of Environment and Waters from 2008 in order to protect and maintain in favourable condition protected and endangered species of birds of prey and their habitats. There are 86 species of breeding birds found in Besaparsky Ridges, 20 of which are included in the Bulgarian Red Book (for endangered species).

Farm structure: The targeted type of farming is pastures with special requirements for their management. The practices include timetable for the mowing periods of the year. The predominant farm size is small, with organic farming still small percentage. Part of the land is owned by the farmers included in the case study and the rest is under contracts with other landowners.

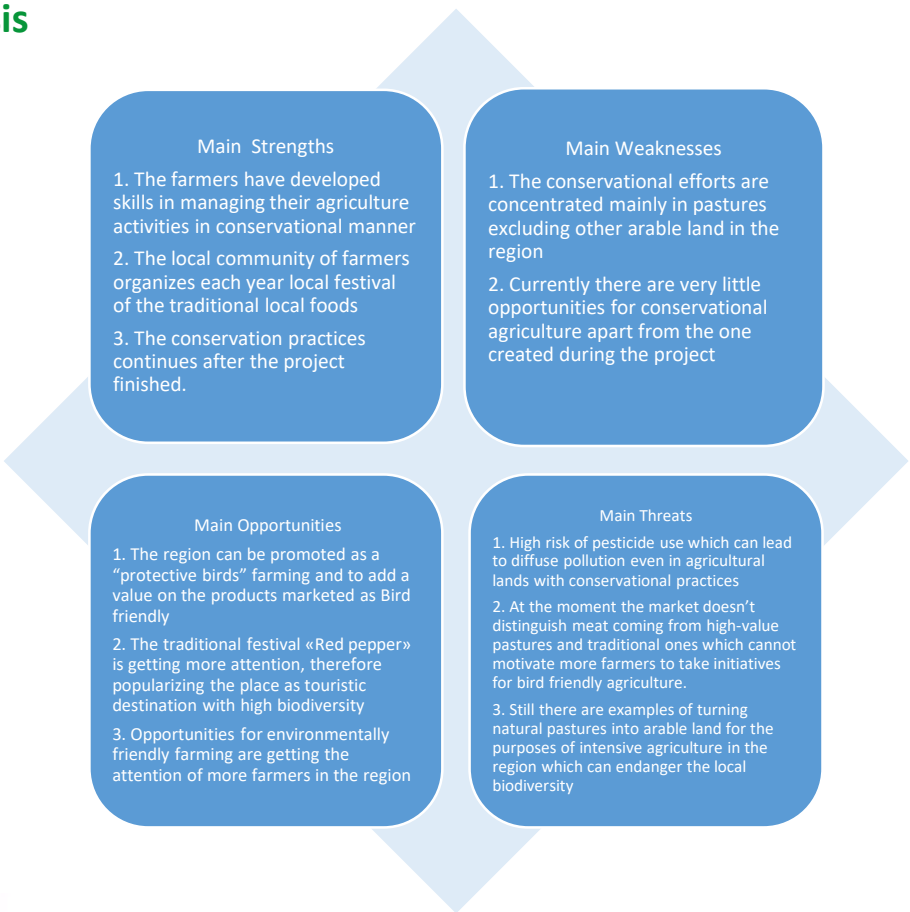
SUCCESS OR FAILURE?

The case is defined as **successful** due the fact that within the time of the project 54 farmers took part and after the project finished they are eligible to enrol into government program for implementing the same conservational activities. Keeping in mind that there is a tendency of turning pastures into arable land, the farmers who took place in the project are a good example of maintaining the biodiversity in the region by implementing conservation practices. After the project was finished these farmers continued to implement the good practices until this moment and the monitoring shows that the population of the European ground squirrel increased and together with that the number of the endangered King Eagle and the Long-legged buzzard.

Reasons for success:

- The project succeeded in creating conservation practices by farmers, the implementation continued after the project was finished.
- Raising awareness and knowledge of the local community about the European ecological network Natura 2000, its benefits and the resulting opportunities for local development.
- Enhancing the skills of local farmers to use agri-environmental schemes for conservational agriculture.

SWOT analysis



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Organic honey from Stara Planina mountain sites

Farmers producing organic honey in one of the natural reserves in Bulgaria have organized in a Organization of producers in 2013. This organization has a contract with one of the biggest producers, distributors and retailers of organic food in the country - Harmonica. The latter is a Bulgarian brand for organic products. In this contract Harmonica buys the processed honey from the organization of producers on premium prices and distributes it as a trade mark for organic honey with biodiversity features.

Summary

The contract is ongoing since 2015 and includes on one hand collective contract between the farmers, and on the other - a contract with the distributor of the honey – "Harmonica" (it is also the name of the brand for natural, eco-friendly products). It also has the features of a value-chain contract, given that the honey and honey products go from the farmers to the processor (a small processing plant for organic honey) and distributor ("Harmonica"). The farmers within the organization are 30 at the moment and are situated in Southeastern and Northwest Bulgaria within the natural reserves of the Stara Planina Mountain. The honeybee products are distributed as high-quality, pesticide free and eco-friendly products with responsibility for the bees and the ecosystems. The contract terms doesn't include specific amount of honey that should be delivered to Harmonica, but it is specified on a yearly basis. The payments are dependable on the type of honey and are between 6.50-11 euro per kilogram of processed honey.

Objectives

1. Conservation of biodiversity by producing honey in environmentally safe way in mountain sites
2. Popularization of Bulgarian honey and honey products with high quality and ecofriendly practices
3. Collective initiative for encouraging Bulgarian farmers to stay in business

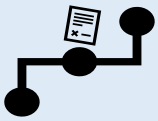
Credits: Dragomir Nikolov, The Iconomist magazine

Problem description

The Bulgarian honey is mainly targeted for export for other countries. The honey however is classified as one with very high qualities, but unfortunately the mass consumption (due to lower prices) is of foreign imported honey and honey products. Also, in the last several years the share of poisoned bees due to agricultural activities is rising, putting some pressure on their population and therefore on the ecosystem functioning. The goal of this collective action was to encourage the consumption of premium natural honey which has positive impact on the local biodiversity, security and quality of products, keeping beehives far from industrialized areas and those with high pesticide risks.

CONSOLE

VALUE CHAIN

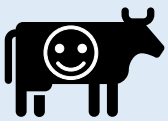


Farmer (beekeeper) – processor – distributor

PUBLIC GOODS

Farmland biodiversity

Quality and security of products



Farm animal health and welfare

INDIRECT EFFECTS

There are indirect effects on landscape and recreation activities.

LOCATION

BULGARIA

Northeast and Northwest part of the Stara Planina Mountain, covering the municipalities - Shoumen, Montana, Tyrgovishte, Vratsa.

CONTRACT

Private – private contract
Contract conclusion: Written agreement

Payment mechanism: Product price

Funding/Payments: Each individual farmer sells his production to the Organization of producers of farmer. The payment from the distributor (Harmonica) is between 6.50-11 euro per kg of honey.

Length of participation in scheme: Open end

Start of the program: 2015
End: ongoing

PRODUCT

- Organic honey from mountain areas
- No medicines or antibiotics are used for the treatment and prevention of bees.
- Only honey produced from the beehive is used to feed the bees.
- All the ingredients used for the production of the honey are natural without synthetic additives.

Data and Facts - Contract

Participation: 30 beekeepers participate in the contract solution.

Involved parties: The contracting parties are the Organization of the producers founded in 2013,the processor and the distributing company. The Organization consists at the moment of 30 farmers whose beehives are situated in the Stara Planina Mointain sites. Harmonica is a processing and distributing organization for eco-friendly products and the company is also involved in many environmental initiatives which main goal is to popularize and encourage environmental behavior both of producers and consumers.

The benefits for the organization of farmers – they have the opportunity to sell their production on premium prices for the Bulgarian market which is a way for them to secure part of their production. The price provided from the distributor is higher compared to the price for other producers of organic honey in the country.
The benefits for Harmonica – they can distribute honey products for the Bulgarian market within their brand for eco-friendly products as part of their mission to popularize quality organic products which have positive environmental impact.

Management requirements for farmers: The farmers should cover the main requirement for situating their beehives in natural reserves surrounded by natural forests and at least 3 kilometers away from contaminating sources. Synthetic drugs and sweeteners are not used when working with bee families. Both biological and homeopathic remedies are used to combat the diseases.

Controls/monitoring: The monitoring is done by independent certification organization for organic farming.

Conditions of participation: The main requirement is the beehives to be situated in natural reserves far away from contaminating sources (e.g. industrial enterprises, railway highways, congested roads) and agricultural lands which use pesticide and other harmful products. The monitoring is performed by independent certifying organization for organic farming (in this case organic beekeeping). The consequence for non-compliance is termination of the contract.

Risk/uncertainties of participants: The main risk that can be addressed to this contract is the risk of bee diseases and death of the bee family.

Links to other contractual relationships. The specific of the contract is mostly concerned with covering the requirements for organic practices. The farmers are applying for organic subsidies under the Rural Development Program for meeting organic standards

Framework conditions

Landscape and climate: The climatic conditions are with temperate-continental climate given that the beehives are situated mostly in Stara Planina sites. Forest ecosystems cover a large part of the territory (70,000 ha) and provide a variety of ecosystem services. This part of the mountain is known for its unique richness of flora and fauna and rich biodiversity, consisting of deciduous forests: oak, beech, maple, hawthorn, tar, linden, and also a variety of wild herbs which are the main food for the bee families.


Credits for photo: Tsvetelina Belutova

Farm structure: The farming system is organic production and the sector is beekeeping. The total number of beehives in the organization is around 4000, as the share of organic farms is 100%.

SUCCESS OR FAILURE?

This is the first farmer organization in Bulgaria for organic beekeeping which by negotiating and contracting with a distributer are placing their production on the Bulgarian market. In the long run they foresee to invest in their own collective processing plant and to distribute the honey products with their own environmental brand – organic honey from natural reserves.

Reasons for success:

1. A Bulgarian product with high quality from natural reserve can reach the Bulgarian market and consumers, whose demand for Bulgarian ecofriendly foods is rising in recent years.
2. This is the first collective effort among organic beekeepers in Bulgaria.
3. The practice for organic beekeeping secures animal welfare, as well as safety and quality of foods.

SWOT analysis

Main Strengths

1. Farmers organize themselves in Organization of producers for organic honey
2. The quality of the honey is very high due the characteristics of the region
3. Their product can reach the Bulgarian market via the contract with one of the biggest ecofriendly distributors and producers.

Main Weaknesses

1. The honey is under other company's brand name.
2. Big part of the production still goes for export.

Main Opportunities

1. The demand for organic products or mountain products with specific quality is rising.
2. The informative campaigns for natural products encourage more environmental friendly behavior and recognition of the pollination ecosystem service.

Main Threats

1. The predominant way for distributing honey products in Bulgaria still is via the short supply chain which narrows the market share.
2. The price of honey products in Bulgaria is low due to import of low-quality products which influence the competitive power of Bulgarian producers who wants to market their products.

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“The Wild Farm" organic farmers

A collective initiative of four farmers applies animal welfare standards, organic standards, agri-environmental measures for the production of beef. They cover the whole value chain from raising the animals, to the processing of the meat and marketing of the products in a small store in Sofia. They have a contract with a distributor for organic/natural foods processed in ecofriendly manner.

Summary

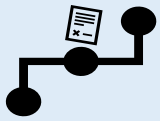
The contract solution includes a value-chain contract between the Wild Farm and a distributor – Bio Balev supermarkets. The farmers also have a contract with the government - the Ministry of agriculture and forests - for support on organically raised cattle. The farm is situated in the South Central region in Rhodope Mountains. The product is organically certified beef which is raised the whole year on natural meadows with high biodiversity features. The hay during the months with low food supplies comes from alpic mountain hay meadows, which are maintained in conservational manner by the farmers. Apart from having an important soil protection and water regulation role they are a valuable source of feed for the cattle. A number of higher plants with conservation status can be encountered on those meadows.

© The Wild Farm Farmers

Problem description

The demand for Bulgarian meat with high quality increased during the last decade, as well as the need for organically clean products. The Wild farm concentrated its effort in producing meat and other supplementary products in a environmental-friendly way so that the demand for natural Bulgarian products can be met. At the moment those farms which are engaged in organic husbandry in Bulgaria mainly export their animals due to the lack of certified slaughterhouses for organic meat. The Wild Farm opened their own slaughterhouse at the end of 2018 which was the first one certified for organic meat in Bulgaria. Part of the animals in the farm includes local rare breeds which contribute to the conservation of local biodiversity. The farm is also situated in a high-nature value site with ornithological significant Egyptian vulture which is a globally endangered species. Therefore one of the mission of the farmers is to implement as many as possible conservation measures (including pesticide free agriculture, maintenance of their pastures consistent with the nesting regime of local bird species, etc.) in order to support the local biodiversity.The initiative was led by the Wild Farm.

VALUE CHAIN

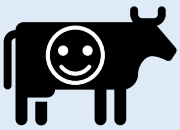


Organic farmers– meat processing - distributor

PUBLIC GOODS

(Farmland) biodiversity, *Biodiversity of rare breeds and ornithology species*

Quality and security of products



Farm animal health and welfare

INDIRECT EFFECTS

Rural viability and vitality

LOCATION

BULGARIA

Haskovo municipality in the Southcentral region of Bulgaria.

CONTRACT

A market sector-oriented contract type between farmers and distributor.

Contract conclusion:
Written agreement

Payment mechanism:
Collective payment without premium price levels

Funding/Payments:
From distributor to Wild Farm (collectively

Start of the program:
2018
End: ongoing

Length of participation in contract solution:
2018 – open end

PRODUCT

The product is organic beef.

Data and Facts – Contract

Participation: 4 farmers participate in this contract solution

Involved parties: The contracting parties are the Wild Farm founded in 1994 and the distributing company Bio Balev. The latter is a distributor of natural, high-quality products, with no artificial additives, sweeteners, colorants or preservatives, that have higher nutritional values. The company is a leading distributor of a large range of organic, vegan, vegetarian, healthy foods certified according to European and international standards for organic quality.

The benefits for the Wild Farm: To sell the production on the Bulgarian market. As an indirect effect of selling their products is the popularization of the Wild Farm as a destination for ecotourism. The Wild Farm has recently opened a guest house with many environmental activities for the guests.

The benefits for distributor: as a distributor they meet the raising demand of the Bulgarian market for products which are natural/organic and of local origin.

Management requirements for farmers: The farmers should cover the requirements for organic production husbandry.

Controls/monitoring: The monitoring is done by independent certification organization.

Conditions of participation: The main requirement is the beef to be organically certified.

The system of payments: The payment is for the Wild Farm (collectively) by the distributor. There are no premium price levels

Links to other contractual solutions: The farmers are applying for organic subsidies under the Rural Development Program for meeting organic standards

Objectives

1. Conservation of local biodiversity of rare breeds and ornithological species
2. Practicing animal welfare principles and whole year free grazing of the cattle (half of the year in high mountain pastures)
3. Popularization of Bulgarian organic beef meat

© The Wild Farm Farmers

Framework conditions

Landscape and climate: The agricultural lands are located mainly on the high parts of the valley. The rich biodiversity includes turtles, falcon, wild cat, wolf, wild boar and more. 174 species of birds have been found on the territory, 40 of which are included in the Red Book of Bulgaria of endangered species and 78 are of European conservation interest. The globally endangered Egyptian Vulture (*Neophron percnopterus*) and over 30% of the Griffon Vultures (*Gyps fulvus)* in Bulgaria nest here. Therefore the region is appropriate for conservational agricultural practices that will have high impact on the local biodiversity.

Farm structure: The targeted system is organic husbandry. The farm size is around 100 ha and the cattle is around 1200 oxen, cows and buffalos. The ownership structure is mostly rent land and farmers are on a full base contracts. The predominant part of the farm is organic.

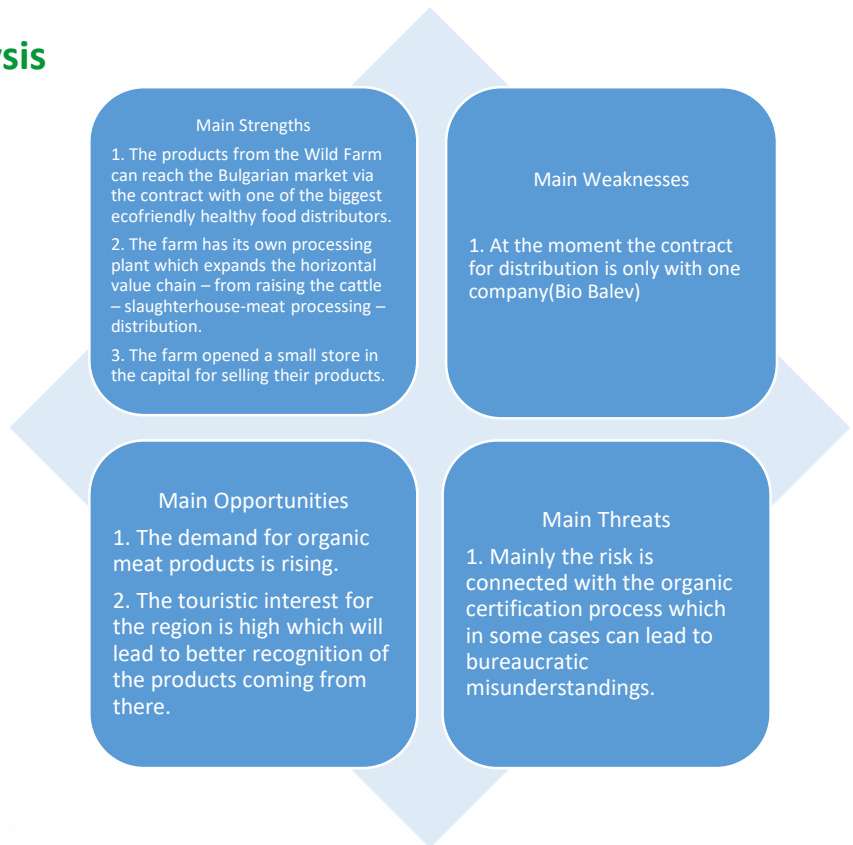
SUCCESS OR FAILURE?

The "Wild Farm" initiative succeeded in not only raising local rare breeds of cattle in organic way but also suppling organic meat for the Bulgarian market. They have been in business for 20 years and although they haven't been organically certified during the whole period, from year 1 they have been considering conservation measures on their farm. The cattle are raised by spending half of the year in the East Rhodopy Mountain above 1500 altitude, grazing on Alpic mountain hay meadows with specific type of plant species assessed as valuable source of nutrition for the cattle. The activities on the farm provide mainly public goods as biodiversity conservation and animal welfare and are targeted to reach the Bulgarian consumer so that the demand for organic food with high qualities can be met.

Reasons for success:

- One of the few organic husbandries in the country which has a contract for delivering their production to the Bulgarian market.
- The opening of the slaughterhouse secured that the production will not be entirely exported but will serve the Bulgarian market.
- The farm has a longstanding practice for environmental conservation and a high motivation to continue in this manner.

SWOT analysis



Horizon 2020 European Union Funding for Research & Innovation

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Main external factors influencing success

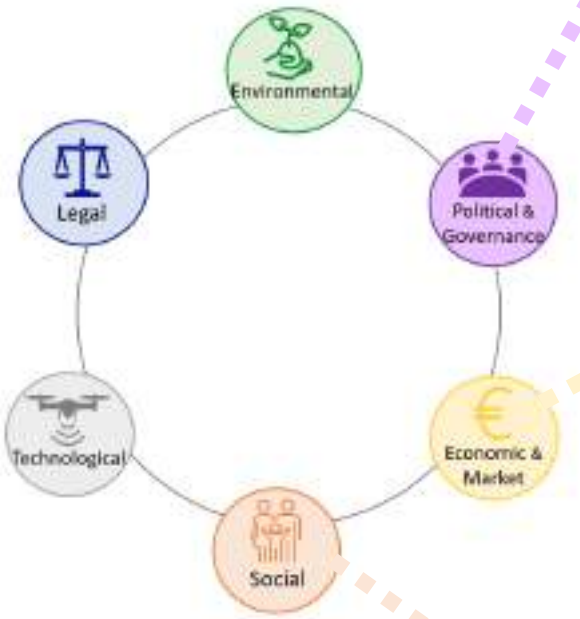
Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Policy incentives fostering the contract solution:

One of the main policy incentives came with the development of the Rural Development Program after 2007.

(1) Firstly, **organic farming** is strongly supported by the Bulgarian government and shows constant increase in the last years. Compared to crop production, organic husbandry is still lagging behind. One of the main reason for the that is the lack of processing plants (slaughterhouses, dairy farms, etc.). Therefore, being the first farm with its own slaughterhouse makes the Wild Farm a good example and a possible contractor in the value-chain of organic products.

(2) Secondly, **conservation of meadows in high-nature value sites** was another aspect under the agricultural policy that triggered conservational behavior among farmers.



Twofold influence of organic farming:

- In general, the organic production in the country strongly depends on governmental support. The **market for organic products is still underdeveloped** due to high prices of the organic products and the limited purchasing power of the consumers.
- The good example of the Wild Farm shows how independent an organic farm can be by extending the value-chain.

Own "mission" to improve local biodiversity:

Environmental awareness: The four partaking farms are very aware of the high nature value of the area with the ornithologically important Egyptian vulture (an endangered species). Following environmentally friendly way of farming is their mission.

Going beyond existing concepts: The Wild farm concept is moreover driven by an own "mission" to implement as many conservational 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.

Additional page added May 2022

Conservation and restoration of grasslands in Strandzha and Sakar mountains for restoring local biodiversity and endangered bird species

For the last several decades former pastures in the Strandzha Mountain has been turned into agricultural land, thus destroying important breeding and feeding grounds for endangered bird species. The contract is between the Bulgarian Society for Protection of Birds and farmers for implementing conservational practices on pastures and restoration of the natural habitats.

Summary

The project started in 2015 and is still ongoing. The main goal was 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 Souslik as a main food source for Imperial Eagle, Booted eagle, Lesser spotted eagle, Long-legged buzzard. The contract is land-based and it includes around 20 farmers in the Strandzha Mountain. The leading organization is the Bulgarian Society for Protection of Birds, which is an NGO. Under a project financed partially by the LIFE + program the association purchased and leased out over 600 ha land to farmers with requirements to restore and maintain the pastures in environmental way.

Objectives

1. Protect the local biodiversity in the area
2. Restoration of the natural mosaic nature of the habitats in the region
3. To encourage the involvement of farmers into contracts for biodiversity conservation

© Svetoslav Spasov, Bulgarian Society for Protection of Birds

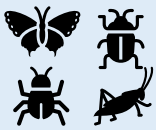
Problem description

There is a tendency to plough and convert some of the most important grasslands for endangered bird species into arable land, vineyards and orchards. The main driving force for this contract was the high percentage of tilled pastures, which were turned into arable land in the Strandhza and Sakar mountains. The restoration of former high-value pastures will contribute to the conservation of endangered vulture birds and will also allow the restoration of the mosaic nature of the habitats – an important biodiversity feature.

LAND TENURE

practice-based – leased out- environmental – conservation

PUBLIC GOODS



Farmland biodiversity

Landscape and scenery

INDIRECT EFFECT

One of the ecosystem features of the pastures is the retention of water (water quantity), regulation of surface runoff and decreasing of soil erosion in hilly terrains (soil quality and heath)

LOCATION

BULGARIA

Strandzha Mountain and Sakar Mountain (Southeast region, municipalities of Stara Zagora, Yambol and Bourgas)

CONTRACT

The contract is for the whole land provided to the farmers from the Bulgarian Society for Protection of Birds. The financing party in the contract solution is LIFE + programme for biodiversity.

NGO – private

Contract conclusion: written agreement

Payment mechanism: No payment but access to land

Funding/Payments: Part of the financing is for purchasing of former pastures that should be restored and conserved. The farmers are also eligible for governmental support for maintaining pastures in conservational manner (practice-based subsidy) for which the subsidy is 324 euro per ha.

Length of participation in scheme: 7 years/ongoing

Start of the program: 2015
End: ongoing

Data and Facts – Contract

Participation: 20 farms are involved in this contract solution. The area of implementation is around Strandzha Mountain and Sakar Mountain, Southeast region, municipalities of Stara Zagora, Yambol and Bourgas.

Involved parties: The contracting parties are the Bulgarian Society for Protection of Birds (an NGO) and the farmers. The role of the NGO is leading because they manage the project, coordinate it, and perform the monitoring activities. Farmers mainly benefit from maintaining pastures by providing grazing space for their animals and for using the haying for fodder. By covering the specific requirements set into the contract with the NGO they also can apply for government subsidy.

The benefits for the NGO: Financial compensation for managing the project; fulfilling their mission and vision for biodiversity conservation and bird protection which are the core of their activities.

The benefits for the farmers: Farmers cultivate the land without paying rent. By meeting certain environmental requirements they also become eligible for government subsidy (compensations for practice-based efforts).

Funding/payments: The funding organization is LIFE + programme who granted the Bulgarian Society for Protection of Birds for restoration and sustainable management of the Imperial Eagle's habitats. Part of the financing is for purchasing of former pastures that should be restored and conserved. The Bulgarian society for bird protection therefore leased out the lands to farmers in the region for activities that aim at restoring and maintaining the pastures. The farmers are also eligible for governmental support for maintaining pastures in conservational manner (practice-based subsidy) for which the subsidy is 324 euro per ha.

Management requirements for farmers: The main requirements for participation are for conservational maintenance of the pastures, incl. restoration of bushland pastures; removing some of the unwanted vegetation to maintain mosaic habitat; sustainable management of grassland through livestock grazing or mowing; restoration of grassland by restoring grassland naturally or by sowing native grass species.

Controls/monitoring: The monitoring is done by the Bulgarian Society for Protection of Birds.

Conditions of participation: The condition is to maintain and restore the pastures in conservational manner, as all requirements are defined precisely in the contract.

Framework conditions

Landscape and climate: The climate is transitional-Mediterranean with a strong Black Sea influence, which is confirmed not only by the high average January temperatures (from 2 to 3.2 ° C), but also by the significant average annual precipitation (from 500 to 1000 mm). The typical habitats are grasslands, bush shrubs and mixed oak forests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- a good breeding ground and predatory place. Bird diversity is very rich: 221 species; 59 of them are included in the Bulgarian Red List, and 96 have conservation significance on a European level. Here can be found the biggest part of the Bulgarian populations of the Imperial Eagle, Booted eagle, Lesser spotted eagle, Long-legged buzzard.

Farm structure: The targeted type of farming is pasture and grassland agriculture with special requirements for conservational management. The total land includes over 600 ha of pastures leased out to farmers. The ownership of the lands is by the Bulgarian Society for Protection of Birds

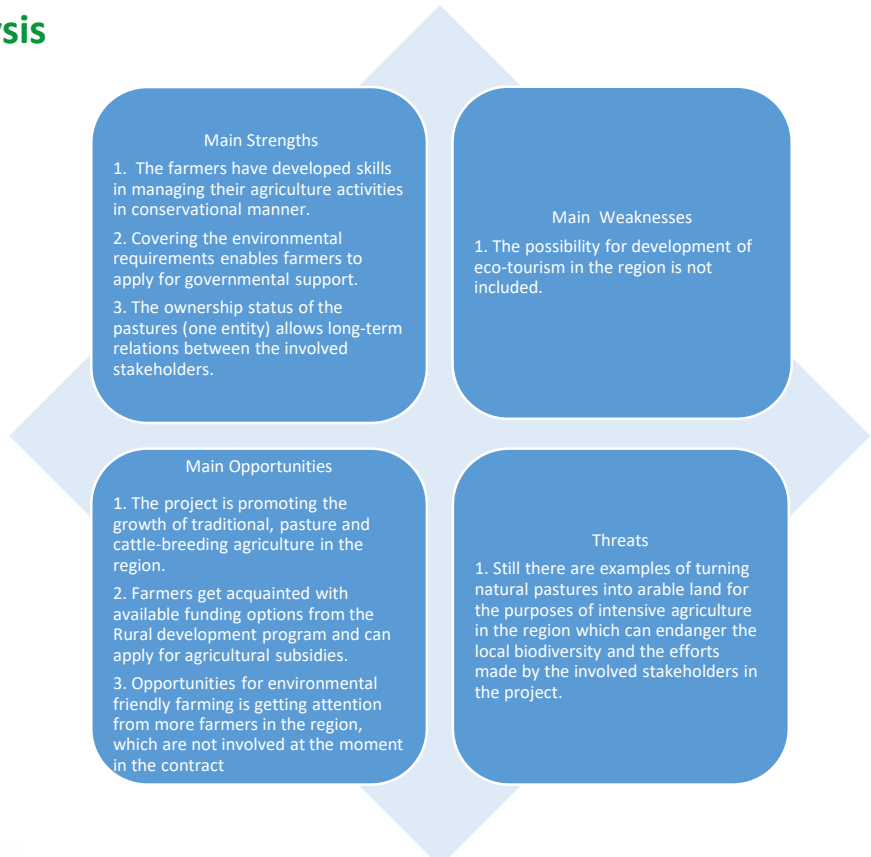
SUCCESS OR FAILURE?

The project involves 20 farmers operating in high-nature value sites with ornithological significance. The agreement between the partners is very effective from an environmental point of view and it highly meets the targeted public goods. The collaboration between an NGO and farmers is a good example for a win-win scenario for both nature conservation and agricultural development.

Reasons for success:

- The ownership of the pastures can be a prerequisite for longer contractual relations between the farmers and the NGO.
- The contract provides a win-win situation for both sites – by preserving the ornithological significant species (core goal of the NGO) and by providing land for livestock farming.
- Local farmers trained in sustainable grassland management in areas with breeding endangered birds.

SWOT analysis



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Main external factors influencing success

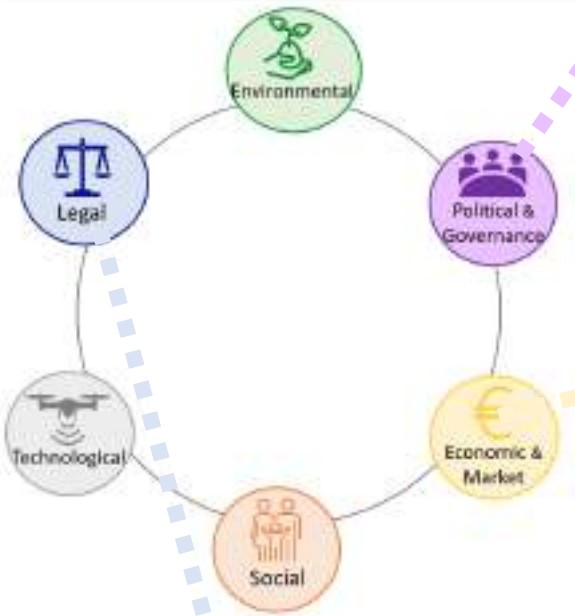
Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Previous contracts supported the contract solutions success:

Previous efforts (before the start of the contract) of **biodiversity experts, ecologists and farmers** have led to the development of different **conservational measures** that can be applied on farmland.

Some of these measures were integrated into the Rural Development Program (after 2015), which later on gave an opportunity for farmers in this region to apply for governmental support for maintaining pastures in conservational manner.

>> The contract serves also as an example for environmental stewardship of the farmers involved, which can secure the good public acceptance for this type of initiatives to be implemented in other parts of the country <<



Economic advantages for the farmers:

By meeting certain environmental requirements within the leasing contracts, farmers become eligible for a governmental subsidy (compensations for practice-based efforts). The payments they receive cover their costs, while additional benefits for example providing a feeding ground for their animals are also received.

Conservation of endangered species -> high priority on the environmental policy agenda

One main legal condition which can be directed to this contract is the national legal framework regarding **biodiversity protection** and **bird conservation** (incl. Biodiversity Act, Protected Areas Act, etc.).

Their influence is mostly positive as the conservation of endangered species is a national goal and has **high priority on the environmental policy agenda**.

Viticulture on steep slopes creates diversity in the Moselle valley

Measures promoting species diversity in viticulture on steep and extremely steep slopes have been developed in collaboration with winegrowers. At the same time these measures contribute to the preservation of the traditional cultural landscape along the river Moselle.

Summary

The Moselle project was initiated by the farmers' and winegrowers' organisation "Bauern- und Winzerverband Rheinland-Nassau e.V." in collaboration with local winegrowers. Winegrowers having first experiences with spontaneous vegetation in their vineyards played an important role to motivate participation of colleagues. During the four years since the start of the measure implementation in 2015, 35 winegrowers participated in biodiversity promoting measures. Interrows and field borders of vineyards are valorised and botanical hotspots with native flora and fauna are established. The winegrowers get a financial compensation for the propagation of wild plants inside and along their vineyards. But also abandonment of vineyards threatens plants and animals which thrive in warm habitats. Measures avoiding scrub encroachment are therefore tested. An intensive ecological support by contracted consultants and an individual adjustment of the measures allow to align the nature protection aspects with the production needs.

Objectives

The preservation and promotion of biodiversity by winegrowers in cultivated steep and extremely steep slopes stays in the foreground. This is done by:

- seeding wild plants for greening the interrows of vineyards and field borders
- establishment of floristic and faunistic hotspots
- clearance of shrubs of abandoned vineyards

as well as safeguarding the attractive landscape for tourism of the Moselle valley.

Problem statement

The project has been initiated as a reaction to the loss of flora and fauna typical for the Moselle vineyards and the need of specific protection measures, especially for endemic species like the Apollo butterfly.

Data and Facts

Participation: 35 winegrowers with approx. 25 hectares. The greening of the interrows with wild plants is done on about 14 ha as well as on small areas of adjacent field borders and over 10 ha of shrubs were cleared on abandoned vineyards (March 2019).

Further participation: 3 local municipalities and one parish are participating in the shrub clearance. In addition, contact persons from 5 local associations are serving as 'local heroes', they substantially support the coordination and implementation of the measures on abandoned vineyards. Biologists carry out the monitoring. A public service center responsible for technical training of winegrowers supports the knowledge exchange. The Moselle project is one of the three components of the project "Lebendige Agrarlandschaften - Lively agriculture landscapes" with the German farmers' association DBV as lead.

Result-oriented and cooperation

Greening of interrows and field borders

Scrub clearance in cooperation with associations

PUBLIC GOODS

Biodiversity

In addition: erosion control and improvement of the soil fertility

Further public goods

Landscape and scenery

Recreational access

Rural viability and vitality

LOCATION

GERMANY

The project area is located in the southwest of Germany, in Rhineland-Palatine along the river Moselle. Productive and abandoned vineyards on steep or extremely steep slopes (> 30%; 17° up to 68°) are targeted.

CONTRACT

The written contracts concluded with the winegrowers are practice-based, but freedom is given about timing and the exact practices to be applied.

The initial length of each contract is one vegetation period (until 31.12.); can be extended until project end.

Payment: The payment of cost incurred at the end of the calendar year is based on the proof of performance (seeds are provided for free).

Project financing:
German Federal Agency for Nature Conservation (BfN) with funding from the Federal Ministry for the Environment and Nature Conservation (BMU), the Landwirtschaftliche Rentenbank complemented by own funds of the regional farmers' and winegrowers' organization

Duration of contract:
Maximum from 2015 until project end

Start: 1st May 2015
End: December 2020

RESULTS

On the monitoring plots have been identified (2016/2018):

- 398 different plants
- 155 species of wild bees
- 49 butterfly species
- 20 grasshopper species
- 5 reptile species

Farming requirements:

The greening of the interrows and the field borders: individual adjustment of location and measure(s) to be implemented before conclusion of contract; seeds are provided to the wine-growers to establish wild plants on every second interrow. When carrying out care measures in the vineyards to ensure the performance the participants promote the high ecological value at the same time.

Floristical hotspots: propagation of seeds and plants of selected locally adapted wild plants and reestablishment on selected steep slopes or handing out of seeds based on oral agreement with a winegrower. A beneficial side effect of these 20 m² large sites with name tags, also called "letter case" is public relation work.

Scrub clearance from abandoned vineyards: The removal of scrub and the valorisation of dry-stone walls is done with involvement of local/ regional associations. Different techniques are applied: manual as well as mechanical manipulation or grazing. The land is either in public or in church ownership and licensing agreements are concluded while the associations are contracted for the work undertaken.

Controls / monitoring: The contracts contain an access right to check the proper implementation of the measures agreed as well as for the monitoring. The on-the spot checks take place at least once a year. Those sites chosen for monitoring are assessed four times a year during the vegetation period. Some winegrowers take advantage from the monitoring to get the local flora and fauna in and near their vineyards better known. The identification of rare plant and animal species or high number of individuals makes the participating winegrowers proud.

Conditions of participation: The contracts are concluded individually with the winegrowers. Two contracts are needed for the scrub clearance, one with the landowner and a second one with the association or enterprise in charge of implementing the measure.

Risks / uncertainties for participants: It is important to cut dominant plants to avoid that they spread their seeds at the end of the flowering period or grow into vine plants. All in all, a vineyard with wild plants for interrow greening requires increased attention. On the other side the permanent soil cover reduces considerably the risk of erosion. Dependent on site and timing of the seeding approximately half of the plants from the seed mixtures were successfully established. Because of the spring drought in 2017 it was necessary to repeat seeding the following year in some vineyards.

Contract features combination: The contracts concluded under the Moselle project built upon the rural development programme of Rhineland-Palatinate called ELER-EULLE, more specifically the scheme named „environmental friendly cultivation on steep and very steep slopes". The participants have to respect the requirements of this scheme. Participation is possible on own land as well as on rented land for the greening of interrows and the field borders. If land is rented, the participating winegrowers have to guarantee that they have a right of use.

Framework conditions

Landscape and climate: The river Moselle carved deep meanders into the landscape and shaped the steep valley slopes now covered by vineyards. Those vineyards dominate the scenery. The climate in the Moselle valley and on the slopes is mild, very sunny and characterised by hot, dry summers in the last years and temperate, humid winters.

Farm system: The primary focus is put on viticulture on steep slopes. The area managed by the winegrowers is limited by generally difficult conditions, the vineyards are labour intensive and require a lot of handwork, especially those on steepest slopes. All in all wine is grown on 5.200 ha of steep slopes in Rhineland-Palatinate.

Information / contact:
http://lebendige-agrarlandschaften.de/moselprojekt/

SUCCESSFUL CONTRACT SOLUTION

All three measures have been well received. First results of the monitoring are documenting the positive effects of the measures on wild plants and animals. The demand for participation by the winegrowers is higher than the possibilities to fund measures due to limited project funds. There was shortage of seeds in 2019 as only seed propagated regionally is used and the dry summer 2018 had led to losses in yields in seed production. Experiences from the project will be used to promote biodiversity and a sustainable cultivation of the vineyards that characterize the landscape along the river Moselle within the agri-environmental programmes.

Reasons for success:

- The winegrowers make suggestions for the area and possible measures, the exact contract details are negotiated individually.
- The winegrowers get the seeds for free, with 24 indigenous wild plants for the greening of the interrows and 15 species for the field borders.
- Wild plants are established at every second interrow, therefore a profitable viticulture remains possible without restriction.

SWOT analysis

Strengths

1. supplementing the spectrum of wild plants
2. creation of additional habitats
3. stabilisation of the ecosystem (longer-term)

Weaknesses

1. more maintenance work for interrows
2. relatively high (seed) costs
3. Possible water competition between vine plant and wild plants (different opinions)

Opportunities

1. promotion of biodiversity
2. erosion protection
3. advantage for product marketing
4. Adaptation of the philoso-phy of the farm in direction of natural resource protection

Threats

1. increased risk of fungal diseases due to less air circulation in the vineyard
2. necessary to ensure that cutting or rolling of the plants in time is allowed to avoid seed spreading

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Organic farming for biodiversity

The initiative with a result-based approach is targeting organic farmers. The farms have the possibility to select the measures that fit best for them to foster wild flora and fauna. A certification scheme qualifies them for selling their organic products in retail with premium price.

Summary

The initiative called "Farming for species diversity (Landwirtschaft für Artenvielfalt)" aims to increase the diversity of wild flora and fauna on organic farms. A result-oriented approach with participation of the value chain is pursued. The WWF Germany and Biopark, a federation of organic farming, have started the initiative together with the retailer EDEKA in 2012 in Mecklenburg-Western Pomerania, now extended to other regions. A new standard going beyond the requirements for the organic certification has been developed with scientific support. The nature protection certification is based on a broad range of over 100 measures. Its central element is a catalogue of measures with credits allocated to each of them. Together with a specialised nature protection advisor, the participating farmers choose the measures that are the most suitable and can be best integrated into their agricultural production. Factsheets provide detailed information on the implementation of the measures, suitable locations and potential indicator species. The whole farm with all its land and the surrounding landscape elements is eligible. If the farmer reaches a threshold of credit points, he gets a supplement for selected products (initially meat products and potatoes, now also apples processed as juice and cereals). The farmer is compensated for his nature protection efforts through the higher priced premium organic product sold with a particular label. The consumers actively support species diversity by purchasing these products.

Objectives

- Increase of the diversity of wild flora and fauna in agricultural landscapes
- Establish a nature protection certificate for organic farms
- Improve the market opportunities for selected organic products

© F. Gottwald

Problem statement

The starting point for this project was the observed decrease of the biological diversity on farmland and in agriculture landscapes. In principle organic farming provides an excellent basis for a high species diversity of wild animals and plants. But also in organic farming the increasing economic pressure leads to intensification and this goes along with negative effects on species diversity.

Data and Facts

Participation: 170 farmers, 4 federations of organic farming (BIOPARK, Bioland, Naturland, Demeter), the retailer EDEKA, starting with EDEKA North. The organic farmers cultivate approximately 52.000 hectare (May 2022).

Further participation: WWF Germany as project lead; scientific support and realisation by the Leibniz Centre for Agricultural Landscape Research (ZALF).

RESULT-BASED

Species diversity: indicator species and habitats

VALUE CHAIN

Organic farmer – organic farming federation – retailer – consumer

PUBLIC GOODS

Biodiversity

Further PGs

Product quality

Rural viability and vitality

LOCATION

GERMANY

The core area of the project is situated in northeast of Germany, expanding to other parts. In 2022 farms located in 11 German Laender participate.

CONTRACT

Verbal agreement between the organic farming federation and the participating farmer (involvement of a nature protection advisor)

Guaranteed purchase for selected products, written

Payment:
Farmers get a premium through EDEKA commercialisation; nature protection advice free of charge

Project financing:
Pilot project based on a partnership contract between WWF Germany and the EDEKA headquarter

Duration of contract:
For farmers without end date

Start: 2012
End: ongoing

Nature protection certification

- Organic farm
- Individual choice from a catalogue of nature protection measures
- Certification if a minimum number of credits at farm level has been achieved
- Cropland, grassland, horticulture land and landscape elements are eligible for the credits

Participation in the nature protection module:

1. Advice: The nature protection advisor assesses the farm and identifies which wild species are present. Existing nature deficits are discussed and solutions are elaborated. He agrees with the farmer which measures are suitable on which fields or neighbouring areas.
2. Catalogue of measures: Farmer can choose from more than 100 nature protection measures for arable land, grassland and landscape elements. A credit point system provides information about the effectiveness of each measure in protecting or promoting species and habitats.
3. Implementation: The farmer implements the selected measures on his farm. Knowledge is gained thanks to the long-term collaboration between the advisor and the farmer, allowing a continuous optimisation of the measures themselves as well as the overall farm management.

Controls / monitoring: The participating farms are controlled annually if they have successfully implemented the chosen measures on their farm. Currently the nature protection advisors are controlling if the necessary credit points are obtained and certify the organic farms. In future it is foreseen to have the mandatory controls for organic farming back-to-back with the nature protection certification. There are monitoring and evaluation schemes for wild herbs on agricultural fields, the whinchat bird as well as skylark, for butterflies, amphibians and grassland vegetation. The evolution of the populations is assessed on selected farms to check if the implemented measures bring the expected benefits.

Conditions of participation: The participating farms have to obtain the threshold of 120 credit points / 100 ha by implementing nature protection measures chosen after an in-depth advice. The products from those organic farms can be sold as premium product (mainly meat and since 2022 apples). Consumers can recognize these products thanks to the logo of 'farming for species diversity' alongside with the WWF logo. In addition, the products are labelled with one of the logos from the participating organic farming federations. Since 2015 organic farms from Brandenburg, Schleswig-Holstein and Saxony-Anhalt are eligible to participate beside farms from Mecklenburg-West Pomerania. In 2018 also farms from Baden-Wuerttemberg joined the initiative and now farmers from eleven German Laender are participating.

Risks / uncertainties for participants: A minimum of credit points has to be obtained on a yearly basis through measure implementation to be able to benefit from the premium price for the selected products. In addition, supply contracts with EDEKA are required for privileged market access. In return the retailer ensures constant reliable prices for the products sold.

Contract features combination: The participating farmers are eligible to get EU-cofunded support for organic farming.

Framework conditions

Landscape and climate: Mecklenburg-West Pomerania (M-V), where the core area of the project is situated, is located in the northeast of Germany with a cool moderate climate. The coastal areas are under the maritime influence of the Baltic Sea. The annual precipitation is around 600 mm. It is the most sparsely populated state in Germany. The state is rich in water bodies and has three national parks as well as numerous nature protection areas, together they cover 6.2% of the territory. The land use is characterized by large-scale farming.

Farm system: The initiative focuses on organic farming. Organic farming takes place in M-V on 14% of the agricultural area. This makes M-V the number one in Germany. Most of the time the organic farms cultivate land of lower soil quality, have significantly more grassland and a higher percentage of extensive livestock. The farms participating in the initiative differ regarding location, farming structure, and farming practices.

Information / contact:
https://www.landwirtschaft-artenvielfalt.de

SUCCESSFUL CONTRACT SOLUTION

The initiative 'farming for species diversity' shows how organic farms can successfully implement nature protection on their farm land. The nature protection module used to reward achievements in nature conservation has proved its worth. This is also reflected in the number of participants which has increased fifteenfold since the initiative started with eleven farms in 2012. The transferability into other regions could be demonstrated with its enlargement, where suitable measures have been added or modified according to regional needs. The ecological monitoring showed significant improvements for selected indicator species, for example the breeding success of the whinchat increased significantly.

Reasons for success:

- Close collaboration between nature protection advisor and organic farmers
- Nature protection measures can be integrated into the farming activities
- Project logo on the products enables consumers to recognize the products with nature protection benefits
- All participating farms can be found on the EDEKA- and the project homepage through a tracking code placed on the product

SWOT analysis

Strengths

1. Promotion of the native wildlife
2. Efforts rewarded by the market
3. Awareness rising for the consumer

Weaknesses

1. Costs of annual nature protection certification
2. Premium price only for some organic products
3. Effects in space (still) limited

Opportunities

1. Premium organic farming
2. Regional value chain with organic + species diversity
3. Strengthening of the nature tourism
4. Roll-out of the certification after adaptation for other regions

Threats

1. Nature protection advice at individual farm level necessary
2. Dependency on retailer for the premium price
3. Consumer often not willing to pay higher price

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Collaboration for sustainability between institutional landowners and tenant farmers

In the region around the city of Greifswald institutional land owners and tenant farmers cooperate to establish a sustainable agriculture protecting environment and nature. Land tenure contracts with sustainability clauses are the means chosen. A transparent tendering procedure is now taking into account sustainability criteria.

Summary

Key players are the institutional land owners of the region around the city of Greifswald and their tenant farmers. The land use should be shaped in a way to meet ecological, economic and social demands in the long term. The Michael Succow foundation has suggested joining forces by setting up the initiative called 'agricultural initiative for Greifswald (Greifswalder Agrarinitiative / GAI)' and has coordinated it until June 2019. After project ending the collaboration platform was transferred into an association with the same name to ensure continuation of the cooperative approach. The current practice under which leased land has been awarded changed substantially. A transparent tendering procedure taking into account sustainability criteria has replaced rental price as key decision criterion. The agricultural holdings get advice on how to integrate environmental and nature protection measures into their farming practice. A cooperation agreement is signed between the agricultural holdings and the institutional land owners for new or renewed lease.

Objectives

- Strengthening the sense of responsibility for natural resources of tenants and land owners
- Improving the sustainability of agricultural production
- Biodiversity maintenance and promotion
- Greater consideration of climate protection requirements and the protection of water bodies

Problem description

The agriculture in the region around Greifswald is dominated by large-scale fields and an intensive agricultural production with a high share of rented land. The intensive land use has negative impacts on the agricultural soils and the neighbouring ecosystems. The initiative has been initiated by the Michael Succow foundation.

Data and Facts - Contract

Participation: Three institutional landowners, the city of Greifswald, the University of Greifswald and the Peter-Warschow Sammelstiftung (a foundation) own together 11.000 ha that they rent to farms of the region (mainly conventional arable farms). 37 of these farmers are members of the GAI association in 2022, together they manage 25.000 ha.
Further participation: Until June 2019 project lead by the Michael Succow foundation, since then by GAI association; assistance and project support by scientists from the university of Greifswald as well as independent external experts.

LAND TENURE

contracts with sustainability clauses concluded between institutional land owners (city, university) – private tenants and farm managers

PUBLIC GOODS

Biodiversity

Soil quality

Water quality

climate regulation

Further PGs

Improvement of the social and economic sustainability of land use

LOCATION

Germany

The project area located in the northeast of Mecklenburg-Western Pomerania encompasses the land around the city of Greifswald up to a distance of 20 km.

CONTRACT

A cooperation agreement is signed between the tenant (agricultural holding) and the institutional land owner in addition to the lease contract.

Payment:
Land tenure contracts with adjusted lease payments, supplemented by funds collected by association (1 €/ ha and year, paid by land owners and tenants) and possibly external funds

Duration of contract:
during the whole term of lease, as a general rule 6-12 years

Start: 2013
End: ongoing (should continue long-term)

Funding:
1st phase: German Federal Environmental Foundation (DBU) Dec. 2015 - June 2019
2nd phase: members of GAI association

Successful cooperation?

- Voluntary collaboration of the regional actors with the common goal 'voluntary mandatory'
- Dialogue forums for an exchange on an equal footing on technical issues
- Successful cooperation requires trust, continuity and seriousness

Farming requirements:

The cooperative approach follows four principles:

1. Cooperative: the involved parties work together closely and on a basis of trust
2. Knowledge-based: based on available scientific and practical knowledge
3. Value-based: the participants act voluntarily based on their values and convictions, taking into account the economic and ecological concerns in a balanced manner
4. Landscape oriented: measures to promote biodiversity take into account the natural as well as the site specific conditions

The conclusion of the cooperation agreement is a prerequisite for new or renewal of land leases. The objectives are formulated as intended improvement, with some specific targets e.g. reduced use of pesticides and minimum-standards concerning the share of high-nature-value vegetation spots. The implementation of the measures is to be tailored to the individual agriculture holding in view of long-term value creation and employment in the region. The farmers benefit from transparent lease criteria, connected to ecological (and social) aspects.

Controls / monitoring: Advisors perform an analysis of environmental deficits taking into account landscape-ecological aspects as well as the farm specific situation and give recommendations for the implementation of environmental and nature protection measures. There is no systematic control; however, the newly established association helps ensuring that farming is in line with cooperation agreement.

Conditions of participation: Land for lease is to be awarded to agricultural holdings willing to cooperate and which commit to farm the land according to the guidelines and the cooperation agreements. Nevertheless, over time cooperation between regional actors became more important than formal agreements in tenure contracts. The measures that have been identified for the agricultural holding to protect and promote biodiversity are formulated as recommendations for action. The implementation of these measures like the establishment of landscape elements, alongside with measures for water and soil protection, remains as far as possible voluntary and farms that are GAI members get support (e.g. through advice about funding possibilities and on technical aspects).

Risks / uncertainties for participants: There is a certain financial risk for the tenants, or at least a funding restriction as agri-environmental and nature protection schemes as well as compensatory measures in line with the German impact mitigation regulation are used for the implementation of practicable measures.

Contract features combination: Conventional and ecological farming are treated equally.

Framework conditions

Landscape and climate: The city of Greifswald is located in the northeast of Mecklenburg-Western Pomerania. The city is situated nearby the Baltic Sea, in the north of Greifswald are the islands Rügen and Usedom. The area is characterised by a flat countryside, rarely going 20 m above sea level.

Farm system: The proportion of rental land is about 80% in Mecklenburg-Western Pomerania. Besides the land owned by institutions there are many private land owners who rent out their land to farmers. 79% of the farmland in the region around Greifswald is arable land. Agricultural holdings with more than 300 ha dominate and half of the farms cultivate more than 500 ha.

The "agricultural initiative for Greifswald" aims at an overall sustainable land use, even though the plots owned by the participating institutions and rented to the farmers do only cover a more or less small part of their land.

Information / contact: https://gai-ev.de/

SUCCESSFUL CONTRACT SOLUTION

The sustainable land use could be successfully established as common guiding principle for the awarding of lease land in the region around the city of Greifswald. Through an intensive dialogue process it was possible to agree on a goal-oriented proceeding. All three institutional land owners (city, university, and foundation) have committed to conclude voluntary cooperative agreements with their tenants for an enhanced consideration of environmental and biodiversity aspects. It was possible to keep the process running after the initial project duration ended thanks to the setting up of an association.

Reasons for success

- The landscape-oriented approach puts the land ownership and the land management into a spatial context going beyond the borders of the agricultural holding and the property, enabling more demanding measures.
- The close involvement of the democratically-elected bodies of the institutional land owners in the cooperation process and the design of the sustainability criteria for renting land
- The process has been scientifically supported, without prejudging its outcome.

Temporary water body created by the ice age in wheat field

SWOT analysis

Strengths
1. Voluntarily assumed responsibility for the future development ('prospective')
2. Additional environmental performance on leased farmland

Weaknesses
1. Long lead time for decision-making processes in the institutions
2. Leasing payments an important source of income

Opportunities
1. Association for a long-term collaboration
2. Strengthening of the regional nature protection
3. In the longer run maintenance or even increase of the value of the land

Threats
1. Unequal power relation (institutional landowners, tenants)
2. Need for additional funding sources for the nature protection and environmental measures

Developments since 2020

- Successful establishment of the GAI association
- Biodiversity measures are based on a farm-specific concept developed with support of nature experts
- Farmers sign a self-declaration independently from the lease contract itself and engage to undertake efforts towards sustainable farming beyond the rented land parcels

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

Agro-ecological transition pathways in arable farming

Suitable strategies and incentive mechanisms for agro-ecological transitions are co-constructed with a local Multi-Actor Platform (MAP), putting a particular focus on result-oriented approaches. Participatory decision support tools are applied to assess the current environmental, economic and social situation of arable farms in Lower Saxony. The outcome is used to identify potentials for agro-ecological improvements.

Summary

In intensive arable regions like the Nienburg district in Lower Saxony the uptake of current agri-environment schemes is low and their performance unsatisfactory.
Nine arable farms are assessed using the participatory decision support tools SMART, Cool Farm Tool and COMPAS to better understand current sustainability issues and barriers in implementing agro-ecological approaches. A local Multi-Actor Platform (MAP) is established to identify possible pathways of agro-ecological transitions and to co-construct practice-validated strategies and incentives for the promotion of improved agro-ecological practices. Agro-ecological practices are adopted on specific parts of the farm if and where such practices fit best with the business plan of the farm. Result-oriented approaches will be developed on an experimental basis to foster farmland biodiversity and water protection using the toolkit to assess the environmental, economic and social performance of the innovative strategies at farm level (part of the German case study of H2020 project UNISECO).

Objectives

A local Multi-Actor Platform (MAP) is set up to:

- improve understanding of barriers and drivers of agro-ecological transitions
- co-construct novel and effective market mechanisms and policy instruments to improve the sustainability of intensive arable farming systems
- design result-oriented agro-ecological practices allowing to improve biodiversity and water quality while minimizing negative impacts on the economic viability

Problem description

In the district of Nienburg, Lower Saxony a high pressure on ecological sustainability in general and biodiversity loss as well as water pollution in particular persists. Land use is dominated by highly market-oriented farming with a high share of rented land. The experience with demanding agro-ecological practices is very limited. Cover crops are grown as greening measure and some farmers have established flowering strips, extensive field margins.

Data and Facts - Contract

Participation: 9 arable farms with 140 ha on average (100 – 200 ha, some with minor pig husbandry). Around 70% of the land is rented, in many cases on a short term. The farmers provide data for the sustainability assessment of their farms and engage in the local Multi-Actor Platform together with other local actors.

Further participation: The Thünen Institute of Farm Economics is coordinating the UNISECO project. It has the lead for this case study and is supported by the Chamber of Agriculture Lower Saxony. Further MAP members are farmers, value chain actors, advisory services, NGOs, and representatives of local and regional administration.

Cooperation & Result-oriented

Preparation of a result-oriented approach in collaboration with local actors to foster biodiversity and water protection based on the outcomes of the sustainability assessment.

PUBLIC GOODS

Biodiversity

Water quality

as well as environmental sustainability in general

Further PGs

Rural viability and vitality

LOCATION

GERMANY

The case study region is the district of Nienburg located in Lower Saxony, in the northwest of Germany. It is characterized by intensive arable farming and a high share of rented land.

CONTRACT

No contracts are signed.

Instead:
Participants engage in sustainability assessment and contribute to the co-development of strategies for an agro-ecological transition benefitting from result-based approaches.

Payment:
The participating farmers aren't paid by the project.

Project financing:
EU Commission (Horizon 2020 project UNISECO - grant agreement No 773901)

Project start: 1.05.2018
Project end: 30.04.2021

Duration of case study activities:
Local project activities started in spring 2019 and last for UNISECO until autumn 2020. But the experimental testing of result-oriented approaches will be explored beyond project time life.

Agro-ecological farming

- is based on the sustainable use of local renewable resources
- benefits from local farmers' knowledge and priorities
- uses wisely biodiversity to provide ecosystem services and resilience
- looks for solutions that provide multiple benefits (environmental, economic, social) from local to global

The participatory decision support tools:

SMART Farm Tool (Sustainability Monitoring and Assessment RouTine):

- multidimensional sustainability tool used to assess ecological integrity economic resilience, good governance and social wellbeing
- enabling the scoring of very different farm enterprises in a comparable manner through standardised collection of farm specific information
- allows to considers trade-offs and synergies between sustainability aspects

Cool Farm Tool:

- an online decision support tool to estimate the environmental impacts of food production
- started as an on-farm GHG emission calculator allowing farmers to gain insights into the potential emission reductions resulting from changes in farm management practices
- provides a simple, yet comprehensive GHG footprint for a broad range of farms
- today it contains also a water (quantity) and since recently a biodiversity module

COMPAS (Comparative Agriculture System Model):

- an economic performance assessment tool developed by the Thünen Institute of Farm Economics
- allows to analyse economic and technological changes of agricultural production at farm level in detail.
- output consists of various economic indicators including total output, labour productivity, net farm income
- in a first step used to analyse the status-quo of the farm; in a second step, specific model parameters can be changed and the outcome compared with the status-quo.

Controls/monitoring: There are no controls. The farming activities are monitored complementing the farm assessment with the decision support tools. Special attention is given to fertiliser, crop protection and soil management (e.g. precision application of fertiliser, cover/catch crops, flower/buffer strips, tillage practices, crop diversification). Therefore detailed documentation of one representative field for each crop grown including quantitative information about plant protection, fertilisation is required from each participating farm.

Criteria for farm selection: The focus was put on specialized conventional arable farms with 100 – 200 ha (some with minor pig farming). Half of the farmers aren't engaging in any agri-environmental measure, the others implement some agro-ecological practices like flowering strips, extensive field margins.

Risks/uncertainties: One uncertainty was about time required for the interviews for the sustainability assessment and for engaging in the MAP. The result-oriented approaches are still to be developed, thus participating farmers are not sure to be able to benefit from them.

Contract features combination: Some farmers and other MAP members have experience with water protection and biodiversity measures financed under the rural development programme of Lower Saxony (on minor farm area).

Framework conditions

Landscape and climate: The study area Nienburg in Lower Saxony belongs to the North German Plain, a flat region that was formed by glacial action characterized by intensive agricultural land use. The climate is maritime with considerable precipitation and mild winters. The river Weser flows from south to north through the district that comprises an area of approximately 83,100 hectares. 63% of it is agricultural land (83% arable), mainly with loamy or sandy-loamy soils. There are 1500 farms, 560 cultivating more than 50 ha.

Farm system: The case study targets arable farming and the average size of the participating farms is 140 ha. Around 70% of their land is rented. Some of them practice minor pig husbandry. The case study area is adjacent to intensive livestock regions with severe issues in manure management leading to issues regarding biodiversity loss and water pollution threats. The land (rental) prices are high. The crop rotation comprises cereals, rapeseed and maize.

Information/contact: https://uniseco-project.eu

SUCCESS

It could be proved that using the participatory decision support tools allows benchmarking the farms regarding their sustainability and to identify entry points for agro-ecological improvements. The willingness to engage in the MAP is core for a successful second step allowing the co-development of suitable agro-ecologic strategies adapted to local specificities. How far the outcomes of the participatory process can be used to develop result-oriented approaches benefiting water quality and biodiversity without harming the economic viability of the farms will be assessed in the forthcoming activities.


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Reasons for success:

- Recognition of the influential role of land owners for a agro-ecological transition in regions with high shares of rented land
- Reflection of the farm specific assessment to identify possibilities for environmental improvements
- Commitment and diversity of involved actors facilitating co-learning on how to effectively support agro-ecological transition

SWOT analysis

Strengths

1. Awareness of specific local environmental, farming and value chain initiatives
2. Integration of local knowledge to promote agro-ecological transitions
3. Co-learning and collaboration in the MAP builds trust amongst the actors

Weaknesses

1. Strong commitment and considerable amount of time required from participating farmers and MAP members
2. Consumers currently not directly represented in the Multi-Actor Platform

Opportunities

1. Reduced pressure on ecological sustainability
2. Possibility to build upon previous projects, MAP structures
3. Integration of information, knowledge and evidence strengthening the science-practice-policy dialogue

Threats

1. Missing remuneration; income foregone / additional cost rule for AECMs
2. Land rental agreement conditions and high land prices

Horizon 2020 European Union Funding for Research & Innovation

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Water protection bread

Actors of the whole value chain from the wheat producing farmers to the consumers are engaging in the initiative for groundwater and drinking water protection. The farmers renounce late fertilisation of their wheat fields and by doing so avoid nitrate leaching into the groundwater. The initiative encompasses a communication strategy targeted towards the consumers. It addresses the importance of clean water as well as the possibility to contribute to it by buying the so called 'water protection bread '.

Summary

The initiative called "water protection bread (Wasserschutzbrot)" that has been initiated by the government of Lower Franconia started in 2014 with one water supplier, one farmer, one mill, and one bakery. In 2022 there are 102 participants in 4 regions of Bavaria. The farmers deliver the wheat to the mills that are processing it to flour for regional bakeries, keeping it separated from other wheat. The participating bakeries engage to use this flour and make use of a special label. Eligible are farmers who farm land in drinking water abstraction areas from a public water supplier and/or in water sensible areas. They renounce late fertilisation of wheat that is heavily criticised from the point of view of groundwater protection and guarantee applying a maximum of 160 kg N/ha. This allows to significantly reduce the nitrogen surpluses in the soil and to avoid leaching into the groundwater. Wheat from selected varieties has good baking properties despite a lower protein content of 11-11,5% instead of 13%. A communication campaign targeted at the consumers is part of the initiative to inform about the importance of clean ground- and drinking water as well as the possibility to contribute to it by buying bakery products made out of this wheat.

Objectives

The aim is the protection of ground and drinking water through a sustainable and regional value chain. Reducing the nitrogen load in groundwater is hereby in the foreground.

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Problem description

Problems with the groundwater quality arise in areas with high agricultural intensity combined with low precipitation rates, a low groundwater recharge rate and in parts very shallow soils. The government from Lower Franconia has started the initiative as a response to it; today it includes as well Central and Upper Franconia.

Data and Facts

Participation: 42 farmers, 7 mills und 39 bakeries with approx. 120 selling points, 14 water suppliers (in 2021). The participating farmers cultivated 370 ha on which 2.500 t of wheat have been harvested.

Further participation: The governments of four regions in Bavaria, section water management; public water suppliers from the region; The Research Institute of Organic Agriculture (FiBL) Germany as external service provider.

VALUE CHAIN

farmer – mill – bakery – consumer and water supplier

PUBLIC GOODS

Groundwater quality

Climate mitigation - through less mineral fertilizers

Further PGs

Rural viability and vitality

LOCATION

Germany

The project area is located in the south of Germany in the Bavarian governmental districts Upper, Middle and Lower Franconia as well as Lower Bavaria. In Lower Franconia wheat is cultivated on one fourth of the arable land.

CONTRACT

No water protection bread contracts signed, but participants sign a voluntary commitment declaration

Private contracts outside of the initiative set the rules for the purchase of the products.

Payment:
There is no payment by the project to the participating farmers, mills and bakeries, but farmers get a fair price according to a pricing model for their wheat.

Project financing:
Bavarian Ministry of the Environment (project activities and communication strategy)

Duration of contract:
The commitment declarations are open ended.

Start: 2014

End: ongoing (financing secured until 2025)

The water protection bread

- bakery products from wheat with reduced protein content
- cultivation and use of selected wheat varieties
- separate storage and processing of the water protection wheat
- regional selling points

Farming requirements:

Farmers: project signs to be installed along the wheat fields; cultivation of selected varieties with good baking properties regardless lower protein content; ensure compliance with the required fertilizer conditions (max, 160 kg N/ha, no late fertilisation); ban on glyphosate from the harvest of the preceding crop onwards; regularly soil analysis from the participating wheat fields; a detailed field recording with all management practices

Mills: separate collection; analysis and storage of the wheat from the water protection fields; separate processing to flour; 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

Bakeries: The participating bakeries 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.

Controls / monitoring: Annual controls are performed. Farmers are checked for compliance with the conditions of participation either by the local water supplier or by FiBL as external service provider. FiBL does also carry out the controls of the participating mills and bakeries. In addition, the participants of the initiative committed to provide relevant information on a regular basis. For each calendar year the applied fertilizer amount as well as the harvested wheat yields, the amounts of milled wheat, and the wheat flour used in bakery products are recorded. The value of the remaining mineralised nitrogen in the autumn (Nmin value) is surveyed from the concerned wheat fields.

Conditions of participation: Even though the commitment declarations are not legally binding the signatories engage in respecting certain rules. For each of the three parties, farmers, mills, and bakeries, specific criteria have been defined in a participatory process.

Risks / uncertainties for participants: Actually there are more farmers willing to participate than can be accepted. The limiting factor is the number of participating bakeries and their demand for flour from the initiative. The purchase quantity is fixed every year in spring, so that the farmers know before the second fertilization how much they can supply to the participating mills. Participating farmers only grow a small part of their wheat on selected fields as water protection wheat. The bakeries are dependent upon a good selling of their bread and other baked goods prepared with flour labelled under the initiative.

Contract features combination: A number of farmers grow the water protection wheat on fields for which voluntary agreements exist with a water supplier; rented as well as owned land is eligible.

Framework conditions

Landscape and climate: The climate of Franconia is sunny, in the summer Lower Franconia belongs to the warmest areas of Germany. The precipitation is lower than could be expected in that geographical location; in particular in the rain shadow of the Franconian mountainous region, the annual precipitation can be as low as 500 mm. The soils are often shallow, nevertheless rich in humus. Due to the geologic conditions, already small nutrient surpluses from agriculture have negative effects on the groundwater quality. According to the Water Framework Directive, 50% of the groundwater bodies in Lower Franconia are in poor condition due to high levels of nitrate. The main cause is relative intensive agriculture regardless a low livestock density with only 0.4 livestock units per hectare on average.

Farm system: Usually participating farmers are purely cropping farmers doing conventional farming. They adapt their fertilizer application in order to respect the rules for the production of water protection wheat.

Information/contact: https://wasserschutzbrot.de/

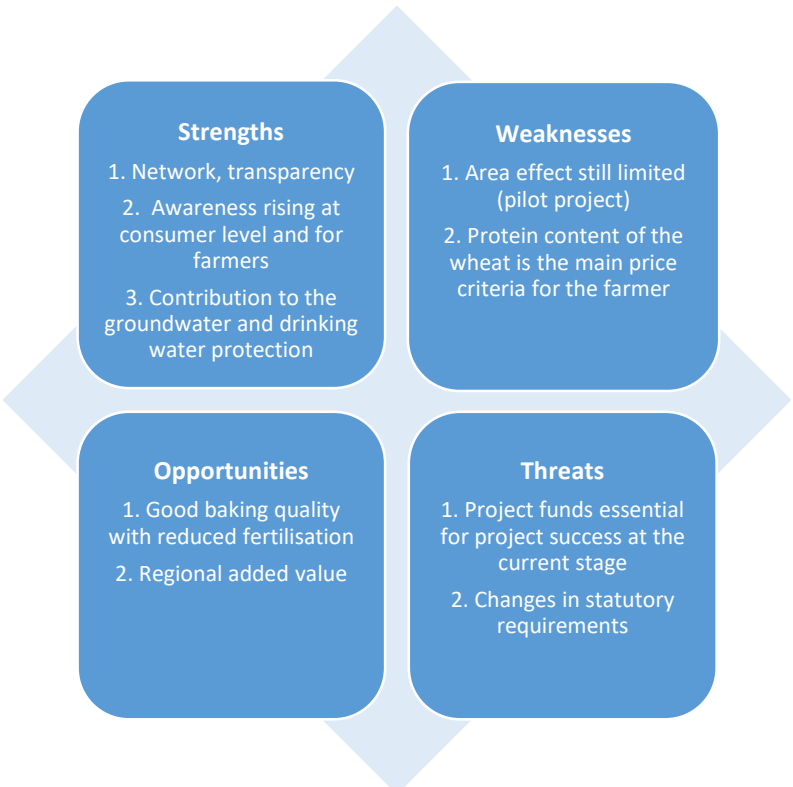
SUCCESS

The initiative is a successful example for environmental protection along the value chain. The number of participants has continuously increased since the start of the initiative eight years ago. There are more farmers willing to participate that are actually able to do so. Even if meanwhile more than 100 selling points are offering bakery products produced with the specific wheat flour, still the market for bread wheat with reduced protein content is rather limited. Nevertheless it was possible to reduce the content of mineralised nitrogen in autumn by 30% on the participating fields and to save 25.900 kg of nitrogen.

Reasons for success:

- Focus on regional value chains
- Accompanying communication strategy, for example through the slogan 'Regional and water-friendly'.
- In parts long-term contractual relationships between the farmers and the participating mills

SWOT analysis



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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Water legislation as driver for action:
The European Water Framework Directive (WFD) alongside with the Nitrates Directive, and hereby in particular the requirement to achieve or maintain the good quality of groundwater and the sensitive drinking water situation were decisive for the start of the water protection bread initiative.

Complementary voluntary activities:
Bavaria has decided to establish water protection cooperations with farmers in drinking water protection areas. The water protection bread initiative builds upon such cooperations.

Political 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.

Good bakery quality properties even with lower protein content:
Breeding efforts resulting in new wheat varieties alongside with the development of novel tests for flour quality made it possible.

Securing water supply with decentral structures:

In Bavaria the provision of drinking water is mainly under the responsibility of municipal water suppliers. A low groundwater recharge rate in combination with nitrate leaching during autumn and winter are significant risks for a good water quality. Costly chemical treatment becomes necessary if the nitrate content is beyond the permitted level of 50 mg is and should therefore be avoided.

Developments since 2020

- Territorial expansion of the initiative
- Increase in number of participating farmers, mills and bakeries
- Growing consumer recognition through intensive communication work
- Several prestigious awards for bread made out of the flour from water protection wheat
- Recognition reduced fertilization does not only benefit water protection, but is also a climate mitigation measure
- The initiative has kick started preliminary discussions about a possible revision of German quality criteria for bakery wheat

Additional page added June 2022

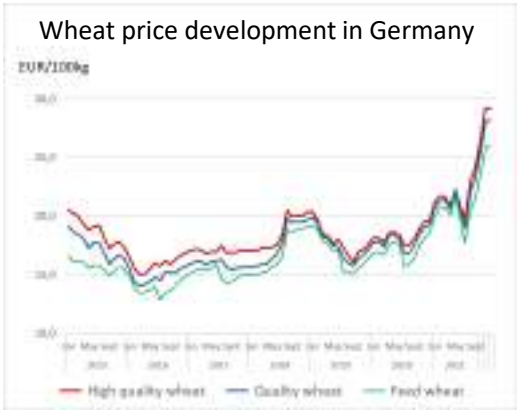
CONSOLE scientific analysis – results and recommendations

Wheat with reduced protein content for bakery purposes - feasibility and profitability alongside with water benefits

Research idea and question

Quality wheat production is characterized by high levels of nitrogen application in order to reach a high protein content, including a late fertilization. The current standardized pricing system is protein content based with high quality wheat > 14% and quality wheat >13% protein content.

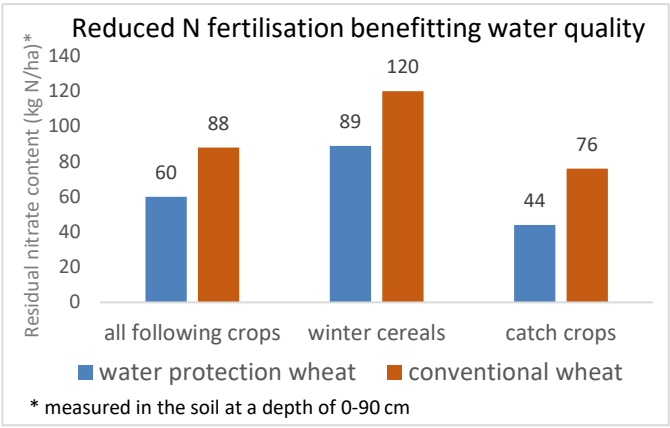
Renouncing the most harmful late fertilization benefits water quality, but requires value chain contracts to maintain farmers' profitability.



Source: Agrarmarkt Informations-Gesellschaft mbH (AMI)

Methodology

- The value of the residual nitrate content has been measured in autumn after wheat harvest making a distinction between soil covered by winter cereals or catch crops.
- 118 wheat fields from 31 farmers were sampled in 2020
- 96 plots were grown under the regime of water protection wheat and 22 under conventional farming



Source: Report „Monitoring-Programm Wasserschutzweizen 2020", GeoTeam GmbH 2021

Main results

For the water protection wheat production the residual nitrate was one third lower in autumn compared to the conventional farming resulting in around 25 kg nitrogen per hectare less with lowest leaching under catch crops. In the typical wheat-growing areas of Franconia, this leads to a reduction of the nitrate content in the leachate by 30 to 35 milligrams per litre.

Recommendations

- The extension of contracts along the wheat value chain for bakery purposes with sustainability requirements beyond the pilot area would allow to significantly reduce the risk of nitrate leaching to groundwater without endangering wheat production for bakery goods.
- The selection of breeds with high nitrogen and protein efficiency and good bakery characteristics is crucial in order to ensure farmers' acceptance.

Additional page added June 2022

Forest conversion from coniferous to deciduous stands - an eco-account case

The environmental restoration of a private forest in Krailling, Bavaria is undertaken as an eco-account offsetting scheme under the German Impact Mitigation Regulation. Hundred hectares of forest are ecologically upgraded while maintaining the subsurface industrial use. Nature enhancement of forest aisles complements this measure.

Summary

The main focus of this initiative is to increase the percentage of deciduous trees through reforestation, forest restructuring and a targeted promotion of native trees in view of enhanced species and habitat protection. Ecological forest conversion takes place in a damaged coniferous forest of 252 hectares in the municipality Krailling in Bavaria. A mainly subterranean industrial use is combined with the creation, upgrading and enlargement of important habitats for wild plants and animals. Thanks to the recognition of the enhancement activities on approximately 100 hectares as private eco-account scheme, the forest conversion is eligible as anticipated offsetting measure. An entry into the land register at the moment when developers make use of the already implemented eco-accounts measures to offset impacts arising from their projects secures the long-term preservation of the forest. The creation of an oak and hornbeam forest associated with wild fruit is complemented by the creation of forest aisles and nutrient-poor grassland in-between the forest pieces.

Emblem of Krailling

Objectives

Biodiversity protection in the long run through:

- development of a private eco-account in southern Germany that is by its surface one of the largest ones
- long-term preservation of a mosaic of forest pieces and nutrient-poor forest aisles
- compatibility of industrial use and high ecological value in one area

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Problem description

The hurricane “Niklas” caused severe damages in the forest on 31st March 2015. Bark beetles damaged the coniferous trees further. This was taken as an opportunity to schedule a large- scale forest conversion. No public funds are available as the forest is declared as a special area due to the industrial use with tank storage facilities in the underground. The idea to create an eco-account was born to enable the forest conversion in direction of the natural forest cover.

Data and Facts

Participation: The company named "G1 Krailling Real Estate GmbH" is owner of the 252 ha site with its forest since 2016. The operator of the tank storage facilities is supported for the forest area by the cooperative named in.Silva eG.

Further participation: The owner of the site was supported by the department for Food, Agriculture and Forestry (AELF) Weilheim, the Upper Bavaria's regional government and the local nature protection authority (UNB) of the Starnberg County. The development of the eco-account is supported by AGL (company for land use planning) that prepared the expert report.

COOPERATION

The collaboration between a private forest owner and the nature protection authority enables the long-term protection and ecological enhancement.

PUBLIC GOODS

Biodiversity

Soil protection

Climate protection

Further PGs

Reduction of landscape consumption due to ecological enhancement alongside with industrial use.

LOCATION

GERMANY

The project area is located in Bavaria, in the southwest of Munich and belongs to Starnberg County. The site is important for the protection of endangered wild animals and plants and habitat connection.

CONTRACT

Contractual agreement with the nature protection as well as the forest authorities for recognition of the private eco-account.

Financing:
Private pre-financing for the eco-account measures in the forest; refinancing through private and state construction and infrastructure projects.

Payment:
The price setting for the eco-points in the eco-account is based on the cost for the nature preservation measures. Hereby supply and demand on the market of eco-points determine if developers make use of it.

Start: 2019 start of the planning of the eco-account measures

End: ongoing (long-term management and conservation of the eco-account site)

Advantages of eco-accounts

- Planning becomes more flexible and the application of the German Impact Mitigation Regulation is facilitated.
- Economies of scale when implanting the measures due to the large size of the area.
- Possibility to integrate the measures and surface into an overall nature protection concept, e.g. a habitats network.

Development and use of the eco-account:

- The forest owner performs the forest conversion on his own expenses and therefore he acquires eco-points.
- The eco-points are based on the calculation procedures fixed for Bavaria depending upon the measures performed.
- Single forest areas are assigned to forest conservation, thinning and targeted promotion of particular tree species.
- As soon as a developer makes use of the eco-points, an easement for the corresponding forest area is entered into the land register for a permanent safeguarding of the environmental improvement.

Map of the parcels to be upgraded

Through the establishment of the large-scale eco-account it is possible to steer developers' obligation to offset environmental impacts resulting from construction and infrastructure projects on a site that is particularly important for species and habitat protection.

Controls/monitoring: A multi-step verification is undertaken. First, the planned ecological enhancement needs to be recognized by the specialized public authorities; once the forest conversion is done, an on-the-spot check verifies if the measures are in line with the ecological planning as foreseen in the expert report. Finally when the eco-points are used, the situation of the area concerned is once again controlled before the land registration is done.

Conditions of participation: The development of an eco-account is only possible if from a nature conservation perspective an enhancement can be achieved and if corresponding measures are undertaken after approval by the nature conservation authority. In principle all developers – private and public – can make use of the eco-account, including the private owner of the eco-account himself.

Risks/uncertainties for participants: The setting-up of the eco-account and the implementation of the ecological measures is done on the expenses and risks of the land owner. An uptake of the compiled eco-points is not guaranteed. Due to the proximity to the Bavarian capital Munich and the fact that constructions and investments are foreseen in the region (inter alia in connection with the extension of the freight transport by railway) it is likely that there will be a demand.

Contract features combination: It is foreseen to also enhance the forest aisles and the grassland ecologically, including grass stripes along pathways and pipelines on the site with the tank storage facility. The project is foreseen on 35 ha using financing from the Bavarian state programme "BayernNetzNatur". This programme puts a particular focus on interlinking habitats and its key principles are the voluntary nature and the cooperative approach. The sustainable and environmental friendly use of the areas between the green corridors, here the forest pieces, is a precondition. This is the case thanks to the ecological enhancement foreseen as eco-account measures.

Framework conditions

Landscape and climate: The eco-account area is located in the landscape protection area named "Kreuzlinger Forst". The objective of the protection is to maintain, restore, protect and connect not only the areas grown with heather, but all dryland areas in the west of Munich. As the eco-account area has been used as subterranean tank storage facility since the mid-1930s, the site was inaccessible for the public and wild animals could live there relatively undisturbed. Along the unused railway lines and sunny waysides thermophilic plants and animals have settled that benefit from forest conversion and in particular the ecological enhancement of the open land.

Production system: The area afforested with coniferous trees has been used for silvicultural purposes. Besides there are areas that are more characterized by deciduous trees, and individual old trees have been preserved, including over 100 year-old oaks.

SUCCESS

For the eco-account Krailling the formerly typical oak and hornbeam deciduous forest with wild fruit trees like wild cherry will be re-established on a 100 hectares large area. The planted and preserved deciduous trees contribute to climate protection through carbon sequestration in the biomass besides being an important habitat for rare and protected species. Due to the special use of this site and the exclusion of the public, wild animals prone to disturbance can successfully settle and propagate.

Reasons for success:

- Avoiding compensation measures that are in conflict with agricultural objectives in a prosperous region with high land sealing.
- High demand for eco-points in the region, making it likely that the forest conversion area will rapidly be secured on a permanent basis by entering into the land register.

SWOT analysis

Strengths

1. Establishment of a coherent area that is valuable from a nature conservation perspective
2. Privately organised nature protection

Weaknesses

1. Complex planning and related costs
2. Forest conversion requires huge forest areas as the allocation of eco-points is relatively low

Opportunities

1. Long-term preservation of valuable forest habitats
2. Combination of climate and nature protection
3. Implementation of complex, but coordinated measures

Threats

1. Acceptance of nature protection regardless special industrial use
2. Weather risk during conversion to deciduous forest

Horizon 2020 European Union Funding for Research & Innovation

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Cooperative rice production in coastal wetlands in Southern Spain

A value-chain related contract solution, where rice with higher standards is produced (integrated production of selected varieties). In the case study, rice producers are associated and work together to produce rice in partial and full organic production of high standards.

Summary

In the case study, an association of 1100 farmers created in 2005 (Arrozua) provides a foundation for the producers to produce and market rice with higher quality. These farmers represent a production of about 13.000 ha. The Arrozua program covers almost the entire value chain, from the rice farmers to the storage, the processing plant, the sale to the end customers, everything is organized under the Arrozua brands (i.e., the Doña Ana and El Ruedo labels) and the white labels that are commercialised by Spain high value retailers (e.g., El Corte Inglés). Since 2010 Arrozúa sells online. The rice producers get fixed prices for the rice in average 16% higher than the globally imported rice.

Objectives

The contract between the rice producers and the association (Arrozua) leads to a higher provision of the following public goods:

- landscape and scenery (preservation of managed wetland)
- Biodiversity: The Arrozua program requires a limitation of agro-chemicals applied and maintenance of flooding to preserve biodiversity of migrating birds from Africa to Europe,
- rural viability and vitality (secure economic viability of the farmers in the Doñana region through the sale of rice with fixed prices).

1. Preserve coastal wetland and secure biodiversity conservation
2. Secure economic viability of the farmers in the Donana region
3. Secure high production standards according to consumer preferences

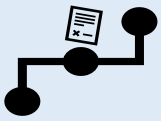
Rice production integrated into the value chain by the Arrozua cooperative. Source: Arrozua cooperative, 2019

Problem description

The sustainability of rice production in coastal wetlands is jeopardised by four main threats: water scarcity, decrease in financial support from the CAP, competition for water to preserve biodiversity, and future climate projections. Current policies are insufficient in response to these kinds of threats and concerns, since they do not consider collective action or time scale. Most local and regional actors are only concerned about the three first threats, and consider the need to deal with climate change as very low priority. In contrast, this last threat is the main focus of international actors.

The high degree of collaboration between producers could be sufficiently important to define new collective action policies and contract solutions to preserve biodiversity. It will be important to incorporate public opinion into the processes of developing contract solutions, since the public opinion is fundamental in the area of the case study.

VALUE CHAIN



farmer – cooperative - distributor - store - consumer

The participation in the practice-based payment is conditioned by the membership to the cooperative Arrozua

PUBLIC GOODS

(Farmland) biodiversity

Landscape and scenery

Rural viability and vitality

Quality and security of products

Cultural heritage

Resilience to natural hazards

CONTRACT

It is a private-private contract.

Financing party:
Market sector-oriented

Contract conclusion:
Written agreement

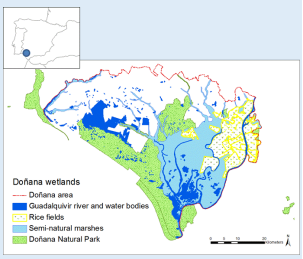
Payment mechanism:
Product price

Funding/Payments:
The farmers collectively fund the cooperative.

Start of the program:
2000
End: open end

LOCATION

SPAIN



Source: A. Iglesias

Data and Facts - Contract

Participation:

- Number of farms: 1100 farmers
- Area of implementation: 13000 ha
- Other participants: retail stores

The area adjacent to the case study is the Doñana National Park with 54252 ha.

Involved parties: The contracting parties are on the one hand the participating rice producers. The producers are organized in an association (Arrozua) founded 2000. The association consists of 1100 members (land owners). The members deliver their rice to the Arrozua cooperative. Arrozua has a drying plant and a storage plant. They organize the drying, processing and selling of the rice. All this is done under the different rice commercial brands and some white label brands on high-end retail stores. A part of the Arrozua rice is also sold directly to private consumers online. Since 2010 the Arrozua farmers can be certified according to integrated production criteria that guarantees low input agriculture while they do not meet the standard of organic agriculture. The Arrozua brand is an economic factor for the whole region. It also influences the tourism sector, because rice is very important in the local gastronomy. In the end the Arrozua rice reaches the consumer in form of high quality rice.

Cooperatives are organizations managed under the principle of collective ownership and the democratic control of members, as well as the tracking of adherence to common values and cooperative principles. Their strength is based on the existence of common interests, the joint interests of the members in pursuing the objectives of the cooperative (economic, social and environmental) and in the steadfastness of the established relationships (objectives and commitments, relations among members, and interaction among members and the Management Board). Agricultural cooperatives are an important tool for the survival of rural areas, competing against current trends in business concentration and maintaining social cohesion.

Rice production in the managed coastal wetlands near the Doñana National Park. Source: Arrozua cooperative, 2019

Advantages of participation:

- Rice producers – they produce with integrated production label and guarantee the selling each year to the Arrozua cooperative. They receive a fixed price and their product is dried and stored.
- Arrozua cooperative – They receive a stable amount of good quality rice that they distribute to high end retailers.
- Retailers – they receive a stable production of high quality rice on two labels and also they can use a retail white label.
- Consumers – they receive high quality rice

Management requirements for farmers: The Arrozua farmers require certain farming conditions. During the growing season (middle of April to October) the rice is inundated. The Arrozua farmers cultivate with minimum agrochemicals in a way called integrated production. The water is left in the fields an extra month to serve as habitat for migratory birds.

Controls/monitoring: In the Case Study, agro-chemicals applied are monitored at least once a year. The costs of inspection are covered by the Arrozua cooperative, and are indirectly paid by the farmers that are members of the cooperative.

Renewal / termination: Termination, by exiting the cooperative or failure to produce in an integrated production way.

Conditions of participation: to be a member of the cooperative.
Risk/uncertainties of participant: Price risks is high since the price is partially set by the international market
Links to other contractual relationships: So far, rice farmers in Doñana received approximately 1,670 €/ha as public subsidies (within the framework of the CAP) and if they met the integrated production commitment that includes a group of best management practices, they also received 398 €/ha. Currently, rice farmers will have to meet the measures included into the CAP greening to perceive the equal subsidies. Thus rice production can be considered profitable for farmers since the average cost of producing rice in Doñana is over 1,496 €/ha (reduced due to a highly mechanized agricultural system and higher education training of farm managers that implement precision agricultural methods) and rice price usually ranges between 2,000-2,200 €/ha on average.
Product requirements: Rice is planted only under irrigated conditions, in medium to large and highly mechanised farms. Direct seeding by broadcasting is the popular method of crop establishment. Rice crops are applied with adequate rate of fertilizers and other agro-chemicals for crop protection. The development and transfer of integrated rice crop management system has increased rice yield during the recent past. Rice varieties belong to japonica and Indica subspecies. Since the 2000s, the areas sown with the indica varieties has gradually been on the increase, and today they cover almost 90% of the rice growing area. The L-202 variety, also known as Thaibonnet, is almost the only Indica type cultivated in the marisma area. Thanks to the exceptional weather conditions, more than half of the long grain Indica type rice produced in the European Union are of Andalusian origin. The Cooperative Arrozua accepts both indica and japonica varieties, however, it requires a quality defined by: morphological uniformity and physicochemical characteristics.

Doñana coastal wetlands provide an exclusive habitat for migration of birds and rice provides crucial services. Source: Arrozua cooperative, 2019

Context features

Landscape and climate: The Doñana region is a coastal wetland in the Guadalquivir River Basin District of Southern Spain, where water is shared among the natural and the artificial wetlands. The recent high temperature and drought episodes are influencing the view of local communities about the need for adaptation in the Doñana natural ecosystems and agricultural systems. The water district is already under environmental pressure, the coastal vulnerability to sea level rise is high, and the potential increase of irrigation demand is very high.
Farm structure: The semiarid conditions and the salinity of soils make the cultivation of many other crops difficult in the rice area. The flooding irrigation system allows tolerable levels of oxygen, temperature and salinity for growing the rice (maximum concentration of 2g/l of salt in the water) whilst avoiding the emergence of a saline crust in the top soil. Further, the sea intrusion increases largely the salinity of the water in the estuary and the Guadalquivir Basin Authority has to provide for dam releases upstream from the rice area to improve the quality of irrigation water. The Doñana coastal wetland is a complex socio-ecological system where the rice production and the wetland ecosystem show a great dependence on water and climate and any change of these factors may alter the state of the environment and local livelihood security.

Information/contact: https://arrozua.com/

SUCCESS? Reasons for success

The solution is a success. Cooperatives are organizations managed under the principle of collective ownership and the democratic control of members, as well as the tracking of adherence to common values and cooperative principles. Their strength is based on the existence of common interests, the joint interests of the members in pursuing the objectives of the cooperative (economic, social and environmental) and in the steadfastness of the established relationships (objectives and commitments, relations among members, and interaction among members and the Management Board). Agricultural cooperatives are an important tool for the survival of rural areas, competing against current trends in business concentration and maintaining social cohesion. The farmers in Doñana benefit from collective production and the scale economy since the XIII century.

Reasons for success:

1. The Cooperative program provides an alternative for the farmers to the less profitable value chain in the global competitive market.
2. The rice production in the Doñana region has a long tradition and the area is very suitable for this type of farming.
3. The initiative for the Cooperative program was from the rice farmers themselves and they organised themselves by means of a cooperative association (Arrozua).

SWOT analysis

Main Strengths

1. Farmers organize themselves in a cooperative (Arrozua) since 2000 that provides drying, storage and marketing
2. The rice fits well into the region and agriculture.
3. The Arrozua rice and marketing brands continue to develop and respond to the environmental requirements of the population and the desire for online trading.

Main Weaknesses

1. All rice produced by farmers is delivered to one client (the Cooperative)
2. Disadvantage for the possibility of direct marketing

Main Opportunities

1. The Arrozua rice can be marketed as a symbol of the region and the Doñana region and the Doñana Natural Park
2. Tourism is very strong and therefore the preservation of the landscape is of great interest

Main Threats

1. Dependence on a single buyer (Arrozua)
2. Development of the demand of rice in Spain
3. Increasing risk of water shortages and salinization

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Organic wine in Rueda, Spain (Rueda)

One contract about provision of organic grapes; the initiative is connected to specific labels, advertised to the domestic and export markets, to enhance the image of the company. The overall target is to expand organic wine production in an emblematic area that influences greatly the Spanish wine market.

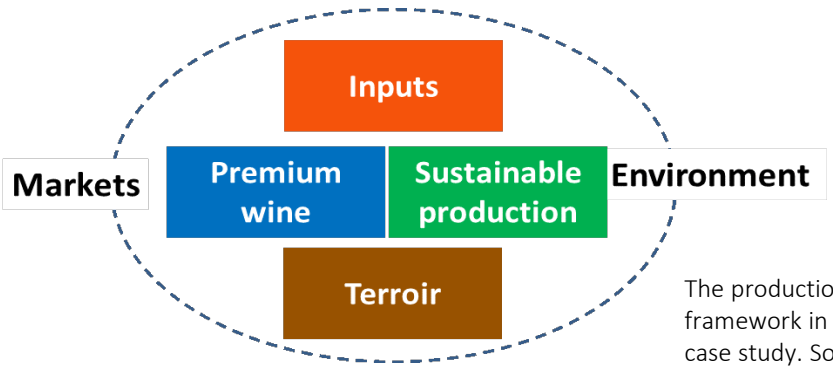
Summary

It is a value-chain related contract solution, where only grapes produced ecologically are bought by the winery Herederos del Marqués de Riscal, S.A (from now on, Riscal), to produce two selected varieties: MARQUÉS DE RISCAL ORGANIC and MARQUÉS DE RISCAL SAUVIGNON BLANC ORGANIC.
In the Rueda case study, 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.

Objectives

The contract between the grape producers and the winery (Riscal) leads to a higher provision of the following public goods:

- landscape and scenery (preservation of wineries)
- protection of endangered species of birds
- rural viability and vitality (secure economic viability of the grapevine producers in Rueda region through the sale of grapes with a higher price than the non organic producers).
- secure high production standards according to consumer preferences



The production framework in the case study. Source. A. Iglesias, 2020

Problem description

The Rueda case study is located in the Duero River basin in northern-central part of Spain, where it occupies an area of 280,000 ha and currently grapewine is grown in almost 15,000 ha. Rueda belongs to the Mediterranean Continental pedoclimatic zone. 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. Wine production in the area in Rueda, is challenged by four main threats: water scarcity, decrease in financial support from the CAP, frost and future climate projections. The sustainability of wine production in the area is dependent on organic production that is becoming more attractive to consumers and with very high demand for export. The Rueda region offers a great possibility for organic production since the limited summer rainfall guarantees low incidence of diseases, especially mildew, therefore if the crop is adequately managed, does not require pesticides. Riscal is a leading company for innovation for organic production in technology and commercially. The producers also plant trees in the edges of the fields to comply with the greening measures of the CAP.

VALUE CHAIN

farmer – winery - distributor - store – consumer

The participation in the practice-based payment is conditioned by the organic production that is strictly controlled by the winery

PUBLIC GOODS

Landscape and scenery

(Farmland) biodiversity

Rural viability and vitality

Quality and security of products

Specific environmental benefits through maintenance of habitats for migratory birds, such as Avutardas, and includes an official special zone to protect birds (ZEPA de "La Nava-Rueda")

INDIRECT EFFECTS

Cultural heritage

Soil quality (and health)

Climate regulation – carbon storage/ greenhouse gas emission

Water quality

CONTRACT

It is a private – private contract.

Financing party:
Market sector-oriented

Contract conclusion:
verbal agreement/ handshake

Payment mechanism:
Product price

Start of the program:
2010
End: open end

Data and Facts - Contract

Participation:

- Number of farms that sell to Riscal: 100 farmers
- Area of implementation: 400 ha
- Other participants: retail stores

Involved parties: The contracting parties are on the one hand the participating individual grape producers. The producers deliver their grapes for wine to the Riscal winery. Riscal is a winery that produces, bottles, and sells wine. All this is done under two wine commercial labels. A part of the Riscal wine is also sold directly to private consumers online. Since 2014 the Rueda grapevine producers that sell to Riscal, are certified according to Organic criteria. The Riscal brand is an economic factor for the whole region. It also immensely influences the tourism sector, because Rueda wine is very important in the local tourism and gastronomy. In the end the Riscal wine reaches the consumer in form of high quality wine.

Advantages of participation:

- Grapevine producers – they produce grapes with organic certification and guarantee the selling each year to the Riscal winery. They receive a fixed price and their product is transformed into wine of two high value labels.
- Riscal – They receive a stable amount of organic grapes that transform, bottle and distribute to high end retailers, restaurants and exports.
- Retailers – they receive a stable production of high quality wine of two labels.
- Consumers – they receive high quality wine

Management requirements for farmers: Organic production.
Controls/monitoring: strict control by the certification authorities
Risk/uncertainties of participant: increase of mildew and climate change
Product requirements: Organic certification, grapevine quality for premium wines

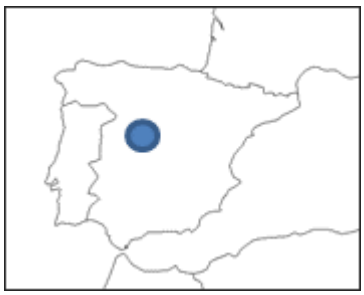
Verdejo

Sauvignon blanc

Grapevine varietites grown.
Soure: V. Sotés, 2001

LOCATION

SPAIN



The Rueda case study is located in the Duero River basin in northern-central part of Spain

Context features

Landscape and climate: Rueda is a Spanish Denominación de Origen Protegida (DOP) for wines located in the Community of Castile and León. It comprises 72 municipalities, of which 53 are in the province of Valladolid, 17 are in the north of the province of Segovia, and 2 are in the north of the province of Ávila. It is one of Spain's leading wine regions, and is known primarily for its white wines based on the Verdejo grape. The climate is continental (long hot summers, cold winters) with a certain Atlantic maritime influences. Temperatures vary widely and can drop below zero in winter (-1 °C) and can reach 30 °C in summer, which is not as high as similar wine-producing regions in southern Central Spain. There is a risk of frost, freezing fog, high winds and hailstones in winter/spring. On the other hand, there is only a very small possibility of drought. Normally it rains in spring and autumn, with an average rainfall of 400 mm/year, while the vines receive 2,700 hours of sunlight per year.

Farm structure: Grapevine is a monoculture since it is a permanent crop. Trees are planted along the edges to the fields to increase carbon sequestration

Information/Contact: https://www.marquesderiscal.com/storyeng.php?id=27

SUCCESS OR FAILURE?

Very successful and expanding

Reasons for success:

- Preferred choice to national consumers and excellent choice for exports
- Knowledge transfer between organic producers

SWOT analysis

Main Strengths

1. Farmers sell to a high value winery since 2010
2. The grapevine production is a premium choice in the region and agriculture
3. The brand continues to develop and responds to the international requirements of the population and the desire for organic products

Main Weaknesses

1. Risk of increased mildew
2. Risk of increased humidity during the warm season

Main Opportunities

1. Riscal can be marketed as a symbol of the region of Rueda
2. Tourism is very strong and therefore the preservation of the landscape is of great interest
3. Farmers are trained in the organic production that is a lasting advantage for them in any case

Main Threats

1. Increase of pests and diseases due to climate change
2. Increasing risk of water shortages due to climate change

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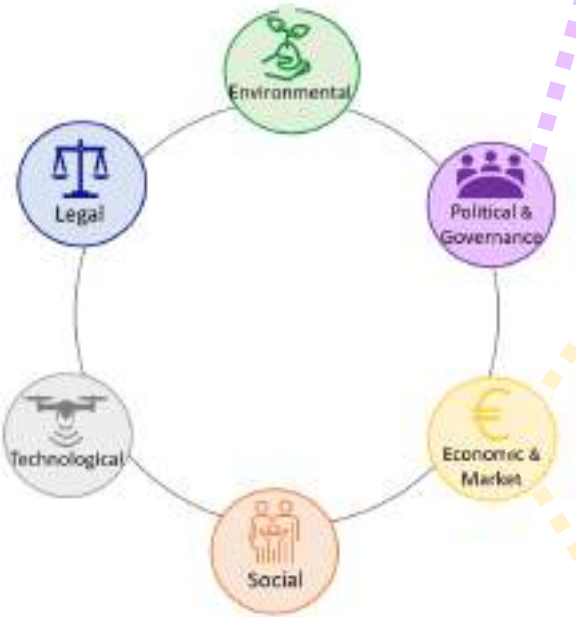
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

In the system of organic wine production in Rueda, 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.

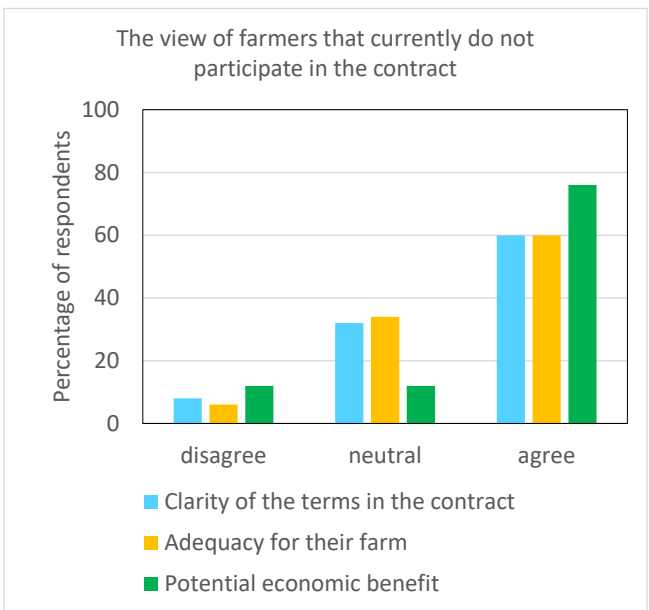
The production of organic wine in Rueda builds on the **trend set by RDPs**, incentivising organic farming. Although **the particular trigger for success are the marketing initiatives of the winery Riscal,** without the RDP, organic farming would most probably not be implemented as widely.



The environmental option is just economically more feasible:

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.

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.



Developments since 2020:

In the last two years, the contract for production of organic wine has expanded greatly due to the increasing demand and the clear understanding of producers and industry. Farmers not participating in the contract have a very positive view of the benefits (as shown in the figure on the left).

Additional page added June 2022

Monitoring and boosting environmentally beneficial practices in the olive grove within the framework of the new CAP measures

There are several technologies with potential application for key soil and environmental variables. These variables are included as potential indicators of eco-schemes and, as well, application of best practices. In the present case study, different approaches based on Copernicus will be evaluated and tested for monitoring of best practices under the new CAP.

Summary

The combination of Sentinel satellite imagery, spatial software capable of analysis and assessing the eligibility of features and land uses based upon probability assessments and geotagged photography under controlled conditions together present the opportunity to minimise the need for traditional on-the-spot controls. The benefits of this approach will be multiplied if this data collection process occurs in synergy with other digital technologies, such as crop monitoring and yield forecasting, bringing greater efficiencies to farms. Soil Organic Carbon (SOS) and Soil moisture will be evaluated under the potential eco-schemes from the new CAP.

Objectives

Soil resources can be managed to help mitigate climate change, to increase agricultural production and to maintain soil quality. Land management can influence Soil Organic Carbon being the main component of Soil Organic Matter. Soil formation can be influenced by temperature, moisture regime, soil properties and their interaction with soil biota. The main objective is the monitoring of SOC changes in olive groves under beneficial practices as key variable for soil quality status and to help mitigate climate change.

Problem description

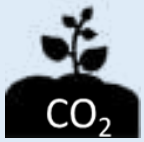
The Integrated Administrative Control System (IACS) introduces specific regulatory requirements and technological tools (Geo Spatial Aid Application, LPIS, etc). The current IACS incorporates different databases (farmers' register, animal register, LPIS, entitlement register, claim databases) but not a methodology to monitor agricultural beneficial practices. In the draft IACS legislation for the new CAP, there is the possibility of introducing data and monitoring systems using Copernicus/Sentinels satellite data or equivalent. Currently, there are several reports on the potential for the use of technologies such as satellites, drones, artificial intelligence, which would support a large part of these tasks, reducing costs in transporting technicians to the plots and increasing the number of plots to be monitored. However, if these types of technologies are not facilitated and supported by policies, they can hardly be widely implemented. The methodology developed by Evenor-Tech is based on MicroLEIS and Carbosoil model, and earth observation techniques for monitoring water retention. For that, validation in-situ model with EO services will be carried out considering tillage management variables (plantation system, vegetation cover, and residues). The final step is developing pedotransfer functions for finding relationships among indicators for soil carbon content and soil water retention and bands or indexes from Sentinel.

OTHERS

Monitoring of environmental performance using novel technologies

PUBLIC GOODS

Soil quality (and health)



Climate regulation-carbon storage

Rural viability and vitality

INDIRECT EFFECTS

Water quality, climate regulation, biodiversity, soil fertilisation.

LOCATION

SPAIN
Andalusia

CONTRACT

The contract can cover the whole farm or only single parcels depending of surface declared. It is based on public funding by the government (with EU-cofunding). It is a public-private contract between the administration and the farmers.

Contract conclusion:
Via online platform

Payment mechanism:
Subsidy

Funding/Payments:
The financing is provided through direct payments and agri-environmental aid to olive farm holders participating in the voluntary measures set in line with the Common Agricultural Policy. However, regarding the potential eco-schemes in the new CAP, new contractual relationship could be monitored through remote sensing related to promotion of public agri-environmental goods.

Length of the contract:
open-end

Data and Facts - Contract

Participation: With just over 1.52 million hectares, the olive cultivation occupies more than 30% of the agricultural area of Andalusia, acquiring an important importance in the province of Jaén, the south of Córdoba, the northwest of Granada, the north of Malaga and the southeast of Seville. Currently, more than 240.000 has were declared under CAP payments. A total of 30 farmers will be targeted in collaborate during the project, related with ASAJA members, attending to crop management, payments received and others variables.
Involved parties: The contracting parties are on the hand the participating farmers. The main participants in the case study will be from the ASAJA network. Most of them apply beneficial practices in their olive groves (in some cases under integrated production also). Another involved part is the regional administration and payment agencies. They are responsible to check the correct tasks declared under the CAP. Currently, the methodology for the on-the-spot controls is based on a first analysis by satellite image (mainly crop identification and surface declared).
The benefits for land managers or farmers: Maintaining of soil quality, greater competitiveness. In the end, the final product reaches the consumer in form of high quality oil or olives.
The benefits for administration: Maintaining rural activity and less on-the-spot controls.
Management requirements for farmers: Real exploitation of plots, real agricultural activities.
Controls/monitoring: Each year a monitoring/certification of the activity of the plots carried out through the registration of documentation, control of the plot, etc.
Conditions of participation: Participants have to be active farmers eligible to be beneficiaries of direct payments and agri-environmental aid. In the Spanish case, one of these three criteria must be met: that the annual amount of direct payments is at least 5% of the total income obtained from non-agricultural activities in the most recent tax period for the that such evidence is available; that their agricultural activity is not insignificant, on the basis that their agricultural income other than direct payments is 20% or more of their total agricultural income in the most recent available tax period; or thirdly, for legal persons or groups of natural or legal persons, that within their statutes it appears, before the end date of the period of modification of the application, the agricultural activity as its main corporate purpose.
Legal status of the contracting parties: Individual farmers and legal persons
Risk/uncertainties of participants: Errors in controls and payment reductions

Context features

Landscape and climate: The olive groves in the Andalusian case study are characterized by varying soils (Regosols, Cambisols, Vertisols, etc). The climate is sub-continental Mediterranean characterized by cold winters and warm summers.

Farm structure: It is aimed at those farmers who really have active productions and carry out an economic activity. Regarding potential eco-schemes (soil protection, climate regulation), the possibility is also sought that eco-scheme payments are based on an indicator such as the increase in carbon sequestration or lower water consumption, compensation is received based on the new CAP.

SUCCESS OR FAILURE?

The monitoring and boosting of environmentally beneficial practices in the olive grove within the framework of the new CAP measures is likely to become a success story. In addition, indicators benefitting novel technologies / satellite images such as carbon sequestration is one of the lines that the regional government pursues for mitigating the impacts of climate change.

Reasons for success:

The main reason for success is the possibility of maintaining small farms, which produce in a more conservative and sustainable manner considering the natural resources, compared to large farms. The potential success of the new contractual relationships is the society's demand for increasingly sustainable food and the societal concern about climate change.

SWOT analysis

Main Strengths

1. The Copernicus program contains a set of satellites with different bands, spatial and temporal resolutions that allow different actions depending on the objectives set
2. Access to data from the Copernicus platform is free, allowing greater economic stability in the development of services based on it
3. The use of open source allows its easy adaptation to other areas

Main Weaknesses

1. Areas with high cloud density
2. In some cases and for some tasks, the temporary resolution of 10 meters is not sufficient
3. Statistical analysis and complex programming languages are required for its development

Main Opportunities

1. Need to save costs by administrations
2. Current and developing policies encourage its use
3. There will be more and more satellites that will provide new and better opportunities

Main Threats

1. Policy changes or non-approval of the methodology by the competent administration
2. Resulting methodology not easily applicable by paying agencies
3. Errors in data collection

Horizon 2020 European Union Funding for Research & Innovation

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Integrated production in the olive groves

Agricultural system of production using farming techniques ensuring sustainable agriculture producing oil and olives from high-nature value region.

Summary

With the integrated production program, sustainable agriculture in Andalusia has been promoted. The statistics offered by the regional government show that participation in this measure has been increasing over the past few years. Specifically, in the olive grove sector, there is a lot of competition. “Integrated production" provides the farmer with a sustainability brand that is usually linked to a better market price. The contract can be made directly with the administration or through cooperatives that manage various farms (minimum 5). As added value, the use of earth observation techniques allow the monitoring of Soil Organic Carbon (SOC) under different crop management increasing the soil quality and the mitigation of climate change impacts

Objectives

- Preservation of soil conservation and biodiversity associated.
- Monitoring Soil Organic Carbon under different crop management
- Improving visibility of integrated production as a system provider of multiple lasting AECPGs.

Problem description

The regional administration provides information on the use and application of different amendments based on expert knowledge and pest risk forecasts. The objective was to obtain a product of both environmental and social quality by granting the integrated production brand. The different crop management have different impact on soil organic carbon. The evaluation process is based on Carbosoil model, developed with 16 soil types and more than 1600 soil profiles in order to predict the soil capacity for carbon sequestration in Mediterranean areas. The novelty in the present case study is developing a control-carbon soil map at a detailed scale for the 0-25 cm soil section, and identifying the impact of crop management on soil organic carbon through earth observation techniques. For that, olive groves under different soil types and crop management will be selected and monitored for estimate the crop management impact on soil organic carbon.

Data and Facts - Contract

Participation:

Number of farms: 55 000; Area of implementation: Currently, more than 500,000 hectares; Other participants: 377 operators (Technician, APIS (Integrated Agriculture Production Groups))

Involved parties: The contracting parties are the participating farmers, coming mainly from the ASAJA network. Another involved part is the regional administration and APIs (Integrated Agriculture Production Groups). Sometimes, cooperatives are also involved, providing a better price to the farmers for their product.

VALUE CHAIN

PUBLIC GOODS

Soil quality (and health)

Climate regulation-carbon storage

INDIRECT EFFECTS

Climate regulation, biodiversity, rural viability and vitality

LOCATION

SPAIN

CONTRACT

The contract covers the area declared under integrated production for 5 years. To do this, it must be integrated into an integrated production association (APIs) and follow the management recommendations and requirements during the contractual period. The recommendations are advised by expert personnel and pursue the environmental and economic sustainability of production.

Contract conclusion:
Online platform

Payment mechanism:
Product price

Funding/Payments:
Farmers don't receive economical benefits or payment, it is a distinctive brand that later in the market usually gets a better price.

Length of the contract:
5 years extendable

Start of the program:
1995
End: still running

PRODUCT

A product badge obtained in a sustainable way is granted

Data and Facts - Contract

The benefits for land managers or farmers: Better prices in the market and reduction of inputs and food safety. In the end, the final product reaches the consumer in form of high quality and sustainably produced oil or olives.
The benefits for administration: Maintaining of soil quality.
Management requirements for farmers: The Integrated Production Regulation establishes a series of prohibited, mandatory and recommended practices based on different threats:
- erosion: plantation following contours or terraces and terraces, strip cultivation or the use of plant covers in the streets of the olive grove and reduction of tillage.
- Plantation: use of certified seeds or seedlings and a recommended plantation framework of 200-300 olive trees/ha without excluding higher density plantations.
- use of fertilizers and amendments: dose taking into account the 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: application of phytosanitary products following the recommendations of risk assessment and the establishment of economic thresholds of losses developed by APIs.
- irrigation: drip irrigation is recommended as the main irrigation system. Regarding the calendar, the use of the methodology proposed by FAO is recommended, using recommended crop coefficients. Recommendation of the use of the accumulated water reserve in the soil during the rainy season and the use of deficit irrigation strategies, taking into account the critical moments of the olive tree. In the case of the use of purified wastewater, a continuous bacteriological analysis (once a month) should be performed, to ensure that the permitted thresholds are not exceeded.
- harvesting: the use of any of the olives collection systems existing in the market is allowed, provided that the quality of the fruit is maintained, avoiding contact with the soil and its subsequent sweeping, such as tarpaulins or nets.
- training: the Integrated Production Regulation encourages the training of all personnel involved in the application of this standard, and contemplates the obligation to possess the pesticide card. It also establishes the conditions that agricultural holdings must maintain (irrigation water, storage of phytosanitary products, etc.) and cleaning and safety measures.
Controls/monitoring: Each year monitoring/certification of the management is carried out through the registration of documentation, control of the plot, etc.

Context features

Landscape and climate: No require specific conditions. The olive groves in our case study can be found under different soils (Regosols, Cambisols, Vertisols, etc) and different climate (Sub-continental Mediterranean of cold winters and sub-continental Mediterranean of warm summers).
Farm structure: Within the integrated production there are different types of farms, large or small, as well as conventional or organic. In the case study, we will focus on those farms belonging to ASAJA partners dedicated full time for the olive tree.

SUCCESS OR FAILURE?

A reduction in the use of chemical fertilizers and pesticides and an increase in the number of hectares dedicated to integrated production have been detected. However, we did not find quantitative data on environmental improvement.

Reasons for success:

- Societal demand: society increasingly demands high quality products which are produced in a sustainable way.
- Sustainability: practices and recommendations can extend the productive life of the plot allowing the farmer to continue cultivating for longer.
- Obtaining a better price in the market: Some brands and mills look for products that carry the badge of integrative production to be more competitive in the market.

SWOT analysis

Main Strengths

1. Relevant effort in the mechanization of cultivation practices, especially harvesting
2. Agroclimatic advantages in Andalusia for the production of olive oil
3. The olive grove is an efficient crop in the use of irrigation, achieving high productivity in deficit irrigation systems

Main Weaknesses

1. Important presence of farms in areas with orographic and edaphoclimatic limitations
2. Risk of increased use of inputs (phytosanitary and fertilizers) and resources (energy and water), derived from the possible boom of intensive olive groves
3. The erosion risk of olive groves represents one of the most important environmental risks and is one of the most widespread in the region

Main Opportunities

1. Increase in social demands for food quality associated with healthy products typical of the Mediterranean diet
2. Increase in the trend for the promotion, commercialization of the product and, above all, in its labeling, on scientifically proven healthy information
3. Development of productive systems with greater efficiency through access to new technologies

Main Threats

1. Growth in white label sales in large commercial areas
2. Relevant increase in the area of olive groves in traditionally non-producing countries (Argentina, Chile, Australia, etc.) and improvement of the productive structures of the countries of the south-east of the Mediterranean (Tunisia, Jordan ...).
3. Little consumer knowledge of the factors that determine the quality of olive oils, which leads to orient their preferences based on prices

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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

The establishment of Integrated Agriculture Production Groups (APIs) as a success factor:

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. These advisory services of the APIs set limits for pesticides, crop and soil management, etc.

Proper implementation of the integrated production groups (APIs) requires correct technical advice to farmers based on the acquisition of sound and up-to-date scientific knowledge through initial and continuing training, in which the technicians of the **APIs play a fundamental role**. Similar contractual relationships have been created for new crops, but they have not been successful because the APIs have not been set up correctly.

Young farmers are lacking:

Currently, the economy of more than 300 municipalities depends mainly on olive growing. However, 75 % of olive growers in Andalusia are older than 44 years and about 25 % are older than 64 years. Andalusian olive growing, like the entire agricultural sector in the region, shows a *lack of generational change.*

This situation is exacerbated in the peripheral rural areas by

- the progressive ageing of the population,
- the continuing lack of training among farmers,
- and the lack of interest among young people in continuing family farming.

Opting for IP is more competitive:

The integrated production system in this case study encounters a very **competitive** and **intensive sector** that has significant impacts on a large number of AECPGs, such as soil and water in particular.

Participation in Integrated Farming can:

(1) on the one hand, increase the value of the oil produced by farmers and,

(2) on the other hand, optimize the use of inputs.

The guarantee of Integrated Production of Andalusia stands out in the competitive market from the products of other markets (national and international) that are not subject to the same controls, **guaranteeing better demand and higher prices.**

Therefore, farmers have voluntarily chosen this farming system, as it is the most competitive.

Additional page added May 2022

CONSOLE scientific analysis – results and recommendations

Evenor-tech researchers have conducted a study to reveal the usage of digital soil mapping and its importance in predicting and spatial distribution of soil organic matter at three depths using machine learning techniques.

Research idea and question

Unlike most of Europe, Andalucía in southern Spain as a Mediterranean area still lacks digital maps of Soil Organic Carbon (SOC) content at multiple depths provided by machine learning algorithms. Currently, the Integrated Production provides a brand allowing better prices in the market. Our idea is developing a cheap approach to monitoring SOC. This approach can be used by public administration, private sector and farmers in order to reduce hot-spots checks and support the development of a new contract solutions based on results.

Methodology

Environmental covariates used in this research include nine derivatives from digital elevation models (DEM), three climatic variables and finally eighteen remotely-sensed spectral data (band ratios calculated by the acquired Landsat-8 OLI and Sentinel-2A MSI in July 2019). In total, 300 soil samples from 100 points were taken at three depths (0-25 cm, 25-50 cm, and 50-75 cm). The use of machine learning allow us identifying variables related to develop a model.

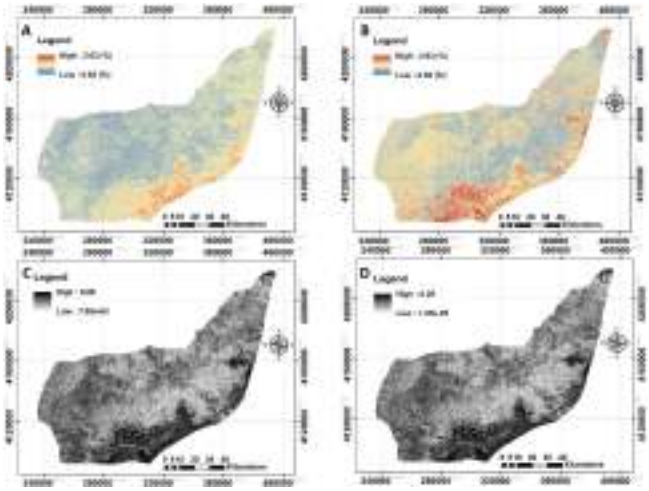


Figure 1. The provided digital maps of SOC0-25cm across the study area using RF model. A: Mean prediction (%); B: prediction of interval range (%); C: standard error map of the prediction; D: variance map of the prediction.

Main results

The integrated indices e.g., NBR_ITG, NDWI_ITG and CMR_ITG were identified as the most important covariates in prediction of SOC0-25cm (ITG=average between Sentinel and Landsat value). This study aims to reveal the usage of DSM (Digital Soil Mapping) and its importance in predicting and spatial distribution of SOC at three depths using machine learning techniques (in this case Random Forest). The terrain attributes analysis was a key step in order to obtain SOC data in middle depth. Taken together, our findings indicate the successful usage of machine learning with application of user-friendly software e.g., R programming.

Recommendations

- Promoting harmonisation and standardisation of soil data. The interoperability among data sources will facilitate the implementation of new technologies based on common parameters.
- Additional data can provide additional benefits. If we have no data on bulk density, the soil carbon storage will be not calculated to monitor the climate change impact.
- The implementation of this kind of technology will allow to consumers, farmers, policy makers, private sector and researchers check all the parameters related to result-based contract solutions in an easy and cheap way.

Additional page added June 2022

Forest Bank – a forest conservation program in Indiana and Virginia, US

Private forest owners convey both land development and timber rights to a quasifinancial institution, Forest Bank, in exchange for guaranteed annual payments, the value of which is based on the landowner's standing timber. The Forest Bank protects valuable habitats and harvests timber using environmentally sound methods. The bank recoups payments made to the landowners, plus an administration fee, through timber sales as prescribed in a management plan that has been accepted by both parties. The owner gets access to annual income without need to liquidate his/her forest assets and compromise conservation values. The Forest Bank is based on market incentives and landowner preferences. The owner can choose between a fixed-term (30 yrs) and permanent (99 yrs) contract.

Summary

Forest Bank attempts to blend economic and ecological objectives by protecting valuable habitats and watersheds and executing ecologically sound forest management that yields reasonable financial return to landowners. Landowners' preferences, economies of scale in management operations across fragmented forest landscapes and Forest Bank's prudent style of timbering should produce a steady flow of revenue that covers both its management costs and the annual returns paid to landowners. Timber harvests are the main source of financial income but carbon offsets and green labels (e.g. FSC-certification) can provide additional revenue to the Forest Bank. Payments to landowners are delivered once a year. A new forest inventory is performed after each timber harvest in the property or every ten years, whichever comes first, and annual payments to the landowner (depositor) are adjusted accordingly. Forest Bank program was initiated by the largest conservation organization in the US, The Nature Conservancy (TNC), in 2002 and has since been running in two states: Indiana and Virginia. In addition, plans or feasibility studies have been made e.g. in Wisconsin, Michigan, Minnesota and New York. It was initially projected that in favorable conditions the Forest Bank could become a self-funding mechanism for conservation. The Virginia Forest Bank is financially self-sufficient but the Indiana Forest Bank receives some financial support from the regional TNC office. The landowners can retain ownership of the underlying land but the development rights (e.g. construction, mining) are always permanently transferred to the Forest Bank, implying that the land will stay forest forever. The landowners can continue to hike, hunt, pick berries and mushrooms and collect firewood as long as it does not hamper forest health and growth and decrease environmental values. The innovative element of the Forest Bank program is that it is voluntary, market-based and accounts for forest owner preferences. It gives owners a way to get cash out of their forest without immediate need to harvest and compromise environmental values also in situations where next harvest incomes would be attained in distant future.

Objectives

- Preservation of biodiversity (valuable habitats and species)
- Ecologically sound forest management that yields reasonable economic return to landowners
- Prevention of erosion and protection of water quality
- Economic viability of local communities

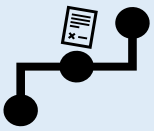
Data and Facts – Contract I

In the contracts the landowners transfer all forest management rights to the Forest Bank. The contracts are supplemented by conservation easement agreements in which the landowners who enroll in the Forest Bank program also waive most land development rights. An underlying objective of the Forest Bank is to make agreements with several adjacent forest owners whose holdings or tracts are located in areas of recognizable natural features and ecological values. In this way the Forest Bank aims to promote collective implementation and accomplish important environmental goals at landscape and watershed level.

LAND TENURE

Forest management and/or conservation easement agreement

VALUE CHAIN



Green labels and environmental premiums for the harvested timber are used (forest owner – Forest Bank – local sawmills – distributors – stores – consumers and other end-users). Virginia Forest Bank also sells verified forest-carbon credits (forest owner – Forest Bank - firms in the carbon trade system) which can be interpreted as a value chain feature.

COLLECTIVE

The contract solution involves several (adjacent) forest owners in the same region.

Problem statement

The Forest Bank scheme was developed in the late 1990s by The Nature Conservancy (TNC), the largest conservation organization in the United States. The motivation for the novel contract solution was that protection of forests was too slow because acquiring environmentally valuable areas from private landowners required significant amounts of capital that was not usually available for conservation purposes. Working the standard way – preserving nature and protecting biodiversity by buying smaller parcels of land – mostly resulted in fragmented conservation areas that had limited environmental impact; they were not suitable for many imperiled species that required larger natural habitats or for watershed management that required landscape level planning and actions. The acquired lands were often also fairly disconnected from other natural lands. TNC experts recognized that conservation efforts should be redirected to account for limited amount of capital, landscape level requirements, and a new form of integration of economic and ecological objectives that accounts for landowner preferences and viability of local communities. They developed an innovative contract solution, Forest Bank, which i) addresses conservation priorities and local economic needs simultaneously, ii) requires less initial capital because it is based on leases and conservation easements and accounts for landowner preferences, and iii) enables operating at the scale of landscapes and watersheds. The arrangement was named Forest Bank since the underlying idea was that a trustworthy institution holds and manages the tracts of forestland "deposited" by many small holders, then pays these owners a guaranteed rate of return on the appraised value of their timber assets, much as a commercial bank pays interest to people on their savings deposits. The Forest Bank is only available in priority ecological and environmental areas. These are often adjacent to national or state forests and parks, or other existing conservation and recreational areas. An important goal of the Forest Bank program is to establish ecological buffer zones around these areas and ecological corridors between them.

Data and Facts – Contract II

Participation: Indiana Forest Bank has 60 forest owners and covers 3 500 hectares. It operates in two environmentally sensitive locations in southern Indiana, adjacent to several state forests and state parks. Virginia Forest Bank has 2 landowners, covers 9 000 hectares and operates in southwest Virginia, also adjacent to state parks. Both Forest Banks are TNC programs that are managed by its local offices (TNC Indiana, TNC Virginia).

Involved parties:

- Nonindustrial private forest owners (NIPFs), parishes and municipalities (landlords)
- The Nature Conservancy: Forest Bank administrator and operator (tenant)

Management requirements for farmers: Both parties need to accept a forest management plan (stewardship plan). The plan is updated every 10 years; in the absence of owner approval, the previous plan shall remain in effect until a new plan is approved. Forest management operations are carried out by the Forest Bank. FSC certification or other sufficiently demanding green label for forest management is required.

Controls/monitoring: Annual third-party audits (FSC group certification). FSC group certification allows a group of forest owners to join together under a single FSC certificate organized by a group manager. In Indiana and Virginia the group manager is TNC.

Renewal / termination: If contract is fixed-term, renewal is possible every 30 yrs. Termination results in financial penalties (applies to both parties). However, the Forest Bank will always retain land development rights which means that the land will stay forest forever.

Conditions of participation: No minimum or maximum number of participants but operational efficiency (economies of scale) and possibilities for landscape and watershed management increase with the number of participants ("depositors") and the area enrolled in the Forest Bank.

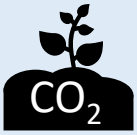
Links to other contractual relationships: The maximum length of this type of contracts in Indiana and Virginia is 99 yrs (also in Finland, Tenancy Act). Renewal is possible.

PUBLIC GOODS

Landscape and scenery

Biodiversity

Soil quality (and health)



Climate regulation-carbon storage

Resilience to natural hazards

Rural viability and vitality

Water quantity (e.g. water retention)

INDIRECT EFFECTS

Improved recreational access and cultural heritage management

CONTRACT

Market sector-oriented private-private contracts

Contract conclusion: Written agreement

Payment mechanism: tradable emission certifications

Length of participation in scheme: fixed-term (30 yrs) or permanent (99 yrs)

Start of the program: 2002

End: still running

PRODUCT

FSC forest certification ensures that products come from responsibly managed forests that provide environmental, social and economic benefits; see FSC certification in the US. https://us.fsc.org/en-us

Risk/uncertainties of participants: Landowners are able to transfer most of the risks related to forest management and annual payments to the Forest Bank: input and output price risks, risks of natural hazards etc. On the other hand, owners are exposed to default risk as virtually in all forms of deposits. The probability of default depends on e.g. market conditions, legislation, financial solidity of the Forest Bank, terms of deposit withdrawal and length of the contract. The current deposits are guaranteed by The Nature Conservancy. However, there is no guarantee that the Forest Bank can fund early withdrawal requests in short term. This feature is not uncommon in real estate business because real assets are less liquid than for example common stocks and bonds.

Funding/Payments: The scheme is meant to be self-funded in a sense that income (mostly from timber harvests and carbon credits) covers all the operational costs of the Forest Bank as well as annual payments to the landowners. It has also been projected that the timber sold by a Forest Bank could earn a price premium through the use of some kind of green or environmental label. Indiana Forest Bank has been financially supported by the local TNC but the Virginia Forest Bank has reached financial self-sufficiency. An important reason for this is that the latter has sold carbon offsets since 2014; currently carbon payments account 25 percent of its total income. Both Forest Banks have also sold environmentally valuable lands to public (federal and state) entities and through these transactions have received financial income that supports their economic stability.

LOCATION

USA

Regional, currently applied in two states: southern Indiana (12 counties) and southwest Virginia.

Context features

Landscape and climate: The state of Indiana lies mostly in the temperate zone. It has a humid continental climate with cold winters and hot summers, with only the extreme southern portion of the state lying within the humid subtropical climate, which receives more precipitation than other parts of Indiana. Most forests are located in the southern part of the state. Hardwoods are the dominant species. Most common tree species are maple, yellow poplar, oak, hickory, beech, birch, cherry and ash; conifers are relatively rare. Eighty-three percent of Indiana forestland is privately owned. The state owns 7 percent and the federal government 8 percent. There are four more densely forested areas in Indiana and the local Forest Bank operates in two of them (Brown County Hills and Blue River). The Blue River watershed ranges from the Brown County Hills to the Ohio River, thus the two Forest Bank regions are also environmentally connected.

Southwestern Virginia lies in the subtropical zone where summers are hot and winters are moderately warm. The Virginia Forest Bank operates in central Appalachians which area resembles the Brown County Hills and is known for its beautiful landscape, exceptionally high biodiversity, steep hills, and streams and rivers. The location of the Virginia Forest Bank, Clinch River Valley, is home to one of the highest concentrations of rare and endangered species in the United States. Before the establishment of the Forest Bank, TNC ranked the Clinch River Valley watershed first in a scientific evaluation of the biodiversity in all watersheds across the United States.

Farm structure: The Forest Bank is designed for nonindustrial private landowners with a desire to maintain and preserve their forests as forests, on the one hand, and a need for access to its financial value, on the other hand. In Indiana, the average size of forest holding is two hectares and an increasing number of private forest owners are non-residents. Both Forest Banks are committed to use continuous cover forestry (no clear-cuts); they will harvest timber and build roads but in ways that maintain the structure of the forest and its biodiversity. Other main objectives are production of high-quality forests and timber, reintroduction of natural tree species and prevention of invasive species.

SUCCESS OR FAILURE?

SUCCESS. Forest Bank has attracted private forest owners and its operations are aimed at increasing forest biodiversity at landscape level. Although the development has been slow, the number of forest owners enrolled in the two US Forest Banks has steadily increased since 2002.

Reasons for success:

- Forest Bank offers an innovative, voluntary, market-based and replicable contract solution that combines the protection of biodiversity and ecosystem health with economically compatible forest management on private forestlands.
- The Forest Bank offers a new way to work with landowners that otherwise would not be reached. It is attractive to landowners who value biodiversity and continuous flow of income from an asset (forest) that is generally non-liquid, and who in exchange for these ecological and financial benefits are willing to accept a lower but still reasonable economic return.
- The collection of land is managed by one entity, the Forest Bank, which operates at the scale of landscapes and watersheds and thus can greatly expand biodiversity and other conservation effectiveness.

SWOT analysis of the Forest Bank

Main Strengths

1. Innovative, voluntary and market driven approach
2. Incorporates private landowner preferences related to environment, income and risk
3. Enables landscape level and watershed management

Main Weaknesses

1. Many forest owners are not willing to give up timber and land development rights for 30 years or permanently.
2. Requires sufficient land area to achieve operational (economic and environmental) efficiency
3. Attracts only those landowners that are willing to trade (give up) some of their financial return for environmental values and risk aversion

Main Opportunities

1. Can be financially self-sufficient
2. May speed and scale up biodiversity and other environmental protection considerably (something that is urgently needed)
3. The arrangement is applicable nationwide in the US and can be tailored to European conditions because many underlying institutions are relatively similar

Main Threats

1. New ideas sometimes collide with habits of thought and the confinements of old laws
2. Possible legal and tax complexities
3. Possible difficulties in finding a trustworthy intermediary that holds and manages the tracts of forestland "deposited" by many small holders and is unequivocally committed, and in every way able, to honor the agreements also in the distant future. The concept may not be feasible for smaller organizations.

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Protected areas of private forests as tourism destination

In Kuusamo cooperation network, visually attractive protected areas are uncovered from private forests. Local nature-based tourism enterprises are offered a possibility to use these spots, nature trails leading to them and potentially existing facilities with their customers. Enterprises make an agreement with the forest owner to compensate the use.

Summary

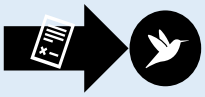
Kuusamo cooperation network (2016-2019) was one of the first attempts to use private forests as a tourism destination and provide a possibility to compensate their use for private forest owners. The aim of the Kuusamo project was to enable contracts between private forest owners and tourism entrepreneurs. The contract has features of land tenure, collective implementation and result-based agreement. Contracts increase access to attractive landscapes and sceneries, and this recreational access can improve physical and mental health. Contracts support rural viability and vitality. The project was initiated by the Forest Centre who took contact to voluntary forest owners and planned 14 nature trails leading to the protected spots. Local tourism enterprises are offered a map of these nature trails as well as additional facilities (parking area, shelter, fireplace). The length of the trails vary from 2-5 kilometers, and they are not marked into the forest. Forest owner and the enterprise are free to agree the compensation model, for example number of people visiting the spot. By the end of the project, four contracts have been made.

Photo by Laila Hökkä

Objectives

1. Create a contract model and enable cooperation to born between forest owner and local tourism enterprises (rural vitality).
2. Promote nature-based tourism (landscape, scenery, recreational access) together with biodiversity protection and forestry, i.e. multifunctional forest management.
3. Deliver knowledge of Finnish forestry and multiple uses of forests to foreign tourists (rural vitality)

RESULT-ORIENTED



The amount of money that forest owners receives from the enterprise is based on the number of tourists visiting the area.

VALUE CHAIN

The terms of use are agreed between forest owners owning the valuable spot and local nature-based tourism enterprises. Tourism enterprises compensate the visits to the spots, as well as use of trails and other facilities for forest owners. Tourism enterprises can take their customers to new, uncrowded, and untouched places that these trails and spots offer.

Problem statement

The idea of Kuusamo cooperation network evolved from the fact that there are several, unknown, attractive spots in private forests that are already protected via METSO-program, and these would be beautiful places to visit for outsiders too. Moreover, tourism enterprises needed places that are uncrowded, silent and untouched ”pearls”, to take their customers, supporting the realization of the significant potential of growth in nature-based tourism in Finland. One of the key ideas in this project was not to give any new restrictions for forest owners who have already voluntarily protected part of their forest. Rather, the idea was to inform tourists about the forestry and silvicultural treatments along the nature trail leading to the protected spot. Forest Centre was the initiator of the project.

The project in Kuusamo was one of the cooperation networks within METSO program. Main aim of cooperation networks was to fit together forest biodiversity protection and other uses of forest through enhancing cooperation among different actors and forest owners. Particularly, the initial focus was in connecting neighboring forest areas to create more clustered biodiversity protection networks. Networks test and develop local ideas, support rural vitality and livelihoods, recreation and multiple uses of forests.

METSO program is biodiversity protection program for the forests of Southern Finland. Southern Finland is dominated by private, family owned forests, and forests have been managed dominantly for timber production. The METSO program was developed as a response to increasing societal understanding that declining forest biodiversity needs to be considered more seriously. Moreover, program was a response for Natura 2000 process, where the top-down approach and poor informing of forest owners led to conflicts. METSO program highlights voluntary means and more acceptable solutions.

The valuable spots that are protected in METSO program were selected according to certain criteria. Especially, the focus was on sites that are in natural state or that can be easily restored. Sites can host endangered species, include notable amounts of some structural characteristics, or be important due to ecological connectivity. Elements such as small natural water features, decaying or burnt wood as well as mature broad-leaved trees are important. Protection is always voluntary for forest owners, who can agree either temporary (10 or 20 years) or permanent agreement.

Photo by Laila Hökkä

PUBLIC GOODS

Landscape and scenery

Recreational access / Improvements to physical and mental health

Rural viability and vitality

INDIRECT EFFECTS

Forest owners were asked stories about their forests. These stories are included into trail descriptions, and this might increase the local cultural heritage. The establishment of trails evoked some new projects in villages such as building a sightseen tower, which might further increase recreational use, and rural viability more broadly also among local people. Even though most of the spots were already protected, some new biodiversity protection areas were established when planning the trails.

Data and Facts

Participation: 14 spots and nature trails leading to them were finalized during the project. By the end of the project (2019) four contracts have been made between forest owners and enterprises.

Involved parties: Private forest owners provide their forests to be visited. Nature-based tourism enterprises take their customers into these forests. Customers are typically foreign people. Forest Centre established and led the project, organized meetings for forest owners and enterprises, and planned the nature trails in cooperation with the voluntary forest owners. Part of the trails, and the facilities along them are owned by municipalities or State Forest (Metsähallitus), and their use have been agreed separately with them.

CONTRACT

Private-Private contract

Contract conclusion: Written agreement

Payment mechanism: In the example agreement payment system is x-number of euros per visited person (product price). However, forest owner and enterprise can freely agree the payment system for each case separately.

Financing party: Market-sector oriented

Start/ end of the program: First contract was made in January 2018 and three contracts in December 2019. It is up to contract parties to agree the length of the contract. It can be, for example, five years. The project ended in 2019, but the aim is that forest owners and enterprises can continue establishing new agreements.

LOCATION

FINLAND

Region: Kuusamo FI1D6

Requirements for forest owners: The key idea of the contract is that there are no new restrictions or demands for forest owners. However, if forest owner conducts silvicultural treatments (pre-commercial thinning, harvesting) s/he needs to report this to another party of the contract and to Forest Centre who can update the description of the nature trail and spot accordingly.

Controls/monitoring: There is no control or monitoring. The agreement is based on trust; enterprises honestly report the amount tourists visiting the spot.

Conditions of participation: In the project, there was limited amount of resources to construct nature trails, and not all the volunteered forest owners were able to participate. Besides limited resources, the spots needed to be attractive enough also for the customers of the tourism enterprises. Example contract is freely available for all interested in the internet pages of the project (Kuusamon yksityismetsien luontohelmet tutuiksi, 2019).

Risk/uncertainties of participants: There are no great risks for forest owners or nature-based tourism enterprises. Forest owners haven't invested their money; the ecologically valuable spots have already been protected and compensated, and the nature trails have been planned by the project. It is in the responsibility of the tourism enterprise to take care of their customers not to harm e.g., the facilities or endangered species in the forest. The trails are marked only on maps, there are no signs in the forest. If there are many visitors, the trails may become visible in forest, which may increase the use of them by private people (based on Everyman's right).

Renewal/termination: Forest owner and enterprise can agree about the renewal.

Funding/Payments: Forest owner and nature-based tourism enterprise make an agreement about the use of the spot, nature trail and the services included (e.g., fireplace, parking place). Enterprise pays for the forest owner according to agreement. In the example agreement, the compensation is based on the number of persons visited (e.g., 5 euros per person). However, the parties of the agreement can freely decide the compensation level and the basis for payment (lump sum, per person). In the agreement, it is possible to define minimum and maximum number of persons visiting the spot for example during one year. Typically, this kind of compensation is not much compared for example to sums received from biodiversity protection or timber trade. According to the experiences during the project, it seems that for the forest owners, it is more important to agree about the terms of the use and be aware who and when is using the nature trail and facilities included, than to get small level of monetary compensation.

If a forest owner has very attractive spot in an easily reachable area, s/he can find several enterprises interested. In these cases, it is possible to get reasonable compensation, e.g., by providing also firewood and a good shelter (cabin)."

Photo by Laila Hökkä

Context features

Landscape and climate: Kuusamo is located in northeast Finland, in highland area (200 meters above the sea). Boreal spruce and pine dominated forests as well as big and smaller lakes are typical. Climate is continental, average temperature around the year is 0°C and the snow cover is one of the greatest in Finland. Growing period during the year is 125-135 days, the annual temperature sum is 800-900 degree days.

Forest owner structure: The project was targeted for private forests in Kuusamo area, however, some of the nature trails and facilities are in commonly owned forests, state or municipality owned forests. In Kuusamo area, the average size of forest holding is 39 hectares. 65% of the owners are living in their holdings or in a same municipality. In Kuusamo, forest owners are on average 60 year old and 72% of them are male.

Information: www.metsakeskus.fi/kuusamon-yksityismetsien-luontohelmet-tutuksi

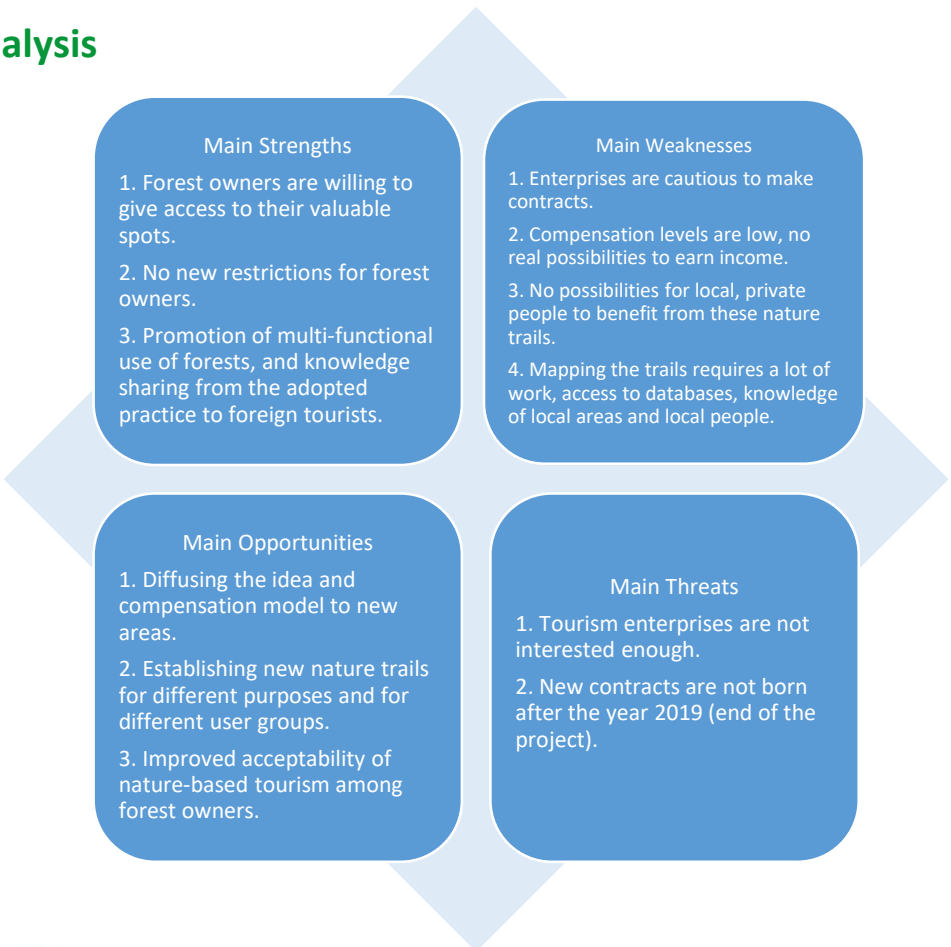
SUCCESS OR FAILURE?

The presented contract solution, in which protected areas of private forest are used as places for tourists to visit, can't be yet classified as success or failure. The acceptance of forest owners was in general high, but the enterprises have been cautious to make contracts. During the project, four contract were made, and by the spring 2022, project leaders were not aware of other contracts. If the number of contracts remains low, the use of public money to map the spots and nature trails in the project hasn't been efficient. According to first experiences, the compensation level that forest owners receive was not very high, although all they receive is additional income from their forests. On the other hand, the project was piloting this kind of contract solution, and all the experiences are valuable when establishing similar compensation models elsewhere.

Reasons for success/failure:

- Forest owners have already protected part of their forest and nature trails to these spots can generate new income to them (success).
- The compensation level is low, especially if there are only few enterprises interested (failure).
- Tourism enterprises are cautious to agree the contracts (failure).

SWOT analysis



Horizon 2020 European Union Funding for Research & Innovation

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Carbon Market – a nonprofit compensation service for restoring ditched peatlands

Carbon Market Ltd (Hiilipörssi) is a private (nonprofit) company that offers compensation services designed to reduce carbon emissions and to increase carbon storage on peatlands. The Company restores ditched peatlands, and its service is primarily targeted to private and public companies and institutions that are interested in compensating their carbon footprint. Landowners are encouraged to voluntarily offer drained peatlands to the Carbon Market which then restores these areas to their natural state as carbon sinks. Carbon compensation payments from companies and institutions to the Carbon Market provide the capital that enables restoring activities. Landowners commit to leave the restored peatland untouched permanently.

Summary

The Carbon Market, launched in May 2018, is a value chain contract solution that aims to reduce greenhouse gas emissions by restoring ditched peatlands to their natural state. The contract solution has also collective features in cases where the restored peatlands have several owners. The landowners of the peatland voluntarily assign a drained peatland to be restored and commit to leave it untouched permanently. During 2018-2020 the service relied on donations of private individuals and institutions and operated under the Finnish Association of Nature Conservation (FANC). In October 2020, a nonprofit company Carbon Market Ltd was established to provide similar services for private and public companies and institutions in exchange for carbon offset payments. About 70% of the proceeds are directly allocated to restoration activities and the remaining 30% to other organizational costs, education on nature conservation and support of scientific work. Compensation purchasers receive a certificate, stating the amount of restored peatland and carbon benefit. Currently, the company's operational activities are focused on a 350 hectares peatland area in eastern Finland which has been assigned for restoration by Tornator Ltd, the largest private forest landowner in Finland. Another current restoration project concerns a 100 hectares ditched peatland in central Finland assigned by a local parish. The original restoration service based on donations continues under FANC. The demerge of two services was motivated by legal reasons.

Objectives

1. Increasing carbon storage
2. Safeguarding biodiversity
3. Safeguarding water quality

VALUE CHAIN

landowner – marketplace – donor or investor

COLLECTIVE

In case of some peatlands there are several owners, all of them need to agree on the restoration project and sign the contract.

PUBLIC GOODS

Climate regulation-carbon storage
Peat accumulation

Biodiversity of drained peatlands

Water quality
Restoration improves the quality of water systems, as natural peatlands effectively filter various nutrients and impurities from the water flowing through it.

Problem statement

Peatlands are the second largest carbon reservoir globally, and in Finland they cover almost one third of the land area. More than 2/3 of total carbon reservoir in Finland is in peatland soils., almost tenfold the amount in living trees in this Europe's most forested country. From 1960s to 1990s, more than half of the (original) mires were drained for forestry purposes (Southern Finland 80%, Northern Finland 40%). However, in many cases the ditching efforts did not result in satisfactory timber growth because the peatlands were not fertile enough or had poor nutrient balance for timber production. Draining of pristine mires has been mostly given up since 1990s, and recent emphasis on peatland forestry has been on ditch network maintenance (clearing and supplementary diching). Ditching drastically alters the hydrology of mires and may destroy mire vegetation and lead to biodiversity loss, cessation of peat accumulation and increased carbon emissions. Restoration of drained peatlands, e.g. by filling in and damming ditches and removing part of the growing trees, aims to gradually restore natural mire hydrology and original mire vegetation, and turn the peatland back to carbon sink. So far, restoration activities for peatlands have concentrated almost entirely on state-owned protected land and thus their climate and other environmental impact has been limited. Carbon Market is one of the first instruments that funds restoration of private peatlands.

The Carbon Market service was founded by the Finnish Association for Nature Conservation in 2018. The initial development of the service was funded by the Kone Foundation. The aim was to develop a new, inspiring way to mitigate climate change and to raise funds for nature conservation. The original idea, implemented in 2018-2020, was to create and sustain an online donation service designed to reduce carbon emissions and increase carbon storage by restoring those ditched peatlands that had turned out to be unsuitable for forestry. Through donations, individuals and institutions could directly invest in emission reduction and carbon sinks in peatlands. The donor received a carbon certificate, stating the amount of restored peatland and the carbon stock. The landowners, in turn, may offer their drained peatlands to the Carbon Market for restoration. The suitability of the peatland is assessed by experts of the Carbon Market. The landowner allows them to make a restoration plan for the ditched peatland, and the regional government authority (Center for Economic Development, Transport and the Environment) gives permission for the restoration activity. Assigning a peatland for restoration does not imply a change in the ownership of the land but the contract is binding and permanent. The landowner may transform the restored peatland into a private protected area which is one way to ensure permanence.

INDIRECT EFFECTS

Natural mires have been a part of the national landscape, however, today they are rare in Southern Finland. In some of the restored peatlands, there have been events to raise awareness of the meaning of peatlands and in this way the contract solution may increase also cultural heritage.

LOCATION

FINLAND

Whole Finland

Data and Facts - Contract

Participation: During 2018-2020 some 1,300 hectares of peatland was restored (or agreed to be restored) using donations from 2,500 private individuals and institutions. The donated capital was 1.4 mill. €, the most common donation 50 €, and the agreements involved ten landowners. In October 2020, a nonprofit company Carbon Market Ltd was established to provide similar services to private and public companies and institutions on more commercial basis. The new Company offers carbon compensation services in exchange for carbon offset payments. It uses 70% of the proceeds to restoration activities and 30% to other expenses and support of related education.

Involved parties: Donors and landowners and (since Oct. 2020) investors and Carbon Market Ltd, a spin-off company of the Finnish Association for Nature Conservation (FANC), with whom the landowner makes the restoration contract. The landowner voluntarily assigns a ditched peatland to restoration and approves the project plan.

Information: www.hiiliporssi.fi/

CONTRACT

Private-private contract landowner - Carbon Market - donor or investor

Contract conclusion: Written agreement

Payment mechanism: No payment for landowner, covers only the costs of restoration. Restoration is funded by donations and carbon offsets.

Financing party: Market sector-oriented

Length of participation in scheme: Permanent contract, the restored peatland may be transformed into a private protected area with a legal status.

Start of the program: May 2018
End: still running

The government regional authority (ELY Center) gives permission for the restoration work. The landowner and the donor or investor do not make mutual agreements.

Management requirements for farmers: All landowners of the uniform peatland to be restored must enter into a contract. A restoration plan will then be made for the peatland area in question. It will be implemented under the control and expense of the Carbon Market. The landowner does not need to do anything, but if he wishes, he can contribute to the plan. Once the restoration work is done, the landowner is not allowed for any activities in the area. The restored peatland may be transformed into a private protected area with a legal status.

Controls/monitoring: The experts of the Carbon Market make self-monitoring when resources allow, for example by checking the condition of the dams.

Conditions of participation: One landowner is enough for participation if he is the only owner of the peatland area that is suitable for restoration. However, often there are several owners within one peatland. In this situation, all landowners need to agree on the restoration plan and sign the contract. The plan will be annexed to the Agreement that is made with the landowner. **Risk/uncertainties of participants:** The restored peatland may at first result in increased release of methane emissions as water level raises. Moreover, heavy rains and floods are expected to increase with climate change, which may also raise the risk for methane emissions as water floods into the peatland. On the other hand, as the climate warms and dry seasons increase, peat decomposition may accelerate and peat fires may become more probable with low water levels.

Funding/Payments: In the scheme, there are usually no payments for the landowner, as the peatlands they own are usually not productive in terms of forestry and thus restoration activities do not result in lost timber income. The minimum donation or offset payment is currently 56 euros which funds the restoration of 600 m^2 of peatland, capturing a minimum 55 kilos of carbon annually. By donating or investing 4,500 euros, one can store 3,750 kilos of carbon per year, which is approximately equivalent to the amount of carbon emissions of an average Finn per year. The website has a carbon counter that calculates how much restored peatland and carbon sequestration one can get with a specific donation or investment. The time horizon in the calculations is 100 years and the price of carbon offsets is approximately 44 €/t CO2-ekv (May 2022). To be on the safe side, Carbon Market Ltd sells only carbon benefits (prevented carbon emissions for peatland soil) that accrue during a 15-year time span, i.e. benefits from the rest of the commitment period (75 yrs) are not sold.

Context features

Landscape and climate: Finland is one of the world's northernmost countries, the landscape being mostly flat with few hills and fewer mountains. 78% of Finland's land area is covered by forest land and 10% by water (lakes, rivers and ponds). The share of peatland is almost one third of the land area. Finland lies in the boreal zone, characterized by warm summers and freezing winters. However, the temperature varies considerably between the southern regions and the extreme north (Lapland), indicating characteristics of both maritime and continental climate. The annual amount of precipitation varies between 500 and 650 millimeters. Lapland has the lowest precipitation, while inland areas in the southern and central parts of the country get the most downpour.

Farm structure: Private forest owners (individuals and families) own 60 per cent of forest land and 70 per cent of the annual growth of timber stock. State-owned forests (25%) are managed by Metsähallitus; the rest is owned by forest companies, municipalities, parishes, foundations and jointly-owned forests.

There are approximately 350,000 family forest holdings owning at least two hectares of forest land. These holdings have more than 600,000 owners. The annual timber growth in Finnish forests is 103 mill. m3 and the potential for sustained harvest removal 84 mill. m3. Family forest owners provide the forest industry 80 per cent of the domestic timber it uses. Forest land is typically managed for timber production. Since 1950s, the dominating forest management strategy has been even-aged management but in recent years also continuous cover forestry has gained some popularity. Attempts to increase timber growth has resulted in intensive ditching of mires, especially in southern Finland, and artificial regeneration of timber stands with spruce and pine seedlings.

SUCCESS OR FAILURE?

The Carbon Market has been a success given its short life span. Within two and a half years (2018-2020) it collected 1.4 mill. euros in private donations, and some 1,300 hectares of peatlands were restored or agreed to be restored. It is too early to assess all the environmental impacts of the contract solution because restoration of drained peatlands is a slow process. After demerging the service and establishing the (nonprofit) private company Carbon Market Ltd for commercial carbon offset purposes in Oct. 2020, the services have continued in two separate lines that may also share activities in the same peatlands. Donors and investors have been very interested in the restoration services, but it has been somewhat difficult to find sufficiently large continuous suitable peatlands for restoration. While some private landowners have offered their own parcels of peatland for restoration, others in the same area may have not been willing to participate in such activities. A successful restoration project requires that all landowners in the same continuous peatland area agree on the restoration goal because otherwise it is not possible to raise the local water level effectively and permanently. Several of the assigned larger peatlands have had only one owner such as state, private company or local parish, which has facilitated restoration.

Reasons for success:

- Usually no need for public funding.
- An inspiring channel to collect private money for the restoration and protection of peatlands.
- The contract may lead to the establishment of a private protected area, which is a permanent nature protection instrument in Finland.

SWOT analysis

Main Strengths

1. Market based - no need for public
2. Landowners and donors and investors are very interested.
3. The contract may lead to the establishment of a permanent private protection area. funding.

Main Weaknesses

1. So far, many of the peatlands that have been restored have been protected areas, which means that in some time period, the end result would have be the same also without restoration. Restoration, however, accelerates the development back towards natural peatland (carbon sink).
2. Due to small-scale forest ownership in Finland, not all the landowners of potential restoration project areas are always willing to participate in the scheme without compensation.
3. Monetary incentives to landowners are currently missing.

Main Opportunities

1. Peatlands have great potential as a carbon storage and sink.
2. There are a lot of low-productive drained peatlands (estimates say almost million hectares) in Finland where drainage hasn't been able to increase timber stock sufficiently. Restoring these peatlands does not reduce landowner's income.
3. Large funding potential: in addition to donations, several private companies are interested in funding restoration activities to compensate their carbon footprint. Their aim is to use this as indicator that they are responsible and take environment into account.

Main Threats

1. Landowners are skeptical towards Carbon Market due to its history with environmental organizations.
2. Too few staff to keep things running.

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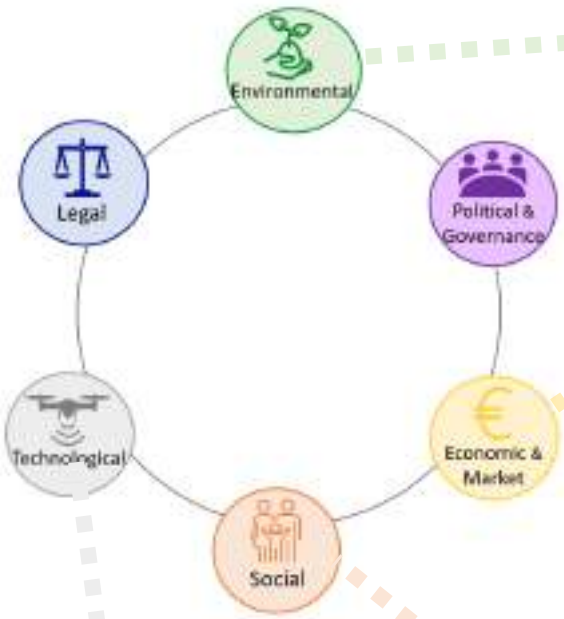
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Major developments in the Carbon Market: In 2018-2020, Carbon Market was an online donation service both for individuals and institutions. It operated under the Finnish Association for Nature Conservation. A major change occurred in October 2020 when the commercial service of carbon compensations was separated from the donation activities and a private nonprofit company Carbon Market Ltd was established. The Company sells compensation services for private and public companies and institution. Moreover, aim is to offer possibility for other companies to compensate their carbon footprint. Private individuals cannot donate (compensate their carbon footprint) via Carbon market Ltd. However, they can still donate for restoring the peatlands by allocating their financial contribution to similar activities maintained by the Finnish Association for Nature Conservation.



Low risk, negligible or positive income effects, easily integrable into the farming system: The contract solution type is new in the sense that landowners offer peatlands to the market operator without getting payments, allowing their peatland area to be fully restored and then in some cases to be turned into a private nature conservation area. On the 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, considering low timber production on these sites and landowners' future needs to invest in dich network maintenance, fertilization and forest regeneration, restoration may show also as an appealing economic option to many of them. From 1960s to 1990s, more than half of the (original) mires in Finland were drained for forestry purposes, but many ditching efforts have not resulted in satisfactory improvement of timber growth, especially on those sites that originally were not fertile enough for timber production purposes.

Online compensation service:

Via the online service compensation is easy, which lowers the threshold to participate. The website has a carbon counter to estimate how many hectares of peatland can be restored and how much carbon is sequestered with certain amount of Euros. On the website, there are news and YouTube-videos about the restoration works. These concretize the meaning of the compensation and will motivate companies and individuals to compensate their carbon footprint. This is also likely to motivate landowners to make contracts on restoration.

Many private forest **owners have simultaneously multiple objectives for forest management**, which means that beside timber income, they value various other products and services that forests are offering such as recreation and biodiversity. Therefore, a contract solution that outsources the restoration activities to a private non-profit actor such as Carbon Market Ltd, and the possibility to receive financial compensation from the state by allocating the restored peatland further to a private nature conservation area, is an attractive option for some peatland owners.

Additional page added May 2022

Pasture bank - a platform for pasture leasing

Pasture bank is an online platform through which the landowners and the domestic animal herders can find each other. This platform provides an example of a contract model for leasing pastures.

Summary

Pasture bank is a platform through which the landowners and the domestic animal herders can find each other and agree a land-tenure contract for leasing pastures or grazing animals. Increasing grazing of underutilized pastures can improve biodiversity, landscape and animal welfare. Besides a contract model, pasture bank offers information about pastures, herding animals (domestic sheep, cows, horses) and services available for all interested partners around the country. The amount and direction of money transferred varies case-by-case; either the animal herder pays for wild pastures, or the landowner who leases grazing animals pays for the herder. The contracts are made between private entrepreneurs, but also municipalities and other organizations can offer their land for animal herders. Pasture bank was initiated in 2005, and during this time the amount of written contracts has increased. There are around 150 announcement every year (including both animals and pastures).

Objectives

1. Increase co-operation between pasture owners and animal herders
2. Increase biodiversity of the underutilized pastures
3. Keep landscape open by grazing
4. Promote animal welfare by using wild pastures

Photo Riikka Söyrinki

Photo Riikka Söyrinki

Problem description

The amount of grazing animals has decreased locally, since the number of farmers has decreased and the amount of livestock of a single farmer has increased. Therefore, some domestic animal herders may need more pastures than they own. On the other hand, some of the pastures that have been developed during the hundreds of years in the rural areas have been abandoned and they have become covered with forest. The pastures that are still existing are underutilized and have declined in biodiversity (and at landscape levels). Increasing grazing would promote biodiversity, for example, the amount of plants, insects, butterflies and birds. Nowadays, pastures with grazing animals are wanted also for the landscape and recreation. Pastures around towns or cities provide recreation possibilities for the nearby citizens. In order to improve the pasture characteristics, the landowners could offer their underutilized areas for herders. However, there hasn't been a platform through which the landowners and herders could meet. Also, there has been a great need for information about the contents of contract between landowner and herder. The pasture bank platform was initiated by Rural Women's Advisory Organisation together with ProAgria which is a Finnish expert organization providing an extensive network of specialists and a wide range of services to rural entrepreneurs.

LAND TENURE

In the contract between landowner and domestic animal herder the terms to use the pasture are agreed. Typically, terms include what resources can be used, for how long and under what conditions.

PUBLIC GOODS

Landscape and scenery

(Farmland) biodiversity

Farm animal health and welfare

INDIRECT EFFECTS

Recreational access, rural viability and vitality, cultural heritage

LOCATION

FINLAND

The participation is possible in the whole country.

CONTRACT

Public-private contracts
municipality/parish - animal herder
Private-private contracts
land-owner - animal herder

Contract conclusion:
Written or spoken agreement

Payment mechanism:
Rent - payment either for land-owner or animal herder depending on the contract.

Financing party:
Market sector-oriented

Length of participation in scheme:
1-5 years, length of the contract varies, and since the contracts are not monitored or controlled through the online service, there is no exact information available.

Start of the program:
The online service has started in 2005.
End: still running

Data and facts

Participation: On average, there has been 150 online announcements (including both animals and pastures) per year during the last years. However, the number of contracts is unknown since they are made privately between the domestic animal herder and the landowner. The online service is available for whole Finland.

Involved parties: The contracting parties are private farmers or other landowners such as municipalities. They can announce their grazing animals or pastures in Pasture bank online service. Once the contract documents have been signed, the partners may not need the online service anymore even though their cooperation continues during the following years. The online service is also a marketing channel for private specialists and companies. The online service is maintained by ProAgria, which is a Finnish expert organization providing an extensive network of specialists and a wide range of services to rural entrepreneurs. The online service is maintained by yearly payments of The Central Union of Agricultural Producers and Forest Owners (MTK), Metsähallitus, Fingrid PLC OYj (public limited liability company), and ProAgria association.


Photo Riikka Söyrinki

Management requirements for farmers: There are no specific requirements for the contract partners. In the contract models offered by Pasture bank there is a detailed list of needs, risks and responsibilities that the partners should agree in the contract solution, such as who is responsible for daily care of livestock or building the fence. However, it needs to be noticed that the contract models can be freely modified by the partners.

Controls/monitoring: There is no control or monitoring of the contracts.

Conditions of participation: There are no specific requirements for number of participants. The contract model available online can be modified by the partners if needed. If the contract conditions are not full-filled, the consequences are carried out by the contemporary law.

Risk/uncertainties of participants: The main risk is the planning of the agreement and the quality of the contract (verbal, written) in which all the responsibilities should be mentioned. The concrete risk is that the other partner is not satisfied, for example the landowner might think that the livestock number is not sufficient to maintain the landscape, the pasture is too small to feed the livestock, the mistreatment of livestock or the escape from an enclosure. There is also a risk of predators.

Links to other contractual relationships: The length of a contract is dependent on the partners. The land-owner or the leaseholder can get **agri-environment** support from EU, if the circumstances fulfill the demands. In this case, the length of the contract is five years.

Funding/Payments: Originally, the domestic animal herder pays a rent of pasture for the land-owner. The rent varies depending on the location of the pasture and the possibility to get the agri-environment support which is 450 €/ha/year or in the highly valuable pastures 600 €/ha/year. On the other hand, the landowner might have high need for the benefits that grazing animals bring, such as increased biodiversity, keeping the landscape open, or possibilities for recreation, and therefore the land-owner pays for the animal herder. For example, for one season the price is around 50 € per sheep and 200 € per cow. It is also possible to agree that no money is transferred, but in the contract the terms for grazing are agreed. Due to private nature of the contracts, the amount of money transferred is not known. Typically, the contracts are made between private partners, but quite often public partners such as municipalities offer their land for the animal herders. Using pasture bank platform is free of charge.

Context features

Landscape and climate: There is no specific landscape or climatic characteristics, except that the winter in Finland is long and summer is short. Typically, animals are taken back to their home farms during the winter time. Thus the minimum length of the contract can be only few months. The climate also differs in the different parts of Finland. The heat summation varies from less than 600 to more than 1400 degree days.

Farm structure: Most of the domestic animal herders being contract partners are private entrepreneurs, whereas the landowners can be also public organizations such as municipalities.

Information: www.laidunpankki.fi

SUCCESS OR FAILURE?

The contract solution could be evaluated as successful even though there is no exact knowledge about the contracts. The online service offering information started in 2005 and is still running. There is a great need to maintain old pastures because of the landscape and biodiversity benefits. The number of written contracts has increased and the number of spoken contracts has been decreasing. However, the marketing, monitoring and developing of the solution is dependent on the external funding. The contracts made during the last 15 years should be evaluated in order to get specific information about the impacts on biodiversity, landscape and animal welfare.

Reasons for success:

1. The contract model offered in the online service covers all the aspects of the pasturage, animal health as the most important, making the cooperation feasible and successful.
2. The contracts can be modified by the partners. Even the direction of payment varies.
3. The contracts enable the traditional herding culture in the old pastures, but also in new pastures for example near population centers.
4. The information about the contract possibilities is freely available for all in the online service.

SWOT analysis of the Pasture bank

Main Strengths

1. The online service for the contract solution has been available since 2005
2. The contracts can be modified by the partners according to their needs.
3. The online service is free of charge and operates in whole Finland.

Main Weaknesses

1. There may be a risk with modified contracts.
2. Online service is not promoted because of the limited funding. Therefore, the contract models may not be found.

Main Opportunities

1. The interested partners can meet in the online service and after the first contract continue the collaboration.
2. The contract solution can be used to maintain the traditional pasture herding.
3. The pasturage maintain and increase the biodiversity in the traditional rural biotopes, and it may prevent the growth and dispersion of invasive plant species

Main Threats

1. Online service is no longer maintained by the funding bodies.
2. Development of the contract solutions is dependent on project funding.
3. No more animal herders.

Developments since 2020

Web pages of Pasture bank were renewed and more marketing has been done. The number of announcements and visitors in online platform have slightly grown in number during the past years.

Horizon 2020 European Union Funding for Research & Innovation

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Green jointly owned forest - TUOHI

The green jointly owned forest TUOHI is a multi-owner forest property applying continuous cover (uneven-aged) forest management regime and thus avoiding clear cutting in forestry. TUOHI is juridically private, established according to the Act on Jointly Owned Forests in Finland.

Summary

In TUOHI, the contract solutions include private investments in the jointly owned forest in forms of invested money or forest property. Monetary investments are spent for acquisitions of forest land.

All shareholders of TUOHI have agreed on the management regime based on continuous cover (uneven-aged) forestry. In addition to economic benefits to shareholders, TUOHI is addressing improvements in forest biodiversity and increasing carbon storage. General juridical provisions on jointly owned forests are applied. Currently, TUOHI is attracting increasing number of investors.

Objectives

- Win-win solution: Profitable forestry without clear cuttings
- Preservation of rich forest nature and multiple use opportunities of forests
- Maintain and increase carbon storage in forests

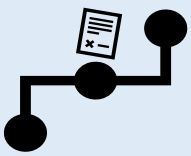
Problem description

In Finland, uneven-aged forest management has been allowed since an amendment in Forest Act in 2014. Before this amendment, forest management was legally restricted practically only to even-aged forestry regime. This restriction lasted approximately 60 years. In even-aged forestry, all trees on a forest site have roughly the same age and height, and the forest is regenerated in a single point of time, typically with clear cutting. In uneven-aged forestry (continuous cover forestry), clear cutting is avoided and the forest is regenerated naturally by harvesting mainly only part of the biggest trees. Therefore, there is no single point of regeneration and the forest remains wooded all the time. In uneven-aged forestry, dispersed age class structure increases the features of natural forest, biodiversity, scenery and recreation possibilities, as well as carbon storage. Currently, uneven-aged forestry is still applied in rather low levels in Finland. If applied with success, uneven-aged forestry may also result in valuable roundwood products and economic benefits to owners. Traditionally, jointly owned forests as a forestry-specific juridical and financial entities have had strictly planned management with even-aged forestry regime. If the shareholders of a jointly owned forest agree with an uneven-age forestry management regime, this may be taken as the main forest management regime of the jointly owned forest. In addition, the jointly owned forest area of uneven-aged management may increase, if it attracts investors with additional private capital. In the case of the jointly owned forest TUOHI, new legal opportunities (structural change) combined with skilled initiators in continuous cover (uneven-aged) forestry management this kind of development has taken place.

LAND TENURE

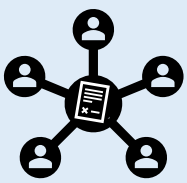
Tenure of the forest property is given to TUOHI that applies continuous cover (uneven-aged) forest management practices

VALUE CHAIN



There are also some features of value-chain; the timber cut from TUOHI forests can be sold as "Clear cut free wood products" and there is brand co-operation with Jukola Lumber Ltd.

COLLECTIVE



Collected investments from investors/forest owners, forest area owned jointly by the investors, profits shared in relation to share of ownership

CONTRACT

Private – private contract
(Jointly owned forest is a juridically private entity)

Contract conclusion: Written agreement

Financing party: Market sector-oriented

Start of the program: Establishment in 2015, thereafter increasing number of contracts by investors/ forestry property mergers
End: Basically permanent, withdrawal is possible

PRODUCT

There are no specific product requirements. Uneven-aged forestry emphasizes production of valuable sawlogs instead of less valuable pulpwood. The applied forest certification criteria must also be fulfilled.

Data and Facts - Contract

Participation: TUOHI has approximately 45 shareholders and the total area is 500 hectares (October 2019). The forests of TUOHI are located in several provinces, and the operating area is whole Finland. 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 to manage the jointly owned forest.

Involved parties: Contracting parties are the shareholders of the jointly owned forest. Involved parties are individual entrepreneurs, who perform cutting operations in jointly owned forest TUOHI and timber buying companies, who buy the harvested timber. All citizens have free access to forests of TUOHI (Everyman's right) and can enjoy the provision of benefits from forests, but this is similar practically in all forests in Finland.

Management requirements for farmers: If a forest owner invests into TUOHI with his/her own forest property by merging it into jointly owned forest, there are no specific requirements. After joining the TUOHI, the forest property is managed according to TUOHI's continuous cover (uneven-aged) forestry regime.

Controls/monitoring: Due to accepted management regime by shareholders, 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.

Renewal / termination: No need for renewal, due to permanent contract. Withdrawal of a shareholder is possible with invested money and if agreed with forest property, but not necessarily with the originally invested/merged forest property.

Conditions of participation: In establishment process, at least two forest properties are needed to form a new jointly owned forest. In case of TUOHI, the principal conditions of participation are minimum amount of investment (10,000 euros) or merged forest property and acceptance of uneven-aged forestry regime.

Risk/uncertainties of participant: In jointly owned forests, there are normal investments risks for participants (shareholders). If a shareholder invests into jointly owned forest with his/her own property, he/she cannot use his/her forest as "a bank" any more, but incomes will be distributed more evenly over years. When uneven-aged forestry regime is applied, there are also natural regeneration risks and risks related to forest health (e.g. root rot risk) as well as damage risks caused by biotic and abiotic factors (insect outbreaks, wind and snow damages). The same risks prevail, however, also in even-aged forest management.

Information: www.yhteismetsatuohi.fi

Funding/Payments: Jointly owned forests are principally privately financed. Private investments are received from forest owners and investors in forms of forest property or invested money. Forest owners and investors receive a share of jointly owned forest.

However, government is offering some incentives for establishing and running jointly owned forests; first, land management measures like establishment of a new jointly owned forest or merging a forest property into existing jointly owned forest are fully financed by the government. Second, jointly owned forests have income tax rate, which is some percentages lower than that of family forest owners.

Context features

Landscape and climate: Finland is one of the world's northernmost countries, the landscape being mostly flat with few hills and fewer mountains. 78% of Finland's land area is covered by forests and 10% by water (lakes, rivers and ponds). Landscape and climate are Nordic boreal forests characterized by softwood tree species. Typically, summers are warm and winters are freezing but the temperature varies considerably between the southern coastal regions and the extreme north, indicating characteristics of both maritime and continental climate. The annual amount of precipitation varies between 500 and 650 millimeters. Lapland has the lowest precipitation, while inland areas in the southern and central parts of the country get the most downpour.

Farm structure: In Finland, forest ownership is dominated by private forests. Measured in productive forest land percentage shares (year 2016), public forest owners include state (26%), municipalities (2%) and parishes (1%) and private forest owners include private persons (59%), jointly owned forests (3%), limited companies (8%) and other owners (1%).

Public goods

Indirect effects: Wooded forest without clear cuttings benefits air quality and microclimate. Moreover, avoiding strong soil preparation increases soil quality. Uneven-aged forestry produces more sawlogs and less pulpwood (high-valued timber). Lesser drainage is needed due to more stable transpiration by trees which improves downstream water quality.

TUOHI is one of the pioneers with certain publicity in applying continuous cover (uneven-aged) forestry regime in Finland. Their expertise has, for instance, been employed in uneven-aged forest management recommendations, available for all forest owners.

LOCATION

FINLAND

The jointly owner forest TUOHI operates in whole Finland.

PUBLIC GOODS

Landscape and scenery
Avoiding clear cuttings and strong soil preparations

Recreational access / Improvements to physical and mental health
Recreational features are associated with wooded landscape and preserved paths since the clear cuttings are avoided

Biodiversity
Avoiding clear cuttings benefits species requiring large wooded areas

Climate regulation-carbon storage
More stable carbon storage in forests, and increased carbon storage in wood products

Resilience to natural hazards
Dispersed age distribution in forest stands may reduce risks

SUCCESS OR FAILURE?

At the end of year 2016 there were in total 356 jointly owned forests in Finland with 455,000 hectares of productive forest land. Some of these entities are already over 100 years old. Jointly owned forest TUOHI is established in 2015 and can be regarded as a newcomer with rather small forest area in this group. TUOHI's emphasis strongly to increase continuous cover (uneven-aged) forest management in Finland has so far been exceptional among the jointly owned forests. The success of TUOHI may therefore not be evaluated only by assessing its' own hectares, but also by the example given to other forest owners. The operations of TUOHI are dominantly privately funded, with minor public assistance for certain operations. In Finland, there are no separate incentives (public costs) of promoting uneven-aged forest management. Due to short term in operation since 2015, TUOHI's contribution to uneven-aged forest management may be regarded as a success with regard to given example and expertise and unclassifiable with regard to own forest area. The effects to the provision of public goods can not be evaluated at the moment.

Reasons for success:

- Unclassifiable: Provision of public goods (in particular forest biodiversity) is not clear after only four years operations.
- Success: Private initiative in the establishment of TUOHI, skilled managers with good networking with forestry and environmental organizations and media.
- Unclassifiable: Slow accumulation of private capital for enlargement of TUOHI.

SWOT analysis

Main Strengths

1. Structural change in forest management legislation allowing uneven-aged forest management combined with jointly owned forest legislation framework
2. Private initiative and private investors as contract parties
3. Skilled managers of TUOHI with good networking

Main Weaknesses

1. Slow accumulation of private capital (investments and equivalent joining forest properties)
2. Distribution of TUOHI's forests overall in Finland, long distances, minor areal concentration, increased costs
3. Unclear effects on the provision of public goods

Main Opportunities

1. Increased profitability by employing uneven-aged forestry compared to even-aged forestry
2. Improved quality of forest nature and multiple use forestry
3. Increased carbon storage in forests

Main Threats

1. General decrease in acceptance of uneven-aged forest management in Finland
2. Drawbacks in natural forest regeneration or forest health
3. Loss of key persons, loss of investors

Developments since 2020

During the period 2019-2022, the number of shareholders has increased from 45 to 70, and the number of hectares has increased from 500 to 619. TUOHI has both FSC and PEFC certificates.

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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Two legal reforms have paved the way for TUOHI

The general basis was the **amendment of the Forest Act in 2014**, legalizing uneven-aged forestry management in all commercially used forests in Finland. 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 were quite different. There has been concern about ageing of forest owners and parcelization of family forest ownership. 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**. The **considerable amendment of the Forest Act** was initially started as a juridical process 2008-2012 in EU by a private person and supported by research results on the uneven-aged forestry.

Gradual shift in demand side for uneven-aged forest management

A considerable share of family forest owners have shown interest towards applying uneven-aged harvesting. However, the demand for uneven-aged harvested roundwood has long been under priced or risk priced by roundwood buyers.

In the first phase after legal change, roundwood buyers therefore rather reacted to forest owner's demands, if she/he insists this forest management regime. **However, information and experiences on uneven-aged harvests have accumulated since then and attitudes towards uneven-aged management have been in change also on roundwood buyers' and harvesting contractors' as well as on forest owners' sides.**

From even-aged harvesting of forests to several harvesting opportunities including uneven-aged harvesting

>> *The reorientation of forest management from clear-cutting to a system of both even and uneven-aged forest management requires new orientation by all parties in the forestry value-chain*. <<

Principally the same technologies are applied in both even-aged and uneven-aged forest management (i.e. harvesting planning and harvesting technologies), but due to standardized principles **even-aged routines are considered to be simpler especially for the harvesting contractors and therefore have considerably lower unit harvesting costs**.

In uneven-aged forestry more planning and work supervision for harvesting was needed especially in the first phase. However, experiences and information on harvesting principles in uneven-aged forests have grown among wood buyers and harvesting operators, which decrease the unit harvesting costs and increase the opportunities for both even and uneven-aged forest management. Together with recent developments in forest resource information collection systems (e.g., laser scanning), new forest regimes may in the future also at least partly replace earlier compartment-based forest inventories and planning with individual tree inventories.

Additional page added June 2022

Nature value bargaining (Luonnonarvokauppa)

Nature value bargaining was a voluntary and temporary (10-20 years) biodiversity protection instrument in which forest owners got payment for maintaining and/or increasing biodiversity in a certain forest area within their forest holding. The solution was tested in pilot project phase (2002-2007) when the different protection instruments for METSO program (biodiversity protection programme for Southern Finland) were developed.

Summary

The "Nature value bargaining" was tested during METSO pilot programme 2002-2007. The aim was to operationalize markets for biodiversity and natural values. Forest owners received subsidy for making the contract. The subsidy level was based on both the biodiversity values of the stand and timber stock. In addition, forest owners' goals affected their price demands, improving the cost-efficiency of the system. After the pilot period, the instrument was abandoned and replaced with more traditional AES due to EU-level legislative reasons.

Objectives

The objective of nature value bargaining was to establish markets for the natural/biodiversity values of forests. In these markets, forest owners are active and voluntary participants who offer valuable areas from the forests they own (Gustafsson ja Nummi 2004). Owners are encouraged to provide natural values by making temporary contracts with authorities (Forestry Centre or Environmental Centre) and by receiving a subsidy for providing the nature values. Basically, private forests are thus rented/leased to state for providing natural values fort he predefined period.

Problem description

The voluntary instrument (being part of the planned METSO biodiversity protection program for Southern Finland) was developed as a response to increasing societal understanding that negative biodiversity development needs to be considered more seriously globally and nationally. In particular, it was considered as a solution to Southern Finland, which is dominated by family owned forests. In Southern Finland forests have been managed dominantly for timber production. In this situation, establishing large continuous protection areas was considered to be challenging. The development was also affected by the experiences gained in Natura 2000 process, where the top-down approach and poor informing of forest owners led to conflicts. As a whole, state authorities were active in driving and developing new and more acceptable solutions. However, the nature value bargaining was an innovation that was developed in regional level (South-Western part of Finland, Satakunta) and it was piloted when the instruments for the METSO programme were tested during the pilot phase 2002-2007. After the pilot phase, the METSO programme was launched in 2008, but the nature value bargaining was not among the instruments anymore.

RESULT-ORIENTED

In Nature Value Bargaining, the subsidy was partly based on the existing and potential (future) biodiversity values of the forest area offered for protection.

PUBLIC GOODS

Biodiversity

INDIRECT EFFECTS

Temporary protection of the rather large areas indirectly improved the provision of various other public goods, such as landscape and scenery (no timber harvesting in protected areas), recreation, cultural heritage and water quality.

LOCATION

FINLAND

Area where Nature value Bargaining was piloted: FI196, FI1C1

CONTRACT

Public-private contract
Forest owners receive subsidy from state-organization, namely Forest Centre.

Contract conclusion: Written agreement

Payment mechanism: Incentive payments

Financing party: Government (without EU-funding)

Length of participation in scheme: typically 10, but can be also up to 20 years

Start of the scheme: 2002
End of pilot phase: 2007

Data and Facts - Contract

Participation: In Nature Value Bargaining 356 owners (3700 ha) offered areas from their forests. After examining the offered areas, contracts were made with 158 owners, resulting in 1520 ha of temporarily protected area (average size about 9 ha).

Involved parties: The direct contract parties are the forest owner and the state authority with whom he makes the contract. In addition, in the pilot project in which this instrument was tested, the forest owners committed to give information to related research project(s), that studied the characteristics and efficiency of the mechanism. In addition, the forest owners could ask advice e.g. from Forest Management Associations, that are advising forest owners in their forest management decision-making and operations.

Management requirements for forest owners: The forest areas that were contracted needed to meet certain characteristics. The offered areas were inventoried by forest/biology professionals. First, the forest area in question was required to represent certain important habitat types (groves, forests with considerable amounts of dead wood component, forests located near small water bodies, certain peatland habitats, traditional biotopes (altogether 11). In addition the forests presenting these habitats needed to contain certain structural characteristics that were important and predefined too. Finally, the price demand from the owner and the willingness to pay from authority needed to meet.

Controls/monitoring: Regional Forest Centre monitored that the characteristics of the protected forests were not damaged.

Conditions of participation: Single forest owner was enough for participation. There was flexibility regarding the characteristics of forest areas that could be accepted for the contract. When the contract was made, it clearly defined the conditions under which the contract could be terminated and what was the process if the land was transferred (sold, inherited) to new owner.

Risk/uncertainties of participants: There were only low risks for forest owners since the state paid the whole sum immediately after the contract was signed. Forest owners also had rights to remove dead trees from the protected forest, if a threshold was exceeded (e.g. > 20 trees/ha), which decreased the risks for insect damages.

Links to other contractual relationships: No, selling the forest holding was possible, but the responsibilities of the contract were transferred to new owner.

Funding/Payments: The funding for the nature value bargaining came from state budget. The actual funding organization was state organization, namely regional Forestry Centre or Environmental Centre. A single farmer made a contract with the Forestry Centre or Environmental Centre and then received the payment. The level of payment was defined in negotiation process between authority and farmer, and it depended on the biodiversity values of the stand, opportunity costs as well as farmer's objectives (nature oriented farmers could demand smaller payment).

Context features

Landscape and climate: The two regions (Satakunta and Varsinais-Suomi) are characterized by twofold climate: On one hand, the proximity to sea affects the climate. Winters are short and relatively warm, whereas autumn period can be rather long and moist. The average annual temperatures vary from +3°C (North-Eastern Satakunta) to +6°C (archipelago). The areas are among the best agricultural regions in Finland, due to long growing periods (the annual temperature sum varies from 1100 (only in limited Nort-Eastern part) up to 1450. In the most fertile forests in these regions, one can find, in addition to typical boreal tree species (Scots pine, Norway spruce, birch) also some nice deciduous trees like oaks, maples as well as alders. The landscapes are rather flat in Southern and Western parts of the area, which is one factor that improves their properties for agriculture. When going towards North-Eastern parts of both regions, one can find some (not very high) hills and upland areas.

Forest holding structure: In the South-West of Finland the average size of privately owned forest property is 30 hectares. In these forests, the prevailing forest management strategy is even-aged management, although the forest ownership goals and management intensities of forest vary between owners.

SUCCESS OR FAILURE?

The solution, per se, was a success. It attracted considerable number of forest owners to participate in the contract during the pilot period. It would have allowed more cost-efficient biodiversity protection that takes into account the forest ownership objectives in the definition of the payment. However, due to EU regulations, which prevented paying subsidies that were based on production of natural values, it needed to be abandoned, resulting in failure.

SWOT analysis

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Eco-grazing - Grazing for ecological grasslands maintenance in the green areas of Brest Metropole

The Head of Green Spaces of Brest Metropole has chosen to entrust the management of the mowing of some of their green spaces to an eco-grazing service proposed by a breeder with a part of his flock of Scottish Black Face-bred sheep whose production (lamb meat) is subsequently sold (not cull or amenity animals as classically done). Eco-grazing is more expensive than conventional mowing, but has been chosen for the many environmental services that result (reducing GHG emissions, reducing noise, social link, local agriculture, invasive plant management, favouring mellow-flowering plants).

Summary

Brest Metropole has explicitly chosen eco-grazing to manage the mowing of some of their green spaces instead of the conventional mowing, although less expensive, because of the environmental services produced by eco-grazing (decrease in the carbon footprint, noise reduction, social link etc. that are perceived by the metropolis). Even though environmental services are not explicitly paid through the current contract (public contract with specified technical clauses), the higher price of eco-grazing could be considered as the city's willingness to pay for induced environmental services. The choice of Brest Metropole in eco-grazing is motivated by the provision of environmental services that could not be produced by thermal mowing. It is a 6-years contract, to guarantee a long-term vision for the breeder.

Objectives

1. Decrease in carbon footprint (from 2 to 8 mower interventions to max 1 passage with a lighter machine)
2. Noise reduction
3. Social link in neighborhoods
4. Meat production from local urban agriculture
5. Biodiversity, invasive plants management
6. Alternative approach to thermal and chemical tools

© Brest Green Spaces

Problem description

Brest Metropole used to manage extensive meadows using the mower and other thermal tools. In order to implement greener management of these grasslands, the Head of Green Spaces took the initiative to introduce eco-grazing, which was more expensive than previously done. A breeder responded to the call for tender by proposing to set up eco-grazing as part of his organic lamb production, to ensure the maintenance of meadows and to provide the desired environmental services.

LAND TENURE

Eco-grazing – pleasure meadows - local urban agriculture – breeder-meat production – ecological maintenance

PUBLIC GOODS

Landscape and scenery

Biodiversity

Climate regulation - greenhouse gas emissions

LOCATION

FRANCE

© OpenStreetMap contributors

Brest Métropole, France

CONTRACT

It is a contract between a public structure (Brest Metropole) and a private person, a livestock breeder

Contract conclusion:
Written agreement

Payment mechanism:
Public procurement/tender

Length of the contract/ of participation in contract solution:
1st contract: 6 years/2 years
2nd contract: 7 years / 1 year (ongoing)

Start of the program:
January 2018- still ongoing

Data and Facts - Contract

Contract feature: Land-tenure. The pleasure meadows have a different management with eco-grazing without changing the use of the site. There has been an increase in the number of visitors to green spaces in the presence of sheep. The periodic presence of animals is extremely appreciated by people of all generations (especially parents and their young children, young teenagers, elders).

Indirect effects: The management of the extensive grassland of Brest Metropole (eco-grazing) has resulted in benefits in terms of biodiversity (invasive plant management, control of brushwood progression), improvement in physical health (decrease in noise, improvement of well-being) and social bonding, as well as local production of urban meat (being in the general interest from the point of view of the Brest Metropole).

Participation: Contractors are a professional breeder and Brest Metropole (Head of Green Spaces). As part of the eco-grazing, a breeder is involved, who practices eco-grazing on 28 hectares of green spaces in the Brest Metropole area (19 hectares in 2018, which could go up to 40 hectares,). The area involved are the green spaces of Brest Metropole, which cover a total area of 860 hectares (not necessarily pasturable yet). The idea would be to join other external partners (companies, schools...) and their surfaces, which could greatly expand the eco-grazing area in order to reach a potential of 200 hectares of pasture in the territory of Brest Metropole. In the short term, the objective would be to reach an area of 70 hectares in eco-grazing and to install a shepherd and a herd on site.

The Head of Green Spaces and the farmer agree on the management of the pasture on small plots, not necessarily close to each other, ensuring that there is enough food for the sheep while having a grass not too high. The breeder's responsibility is the weekly movement of the sheep (i.e. 4 to 5 hours of work with a sheep dog), the health management of the herd and the emergency interventions (escapes, diseases, etc.). 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 population near the grazed areas benefits from the reduction of noise pollution and the social bond that is created by discussion around sheep and interactions with them.


© Brest Green Spaces

CONTRACT

Funding/Payments:
The payment for the eco-grazing is less than 400 euros/hectare/year excluding taxes. It comes from Brest Metropole. The land rent is graceful as well as the grazing and provision of a 3.1 ha parcel of meadows and a few small buildings (by contract on the duration of the market).

Renewal of the contract:
No
(public tender has to be proposed again to continue the activity)

Termination of the contract:
There are termination clauses on both sides with a notice period. On the Brest Metropole side, it occurs if there is a non-completion (CCAG - General Administrative Clauses Book).

The benefits for the livestock breeder: This is a first step before not only contracting the eco-grazing service but associated environmental services and for extending this activity to other areas on Brest Metropole territory and with other financiers, especially private ones.

The benefits for the Head of Green Spaces: It is an alternative to mowing. It produces a range of environmental and ecosystem services (noise reduction, GHG reduction, endemic biodiversity, social link, local agricultural production). In order to sustain the eco-grazing activity, the Head of Green Spaces promotes eco-grazing and related environmental services to private and government partners and is considering the integration of eco-grazing and agricultural food production in a broader reflection, for example in the context of the Territorial Food Plan.

Management requirements for the farmer:

- to provide a herd with a minimum of 40 sheep, up to 80 depending on the season and the maintenance goal;
- to ensure the health monitoring of the animals and to ensure the preservation/improvement of the health of the animals in his care;
- to ensure the movements of the sheep from one place to another.

Controls/monitoring: At this time, there are no indicators, except for potential complaints from the public/individuals who enjoy recreational grassland but on the contrary, the local population appreciates this type of management. The Head of Green Spaces manages the annual planning of the pastures, with two person who follow the condition of the plots (visual aspect) on a weekly basis (at least) depending on the condition of the plots and the amount of food available for the animals. The breeder and the Head of Green Spaces jointly determine the number of animals to be deployed (the breeder adjusts according to his own appreciation of the feed availability of each plot at a given time).

Conditions of participation: No special conditions, other than to match Brest Metropole's requests issued during the tender (CCTP - Special Technical Clauses Book) and to offer an eco-grazing service at a rate that fits into the budget of the Green Spaces.

Risk/uncertainties of participants: The risks of the participants are shared, although more important for the breeder, for him they are particularly related to animals, and in this case, the risks are borne by the farmer (escapes related to malevolence and the condition of the fences, loss, theft, aggression by dogs in particular, sudden death). The risk of grazing discharges is limited by the breed used (Black Face), but there is a mulcher passage each year. There is also a risk of vandalism on the fences, which is the responsibility of the Green Spaces.

Context features

Landscape and climate: The climate is temperate ocean. The landscape to be mowed is characterized by meadows spaces mainly, with invasive plants, brambles, ivy on tree trunks, heath and heather, some undergrowth. The breed of sheep (black face) was chosen for its ability to ingest these plants, refused by other breeds, and its resistance to bad weather. Black Face **sheep** are relatively wild which limits its fraudulent collection.

Farm structure: A farm/shepherd that offers eco-grazing with a breed adapted to environments and constraints (including management of invasive plants).

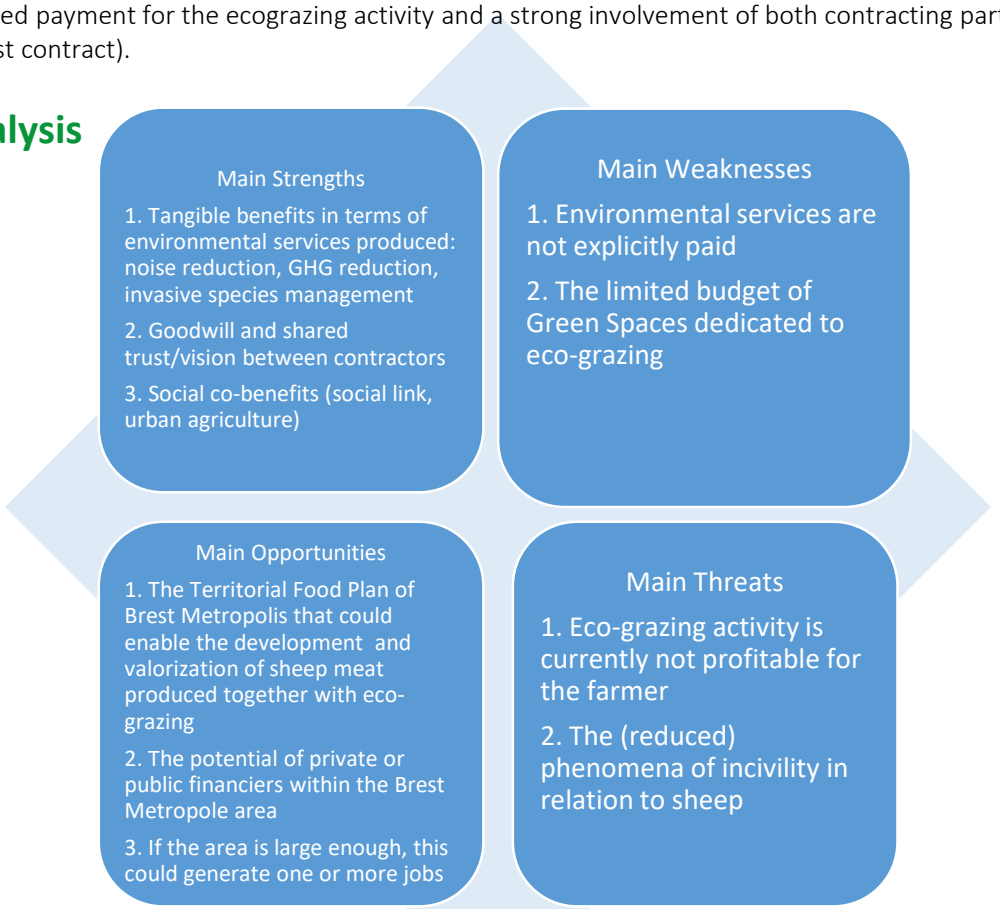
SUCCESS OR FAILURE?

This is a successful contractual solution as the Head of Green Spaces is satisfied with the contracting of eco-grazing (limited investment, low-cost maintenance, little work for agents, low equipment maintenance and little fuel, no risk of economic loss), and wants to increase the number of plots where he can set up eco-grazing. The Head of Green Spaces is actively looking for private or public partners (and the farmer for private or public financiers) to expand eco-grazing (and associated environmental services) on the Brest Metropole perimeter and to allow an explicit payment of the eco-grazing environmental services. For the farmer initially involved, it is a failure, since he stopped all of his farming activities in December 2020. Since, a new public tender has been launched successfully. There is now a 7-year contract with the association "Vert le Jardin" who employs a full-time breeder to perform the eco-grazing and breeding activities. Based on their past experience, the payment of ecograzing has increased more than 500 €/ha.

Reasons for success:

- Eco-grazing has proven to be successful for the population, people are asking for it and become more animal-friendly.
- The contracting farmer/association proposed a breed adapted to the needs of Brest Metropole.
- An increased payment for the ecograzing activity and a strong involvement of both contracting parties (for the last contract).

SWOT analysis



"The INRAE Team in CONSOLE bears the entire responsibility of this factors of success and failure appraisal"

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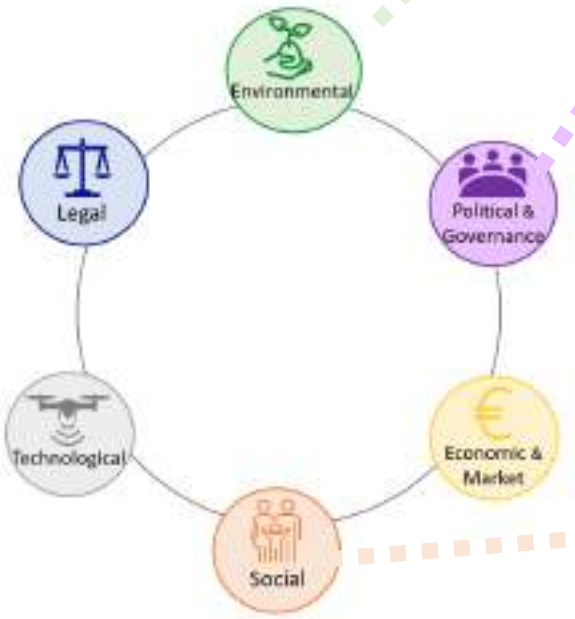
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Multiple beneficial side effects create win-win situations: compared to the old system of mowing, with sheep, only one cut is done. There's a lot **less noise with sheep**. Moreover, since the implementation of eco-grazing, there is a **greater diversity of flora in the meadows**.

>> There is an improvement in the carbon footprint, less noise pollution and a greater diversity of flora in the meadows. <<

The role of regional political will: 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.



Social appreciation: the sheep plots have become a place to walk, and citizens appreciate the sheep (monitoring, spontaneous counting, one-time help) and there is a decrease in vandalism.

- It became obvious that in periods when sheep are absent people were disappointed. The citizens attachment enables the perpetuation of this activity.
- **During the shearing of the sheep**, it is an opportunity to make a day of animation around it with the schools, with educational and cultural aspects, and in the future a possible return of transhumance activities.

Developments in the Program since 2020: Following the departure of the previous breeder, a new 7-year public contract has been made with the association "Vert le Jardin" who employs a breeder installed on site. Compared to the last contract, the payment has increased from less than 400 €/ha/year to more than 500 €/ha/year. There will be larger flocks (20 ewes) moved more often, with for now a flock of 100 ewes of the Lande de Bretagne breed (local breed). The breeder takes over the management of the drinking troughs and the green spaces department takes over the management of the fences. It is the breeder who builds his schedule according to the state of the pasture. There is better landscaping: the state of the grass is monitored by the breeder, and the animals are changed plots as soon as the mowing height target is reached.

There continue to be activities offered to local residents that are supported by the association "Vert le Jardin". A wool activity is being relaunched together with a production of lambs. Animations are made on how to behave or approach the sheep, how the herd works, what to do if you want to have one or more sheep at home.

Terres de Sources - Public food order in Brittany, France

The farmers located in the drinking water supply area of the city of Rennes can contract for the supply of the public canteens of the urban area. Only farmers who commit themselves to improve their farm environmental practices using the IDEA method can subscribe to this public contract. In this case, the difference between practice-based and result-based is questionable since the IDEA method is mainly based on farmland use and agricultural practices indicators.

Summary

The contract solution is to create a public call for tenders that is orientated towards environmental services while also providing food supply to canteens in Rennes urban area. An association between Collectivité Eau du Bassin Rennais (EBR) and the city of Rennes initiated the first call for tenders in 2015 to supply Rennes canteens (10,000 meals per day, a budget of 50,000€ per year). There were three applicants (two pork and one dairy producers). Those three farmers had committed to improve their agricultural practices for the length of the contract (3 years) using the French IDEA method, which includes a system of 42 sustainability indicators. When applying to the call, the farmers decide their output price based on their cost of production, transport cost to canteens and an additional adjustment cost towards more environmental friendly practices. EBR also gives them an annual bonus payment according to their environmental contribution using an incentive term mentioned in Article 17 of the French public markets rules. A farmer who contracts with the city of Rennes and EBR gets a fair price of his output and a bonus payment for the environmental service he provides to enhance drinking water quality.

From this first experience, EBR and 15 municipalities in Rennes urban area launched a second public call for tenders to supply canteens in this area (20,000 meals per day) in 2017. There were 20 applicants (meat, fruits and vegetables, dairy, wheat …). The farmers who have contracted for 4 years under this call are either direct sellers or sell their output through downstream firms (the agricultural cooperative Le Gouessant, Establishment Bigard or the new dairy cooperative Lait Sprit d'Ethique).

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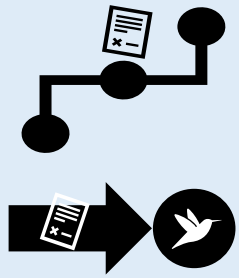
Indirect effects (provision of further public goods): The contractual solution aims to favour more sustainable farming systems using the IDEA method developed by the Research Supervision of the French Agricultural Ministry. The IDEA method assesses farm multi-performances (the overall farm performance) using 42 indicators which cover the three dimensions of sustainability (agroecology, sociology and economics). These indicators include biodiversity, autonomy and low use of inputs, natural resources preservation (soil, water and energy), economic viability, local development and circular economy, food, employment and labor quality). The use of this method allows farms to be evaluated on a broader scope than only environment impacts (here drinking water quality). Consequently, other AECPGs may be concerned in this program.

VALUE CHAIN and RESULT-BASED



The contractual solution aims to favour more sustainable farming systems using the IDEA method developed by the Research Supervision of the French Agricultural Ministry. The results are based on the improvement of agricultural practices using 21 indicators over the 42 provided in the IDEA method. The results are not directly linked to the supply of a public good (improvement of drinking water). The contractual solution is changing to focus on 9 indicators. If no improvements are made, the contract and the supply of catering can be suspended.

PUBLIC GOODS

Water quality- drinking water - and further ecological benefits

CONTRACT

The contracts are made between farmers (private) and local government (public) through a public tender. The contract covers the whole farm, since the IDEA method, used to monitor and assess environmental services, is applied on the farm overall management.

Contract conclusion: Written agreement

Payment mechanism: Combination of incentive payments and product price

Length of contract: 3 years for the first one (start in 2015) and 4 years for the second contract (start in 2018)

Length of participation in contract solution: 5 years for the first three farmers and 2 years for the other 17 farmers

PRODUCT

The products must comply with the requirements of the canteens, in addition to the requirements in terms of practices.

LOCATION

FRANCE

Rennes urban area, Brittany.

Objective

- Improve drinking water quality in Rennes urban area in Brittany, France

Data and Facts - Contract

Participation: For the first call for tenders (public market from 2015 to 2017), three farmers contracted: two pork and one dairy producers who were direct sellers. For the second call for tenders (public market from 2018 to 2021), 20 producers (pork, sheep, dairy, fruits, vegetables, wheat, beverage) contracted. 12 are direct sellers and 8 producers sell their products through downstream firms. For both calls, the area of implementation covers two drinking water catchment areas (Northeast of Rennes and West of Rennes).

For the first call for tenders (public market from 2015 to 2017), the other participants were:

- Collectivité Eau du Bassin Rennais (EBR), a local government that produces, manages and distributes drinking water supply within the Rennes urban area,
- The city of Rennes.

For the second call for tenders (public market from 2018 to 2021), the additional participants were:

- 14 other municipalities in Rennes urban area,
- The Cooperative Le Gouessant et Establishment Bigard, the new cooperative Lait Sprit d'Ethique, Manger bio 35.

Involved parties: Among the involved parties, there is the EBR. EBR has 12 drinking water catchment extraction points, mainly surface water resources (rivers, water storages) whereas most French urban areas get one main water resource. 85% of drinking water is extracted outside Rennes urban areas. Water basins covers a large surface of 1,500 km^2.

For the first call for tenders, 3 farmers who sell directly to canteens of the city of Rennes were involved. The city of Rennes provides 10,000 meals per day in its canteens. The city initiated the first call for tenders to provide food in its canteens from farmers who are committed to use a code of environment-friendly practices. The objective of the code of practices is to improve drinking water quality through the improvement of the farm production system.

For the second call for tenders, in addition to the EBR, 15 municipalities in Rennes urban area were involved as well as 20 producers (pork, sheep, dairy, fruits, vegetables, wheat, beverage). 12 are direct sellers and 8 producers sell their products through processing firms (two agricultural cooperatives and a processing firm).

Financing party: Local governments (the city of Rennes and other municipalities from Rennes urban area) for food purchase to supply canteens and EBR for the bonus payment associated with environmental services.

Funding/Payments: There are two stages. First, local governments initiate a call for tenders. Farms who are located in the water catchment areas can apply to it. Local governments select applicants based on the code of practices. Then, the selected farmers can provide agricultural products to canteens for the contract length. Each local government, depending on its needs, chooses to purchase or not food products from those selected farms.

- Food price: Farmers are paid for their output. Each farm, when applying to the call for tenders, sets its fair price. The output price includes the cost of production, the transport cost and the additional cost to adopt the code of practices. Local government pays them for the quantity provided.
- Environmental bonus: The selected farms have an annual bonus payment for the environmental services targeted. This payment depends on how the selected farms have set their agricultural practices target in percentage. The improvement is determined using the initial IDEA farm score, the maximum IDEA score (182 points), and the target defined by each farm. A selected farm can get 150€ per percentage. The annual bonus is limited to 3,000€ per year and per farm.

The advantages of participation: For EBR, these contracts help to improve drinking water quality and to reduce water treatment costs. Similarly, it allows the city of Rennes to provide drinking water with high quality, local food products for public canteens, and to help to get a sustainable territory. For farmers it is a way to get a payment for an environmental service and to increase their market outlets for some of their outputs.

Management requirements for farmers: Farmers who applied to the call for tenders must produce under a stringent code of practices :

- Use of feed that is GMO-free and palm oil-free
- No use of preventive antibiotics
- No use of some pesticides

A farm diagnosis is realised using the IDEA method.

Problem description

Collectivité Eau du Bassin Rennais (EBR), the local government which produces, manages and distributes drinking water supply within the Rennes urban area, has committed to provide solutions to improve water quality (e.g. reduction in nitrogen and pesticide use) in Rennes urban area in Brittany (10th urban area with 710,000 inhabitants). Rennes urban area is composed of 56 municipalities and provides drinking water for 480,000 inhabitants. Drinking water catchment areas are located in an intensive agricultural area (2,000 farms). Two water basins are concerned. The first one is located in Northeastern Rennes, where agricultural production is mainly dairy production. The second one is located in Western Rennes with animal production (dairy, pig and poultry productions).

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Controls/monitoring: An initial and a final diagnosis are done by one of the three following organisations (Chamber of agriculture, Agro bio or Adage) to give a farm score using IDEA method. Once a year, EBR checks the planned improvements made by each farm, pending the implementation of the labelling process.

The following points are checked:

- Feeding: GMO-free and palm oil-free,
- Animal health: no use of preventive antibiotics,
- No use of some pesticides (neonicotinoids, metaldehyde, Dimethenamid, metolachlor),
- An improvement in the IDEA score.

Conditions of participation: Farmers must be located in the catchment area (2,000 farms). They must produce agricultural products that can be used in canteens. The consequences of non-compliance with the contractual conditions can be the suspension or the termination of the contract.

Risk/uncertainties of participants: Some agricultural products are excluded from the call for tenders because canteens cannot use them. However, when EBR finds that a farmer commits to a high enough environmental target, local governments can collaborate with the farmer to help them change his output so it could meet canteens' requirements. Since 2016, the public procurement code requires buyers to analyse the supply (sourcing) before launching their public call for tenders. It allows local governments to ensure that the call for tenders will be successful. Otherwise, the risk would be that the call for tenders has no applicant when the code of practices is too stringent. For the first and second calls for tenders, local governments are not committed to buy a minimum quantity of products. In the next call of tenders, this will be considered, in order to guarantee farmers a minimum added value so that they are encouraged to adopt more ecological practices.

Links to other contractual relationships: The contract involves several stakeholders. First, EBR and the municipalities create a group order to initiate a call for tenders and select applicants. Second, this group order and each farmer sign a contract to define the agricultural products that can be provided to the canteens and the target for the environmental service.

Context features

Landscape and climate: The 12 water catchment areas are water surface areas and 85% of the area is located outside Rennes urban area. This region has an intensive agricultural sector. 2,000 farms are located there. They mainly produce animal products (dairy, pork and poultry productions).

Farm structure: The contractual solution does not target any farming system. The objective is to improve the ecological practices of all farms located in the water catchment areas.

SUCCESS OR FAILURE?

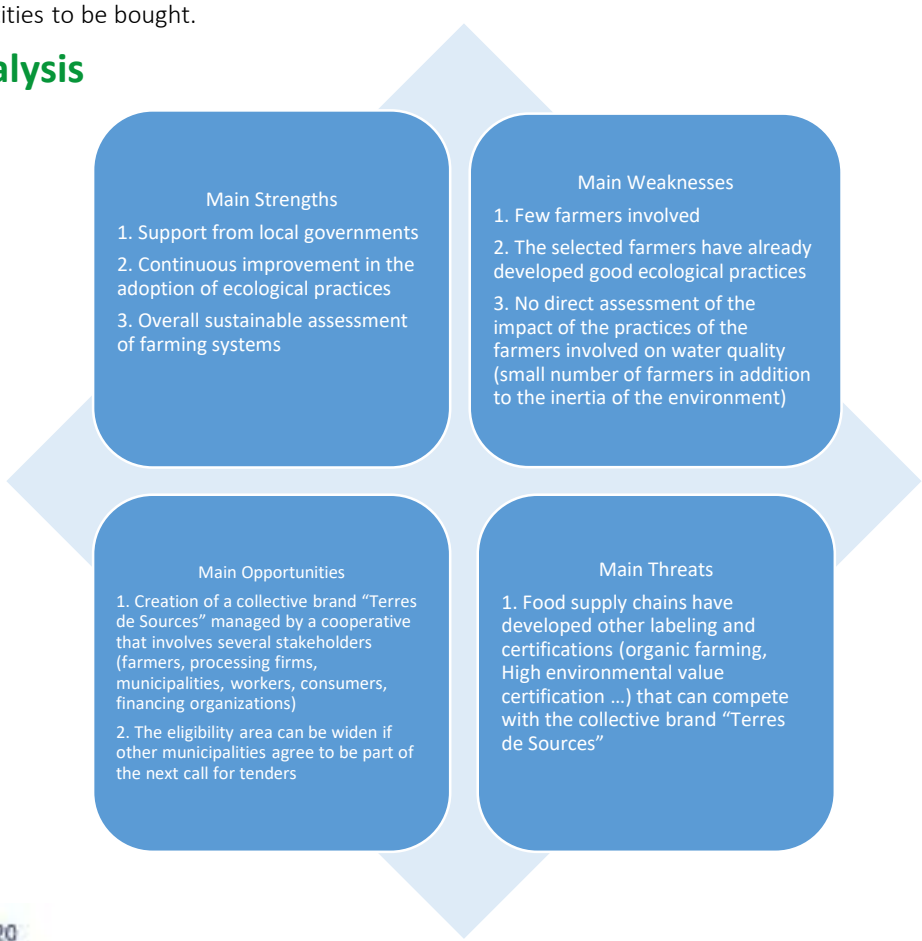
We can say that the Terres de Sources program is successful because the number of participants has increased from 3 in 2015 to 20 in 2017. However, the results on water quality improvement are not measurable because the participant rate is still too low.

We can mention, as a success criterion, that Terres de Sources has just received a financial aid of 20.6 million euros to strengthen water resource preservation and to develop new food supply chain with a collective trademark "Terres de Sources". A cooperative will be created to manage this trademark and will be governed by several stakeholders (producers, processing firms, consumers, local governments, workers, banks). The cooperative will promote the collective label, provide technical services to farmers, processing firms and administer sales.

Reasons for success:

- The project has started with few participants, which has allowed to grow trust between them. The project was built with all the parties concerned, taking into account everyone's needs.
- No strong commitments for local municipalities regarding the amount of food to buy from farmers, which facilitates their participation (but this does not guarantee the payment of environmental services and efforts made by farmers).
- Experimental process that aims at involving more farmers, more municipalities and commitments in terms of food quantities to be bought.

SWOT analysis



Horizon 2020
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Esprit Parc National - Food and services in the national park of Guadeloupe

"Esprit Parc National" is a brand promoted, delivered and granted by the French Biodiversity Agency. This label is granted to farmers and tourism enterprises that adopt production practices for nature protection (close to organic farming) in the vicinity of the core natural reserves in national parks. In Guadeloupe this might be an opportunity for agroforestry farmers to get better prices. However transaction and production costs seem too high for most eligible farmers.

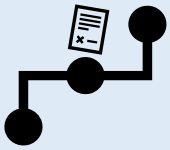
Summary

The contract is characterized by two regulations frameworks: a generic one and one depending on the categories of products or services branded. The generic regulation states the common commitments and eligibility criterions required for every provider of products or services called User (of the brand). Among the general requirements are those relative to the protection and the valorization of the landscape quality and biodiversity, the valorization of natural resources and local craftsmanship in a processes of sustainable development. The User has to comply with these regulations during the contract. The length of the contract is not fixed in these regulations and can be renewed. The contracts are between the User and the national park where her activities are located. The Users pay an annual fee to use the collective brand. The amount of the annual fee is fixed by decision of the French Biodiversity Agency. The Agency can also decide to change unilaterally the regulations both generic and specific, in which cases the User can have up to 3 months to comply with the new regulation.

Problem description

"Esprit Parc National" is a collective brand registered by the national parks of France and it is implemented in each of the 10 French national parks. The brand is exclusively granted to products or services from economic activities that preserve the biodiversity and the heritages. Through this brand, the national parks contribute to the preservation of the cultural heritage and the valorisation of activities compatible with nature protection. The national park of Guadeloupe is a part of it, and has implemented this brand in its territory, first in order to support the development of ecotouristic activities. However this brand also concerns agroforestry productions, in particular undergrowth crops such as vanilla, coffee or cocoa.

VALUE CHAIN



Natural park – farmer or producer – consumers
Short value chains are promoted to create more local value and social links with the national parks and to make national parks an asset and an opportunity for neighbours rather than a source of environmental constraints hampering the economic development.

PUBLIC GOODS

Landscape and scenery

Recreational access / Improvements to physical and mental health

Forest biodiversity

Rural viability and vitality

CONTRACT

Public – private contract
Between one national park and a private law person

Contract conclusion:
Written agreement

Payment mechanism:
Product price

Financing party:
Consumer-oriented

Start of the program:
2015
End: still running

Data and Facts - Contract

Participation: The collective brand is attributed to products and services, and not to units of production: several products or services can be produced by the same unit of production, but not all products from this unit of production are entitled to be branded as « Esprit Parc National". In 2019, there were 939 products and services branded as "Esprit Parc National" over the 10 French national parks, included transformed products, artcrafts, accommodations. Four of them are Vanilla products, with two located in the national park of Guadeloupe. This national park covers 18 800 ha of land and 3 300 ha of sea (heart of the park).
The total area of the terrestrial hearts of the national parks covers 2 486 918 hectares and the maritime hearts 49 750 hectares. The eligible areas can be larger or smaller than the hearts of parks depending on the parks.

Involved parties: The French Agency for Biodiversity manages the collective brand "Esprit Parc National". The contract is made between the relevant national park and the user, for one or several products or services. The collective brand has been implemented since 2015. There are 33 classes of products concerned by the brand. The products or services are sold and proposed locally, and the short chain of value is encouraged. However, through the communication of the brand, the promotion of local products and services is wider (national and international). The objective is to encourage the economic development of park lands, while preserving nature.

The advantages of participation: The French Agency for Biodiversity manages the collective brand "Esprit Parc National". The farmers or other users of the collective brand benefit from the notoriety and image of national parks. They benefit from a visibility of their activity on the territory and beyond, thanks to local and national communication actions. It allows them to promote more widely the environmental quality of their products and services and their local roots. Doing so, they are part of a network of professionals who defend common values. They also benefit from a special support and training. For the consumers, the collective brand is the warrant that the products or services consumed are from the local economy while preserving the landscape and biodiversity within the national parks.

Objectives

1. A tool for the economic development of park lands, while preserving nature
2. A bearer of the values of national parks (commitment, authenticity, respect, sharing, vitality)
3. Raise consumers' awareness

Management requirements for farmers: Besides the general requirements, there are specific requirements that depend on the category of products or services the applicant wants to market with the brand "Esprit Parc National". For instance, in the case of products category relative to "fruits, vegetables, mushrooms, plants and edible flowers, cultivated or harvested plants", the farmers/producers have to commit to 13 mandatory criteria and at least to 3 of the 6 facultative criteria in the case of the production and commercialization of fresh products. The mandatory criteria are: the location on the territory of the national park, product valuation, location in a pollution-free environment, no use of synthetic chemicals, no GMOs in cultivated species, no agri-ecological infrastructure degradation, species or variety diversification, water resource protection, fruit and vegetable conservation, management of the waste related to production activity, customer awareness. Among the facultative criteria, farmers can choose between: choice of local or old varieties, setting up a natural mulch, packaging fresh products in biodegradable materials, responsible personnel management, partnership with local players, business development agri-tourism. Some of these requirements are very close to the organic farming ones.

Funding/Payments: Payments are coming from the consumers. The Payment for Environmental Services (PES) corresponds to the monopolistic competition mark-up (positive price difference due to the discrimination of the product), if any, associated to the branded product compared with standard product. A strictly positive mark means that some consumers voluntary contribute to the environmental objectives of the brand while buying the branded product.

Product requirements: In terms of products quality, the farmers are required to be part of a process to enhance their production: enrolment in a process to identify the quality and origin of their production or be labelled in organic agriculture or proposing direct sale, short circuit or be registered in a collective approach product valuation (territorial brand...) or value their production through a transformation activity.

Controls/monitoring: There are controls. In each product category regulation, the type of control is mentioned for each mandatory and facultative criteria. The farmer has to be able to prove, using invoices, vegetation or field indicators, or any other means or document agreed beforehand, that the criteria are met (the mandatory ones and the facultative ones chosen by the farmer). The French Agency for Biodiversity and the national parks can proceed to controls regarding the use of the collective brand, either by proceeding directly to these controls, or by delegating this mission.

Conditions of participation: There are no limitation of participation, but there are some conditions to use the collective brand. In the generic regulations, the requirements to be eligible to use the collective brand are to adhere to the values of the national parks. In the case of products such as "fruits, vegetables, mushrooms, plants and edible flowers, cultivated or harvested plants", that have their own particular category regulation, one of the conditions is to have 70% of the crop area located within the national park. The requirements and norms are precisely and comprehensively defined in documents that are available online with no restrictions (consumers and producers can have access to these information). The consequences of a non-compliance of the contractual conditions may vary according to their frequency and their severity, but can lead to the interdiction of using the collective brand.

Risk/uncertainties of participants: As long as the farmer respects her commitments, she has low risk to loose the ability to use the brand (except for a change in the product category regulation). There is a risk that the price, even higher than standard, does not cover the cost of environmental efforts, the fee and other transaction costs.

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LOCATION

FRANCE

Guadeloupe (Antilles island), National Park
©Esprit Parc National

Context features

Landscape and climate: Guadeloupe is a Caribbean island with a tropical climate. The national park of Guadeloupe benefits from a wet tropical climate. It is made of mountains (altitudes: 0 to 1467 metres) covered by tropical forest. All national parks have a specific landscape, scenery and biodiversity, sometimes extremely fragile, such as in the national park of Guadeloupe, with numerous endemic species. In order to preserve these parks and promote them, the collective brand "Esprit Parc National" has been created, in the logic of a sustainable development.

Farm structure: There are no particular types of agricultural systems targeted, however, the conditions required to be part of the collective brand are numerous and stringent, given the objective of environment, landscape and biodiversity conservation. For farmers, the agricultural practices required are close to the biological agriculture: no use of synthetic chemicals, no GMOs in cultivated species, no agri-ecological infrastructure degradation (hedges, isolated trees, walls), species or variety diversification.

SUCCESS OR FAILURE?

We could not find an access to any results indicators that could track the evolution of natural resources or biodiversity. However, the collective is implemented since 5 years with a relatively important offer, it seems somehow successful.

SWOT analysis

Main Strengths

1. Short value chain (not one single buyer and low traceability and transaction costs)
2. Access to protected area to produce high value goods
3. The brand is promoted nationally

Main Weaknesses

1. Stringent requirements that restrict the number of potential participants
2. High transaction costs compared to expected gains (research for information, technical references, negotiation…)
3. Technical uncertainties (lack of technical references in agroforestry) that increase transaction costs
4. Delay in the access to paiements for a support measure for agroforestry as part of the 2014-2020 programming of the 2nd pillar of the CAP in Guadeloupe

Main Opportunities

1. Combine branded services and products

Main Threats

1. Competition by very cheap and not so bad imported products, especially for Vanilla

Horizon 2020 European Union Funding for Research & Innovation

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ECO-METHANE – Rewarding dairy farmers for low GHG emissions in France

With the ECO-METHANE program, farmers commit to provide a monthly analysis of the fatty acid profile of their milk and to feed their cattle with rich-omega 3 feed intake (mainly through grass feed) and by doing so to decrease the methane emissions of their cattle. In 2019, 617 farmers were engaged in this result-based method.

Summary

The Eco-Methane program is a private-private result-based contractual solution. Methane emissions of dairy cows are estimated by frequent and regular infra-red analysis of their milk. Indeed, there is a correlation between an equilibrated feed ration, the composition of milk fatty acid and the emission of enteric gas (methane) by dairy cows. Farmers' payments depend on the difference in their methane emissions to a regional reference. They also depend on the donations by private companies to support their effort. Funds are collected by the Bleu-Blanc-Coeur fund for health-oriented agriculture and payments granted by the private association "Bleu-Blanc-Coeur" that also governs a food brand based on better animal nutrition for heathier human food. The Eco-Methane method has been recognized by the French Ministry of Ecology in 2011 and by the United Nations in 2012, as a specific methodology for projects of methane emissions reductions of digestive origin trough the feed of dairy ruminants.

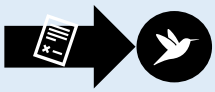
Objectives

1. Reduce GHG emissions
2. Increase zootechnical performances of the dairy cattle

Problem description

Animal breeding contributes for 14,5% of global GHG emissions (FAO) and on a dairy farm, the methane emitted by cows represents more than 50% of the total GHG emissions of the farm. This contract solution was implemented in France with the initiative of a feed company and the association Bleu-Blanc-Coeur. Bleu-Blanc-Coeur is a label that focuses on the nutritional benefits of consuming products from animals fed with omega-3 rich feed ration. Furthermore, there is a correlation between an equilibrated feed ration, the composition of milk fatty acid and the emission of enteric gas (methane) by dairy cows. They have used the program Eco-Methane to encourage dairy farmers that could not be involved in their label (due to a lack of local adapted structures) to adopt practices that would reduce their methane emissions. The Eco-Methane method has been recognized by the French Ministry of Ecology in 2011 and by the United Nations in 2012, as a specific methodology for projects of methane emissions reductions of digestive origin trough the feed of dairy ruminants.

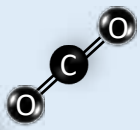
RESULT-BASED



Each farmer commits individually to provide each month its milk analysis to the association Bleu-Blanc-Coeur. The milk analysis provides the composition in fatty acid that can be directly linked to methane emissions.

The commitment to the Eco-Methane program forbids the use of synthetic chemical adjuvants such as synthetic fatty acids, formalin, caustic soda and of all sources of palm (oil and meal) or copra in the cows feed. It also encourages farmers to include in the dairy cows' feed ration a fraction of omega-3 throughout the year, mainly given from grass.

PUBLIC GOODS



Climate regulation - greenhouse gas emissions

CONTRACT

Private – private contract between farmer and private association (Bleu-Blanc-Coeur)

Contract conclusion: Written agreement

Payment mechanism: incentive payments (vouchers)

Length of contract: Annual contract with tacit renewal for the farmers

Length of participation: 4.5 years in average (increasing)

Start of the program: 2011

End: still running

Note: At first, farmers were not payed. The first partnership between the association and a private company has begun in 2015 with the catering service of the Group Orange.

LOCATION

FRANCE

https://www.bleu-blanc-coeur.org

Data and Facts - Contract

Participation: In 2019, 617 farmers were engaged in the Eco-Methane program. It represents 16 203 milk analysis and an average mean decreasing rate in GHG emissions of 11,1% per farm, that is 21,5 T CO2eq. The area involved is the metropolitan France. The Bleu-Blanc-Coeur association that initiated and coordinates the Eco-Methane program is based in the region Brittany. There are also several donators involved (a telephone operator, a national bank, a feed company, …).

Involved parties: The farmers targeted by the Eco-Methane approach are dairy farmers. The farmers participate in the Eco-Methane program through the association Bleu-Blanc-Coeur (BBC), founded in 2000. They have to provide their milk analysis and commit not to use synthetic chemical adjuvants such as synthetic fatty acids, formalin, caustic soda and all sources of palm (oil and meal) or copra in the cows feed.

The association Bleu-Blanc-Coeur is the coordinator of the Eco-Methane program. The association gathers various actors of the food chain around a common objective of quality, in terms of animal, environmental and food quality. In order to provide incentive payments to the farmers involved in the Eco-Methane program, the association Bleu-Blanc-Coeur has created another association habilitated to receive donations (partly tax-free) from companies, local authorities or private individuals. Among the donators there are the telephone network operator Orange (through its catering service), the Crédit Mutuel Arkea (bank company), the Groupe Up, Valorex (animal feed company).

The benefits for the farmers/ for the association: The benefits for farmers is to be involved in a program that rewards their decrease in GHG emissions while not imposing given practices, other than the interdiction of using some components in their animal feed.

One of the benefits for the Bleu-Blanc-Coeur association is to give farmers incentives to change their farming practices towards what is required otherwise in their animal products brand. Actually some of the farmers engaged in the Eco-Methane approach value their milk within the Bleu-Blanc-Coeur marketed products.

Management requirements for farmers: Each farmer participating to the Eco-Methane approach commits individually to provide each month his milk analysis to the association Bleu-Blanc-Coeur. It is also forbidden to use synthetic chemical adjuvants such as synthetic fatty acids, formalin, caustic soda and all sources of palm (oil and meal) or copra in the cows feed. Farmers are encouraged to include in the dairy cows feed ration a fraction of omega-3 throughout the year, mainly provided from grass (grazed or preserved).

Controls/monitoring: The farmers get controlled and certified through the association Bleu-Blanc-Coeur. Each month, farmers individually provide their milk analysis. Three dimensions are observed :

- The quantities of the different components of the feed ration used in the dairy farms involved in the project
- The profile of fatty acids of the milk collected by the dairies and farmers groups
- The milk yield of dairy cows

The emissions of GHG are estimated from the profile of fatty acids and the milk yield, such that:

$$CH4\ produced = (FA \leq C16 / total\ FA) * (a * Milk\ yield^{b})$$

Where *CH4* are the methane emissions, *FA≤C16 / total FA*, the fatty acids ratio expressed in % of fatty acids with 16 or less carbon atoms over the total amount of fatty acids, *milk yield* the milk production in kg per cow and per year and *a* and *b* numeric coefficients.

To be involved in the program, farmers have either to be adherents of the association Bleu-Blanc-Coeur, who monitors the controls, or to have a guarantee of their approach, in this case, a technician from a company member of the association Bleu-Blanc-Coeur.

Legal status of the contracting parties: Here, the AECPGs suppliers are single farmers and the buyer is the Bleu-Blanc-Coeur association that receives donations for this purpose from private companies (such as the telephone network operator Orange (through its catering service), the Crédit Mutuel Arkea (bank company), the Groupe Up, Valorex (animal feed company)) and particulars. The association has a particular convention with each partner. Some partnerships involve local municipalities.

Product requirements: Here, the production of the public goods (reduction of methane emissions) is directly correlated with the milk production and its composition in fatty acids, rebalanced by an omega-3 intake in the ration. The ratio of milk fatty acids and the methane emissions deduced from it are compared to a regional reference. However there are no ratio targeted in particular.

Conditions of participation: There are no limitation of participants. The requirements are defined precisely and comprehensibly in terms of feed requirements and dairy milk analysis use. The consequences of non-compliance with the contractual conditions are a non-payment and the termination of the contract, but there is no particular penalty.

Funding/Payments: To provide incentive payments to the farmers involved in the Eco-Methane program, the association Bleu-Blanc-Coeur has created another association habilitated to receive donations (partly tax-free) from companies, collectivities or private individuals. Among the donators there are the telephone network operator Orange (through its catering service), the Crédit Mutel Arkea (bank company), the Groupe Up, Valorex (animal feed company). Each partner has his own convention with the association Bleu-Blanc-Coeur.

To receive the payments, farmers have to commit to several management requirements and they are payed for GHG emissions saved, based on a regional reference (the price is not fixed).

Single farmers receive the payment in the form of vouchers or communication tools. Indeed, the amounts involved are low and more symbolic than representing a proper payment.

Renewal / termination:

- Renewal of the contract : tacit annual renewal,
- Termination: if the farmers do not respect their commitments, they exit the Eco-methane program.

Risk/uncertainties of participants: The main source of risk for participants is to not reach the objective of a reduction of methane emissions based on the historical regional reference. The reference takes into account the characteristics of the production system. However the financial risk is low : there are no penalty in case of non compliance and the payments are quite low as well and do not represent a necessary revenue for farmers.

Links to other contractual relationships: Some farmers engaged in the Eco-Methane program have another contractual relationship with the association Bleu-Blanc-Coeur through their marketed brand that has higher requirements than those of the Eco-Methane program. However this does not condition the participation to the program.

Context features

Landscape and climate: France has a variety of landscape and climatic conditions that are nevertheless suitable to extensive dairy farming (whether in mountainous regions or plains and bocages). This is not a requirement in the Eco-Methane program but grass is a source of omega-3 for animals. Omega-3 can also be added in the animal feed using compound feed rich in omega-3, for instance with extruded linseed. This kind of compound feed is sold by the Valorex feed company which is part of the association Bleu-Blanc-Coeur.

Farm structure: The farming system targeted is dairy cows farming, since the estimation of methane emission is based on the correlation between the composition of dairy milk and methane emissions. Other animal milk production systems are not targeted by this program. There are no other pre-requirements to be part of the Eco-Methane program.

SUCCESS OR FAILURE?

The Eco-Methane is a successful contract solution both in terms of participation and results per farm. Since the beginning, the number of participants has increased : in 2015, 429 farmers were involved in the Eco-Methane program and in 2017, it increased to 745 farmers. In 2019, 617 farmers were involved in the program, and the reduction of methane emissions was estimated to an average of 11.1 % per farms (21.5 t CO2 eq). Since August 2021, the Eco-methane approach has also been recognized by the Low Carbon Label (created by the French Ministry of Environment) and offers new development prospects. They are currently building the first labeled project.

Reasons for success:

- Results-based program, based on a recognized method that is easy to implement (based on milk analysis)
- Few mandatory requirements, most of them already adopted by farmers (easy access to the program) and no pre-requirements (other than dairy milk farming)
- Few risks in case of non-compliance to the requirements
- Important potential of participants within the farmers involved with Association Bleu-Blanc-Coeur

SWOT analysis

Main Strengths

1. Method used to estimate methane emissions
2. Attractive and simple program : few requirements and no penalties
3. Quality of animal products due to better feed (rich in omega-3)

Main Weaknesses

1. Reductive in terms of environmental benefits (onlymethane emissions)
2. Payments to farmers are dependent on the amount of money collected through the association, it is quite low and can vary
3. The individual additionnality is not insured, since most farmers already have practices allowing them to have lower methane emissions compared to the regional dairy farm reference

Main Opportunities

1. The program could become more inclusive with other environmental benefits assessments (AECPGs from grasslands, such as biodiversity, animal health, water regulation)
2. Eco-Methane could attract more donators in order to make their payments more inciting and their program even larger
3. The regional references and numeric parameters used could be updated to be even more accurate and extended to other animals (For now regional reference are taken from 2007 scientific references and the numeric parameters of the formula used to compute methane emissions are taken from 2009 scientific works)

Main Threats

1. Within the Eco-Methane program, farmers produce a better milk quality while not having enough local processing or commercial outlets to market it as such
2. Could be replaced by public programs (with fixed and more inciting payments), since the scientific method Eco-Methane it is based on is patent-free

"The INRAE Team in CONSOLE bears the entire responsibility of this factors of success and failure appraisal"

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

Main external factors influencing success

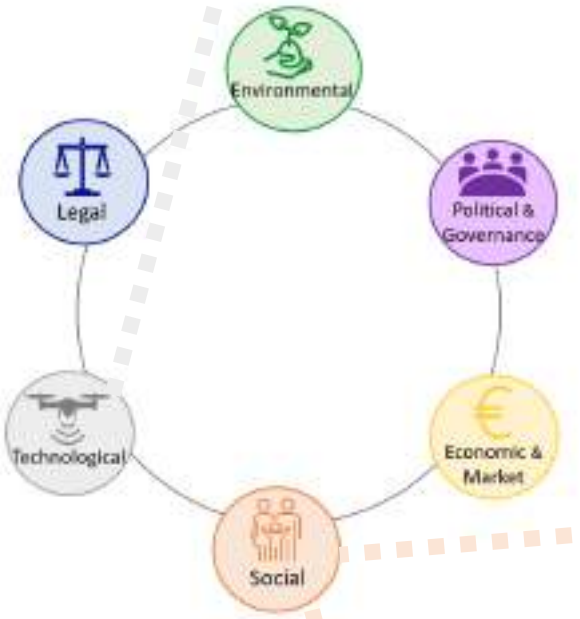
Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Technology for indicator monitoring and measuring:

In EcoMethane, 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 controlling the ration in terms of animal health as well as 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.



Communication of environmental success:

EcoMethane allows farmers 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 environmental goods, such as landscapes, animal welfare, clear water etc.

The possibility to enhance public awareness 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 breeders and their practices.

A program that "make sense":

In EcoMethane 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:

>> EcoMethane finally brings […] 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. <<

CONSOLE scientific analysis – results and recommendations

INRAE researchers have conducted an analysis based on the idea of the "Ecomethane" case study to gain further insights about the payment design and its possible implications.

Background

- Methane (CH_4) is a short-lived climate pollutant → a significant reduction of emission rates would have a rapid positive impact on climate.
- 81% of EU agricultural CH_4 emissions result from enteric fermentation (e.g. digestive process in cows)
- For a given productivity, enteric CH_4 emissions decline as dairy cows' feed is enriched with unsaturated omega-3 fatty acids → the main natural sources are grass fodders and linseed.
- Since 2011, the Payment for Environmental Services programme Eco-Methane rewards French dairy farmers for reducing CH_4 emissions, calculated from cows' productivity and fatty acid composition of milk.

Research aim

To effectively support CH_4 mitigation in dairy farms, the payment design:

1. Should be based on an emission indicator that captures both the effect of productivity and feeding.

→ We examine how diet affects CH_4 estimates.

2. Should compensate farmers for the extra-costs of milk production induced by a change of their practices.

→ We quantify the additional production cost of a change in cows' diet.

Method

We used a balanced panel of 735 French dairy farms for the years 2016 to 2018 and conducted:

→ a comparison of two estimates of CH_4 enteric emissions per litre of milk

→ An estimation of additional milk production variable costs

Main results

- Our results confirm the relevance of using CH_4 indicators (= ways of measuring and display CH_4) taking **both productivity** and **diet** into account in the design of **payment schemes** targeting the reduction of GHG emissions.
- The financial support needed to incorporate more grass in their fodder crop rotation system differs from one dairy system to another.
  - → Our results suggest that low productivity French dairy systems with already large shares of grassland areas might need higher payments to enter a scheme such as Eco-Methane, or find less costly ways to decrease their emissions (increasing productivity).
- Increasing grassland areas in dairy farms is likely to have other direct effects on farm costs that are not considered in this study → additional barriers to participation in payment schemes.

Recommendations

- For an efficient result-based scheme :
  - Having an indicator and a monitoring feature that allow farmers to adjust their practices and to predict the environmental results to be reached.
  - Having payment schemes where farmers can anticipate the payments they will obtain.

Additional page added June 2022

HAMSTER – Collective AECM to restore habitats of the European Hamster in Alsace (France)

The collective AECM Hamster_01 is implemented since the 2014-2020 CAP programming period. The association AFSAL (Farmers and Wild Animals in Alsace) is coordinating the cropping systems of about 140 farmers located in three different static protected areas (a total of approximately 8000 hectares), to favour the development of populations of the protected rodent specie *Cricetus cricetus* (European hamster). The association is under a 5-years contract and benefits from a financial envelope from the CAP that is allocated among the farmers engaged in the measure based on their effort. An additional individual result-based payment (bonus) was introduced in 2018.

Summary

The collective AECM Hamster_01 was introduced in 2014 in the territorial Agri-Environment-Climatic Plan (PAEC) "Great Hamster of Alsace" ("Grand Hamster d'Alsace") to protect the European Hamster in Alsace. Hence, the contract solution aims at encouraging the provision of a public good (remarkable biodiversity) for which the supply is limited to a specific geographical area. Since its implementation, ten territories spread among 3 eligible static protected zones contracted the measure. It represents about 140 farmers and 3000 ha. In addition to farmers, this scheme also involves various key stakeholders: the association AFSAL acting as an intermediary and regulator and in charge of allocating the public financial support among farmers; the Chamber of Agriculture of Alsace; the French Agency for Biodiversity (OFB); the Departmental Directorates of Territories (DDT) of the Bas Rhin and Haut Rhin Departments. The collective payment is conditioned to the implementation of crops and agricultural practices in favour of the survival of the European hamster on at least the targeted percent of the agricultural land of the territory. The individual "burrow premium" is conditioned to the identification of at least one hamster burrow on the agricultural plot.

Objectives

1. Protect the habitats and populations of European hamster
2. Maintain the good functioning of the entire ecosystem associated with the specie

Problem description

Cricetus cricetus is an umbrella indicator specie contributing to agricultural soil quality. In France, its presence is limited to a few municipalities in Alsace. Threatened by the development of maize cultivation and its reputation as an agricultural pest, it is classified in the list of endangered species and protected by the Habitats Directive since the early 1990s. Operations aiming at maintaining European Hamster populations were carried out since the late 1990s but failed to meet the objectives. Following a complaint submitted in 2006, the Court of Justice of the European Union convicted France in 2011 for its lack of effective protection. 2 individual agri-environmental measures supporting the implementation of crops and agricultural practices in favour of the European hamster were introduced during the 2007-2013 CAP programming period. However, the lack of spatial coordination of the operations limited their impact. Therefore, the National Hunting and Wildlife Bureau (today part of the French Agency for Biodiversity) and the Chamber of Agriculture of Alsace took the initiative of proposing a collective agri-environment-climate measure (AECM) in the territorial project of the 2014-2020 CAP programming period, in addition to 4 individual AECM. In order to encourage more farmers to get involved in this approach, an individual bonus designed as a "burrow premium" was introduced in 2018 to reward the land managers of the plots on which at least one European hamster burrow was identified.

COLLECTIVE

Departmental Directorates of Territories → financial support transferred to an intermediary (AFSAL) → allocation to the farmers targeting a common objective (collective management)

RESULT-BASED

Since 2018, measures Hamster_01' : Identification of at least one European Hamster burrow on an eligible plot → bonus to the farmer.

The eligibility to the result-based payment is conditioned to participation in the collective measure.

PUBLIC GOODS

Farmland biodiversity

Cultural heritage

CONTRACT

Public-private : government – farmers association (AFSAL)

Contract conclusion: Written agreement

Payment mechanism: incentive payments

Length of contract in scheme: 5 years

Start of the program: 2013
End: still running

Note: Farmers can enter a new AECM contract as long as a collective measure targeting the European hamster is proposed under the framework of the CAP

LOCATION

FRANCE

Protection areas concerned with the agricultural measures to restore habitats for the European Hamster
Source : Alsace Chamber of Agriculture, Bas-Rhin DDT, AFSAL, 2020

Data and Facts - Contract

Participation: In 2019, 137 farmers participated in the program, 112 in 2018, 123 between 2013 and 2015. The area of implementation is located in the region Alsace, France. 9 territories signed a 5-years contract between 2013 and 2015. 10 territories were under contract in 2018. The surface areas engaged range between 60 and 520 ha, representing a total of 2560 ha in 2015 and 2700 ha in 2019.

Involved parties: Since 2013, the farmers willing to participate in the collective AECM must join the AFSAL association. Farmers sign a contract with the association in which they commit to implement the requirement specifications and participate in the group meetings planning the cropping systems of the territory. In particular, each farmer commits to dedicate each year a share of their agricultural land to hamster-friendly crops so that the territory reaches its targeted objective. The AFSAL represents the farmers of a territory, applies for the financial aid and commits that the requirement specifications of the AECM will be fulfilled at the territorial level. The Departmental Directorates of Territories (DDT) monitors compliance and transfers the money to the association.

The benefits for the farmers/ for the association:

The collective contract solution presents several advantages for farmers :

- They receive a financial compensation for implementing new agricultural practices.
- The economic incentive is even greater since the introduction of the burrow premium.
- The risk is shared within the group of farmers.

For the AFSAL association, acting as an intermediary, it offers the opportunities of attracting more farmers (transaction costs are transferred from the farmers to the association), communicating and supporting in a more efficient way, and increasing environmental results through more spatially coordinated operations. Moreover, their good knowledge of the local context allows for a better targeting of actions and payments (proportional to individual efforts), and thus increases the efficiency of the scheme.

The benefits for the Departmental Directorates of Territories (DDT): This type of AECM is beneficial because it diminishes the transaction costs of the public authorities (instead of interacting with 140 farmers, the institution only deals with one intermediary).

Management requirements for farmers for the collective payment:

- At least 26% of the total utilised agricultural area (UAA) of the collective zone declared must be dedicated to crops favourable to the European Hamster (winter cereals, alfalfa)
- A cover crop comprising a mix favourable to the European Hamster (sunflower, at least one legume and one grass or polygonacea) is implemented after a winter cereal harvest before the 1st of August on at least 50% of the total area dedicated to winter cereals.
- The harvest of plots of alfalfa larger than 0,5ha rotates from July 1st to October 15th on at least 50% of each plot, such that there is a continuous cover of 30 cm high.
- The UAA under alfalfa must not exceed 30% of the area dedicated to winter cereals. The collective organisation ensures that the repartition of the crops favourable to the European Hamster is made so that there is surface ratio of approximately 1 alfalfa for 5 winter cereals.
- The plots cannot be dedicated to alfalfa for more than 4 successive years.
- Cereal strips and unharvested alfalfa surfaces are in close proximity of 50% of the production blocks containing identified European Hamster burrows.

Management requirements for farmers for the individual bonus: The plot contains at least 1 European hamster burrow assessed during the yearly counting campaign.

Controls/monitoring: The DDT monitors the surfaces under hamster-friendly crops using the farmers yearly statements necessary to receive CAP aids, and communicates those elements to the Chamber of Agriculture of Alsace and the AFSAL.

In addition, there are periodic field inspections (random checks) in accordance with the usual monitoring operations of the CAP. Farmers are monitored individually based on their annual management plan that is transferred to the DDT. The administration can then check the repartition of the actions within a group of farmers. Before allocating the "burrow bonus" payments, the DTT undertakes an administrative control followed by a field check.

Conditions of participation: The AECM is implemented in priority in the territory of the Agri-Environmental Plan « Great Hamster in Alsace » (the 3 static protected zones and their associated support zones). The integration of plots of the support zones is possible if they are continuous to others already under the measure, and if most of the plots of the territory under contract is in a static protected zone. Moreover, it is required that local representatives agree for the undertaking of release operations of hamster individuals if necessary. Regarding territories where the European hamster is absent, the measure can still be implemented if release operations are organised and accepted by local representatives. Moreover, once a farmer subscribes to the collective AECM, he can no longer contract other compensatory measures specific to the European hamster protection (cumulating public measures or public and private measures is impossible).

Funding/Payments: The financial envelope comes from the national funds (top-up) of the French Ministry of Agriculture and Food (MAA) with 35% of co-funding from the EU. The 5-years budget depends on the percentage of favourable crops targeted by each group of farmers. The minimum corresponds to 452€/ha/year for the territory for a target of 26%, and the maximum to 520 €/ha/year for a target of 40%. Moreover, farmers are compensated for participating in planning and information meetings (132€/year/farmer). The burrow bonus corresponds to 255,67€/plot with at least one burrow. The AECM animation is funded by the National Action Plan.

Risk/uncertainties of participants: The main uncertainty for farmers is the variation of opportunity costs (in particular the price volatility of maize, winter cereals and alfalfa). There are also uncertainties regarding compliance of the management requirements by all farmers and the environmental impacts of the operations (in particular whether or not farmers will be eligible for a burrow bonus).

Links to other contractual relationships: It is not possible to enter the collective AECM while being still under another (private or public) contract targeting the European hamster protection.

Context features

Landscape and climate: The Alsace region is dominated by urban areas that were particularly expanded in the 90s. While the agricultural sector contributes relatively little to the economy, it is known for presenting a high performance. Alsace is particularly famous for its wine industry and is also a significant producer of cereals (10% of French cereals). The region benefits from strategic geographical assets favouring exportations: the Rhine river and its central location relative to the European market. The territories eligible to the collective AECM Hamster_01 are located in the Alsace plain, characterized by homogeneous landscapes with large open fields and a relatively flat topography. The largest European water table feeds numerous rivers and streams that contribute to maintain a few humid and wooded areas. An important development of road infrastructures fragmented landscapes and had negative impacts on biodiversity and the survival of some naturally occurring species. The climate is semi-continental, characterized by cold and dry winters, and hot and sunny summers. The average temperature is 11°C. The Vosges mountains generate a Foehn wind from west to east resulting in low precipitation levels. The Alsace region presents a high diversity of soil types.

Farm structure: The average farm size of the territories of the case study is around 48ha. The plots are relatively small and fragmented in the northern and central areas (1.25 ha on average). In the southern area, the average plot size is larger (2.7 ha). Most farms grow field crops and their cropping systems are dominated by maize (it corresponded to 60 to 65% of the territory UAA in 2013). There are also some mixed crops and livestock farms. The agronomic quality of soils is considered good. Agricultural practices have significantly evolved in the last 40 years with negative consequences for the European hamster survival. A special feature of this territory is that farms commonly exchange plots on a yearly basis, what limits incentives for contracting individual AEM during 5-years.

SUCCESS OR FAILURE?

The contract solution can be considered as successful as the number of European hamster individuals kept increasing since 2014 and farmers maintain their participation. There were 123 farmers involved in the program between 2013-2015, 112 farmers in 2018 and 137 farmers in 2019. The surface of the three areas engaged range between 60 and 520 ha, representing a total of 2560 ha in 2015 and 2700 ha in 2019.

Reasons for success:

- Economic incentives high enough
- Significant involvement of local actors and institutions
- Spatial coherence of the operations

SWOT analysis

Main Strengths

1. Increasing participation of farmers
2. Quality and transparency of the operations designed to monitor European hamster populations
3. A network of stakeholders favouring sustainable cooperation and innovative solutions (European experts, National Action Plan, programme LIFE Alister)

Main Weaknesses

1. The number of European hamster individuals remains too fragile and difficult to sustain on the long-term. The habitats continuity and quality must still be improved
2. The agricultural practices supported by the scheme are still not profitable enough
3. Many still not recognize the necessity of protecting the European hamster

Main Opportunities

1. An increasing awareness of biodiversity issues and the need to protect native species
2. The development of new markets, value chains and agricultural practices for crops favouring the European hamster
3. A better positioning and overall coherence of the different actions and public policies targeting the European hamster protection

Main Threats

1. Predation
2. Public budget reduction
3. The increasing intensification of agriculture and the development of big infrastructures contributing to the fragmentation of the European hamster habitats and populations

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

The Burren Programme

Due to the unique landscape, farmers in this region face many environmental challenges which the traditional agri-environmental schemes do not address. This project works with farmers to achieve specific environmental outcomes, rewarded by payments, and also makes funds available for farmers to invest in self-selected, but pre-approved, conservation projects. Environmental targets are set and monitored by farm advisors, performance is scored and payments are made based on the scoring system.

Summary

The Burren Programme is described by Dunford, the project leader, as a 'hybrid' approach whereby participating farmers are rewarded annually for their environmental performance while also having access to a fund to carry out self-nominated 'conservation support actions' to help improve this performance over time. The typical 'action-led' approach to agri-environmental schemes is enhanced to encourage farmers to undertake conservation actions specifically designed to improve the environmental health of their farm, and to enhance their income through the new, complementary, results-based payment. 5-year contracts are offered to all participating farmers, with the last of the contracts set to expire in December 2022. The project has an outline budget of approximately €10m supporting 328 farmers and 23,000 hectares of target habitat. Farmers sign a five-year plan with extensions of two years in some cases and farmers are afforded flexibility in undertaking conservation actions.

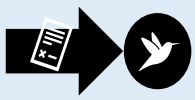
Objectives

1. To ensure the sustainable agricultural management of nigh nature value farmland in the Burren, improving water quality and usage, and supporting the landscape and cultural heritage of the region.
2. To contribute to the positive management of the Burren's landscape and cultural heritage.
3. To contribute to improvements in water quality and water usage efficiency in the Burren region.

Problem description

The Burren extends over an estimated 72,000 ha of land in Counties Clare and Galway (Ireland). It is defined by the presence of exposed limestone, the calcium-rich skeletal remains of marine organisms that populated the seas over 340m years ago. The Burren has recently been recognised through UNESCO Geopark Status, over 30,000 ha of the Burren is designated as Special Area of Conservation (SAC) and an additional 2,000 ha designated as Special Protection Area under the Birds Directive (79/409/EEC). A study by Dunford (2001) estimated that stocking levels in the Burren increased from 0.38LU/ha in 1970 to 0.66LU/ha in 2000, a 73% increase. During this time, it is estimated that approximately 30% of the Burren's archaeological sites were lost due to land reclamation. Silage gradually replaced the naturally available forage of the winterage pastures, resulting in reduced levels of grazing which contributed to a loss of biodiversity and accelerated levels of scrub encroachment. The initial stimulus for the project came from local farmers who, feeling threatened by SAC designations and environmental programme conditions, decided to engage constructively with researchers and public authorities to find a way forward.

RESULT-BASED



COLLECTIVE

The project operates a 'hybrid' approach whereby farmers are rewarded annually for their environmental performance while also having access to a fund to carry out self-nominated 'conservation support actions' to help improve this performance over time.

PUBLIC GOODS

Landscape and scenery

(Farmland) biodiversity

Soil quality (and health)

Rural viability and vitality

Cultural heritage

Water quality

CONTRACT

Financing party:
Government (with EU-funding)
It is a public-private contract.

Contract conclusion:
Written agreement

Payment mechanism:
Incentive payments

Length of participation in scheme:
5 years

Start of the program: 2010
End: continues today

The project has evolved over an almost 20 year period using various EU funding sources

Data and Facts - Contract

Indirect effects: The programme is closely aligned with a local NGO Burrenbeo which was established to tell the story of the living Burren. Burrenbeo helped to reshape the narrative around the Burren to one which also celebrated local people, place and tradition. Burrenbeo also helped engage the broader community through monthly walks and talks, volunteering events and festivals, including 'Burren in Bloom' and the 'Burren Winterage Weekend' which are unique celebrations of the rich legacy of pastoral farming in the Burren.

Participation: In the contract solution 328 farmers are involved and 23,000 ha of target habitat.

Involved parties: All Burren programme farmers are offered a simple 5-year contract outlining the baseline situation on the farm and suggested priority actions to improve the farm environment. By signing this 5-year plan the farmer agrees to abide by the Terms and Conditions. A set of procedure manuals translates these T&Cs into detailed procedures to be undertaken by the project team, who are responsible for the successful delivery of the programme, in conjunction with the farmer.

Management requirements for farmers: Environmental targets and an action plan is set by the farm advisor and the programme team. Farmers must implement this and perform along a scoring system to ensure payment.

Funding/ Payments: The programme is funded by the Department of Agriculture, Food and the Marine through Pillar II of the Common Agricultural Policy. Each farmer's payment depends on the score they receive on their assessment on a per hectare basis. For example, a winterage score of 5 yields €60/ha, 6 yields €72/ha, 8 yields €96/ha on a farm of between 10 and 40 hectares. The payment system contains a number of innovations designed to encourage an improvement in management and thus site condition, rather than settling for the status quo. For example, 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 Programme. The average payment is approximately €3,500 per farmer.

Controls/monitoring: Farm advisors score performance using an evidence based system while on a site visit. Burren Programme team members validate scores on approximately 30% of farms annually.

Renewal / termination: 5 year contracts, with extensions of two years in some cases. Some contracts have rolled over since the first programme in 2010.

LOCATION

IRLAND

It is conducted in a specific region. Given the resouce intensity it is difficult to judge whether it can be implement nationally.

Risk/uncertainties of participants: The farmer runs the risk of not scoring highly enough to qualify for payments.

Conditions of participation: Farmers must apply to the scheme, attend an initial induction meeting and then devise a farm plan for environmental improvements with their designated farm advisor. The annual summer assessment conducted by the advisor is the approval process for the performance payments. The environmental health assessment assesses the management of each field in terms of both the actual management, the management that is needed to get it into the best condition for it to function as a species-rich limestone grassland/heath, and the ecological integrity of the grazed habitats present. A scoring system, underpinned by evidence-based information, helps to create a very robust, detailed and objective system. The scoring system is conducted on site by the farm advisor each year, validated by the project team and submitted to the Department of Agriculture for payment

Context features

Landscape and climate: The Burren extends over an estimated 72,000 ha of land in Counties Clare and Galway (Ireland). It is defined by the presence of exposed limestone, the calcium-rich skeletal remains of marine organisms that populated the seas over 340m years ago. Over time, these remains were compressed and elevated to reveal the massive, fossil-rich limestone terraces which prevail today. The region hosts over 70% of Ireland's native flora and is one of the best surviving areas for bumblebees in Ireland, it is home to at least half of the 570 macro-moths recorded in Ireland and 30 of Ireland's 34 butterfly species. Over 60 species of snail are found in the Burren, as are most of Ireland's native bat species. Ireland's only native reptile, the common lizard (Zootoca vivipara) and the introduced slow worm (Anguis fragilis) are frequently seen. Farmland birds such as Yellowhammer (Emberiza citrinella), Common Cuckoo (Cuculus canorus), Red-billed Chough (Pyrrhocorax pyrrhocorax), Eurasian Skylark (Alauda arvensis) and Common Linnet (Carduelis cannabina) are declining elsewhere but can still be found in suitable Burren habitats, as well as birds of prey such as the Peregrine Falcon (Falco peregrinus).

Farm structure: Given the rocky nature of the Burren, it is a pastoral landscape, most Burren farmers are specialist producers of suckler beef, with a typical herd size of 30-40 cows, usually composed of a mixture of continental-cross (Charolais, Limousin, Simmental) animals. Typically, farmers sell the weanlings from these cows at local sales in Autumn where generally good prices are made, with many male calves destined for the export market, many of the females sold for breeding. A small number of dairy farms continue to operate in the region, while sheep farming persists mainly in parts of the east Burren.

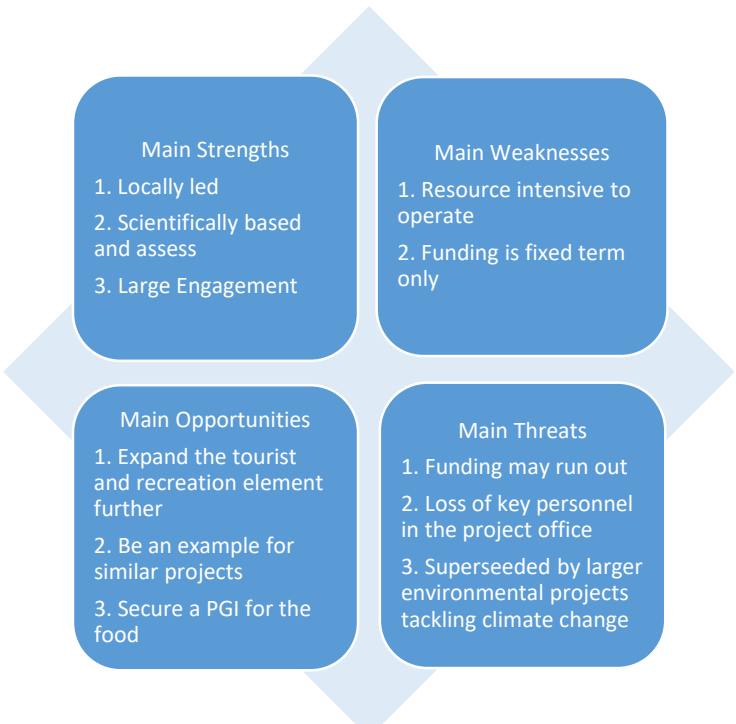
SUCCESS OR FAILURE?

The programme has been a success in that is has engaged and re-engaged many farmers to implement management techniques and make investments that have been beneficial to the environment and economic viability of this unique landscape. Following an evaluation of the programme in 2020, The Department of Agriculture, Food and the Marine calculates that improvements in landscape and habitat quality are worth at least €32.8 million and the programme has generated €23 million in local economic activity since 2010.

Reasons for success:

Co-creation was an important success factor. Although the programme was born from a PhD project, it respected farmer's ideas and their role in finding solutions. Furthermore, a team of four locally-based staff were appointed to run the project, 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. 'Learning by doing' was another success factor, the project demonstrated in real-time what 'conservation farming' looked like and proved that it can in fact improve agricultural efficiency and performance (e.g. reducing input costs and/or increasing stocking levels). This was a lesson that surprised some farmers and engaged many more. Although it addresses a complex issue, a key success factor was the ability to keep farmer participation simple and non-onerous. This is reflected, for example, in the simplicity of the farm plans and clarity of the payments (per score and per task) and is enabled by the high level of available support for the farmer from the local programme office and from the trained farm advisors.

SWOT analysis



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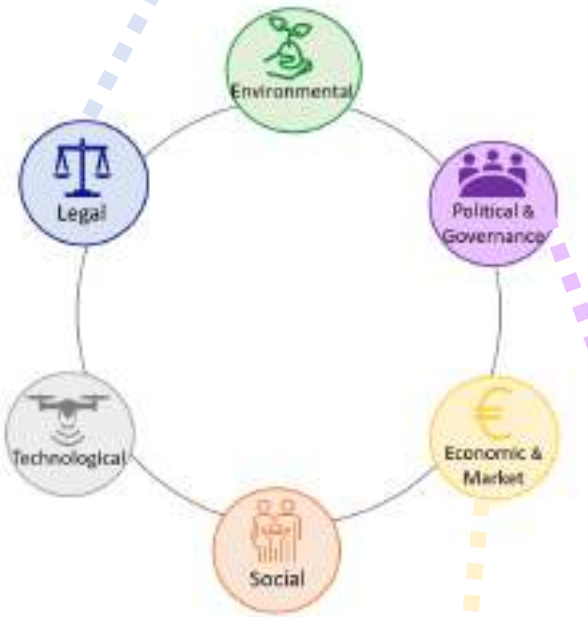
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study, an in-depth analysis found that the following, selected factors were of specific importance.

The Burren program 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. <<



Institutions, governance and formal structures in a public result-based program:

- In the Burren Program, 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**.

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

Additional page added May 2022

RBAPS - The Results-based Agri-Environment Payment Scheme (RBAPS) Pilot in Ireland

To test how results-based agri-environment schemes could work over wider areas and in differing landscapes, the EU Commission provided 70% funding for the Results-based Agri-Environment Payment Scheme pilot (called RBAPS Pilot) in Ireland and Spain. Two regions were selected in Ireland. Ecologists worked with 35 participating farmers to improve the biodiversity status of their farms. Farmers were paid on a per hectare basis conditional on a score achieved on a 1 to 10 scale.

Summary

The project is operated on 35 farms in two pilot regions. The first step in the scheme design involved selection of the biodiversity targets, i.e. the ecological benefit for which farmers are incentivised to manage their farmland. Locally applicable biodiversity targets in the pilot regions were selected to reflect legislative requirements and conservation concerns.

Problem description

Two pilot areas were selected to test the success and potential scalability of results based schemes. County Leitirm was selected as a range of grassland quality and conservation value is present, supporting a variety of biodiversity, this broad species-rich grassland target was selected for measure development and testing. Such a target would also be more widely applicable within wider high nature value farmland settings. County Leitrim is a stronghold for the marsh fritillary butterfly and this invertebrate species is associated with extensive farming practices on wet ground. The second pilot area the Shannon Callows has by far the largest area of lowland semi-natural grassland and associated aquatic habitats in Ireland, and one in which there is least disturbance of natural wetland processes. The River Shannon Callows was selected as a pilot area as it has a dual Natura designation, including the River Shannon Callows Special Area of Conservation (SAC) and the Middle Shannon Callows Special Protection Area (SPA), and extensive areas of farmed land supporting a range of habitats and species of conservation importance. Although the focus for biodiversity targets in the callows was on the qualifying special conservation interests (SCI) of the Natura 2000 sites, consideration was taken of their ability to be delivered through a results-based approach.

RESULT-BASED

Farmers apply to participate in the scheme. Their farm is assessed and they are assigned specific and appropriate biodiversity targets. Their performance is scored on a scale of 1 to 10 by the team of ecologists and the farmers are paid accordingly along a sliding scale.

PUBLIC GOODS

(Farmland) biodiversity

Landscape and scenery

Rural viability and vitality

CONTRACT

Financing party:
Government (with EU-funding)
It is a public-private contract.

Contract conclusion:
Written agreement

Payment mechanism:
Incentive payments

Length of contract:
Max of 2 years

Start of the program:
2015
End: 2018

Length of project funding.

LOCATION

IRLAND

Objectives

The specific objectives of the RBAPS Pilot project were to:

- Promote the design, development and use in rural areas of results-based remuneration schemes to conserve and enhance biodiversity;
- Increase the understanding of factors that contribute to the success or failure of such schemes;
- Identify opportunities and conditions for increasing the use of such schemes in the EU and in particular in the context of the Common Agricultural Policy (CAP);
- Explore the potential for such schemes to be applied widely in the rural countryside and beyond grasslands, e.g. for the protection and enhancement of pollinators, soil biodiversity;
- Demonstrate the potential of these schemes to have positive ecological outcomes by developing, testing and using widely applicable monitoring approaches;
- Promote and increase awareness and better understanding of the benefits of results-based remuneration schemes particularly within the rural community.

Data and Facts - Contract

Indirect effects: Importantly, the pilot has fed into emerging results-based approaches in Ireland and throughout Europe. Members of the RBAPS Pilot team have assisted European Environmental Innovation Partnership (EIP) Operational Groups in Ireland with results-based elements. The County Leitrim species-rich grassland scoring assessment has formed the basis for grassland scoring assessments that have been included in the Hen Harrier and Freshwater Pearl Mussel EIPs, which between them aim to enroll >1,500 farmers by the end of 2019.
Participation: A total of 35 farmers participated in the scheme in Ireland in 2017, entering over 260 hectares of land across 143 fields (including enclosed fields and unenclosed plots (see Table 6.8). Participant farmers represented the wider farmer demographic, with a mixture of ages, part and full-time farmers and farming enterprises commonly found in the surrounding landscape. For most of the measures being trialed, land parcels with a broad range of scores were included in the pilot.
Involved parties: Team of ecologists/researchers funded by the EU through research funding and 35 farmers based in two regions of Ireland.
Management requirements for farmers: Annual training was offered by the project team to participating farmers over the two years of farmer contracts. A half-day classroom setting was used to present the scheme concept, its comparison with more familiar management-based schemes and the RBAPS Pilot scheme aims. The classroom session was followed by a half-day of field-training (preferred by farmers) for each measure which focused 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). Most farmers participated willingly at the farmer training events, with some requesting additional training as they found it both helpful and enjoyable.
Funding/ Payments: To establish payment rates, the principal threats to the biodiversity targets were considered and the associated cost (including income foregone and additional costs) of achieving the biodiversity target was calculated in line Common Agricultural Policy regulations. Up to 10% transaction costs were also included under each measure. The payment structure aimed to achieve a balance between incentivising farmers to deliver the highest possible score in their particular 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. Payments for good performance (6-7 out of 10) ranged from €170 to 330 per hectare depending on the species richness of the farm. While payments for those scoring 10 out of 10 ranged from €350 to €450 per hectare
Controls/monitoring: To facilitate testing of the developed measures, farmer contracts were implemented for two years in each pilot region, with associated advice and supports from the RBAPS Pilot teams. Payments to farmers were conditional on achieving biodiversity targets.

In the Shannon Callows capital works were also included in the available measures to incentivise farmers in undertaking works which would lead to improvements in the biodiversity target. A common design approach was used to quantify the assessment of ecological quality across the two regions and five measures. The assessments relied on the use of results indicators which are proxies employed to quantify the quality of the biodiversity target. Measure specific result indicators were identified and trialed for their fairness, robustness and reliability in assessing the quality of the farmland for the measure they were most suited to provide and to indicate general environmental condition. It was extremely important that the results indicators were both linked to the biodiversity target and feasible for the farmer to deliver. The RBAPS Pilot scores were designed to reflect the variation in the quality of the selected biodiversity target which was assessed by totaling the points awarded for result indicators and translating into a scoring scale from 0 (very low) through to 10 (very high) (Table 6.2.) All RBAPS Pilot scorecards are available at www.rbaps.eu. The monitoring stage had two main objectives. First, it served to assess the relationship between the RBAPS Pilot quality score and the associated result indicators, i.e. was there a significant positive correlation between the quality score and the chosen biodiversity target. Secondly, it assessed the impacts of the scheme on the biodiversity targets and in reaching the scheme objectives, although in the pilot project, this was constrained by the very short timeframe over which farmer contracts operated.

Renewal / termination: 3 year project only.

Risk/uncertainties of participants: There is a risk that the cost of participating is less than the payment received, although the researchers aim to design the scheme so that this does not happen.

Conditions of participation: A call for participant farmers was made through various media sources in selected areas where selected biodiversity targets were confidently expected to occur. Applicant farms were checked for suitability and for potential double payments with other agri-environment schemes (lands entered to other agri-environment schemes were excluded from entering the RBAPS Pilot). For the scheme, all participant farmers were required to be in receipt of Basic Payment.

Context features

Landscape and climate: The pilot regions were chosen in High Nature Value (HNV) farmland, and offered contrasting farming methods, climate and physical challenges. Each region focused on different biodiversity targets associated with grassland and perennial cropland, with the teams testing, monitoring and evaluating the developed scoring assessments (score cards, guidance and methodologies) across the full spectrum of quality. The scoring assessments were also tested by the participating farmers, farm advisors and with the agricultural ministry.

Farm structure: Small scale, low intensity beef cattle and sheep farming is targeted in these two regions.

Location: The two pilot regions are in Ireland; County Leitrim and the Shannon Callows. County Leitrim is dominated by small, extensive, low-income family farms. Farm habitats encompass primarily grasslands with field boundaries, wetlands, scrub and woodland and upland habitats, mainly peatlands. Designated sites tend to be concentrated in uplands meaning much of the lowlands, including extensive areas of semi-natural grassland, fall outside of Natura 2000 protection. As a range of grassland quality and conservation value is present, supporting a variety of biodiversity, this broad species-rich grassland target was selected for measure development and testing. County Leitrim is a stronghold for the marsh fritillary butterfly and this invertebrate species is associated with extensive farming practices on wet ground. The Shannon Callows has by far the largest area of lowland semi-natural grassland and associated aquatic habitats in Ireland, and one in which there is least disturbance of natural wetland processes. The River Shannon Callows was selected as a pilot area as it has a dual Natura designation, including the River Shannon Callows Special Area of Conservation (SAC) and the Middle Shannon Callows Special Protection Area (SPA), and extensive areas of farmed land supporting a range of habitats and species of conservation importance.

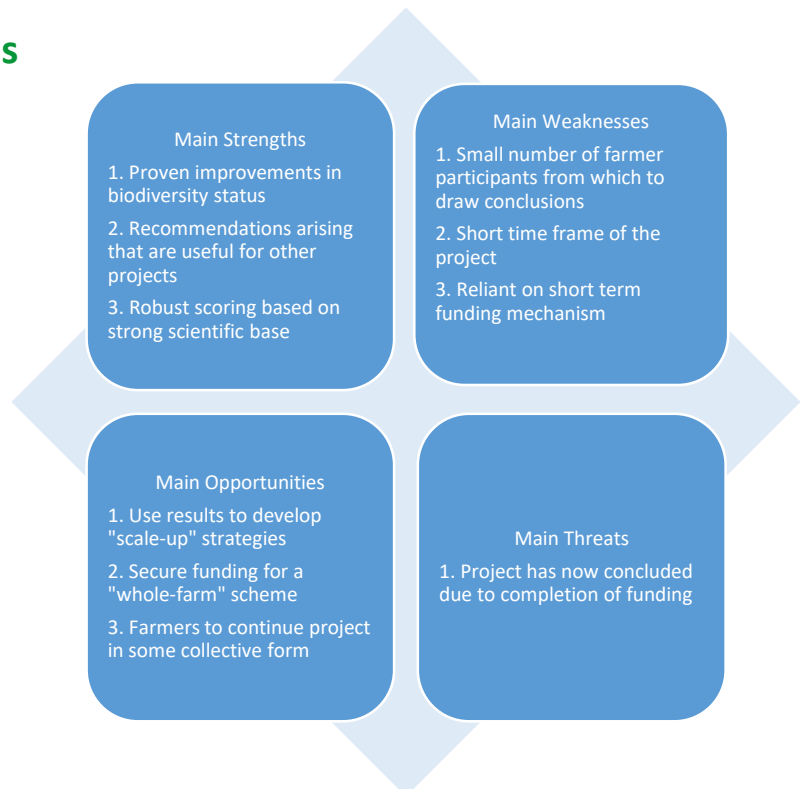
SUCCESS OR FAILURE?

The project was a success as in all regions. Positive correlations were found between the RBAPS Pilot quality score and the biodiversity target. The proven strength of relationship between the scoring assessment and biodiversity target gives confidence in the scoring system. Using such a system makes it possible to reduce the requirement for more detailed ecological monitoring making results-based payment schemes easier to monitor compared to prescription-based measures. Monitoring also showed that the scheme did have positive impacts on certain biodiversity targets compared to non-participant (control) farms, although caution is required in the interpretation due to the small sampling sizes available.

Reasons for success:

The farmer training, both in class and in field, was a success factor. Farmers were asked to score their own fields and this gave them confidence with the scoring system. The social aspect of the training days was also a contributing success factor. Farmers' attitudes, understanding and criticisms of the approach were explored through a series of systematic questionnaires and interviews, providing valuable insight into how results-based approaches could appeal to the wider farming community, thus informing better design of future programmes. The results showed that tiered payment structures that link the quality to the payment rate can incentivise change in farmer attitudes and management and bring about benefits for biodiversity targets. A key success factor was that payment rates were designed to reflect the value of the biodiversity being produced, the effort required to produce it and also the prevailing market concerns.

SWOT analysis



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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study, an in-depth analysis found that the following, selected factors were of specific importance.

Low intensive agriculture, low income: The 2 pilot regions for RBAPS are particularly sensitive agricultural areas:

(1) In **Leitrim**, small fields predominate on the lowland, in a bocage (mixed woodland and pasture) landscape with a high density of hedges. Grasslands are predominantly semi-natural or semi-improved.

(2) 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. 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. <<

Developments in the Program since 2020: The project concluded in 2018.

Orchestrated cooperation of multiple actors:

- Co-ordinating partner for RBAPS in Ireland and Spain is 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 project is administered by **locally-based teams** and comprised four **full-time staff members** and a **project co-ordinator from the EFNCP**. The team members are 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.
- Each pilot area is 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.

Additional page added May 2022

BRIDE - Biodiversity Regeneration in a Dairying Environment

BRIDE is a results-based biodiversity project based in low-land intensively managed farmland. Farmers agree to a biodiversity management plan for their farm, where they agree to carry out up to 10 biodiversity measures. Payment is linked to their performance on these agreed measures.

Summary

BRIDE is a results-based landscape biodiversity project in a low-land intensive farming region, where farmers agree to improve the quality of the habitats on their farms. The BRIDE project involves 44 farmers working together to improve landscape biodiversity in the Bride River Valley Region. It is an EIP-Agri project which has been funded for the period 2018 to 2023. The project has designed, and is implementing, a results-based approach to conserve, enhance and restore habitats in low-land intensive farming. A results-based payment scheme is applied whereby farmers are assessed and scored, with higher quality habitats gaining higher payments. The farmers are geographically clustered enabling a landscape approach, a critical element in effective landscape biodiversity and in the creation of a well-functioning bio-district. BRIDE is locally-led and farmer driven. It also incorporates knowledge transfer opportunities for farmers to learn how to manage habitats and improve farm-level biodiversity.

Objectives

1. Explore an innovative implementation of a results-based approach for wildlife on intensively managed farmland.
2. Develop, implement and assess innovative options to restore, preserve and enhance farmland habitats.
3. Improve communication and dissemination about the contribution of Irish farmland to the conservation of biodiversity, especially in intensively managed dairy grasslands.
4. Facilitate the creation of a market-based demand by the agri-food industry for supply of ecosystem services from farmers.

The practice-based payment is conditional on achieving performance on key agreed biodiversity measures. The performance is scored by the BRIDE project ecologist.

RESULT-BASED

Payments based on results

COLLECTIVE

44 locally based farmers; has encouraged the collaboration of farmers from different sectors and levels of intensity

PUBLIC GOODS

Landscape and scenery - Annual biodiversity plot, field margin, hedgerow (new), invasive species control, native woodland, tree line

Farmland biodiversity - Annual biodiversity plot, field margin, bat boxes, species specific bird boxes, rodenticide alternative, invasive species control, multi-species grassland, nettle patch, native woodland, pollinator plot, introduction of ponds, riparian buffer strip creation, tree line, farmer suggested measure

Soil quality (and health)
multi-species grassland

Climate regulation - carbon storage -
field margin, hedgerow (new), multi-species grassland, native woodland, riparian buffer strip creation, tree line, farmer suggested measure.

Water quality –
Hedgerow (new), invasive species control, multi-species grassland, native woodland, pond, riparian buffer strip creation, tree line, farmer suggested measure.

CONTRACT

Financing party:
Government (with EU-funding)

Contract conclusion:
Written agreement

Payment mechanism:
Incentive payments (containing

Length of participation in scheme:
5 years

Start of the program: 2018
End: 2023
The team is actively exploring funding beyond 2023

Data and Facts - Contract

Participation: There are 44 farmers participating in this project, of which almost one half are in dairy, one third in beef and the remainder in equine, tillage and sheep. The area of implementation is the Bride River Valley catchment area which incorporates north-east Cork and West Waterford in Ireland. The area covers 600 km2. Other stakeholders involved in the project are representatives from the business, environmental and state sectors, which perform an advisory role for the project.

Involved parties: Contracting Parties Participating Farmer - the farmer is required to monitor and record biodiversity improvements on their farm. BRIDE map, monitor and score the Biodiversity Managed Area (BMA) of participating farms and decide on payments in relation to performance on same. Involved Parties include the wider community which now resides in an area with an improved biodiversity profile and other farmers who now have a model to draw on for the management of biodiversity on farmland.

Management requirements for farmers: A Biodiversity Management Plan (BMP) is drawn up by the project ecologist for each farm in consultation with each farmer. The farmers must carry out 3 habitat related actions in areas such as hedgerow management, field margins, skylark plots, creation of a permanent pond, native woodlands, winter stubble, nest boxes and bat boxes, annual biodiversity plot, invasive species control, multi-species grassland, riparian buffer strip creation, tree lines and so on. A farmer will receive a once-off capital payment for work carried out, e.g., fencing a hedgerow or excavating a pond, but annual payments will be made on the biodiversity quality of the habitats on the farm. All of the habitats included in the BMA will be scored and a quality mark given accordingly. An independent ecologist is also available to give a second opinion if a farmer wishes to appeal the result.

Controls/monitoring: The monitoring of this project is carried out, firstly, by the farmers themselves (through recording of the data on their farms) and, secondly, by the Bride project ecologist on an annual basis. Each farmer will have agreed to up to 10 biodiversity measures. The ecologist monitors the quality and improvements in these measures, issuing a score. Payment is then based on this score.

Renewal / termination: The contract ceases on termination in 2023. However, the BRIDE team is actively exploring funding beyond 2023.

Conditions of participation: At the outset, the project had intended to cater for 27 farmers only. However, the project was over-subscribed and 44 farmers were included. There was consensus among the original smaller group of farmers to accept a larger number into the project, notwithstanding the fact that this would lower the payments to each farmer. There is a general consensus among the farmers that the measures and the development of biodiversity on the farm is of more importance than the monetary incentives to the individual farmers. The only consequence of non-compliance is non-payment.

LOCATION

IRELAND

BRIDE is based on a specific region rather than whole country. The region is Bride River Valley catchment area which incorporates north-east Cork and West Waterford. The area covers 600km2. NUTS 2: IE05 NUTS 3: Parts of IE052 and IE053

Risk/uncertainties of participants: A possible risk is that other regions may claim a biodiversity contribution without having an official monitoring framework in place to ensure long-term biodiversity improvements. This dilutes the role of BRIDE in advancing real biodiversity improvements which require a framework of measurement, monitoring and constant enhancement rather than general statements or aspirations.

Funding/ Payments: The project is funded by an EIP Agri-Environment Scheme. This is jointly funded by the Irish Government and EU. Farmers receive a once-off capital payment which is deemed necessary for the introduction of biodiversity measures, capped at €2,000. Depending on the performance on the agreed biodiversity measures, the farmer receives up to €3,000 per annum. The project team have developed a brand called 'Farming with Nature' with the objective that farmers will, in time, receive a payment in the form of a price premium from the marketplace if their practises meet a required standard.

Problem description

The BRIDE Project directly addresses three key drivers of habitat reduction on intensively managed farmland by firstly, incentivising farmer action to maintain and enhance biodiversity; secondly, increasing awareness of biodiversity on such farms; and, thirdly, stimulating a market-based signal that values such biodiversity. The conditions that led to the project were a recognition that biodiversity, particularly on intensive farms, was reducing, coupled with a more general concern with the perceived ineffectiveness of the agri-environmental schemes which were designed on a national basis, input-based and usually regulatory (and sometimes punitive) in nature. A team of local farmers initiated the project, having recognised that a results-based scheme which gave autonomy and flexibility to the farmer would be more effective. They also recognised the need for agri-environmental schemes to engage with the more intensive farmers, and at a more local level, if there was to be a transition to sustainable agriculture in Ireland.

Context features

Landscape and climate: The region is primarily undulating low-land farmland, incorporating the Nagle Mountain range (rising to 230m) and the Bride River valley. The climate in the region is temperate oceanic climate with warm summers and cool winters. Parts of the region are prone to flooding in the winter.

Farm structure: BRIDE is open to all farms based in the Bride River Valley catchment area which have reached a minimum 5 percent BMA. The project includes farms which operate in different sectors (dairying, beef, equine, tillage, sheep) and at different levels of intensity (ranging from intensive to extensive farming systems) and of different sizes. It is also open to both part time and full time farmers.

SUCCESS OR FAILURE?

The project is deemed to be environmentally successful in that the project was over-subscribed with very significant engagement. The project has changed the mindset of participating farmers.

Reasons for success:

- The project is locally based on a simple model that is understandable and is achievable and has achieved strong engagement from the farmers.
- The project has strong farmer leadership that is local and has arisen out of the intensive dairy sector. This gives the project credibility to both intensive and less intensive farmers.
- The project has shown that the introduction of biodiversity measures makes sense and contributes to tangible environmental, economic and social benefits.

SWOT analysis

Main Strengths

1. Farmers of all different types have bought into, and see the benefits of, the biodiversity concept on the project which has resulted in a real shift in mindsets.
2. This results-based model is simple, transparent and doable and has strong local leadership.
3. The specific local townsland nature of the project has united the local community and generated goodwill and pride in the area. It is also widely recognised outside the region as an innovative approach.

Main Weaknesses

1. Short-term nature of the funding, realisation of future funding.
2. The interest in the project from outside parties (farmers, public and media) has increased the workload on the BRIDE team.

Main Opportunities

1. Develop a sustainability accreditation system.
2. Develop a market-based reward system, whereby consumers pay a premium for produce from the area in the knowledge that the producers are enhancing biodiversity.
3. Development of a circular economy incorporating the current farming activities that are taking place in the Bride River Valley and enabling different local suppliers across the supply chain to support one another, e.g., local grain farmer can supply feedstuffs to dairy and beef farmers.

Main Threats

1. Dilution of the BRIDE biodiversity brand through the adoption by other farmer groups linking into the work of BRIDE without development of measures, monitoring or enhancement.
2. Current lack of accreditation means the project relies on the self-motivation of farmers to participate.

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Carbery Greener Dairy Farms™ CGDF

Carbery Greener Dairy Farms™ is a dairy efficiency programme designed to measure, monitor and optimise resource allocation and best practice in environmental sustainability on dairy farms. The programme involves 62 dairy farmers in West Cork, each of whom are members of agricultural co-operatives, which in turn, own the Carbery Group. Each farmer carries out and monitors various environmental efficiency measures in order to improve the carbon dairy footprint of their farms and achieve greater efficiencies. Learnings are disseminated beyond the initiative through farm walks, workshops and discussion groups.

Summary

Greener Dairy Farms™ is a dairy efficiency contract solution introduced by Carbery Group (a global leader in food ingredients, flavours and cheese) and Teagasc (state body which provides research, advisory and training to the agricultural and food sector in Ireland) to measure, monitor and optimise resource allocation and best practice in environmental sustainability on the dairy farm. The programme was set up in 2012, starting with 12 dairy farmers and now extends to 62 dairy farmers, all of whom are members of the co-operatives that own Carbery. Each farm has been assessed for carbon footprint, water and energy usage and soil fertility and a baseline created. Based on this assessment, various environmental efficiency measures have been introduced to improve performance and achieve financial savings. The programme was based on a previous European project called the Dairyman Project, where 120 dairy farmers in 10 regions of North West Europe which focused on farm resource efficiencies and management. Carbery was the first to start such an endeavour in Ireland. While all the farms are not adjacent to each other, they are all located within a relatively small territorial area.

Problem description

Carbery Greener Dairy Farms™ was initiated by the sustainability department of Carbery Group Ltd in 2012. There was recognition that environmental pressures were going to increase in conjunction with the planned growth in herd sizes in response to the removal of the EU milk quota in 2015. The sustainability team recognised that there was a need to balance this growth with on-farm sustainability measures. In conjunction with Teagasc (the state body for research, advisory and training services to the agricultural and food sector), the programme was developed. While based on the Dairyman Project in Europe, which focused on strengthening rural communities by improving farm resource management in a profitable way, Carbery was the first to initiate such a project in the dairy sector in Ireland.

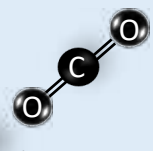
OTHERS

Savings through environmental efficiencies and capital grants

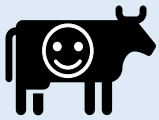
PUBLIC GOODS

Trees supplied to Carbery Farmers (including the CGDF participants), initial bio-diversity assessments

Acidic soil with sub-optimal nutrient uptake from fertilizer inputs - spreading of lime help to create pH balance, reducing fertilizer inputs and costs. Analysis of the Nutrient Budgets showed an average N balance of 258 kg N/ha and an average P balance of 8kg n/Ha.



Carbon Footprint was reduced on average across the farms from 124kg to 104 kg/CO2 equivalent/Kg of energy corrected milk from 2012 to 2017.



CDGF farmers strive to increase number of days of pasture grazing.

CARBERY

PUBLIC GOODS

The average energy consumption was 0.5 cent per litre of milk produced. Measures have been introduced to reduce leaks and for the storage and reuse of water.

PROFITABILITY

Through environmental efficiencies.

CONTRACT

It is a market sector-oriented contract solution. The contract partnership is private-private.

Contract conclusion: Verbal agreement / handshake

Payment mechanism: Savings are used as a payment mechanism.

Length of participation in scheme: Open end

Start of the program: 2012
End: on going

Indirect effects: Carbery also highlights the improvements in product quality which have value chain benefits. The public goods from this project are: improved carbon footprint of the farms; viability of farms through greater efficiencies; evolving ecological mind-set of farmers; self-esteem of the farmers; and spill-over into the wider community (educational events, employee sustainability commitments, carbon footprint, water retention).

Data and Facts - Contract

Participation: In the Greener Dairy Farms™ program, the 62 participating farmers, whose herd size ranges from 80 to 350 cows, are all full-time farmers. The area involved is the West Cork region in Ireland which covers approximately 1,900 Km2.

Involved parties: The primary contracting parties are the participating farmers, Carbery Group and Teagasc. This collaboration "utilizes veterinarians, milk quality advisors and discussion groups to advise farmers on how to improve their carbon footprint, as well as optimize water usage and soil nutrient management on the farm" (Origin Green, 2016 Sustainability Report). Bord Bia (the Irish State agency to promote Irish food) has used the model developed by the Greener Dairy Farms™ for their national Sustainable Dairy Assurance Scheme (SDAS). The farmers are also involved in the Teagasc Agricultural Sustainability Support and Advisory Programme (ASSAP) for the improvement of water quality. Carbery staff are supporting this programme through advice and mentoring of farmers. The local university (University College Cork) has partnered with the programme and has given farmer participants on the Greener Dairy Farms™ Recognised Prior Learning (RPL) to complete the Diploma in Environmental and Social Policy.

Management requirements for farmers: The key requirement is that each farmer is required to record relevant operational and environmental data which is compiled in an annual spreadsheet.

Controls/monitoring: CGDF monitors the participating farms in terms of the following: carbon footprint of a litre of milk produced by CGDF farmers; energy consumption on the dairy farms; water usage; financial sustainability of the farms; and soil fertility. These are monitored through the regular recording of relevant data and the input of Teagasc and Carbery agricultural advisors.

Objectives

The overall purpose of the project is to raise the awareness of sustainable dairy production methods among Carbery suppliers and to highlight areas where gains in terms of productivity could be made by monitoring farms within the catchment. The specific objectives are

- To develop a baseline footprint for carbon, energy and water usage and soil fertility and to carry out an initial biodiversity assessment.
- To establish where efficiencies could be made by devising a management plan with the farmer.
- To disseminate the learnings.

Conditions of participation: There is no minimum or maximum number of participants. One of the key requirements for the participant farmers is the submission of a completed spreadsheet of farm operational data (including water and energy usage, soil measurements, grazing days and so on). Submission of data is a requirement of participation.
Risk/uncertainties of participants: One of the key risks is stagnation of the project. However, discussions are underway on how to enhance the project over time through farmer incentives and the development of a demonstration zero-emission farm.
Funding / Payments: To introduce environmental efficiencies, various capital expenditure was required, such as the introduction of smart meters, plate coolers in milking parlours and water storage tanks. The funding was supplied by Carbery, State grants and, in some instances, the farmers themselves. Softer supports include subsidised training, knowledge exchange visits and hands-on support from agricultural advisors.

Context features

Landscape and climate: The landscape is very mixed, ranging from very fertile low-land to mountainous peatland. The climate is moderate with cool winters and warm summers.
Farm structure: The participating farmers in Greener Dairy Farms™ are all intensive dairy farmers. The farms range in herd size from 80 to 350 dairy cows. The farms are wholly owned by the farmers and each farmer is a member of a dairy co-operative and, in turn, an owner of Carbery Group. All farmers are full-time.

LOCATION

IRELAND

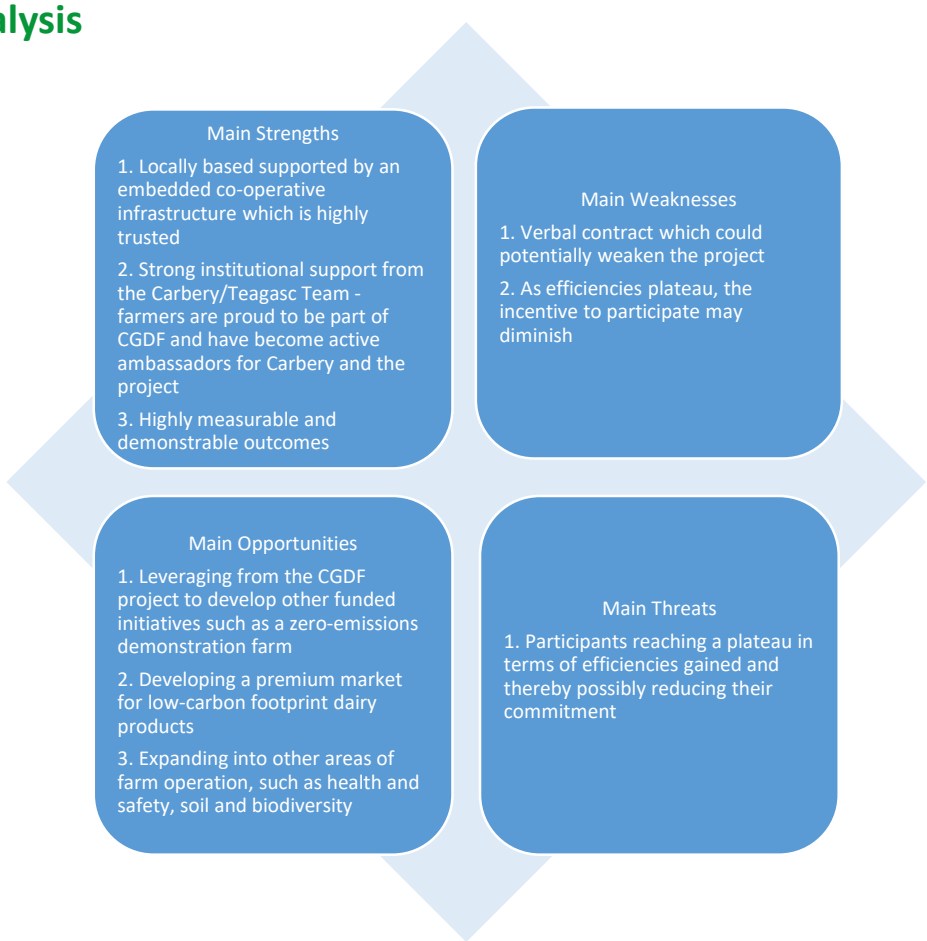
SUCCESS OR FAILURE?

The project can be deemed a successful contract solution because it has reduced carbon emissions, raised awareness on water use, increased farm profitability, reduced energy use, and educated on the importance of sustainable dairy production. Between 2012 and 2019, the contract solution expanded from 12 to 62 participating farmers.

Reasons for success:

- Attitude of participating farmers - very positive attitude, openness and willingness to engage, trust in Carbery.
- Strong Carbery/Teagasc team behind the project - highly motivated and innovative team.
- Clear benefits to the farmers from participation.

SWOT analysis



Horizon 2020 European Union Funding for Research & Innovation

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Incentives for collective reservoirs

A group of farmers builds a water reservoir benefiting of support by the CAP through the Rural Development Plan. The support is conditional on the creation of a consortium composed by a minimum number of farmers.

Summary

The measure has been programmed in the RDP since the 2007 - 2013 and supports the construction of collective small-medium irrigation reservoirs. The objective is two-fold: 1) to ensure a stable water supply for the agricultural sector, and 2) to reduce the pressure on groundwater resources. The largest share of reservoirs have been built in the hilly area of the Ravenna province, an area characterized by water scarcity. The construction of the reservoirs hence lessens the potential trade-offs and conflicts among water use (e.g. irrigation and human consumption) while supporting a vibrant rural economy. Simply forbidding irrigation would create an unbearable burden on the area. The support is in the form of partial coverage of construction costs and it is granted if the candidate projects involve a minimum number of farmers and/or water stored (even though the thresholds have changed over the years). In the Ravenna province there is the largest number of measure applicants. In such an area the Consorzio di Bonifica della Romagna Occidentale (Land Reclamation Board of Western Romagna) has proved a key actor in the management of such projects, coordinating farmers demand and providing technical assistances.

Objectives

1. To ensure a stable water supply for the agricultural sector
2. To reduce the pressure on groundwater resources.

Problem description

The measure has the double objective of ensure a stable water supply for the agricultural sector, and at the same time the reduction of groundwater consumption.

Data and Facts - Contract

Participation: In the 2007-2013 there were 249 farmers involved in the Ravenna province, storing a total of 774,000 m^3 of water. In the programming period 2014-2020, the projects managed by the Consorzio di Bonifica della Romagna Occidentale involved 320 landowners, storing a maximum of about 1 million mc of water, and about 200 km2 of pipe networks. Landowners co-financed the projects with about 6 million euros.

Involved parties: Farmers send the application, but the consortium is the real link both between the region and farmers and also among farmers.

The benefits for the farmers: Farmers have two benefits: firstly, the increasing amount of water available; secondly, stabilizing water availability, being less vulnerable to precipitation variability. The reservoir acts as a buffer. The water that the single participant can get is bound to the surface of the cultivated area.

Management requirements for farmers: There is a minimum number of farmers involved (in the RDP 2007-2013) and a minimum (100,000 m^3) and a maximum (250,000 m^3) for the reservoir capacity.

Controls/monitoring: There are no controls.

Risk/uncertainties of participants: Despite the regional funding the cost are high. It is an investment often made but it is risky indeed. The profitability for farmers depends on their production and on the market price.

COLLECTIVE

Water reservoir - consortium

PUBLIC GOODS

Water quantity

INDIRECT EFFECTS

Indirect effects on rural viability and vitality

LOCATION

ITALY

Ravenna province, it's an area of the Consorzio di Bonifica della Romagna Occidentale (Land Reclamation Board of Western Romagna).

PARTICIPATION

249 farmers are involved in this contract solution (2007-2013)

CONTRACT

Public- private contract

Contract conclusion:
Written agreement

Payment mechanism:
Investment support

Length of participation in scheme:
one-shot, it's an investment.

Start of the program:
2007

Financing party:
Government (with EU-funding)

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Context features

Landscape and climate: The mountain and hilly area of western Romagna has semi-arid climatic conditions. Fruit production is the main farm specialization. The reservoirs were built in this area which implied more complicated works, in order to overcome the height differences from the water supply to the farm. 7% of the irrigated area in the case study region is served by reservoirs, which is considerably higher than the average share served by reservoirs in the hilly areas of E-R (2%) (ISTAT 2010). The importance of irrigation in the case study area is suggested by observing how, in the period 1982–2010, the share of irrigated areas over the total utilised agricultural area has remained steady at the regional level (around 10%), but has increased markedly from 2% to 16% in the hilly part of the Province of Ravenna (ISTAT 2010).

Funding and Payments: EU is the funding organization through the regional (in Italy) Rural Development Plans.

Targets to receive the payments:

- construction / expansion of irrigation reservoirs,
- works for water distribution,
- other adjustments such as gates, ladders, signs, etc,
- improvement of a water network systems for water distribution;
- intangible investments such as software to help the logistic part (maximum 10% of the investment).

Farmers will receive the payment directly. The support is the 60% of the project, from a minimum of 100.000€ to a maximum of 1.200.000€.

SUCCESS OR FAILURE?

It is a success, high adhesion rate, and it helps the farmers on having more stability on the water issue.

SWOT analysis

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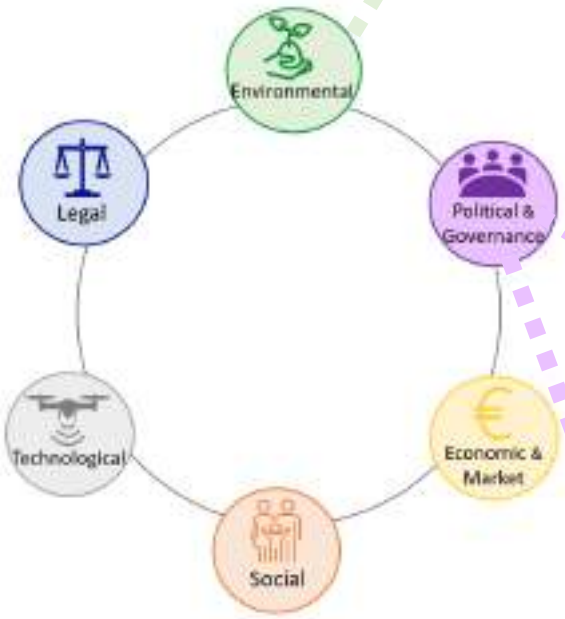
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

AECPG losses in production systems have negative effects: Climate and climate change affecting water availability:

The main environmental variable of concern in this contract solutions is climate and climate change, especially in relation to water availability.

- A **reduction in precipitation levels** has been observed since the beginning of the 20th century and an **increase in min. and max. temperatures** since the 1950s (Cervi and Nistor 2018).
- Moreover, in the last decade, severe **droughts** have hit the region with substantial effects on agricultural activities (Cervi et al. 2018).
- Stability of water supply is necessary to ensure the cultivation of high value crops (fruits) and hence for the survival of a vibrant and export-oriented rural economy.



Existing local institutions as key success factor:

Local institutions are key in 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 CBRO that works as a bridge institution both:

- vertically (between farmers and the regional administration) and
- horizontally (among farmers).

High trusts on the Consorzio has been reached through lengthy participatory process toward planning and designs of reservoirs.

Developments within the European Common Agricultural Policy:

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.

Particularly for collective approaches such as the collective reservoirs, the aim to develop and elaborate of national RDPs towards more acceptable and innovative approaches were the main driver for initiation and implementation.

References:

Cervi, F., and M.M. Nistor. 2018. "High Resolution of Water Availability for Emilia-Romagna Region over 1961–2015."Advances in Meteorology. Available at: https://www.hindawi.com/journals/amete/2018/2489758/ [Accessed February 19, 2020].

Cervi, F., F. Petronici, A. Castellarin, M. Marcaccio, A. Bertolini, and L. Borgatti. 2018. "Climate-change potential effects on the hydrological regime of freshwater springs in the Italian Northern Apennines." Science of The Total Environment 622–623:337–348.

Additional page added May 2022

Cooperation in Natura 2000 area benefiting biodiversity (Measure 16.5)

The measure incentives the local coordination and collaboration of public and private actors in projects aimed at the conservation of biodiversity.

Summary

This operation targets effective interventions for biodiversity protection in areas with Natura 2000. These environmental efforts require synergic and coordinated actions to protect biodiversity, primarily removing any critical issues that may exist in the Natura 2000 areas (coming from the implementation of measures by the Habitats and Birds directives). The cooperative approach allows to reach specific objectives not effectively achieved with individual interventions. This method starts with a "mutual agreement" phase, where the involvement of the largest number of beneficiaries is required. It evolves in the creation of a "local cooperation agreement", approved by the local competent authority for biodiversity.

Objectives

- Safeguarding, restoring and improving biodiversity in Natura 2000 areas.

Problem description

The driving force of this measure is "Safeguarding, restoring and improving biodiversity, in Natura 2000 areas and in areas subject to natural or specific obligations ". The RDP and therefore the political region has supported during the last three Rural Development Programs (from 2000 to 2019) measures that push towards a more careful approach toward protected area.

It is important, for the purpose of maintaining a sustainable management and moreover for the restoration of forest, agricultural ecosystems and natural/semi-natural habitats, to financially support farmers who actually have a low-income due to the protection of natural areas.

Data and Facts - Contract

Participation: The cooperation activity is be carried out by the public body that proposes the local cooperation agreement, in order to reach the involvement of the largest number of beneficiaries.

Involved parties: The following types of beneficiaries can take advantage of the aid provided:

- single and associated agricultural enterprises;
- other land managers including environmental NGOs, public bodies, collective properties.

The benefits for the farmers and for the organization: Farmers receive a financial support for covering some of the costs that are due to the implementation of Natura 2000 constraints. The advantage of the financial body is a maintenance in biodiversity levels of the area and on the other hand the solution of the critical issues coming from the conservation rules.

Management requirements for farmers: It depends on the specific objectives described in the RDPs.

COLLECTIVE

local cooperation – public body - Natura 2000 areas

PUBLIC GOODS

Biodiversity

INDIRECT EFFECTS

Landscape and scenery

LOCATION

ITALY

Emilia-Romagna region

CONTRACT

Government (with EU-funding)

Contract conclusion: Written agreement

Payment mechanism: incentive payments

Start of the program: 2013
End: 2020

Emilia-Romagna Region ITALY

Funding/Payments: In Natura 2000 areas funding can be provided for:

- cooperation activities,
- non-productive investments
- area management activities etc.
- The EU contribution can be up to 100% of the eligible expenditure. The cost of the cooperation project is set at a minimum of 20,000 euros and a maximum of 200,000 euros: up to 5% for cooperation costs and the remaining for project implementation.

SUCCESS OR FAILURE?

Failure. Only two applications, and both of them were rejected as they were not in compliance with the call requirements.

Reasons for failure:

The measure was highly complex and set a number of constraints and rules that made the realization of the project extremely difficult. Eligible projects should have indicated a target in terms of biodiversity. The same target was aimed to resolve the critical issues for farmers, coming from the restrictions on agricultural practices, imposed by the regulations for the protection of biodiversity in the area where the applicants are located.

SWOT analysis

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Rewilding of detention basin in Massa Lombarda

In Massa Lombarda the Consorzio di Bonifica della Romagna Occidentale (CBRO) purchased private lands to create a Repopulation and Capture area that at the same time helps in managing natural hazards. The Project aims to protect and manage this basin in order to control its natural growth, and to collect the excess of water.

Summary

The CBRO realised a compulsory acquisition of an area with the objective to develop a detention basin to manage resilience to natural hazards. The CBRO used the Council Regulation (EEC) No 2078/92 to finance the ecological restoration of the area. Despite the financial support envisioned for a 20 years period, the CBRO decided not to change the land use destination of the area after the end of the period. Recently the CBRO has uptake the wetland measure (121 Emilia Romagna RDP) for the next twenty years, as it is considered the most suitable measure to constitute the restoration of biodiversity and risk of flood reduction. The case study is a successful example of a land tenure approach to environmental management, carried out by a collective/public association with funding from the EU.

Objectives

Resilience to natural hazards (flood), biodiversity and landscape and scenery

Problem description

To conjugate the need of managing natural hazards (i.e. flood) around the municipality of Conselice, with the re-establishing a traditional wetland area with many local species that have been driven away from their habitat, the consortium has decided to realise a compulsory acquisition with public aims and used EU funds to ensure the ecological restore the area.

Data and Facts - Contract

Acquisition: The CBRO commissioned a study to the University of Bologna in 1986 to identify the most suitable area to develop a detention basin to reduce the flood risk for Conselice municipality. The CBRO conducted a compulsory acquisition after having declared that CBRO needed the property right of the area with the public aims in 1999. The CBRO paid three times the average market value of the land based on the real land use in 1999 (3*15.000€ per ha).

Participation: there is only one contract, the CBRO and the implementation area is 21.8 hectares. Hunting is forbidden because the expansion box is included in a Repopulation and Capture Zone. The local ornithological community is a specific element of greater naturalistic interest. The water basin with submerged and amphibious vegetation is spread over 70% of the surface, surrounded by grassy margins and adjacent to arable land. The management of the area will be oriented to a naturalistic recovery. Recently the CBRO renews the contract for about another 20 years by participating in wetland measure.

Involved parties: EU is the financing party which assigns the fund to the winning parties, in this case, the consortium that will use the support to improve the area.

Advantages of participation: possibility to plan long-term investment in natural capital. The basin brings back the ecological balance of birds, amphibians and reptiles. Restore the ancient ecosystem of the area. Inclusion of the area in the Natura 2000 protected areas (ZPS IT4070023)

Management requirements for farmers: mowing is forbidden between February and June. Condition to keep at least 50% of land flooded by water all the year

Controls/monitoring: monitoring was introduced with the new measure in 2022. Control of population of invasive species potentially damaging the water river border (i.e. Nutria - Myocastor coypus; Crested Porcupine (Hystrix cristata) Foxes (Vulpes vulpes)

Conditions of participation: the duration of the commitment is 20 years plus the continuation of the activities by participating in measure 121 (wetland) in 2022.

LAND TENURE

Purchase of private land by a public association for environmental and natural hazard management

PUBLIC GOODS

Landscape and Scenery

Biodiversity

Water quantity

LOCATION

ITALY

Massa Lombarda (RA), Italy

Contract

The contract is public – public partnership through the Government (with EU-funding).

Contract conclusion:
Written agreement

Payment mechanism:
incentive payments

Funding/Payments:
The financing chain begins with Europe, then region Emilia-Romagna, and then the CBRO.

Start of the program: 1999
End: ongoing

Estimation of success

The contract solution is successful as the case reported has allowed conducting (long-term) environmental improvements. Although climate change has reduced on average the precipitation during the fall and winter seasons, the detention basis has increased the resilience to extreme weather conditions. The area conjugates its primary function of detention basis with the preservation and restoration of natural capital in the area. The area is included in the Natura 2000 protected areas (ZPS IT4070023) and also provides birdwatching services.

SUCCESS OR FAILURE?

Success for the reduction of flood risk. Active only one time in the last 25 years, in addition has created positive environmental externalities by improving ecological capital in the area

Reasons for success:

Mainly three reasons:

- The water basin acts as actual protection for local biodiversity as well as can contribute to reduce natural hazards during water flow seasonal peaks
- Purchase of private land for public purposes to ensure a long-standing provision of these public goods
- The RIB can ensure optimal use in synergies with overall water management as well as keep it functional when is needed

SWOT analysis

Main Strengths

1. Synergies between the delivery of different environmental public goods.
2. Use of land otherwise unused
3. Long term investment

Main Weaknesses

1. The financing is dependent on public funding
2. Conflicting between the different functions of detection basin
3. Surveillance and monitoring costs of a very large AECS

Main Opportunities

1. It created the opportunity for deal with new environmental problems (drought).
2. Create new provision of public goods (i.e birdwatching; park, landscape)

Main Threats

1. If funding will not be available anymore there is the risk of cancelling the project
2. Climate change and modification of rain patterns
3. Monitoring and control invasive species

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“Carta del Mulino” – Barilla

It is a new type of contract solution (agreement and list of requirements) proposed by Barilla to enhance the sustainable future path of its production. Farmers have to comply with ten rules to produce the raw material, in order to be a part of the “Carta del Mulino” agreement.

Summary

With the “Carta del Mulino”-program a value chain contract solution has been introduced for the farmers that supply Barilla’s bakery brand Mulino Bianco with soft wheat. Farmers have to respect ten rules, (defined together with WWF, UNITUSCIA and UNIBO) that affect their way of production and boost the sustainability of the products along the value-chain. The contracts are signed by the mills, elevators, farmers and any trader if there are, but Barilla is purchasing only such certified products for the specific production lines described above.

Objectives

- Increase in animal and plant biodiversity, quality products and support of farming communities

Problem description

Consumer preferences have reoriented toward environmentally friendly products, safety, and traceability. To deal with this change, Barilla has implemented a contract solution that links the delivery of soft wheat for the production of bread and flour confectionery (e.g. biscuits) to the provision of agri-environmental public goods.

Data and Facts - Contract

Participation: In 2019, around 500 farms and 14 mills participated. The area of implementation is mostly Italy, but also France. In 2021, the number of farms and mills involved in the project were respectively about 2600 and 16. The contracts involved 60,000 ha of wheat, and about 1800 ha allocated to flower strips.

Involved parties: Barilla designed the contract and the ten rules. The contract in itself is however an agreement between farmers, elevators and mills.

Indirect effects: The rural viability and vitality since farmers receive a price premium for the compliance with the ten rules.

The benefits for Barilla: The main advantages is the possibility to market and to communicate the sustainability of its production.

Information/Contact: www.mulinobianco.it/lacartadelmulino/

VALUE CHAIN

Farmers – elevators - mills - Barilla

The solution has been initiated and carried out by a private company

PUBLIC GOODS

(Farmland) biodiversity

INDIRECT EFFECTS

Rural viability and vitality

LOCATION

ITALY

CONTRACT

The contract is market sector-oriented. Barilla designed the contract and the ten rules. The contract in itself is however an agreement between farmers and the mills or elevators.

Contract conclusion: Written agreement

Payment mechanism: product price

Funding/Payments: Farmers receive a price premium from the mills or elevators with which they sign a contract. Barilla purchases the products from the mills or elevators.

Length of participation in scheme: 1 season

Start of the program: 2018
End: ongoing

PRODUCT

Soft wheat

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The benefits for the farmers: The main advantages are: optimisation of agronomic inputs, restoration of soil fertility, increase in biodiversity, product sales guarantee and a final premium price, increasingly environmentally friendly farming practices, support farming communities and return good and safe products to consumers.
Management requirements for farmers: Ten rules define the management requirements. First, farmers must be compliant with with the ISCC PLUS certification. Second, farmers need to implement a crop rotation with at least 3 different crops in a 5 years time span. Third, at least 3% of the area allocated to wheat should be reserved for flower strips. Fourth, farmers must used certified seeds. Fifth, no use of neonicotinoids. Sixth, no use of sludge. Seventh, no use of glyphosate. Eighth, lots must be segregated and traceable. Ninth, conservation of wheat must be implemented though physical means, according to organic requirements. Tenth, the added value must be fairly distributed along the supply-chain.
Controls/monitoring: Annual audits by an independent third-party control body to all subscribers to the "Carta del Mulino" project. 30% of total farmers are tested.
Conditions of participation: There are food safety, quality and environmental standards. Barilla is expected to cover the entire purchase of soft wheat through farms that are in compliance with the ten rules.
Renewal of the contract: The renewal of the contract is subject to the implementation of the ten rules. For example, the constraint on crop rotation can limit the renewal for a given period.
Termination of the contract: Termination is due to the non-compliance with the ten rules.
Risk/uncertainties of participants: The main risks for Barilla is the request for greener and greener products. For the farmers the risks are the usual ones of the agricultural production. If the quality of the product is not high enough for the Barilla processing, the price premium is granted in any case to compensate the higher costs incurred by the farmers.

Context features

Farm structure: Arable farming.

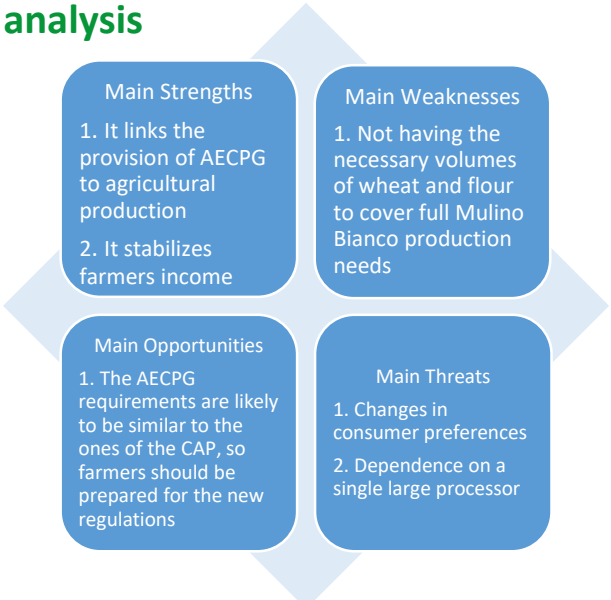
SUCCESS OR FAILURE?

It represents a successful example from the implementation point of view: in 2021 more than 2600 farms have applied, allocating about 1800 ha of Utilized Agricultural Areas to flowers.

Reasons for success:

The main reasons for the success is the link between agricultural production and agri-environmental public goods. More specifically, the contract that is linked to the provision of AECPGs also stabilises the income of farmers and gives them a premium on the product price.

SWOT analysis



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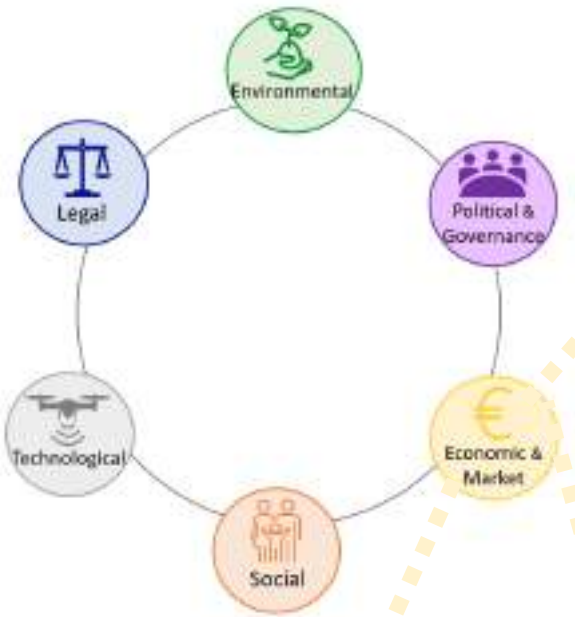
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Bees

The population of bees and other apoideas are under threat.

Participation in the *Carta del mulino*, among the management practices, requires the allocation of a substantial area for flower strips that are the foraging fields for these insects.



Consumers willingness to pay:

Increasingly consumers partially base the decision consumption on the sustainability of the products.

This creates a huge opportunity to channel these preferences in funds aimed at incentivizing agri-environmental public good provision.

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

In the Barilla initiative Carta del Mulino, partaking farms come from several areas across Europe and beyond. The high heterogeneity of the areas prevents from a common assessment of economic and market conditions.

However, up to now more than 2,600 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 the partaking mills and flour to Barilla.

Price stability

From the farmers point of view, contracts reduce the potential uncertainty related to both production (from e.g. climate variability or pests) and from the market

Additional page added May 2022

Farmers as Custodian of a Territory

The contract is designed to compensate farmers for monitoring and for interventions to control flood risks and to improve the management of river basins. The contract represents a case of the outsourcing of environmental and public goods services to the farmer. In other words the public agency outsources the control and maintenance of the river basin, the prevention from flood risks and other environmental goods directly to the farmers.

Summary

This type of contract compensates farmers for external activities to their farm production. The contract type has changed over time. However, the structure remained constant, and it includes two main parts: a) a fixed amount (payment) per farm for monitoring a water basin, b) a variable amount to reduce flood risk (and other risks like for example, erosion). The payment is incrementally based on the risk and the action taken to prevent it.

The investigated contract solution is the second one, which was redesigned in accordance with farmers involved and the University of Pisa. The second contract solution reduced drastically the fixed components (previously 6000€) due to the shortage in the budget to compensate direct interventions in case of urgent actions required. The main novelties were the requirement of a monthly report containing the results of monitoring and indicating the most problematic area. In addition, after a weather alert, the farmers could signal the threat to water bodies using a dedicated Web App (IDRAMAP).

Objectives

1. Preservation of the good status of water bodies.
2. Maintenance of agricultural and forestry activities with the preservation of existing hydraulic structures.
3. Support execution of preventing investments to reduce pressure on water bodies.
4. Supporting farmer's viability.
5. Improve the cost-effectiveness of water bodies management.
6. Increase the capability to observe the territory and increase positive attitude towards non-productive investments.

Result-oriented: The second component might belong to the result-oriented category (theoretically). Practically the payment rewards the number of actions. Each action is paid based on the expected cost. In this case, it cannot be different because the public administration cannot pay farmers or other providers based on result, because they need some real documentation (invoice etc.) to justify the public expenditure. Besides, a public authority does not know ex-ante the source of threats (i.e. number of weather alerts and severity of rain). So they need a flexible system to ensure the management of river basinss.

Indirect effects:

- An incentive to increase farmer's investments and farmers modernization.
- An incentive to better know the territory as well as to increase the cooperation with the public agency.

RESULT-ORIENTED

The payment rewards the number of actions. Each action is paid based on the expected cost.

PUBLIC GOODS

Resilience to natural hazards
Reduce the territory exposure to flood and extreme events

Water quantity
keep functioning existing hydraulic infrastructure

Rural viability and vitality
support farmers activities by paying for additional services

Landscape and scenery
keeping farmers active on mountain area will improve the landscape quality of the forestry

LOCATION

ITALY

The area enrolled is included into the mountain area of two Tuscany provinces: Lucca ITI12 and Pistoia IT12.

Problem description

The mountain area of the Tuscany region is exposed to floods and landslides. This situation has worsened due to the effects of climate change and land abandonment. The Mountain community was in charge of monitoring and avoid water management risks over a territory of 115,000 ha, which includes 1,500 km of water bodies.

One of the three Authorities in charge to manage water risks in mountain areas (the formers Mountain community of Serchio Valley, now converted in Union of Municipalities of Serchio Valley (UMC) took the initiative to face:

a) institutional change, due to enlarging of the operated area due to acquisition and merging of the previous institution in charge of water basins management (RIbs) with devolution of competences to UMC;

b) needs to improve the efficiency in the management of water bodies, to avoid flood and other damages;

c) needs to reduce pressure on the environment by trying to keep farmers on the farm in the marginal area of the Apennine, while putting emphasize on ecosystem services provided by agricultural activities (reduction of soil erosion in the mountain by continuing grazing or correct forest management; maintenance of existing hydraulic structures in the forestry and agricultural areas).

Data and Facts - Contract

Contract features combination: The contract is an agreement between the UC of Serchio Valley and 27 farmers selected on the basis of two criteria: a) proximity to the water bodies and the capability to undertake necessary actions. Formally, there is a public call asking farmers the willingness to be involved in the project. The agreement includes a description of actions to be taken in their area managed as well as the first refusal for further activities when needed. The deal includes a fixed amount for monitoring activities and a variable amount based on agreed actions and new actions (based on the right of first refusal or fiduciary piecework).

The fixed payment is calculated on the basis of 250 € per years = 5 weather alerts per year with a cost of 50€ per each monitoring activity. The beneficiaries must prepare and submit to UM a monthly report containing the outcome of monitoring activities on their management of water bodies. The variable component is based on direct commitment due to a previous agreement. The farmers must respect the foreseen timing. An additional payment for a large intervention can be paid by measure 226 or RDP of Regione Toscana (RT).

Participation: 27 farmers were involved. They cover about 40% of the hydrological bodies area. Currently, there are no reasons to try to extend to another subject (i.e. NGOs, citizens due to lacks in types of equipment to perform the required actions).

Involved parties: Farmers received the payments and in turn, had to ensure both monitoring activities, prevention actions and required additional actions.

Citizens and other farmers are less exposed to flood risks, and benefit from effective water management. An additional problem about keeping minimum water level for Massaciuccoli Lake arose in recent years.

The benefits for participating in the contract solution: Farmers have broadened their farm activities and received payments in turn for ecosystem services. In addition, they were able to increase investment and keep farm active. The UM outsourced an activity to actors with higher knowledge of forestry and agricultural condition on the territory.

CONTRACT

The contract was between the UC of Serchio Valley and 27 farmers selected by criteria.

public – private

note RIB is the paying agency and farmers receive the payment.*

Contract conclusion:
Written agreement

Payment mechanism:
Incentive payments. The financing came from Government (with EU-funding)

Funding/Payments: The paying agency is the Union of Municipalities. The money came from government and from the RDP of RT using measure 226, which allocate to the UM the possibility to pay farmers. The fixed part is 250 € per year, while the variable part depends on the expected activities that have been agreed between the farmers and UM plus some extra payment in case of higher needs.
The maximum amount of payment cannot exceed the 50,000 € per single farm and 200,000 € for the other (due to constraints of national regulation of direct commitments).

Length of the contract: 2-3 years

Start of the program: 2011
End: 2014
Continuing with different contractual arrangements due to dismissing of agreement with ICT tools and changes in administrative norms about direct payment to the farmers (procurement code)

PRODUCT

Contract decoupled by production. Some indirect effects on supporting forestry production by keeping farmers activities.

Management requirements for farmers: In addition, each contract is differentiated on the basis of preventing activities which are required and are paid with the variable components. These activities include indications for cutting strategies, use of specific sustainable products, grazing management, cleaning of water bodies.

Controls/monitoring:
- Use of ICT and a formal delegation of activities by local technical office.
- Numbers of weather alerts.
- Preparation of a monthly report containing information on the main risk observed.
- Respect the time of the work described in the contractual agreement for the actions.

Conditions of participation: The UM opened a public call for interest in the outsourcing activities. The call allowed to identify interested farms in supporting the public administration on these services. Then after having signed an agreement (convenzione) the UM are allocated them based on proximity to the water bodies and on the effective capability to implement required action. Due to the few farmers interested the UM decided to not apply additional preference criteria. In case of non-compliance, the UM refuses to renew the agreement. Actually, the UM said that all farmers were in compliance with the commitments.

Legal status of the contracting parties: UM is a public association with tasks also on land reclamation and irrigation. The other contracting party are farmers, with no specific legal status requirements.

The contracting area: The contracting area covers water bodies plus specific activities performed on each farm. Hence, in several cases, the farms are in charge to monitor an area outside they operated area. In the previous contract, the fixed payment was proportional to the area monitored, but this linkage was removed in the investigated contract.

Renewal / termination: The UM requires a monthly report containing the results of monitoring activities and one additional report after each weather alert. The additional report contains emerging concerns, not directly observed in the previous report. This report constitutes the basis for asking for direct interventions. The UM was flexible in judging the quality of the monthly report, especially during the earlier phases, but requires a rigid timing for both small and large activities directly committed.

Risk/uncertainties of participants: Payments decoupled by markets, the source of uncertainties are the amount of investment required and the number of weather alerts per year.

Links to other contractual relationships: The only requirement was to respect the law about security of working conditions (i.e. use of specific equipment etc.).

Context features

Landscape and climate: The area investigated is very rainy, mainly in the spring and autumn. The winter is often rainy with snow often above 1500 meters. These conditions combined with the abandonment of grazing activities along the internal area can create spontaneous vegetation and a continuous growing of the unmanaged forest. These conditions, besides quite a steep slope, can create a lot of pressure on water management.

Farm structure: No specific requirement, but enrolled farmers with equipment enable to support action on water bodies.

SUCCESS OR FAILURE?

The custodian was a successful contract solution.

Reasons for success:

Bottom-up programming with involving of farmers.

SWOT analysis

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

INTEGRATED TERRITORIAL PROJECTS - (ITPs) /territorial agreement

The ITP allows a collective implementation and the concentration of RDP non-productive investments aiming at securing environmental assets on some specific areas of the Tuscany Region (vulnerable areas, marginalized etc.).

Summary

The contract is developed within a MULTI-MEASURE CALL of the Tuscan RDP 2014-2020 and aims at the aggregation of public and private subjects to deal - directly and indirectly - with specific environmental problems at a territorial level (hydro-geological risk, soil quality, biodiversity, water retention and landscape enhancement). The contract requires the establishment of a territorial partnership and the development of a territorial development project focused on the main environmental issues of the area under contract. Once approved by the Region, the ITP allows the direct activation and funding from a multiplicity of environmental related sub-measures/operations of the current RDP (i.e. non-productive investments related to agro-climatic-environmental objectives). The individual instances presented under the ITP umbrella gain priority over the other applications for RDP measures for both selection and funding. The contract requires a leading subject to coordinate the management of the proposal. The leader has the task of managing network activities and monitoring the progress of material investments to ensure the implementation of the project and its effectiveness/efficiency. The leading entity is also responsible for guaranteeing compliance. The public agency requires at least 85% of budget with respect to the proposed investments in order to deliver payments. The total budget is up to euros 3 million for projects at least euros 500,000 in non-productive investments (environmental). The territorial agreement is signed by both, those who should realise the investments and those who makes a non-direct contribution to the project. For at least three years, the signatories are linked to each other by contractual constraints which regulate mutual obligations and responsibilities regarding the realization of investments aimed at achieving the territorial objectives set in the project (i.e. the investments). Of the 28 projects received by the Tuscany Region within the current RDP, this case study focuses on the ITP of the Tuscan archipelago (Islands of Elba, Capraia and Giglio) that started in 2016. The leader is the Department of Agri-Food Production and Environmental Sciences of the University of Florence (DISPAA UniFi).

Objectives

1. Activation of a coordinated monitoring and management network to face hydrogeological instability;
2. Increasing the overall resilience of the territory to calamitous events originated by climate change;
3. Improving the state of conservation and functionality of some elements of the historical landscape;
4. Systematic and site-specific dissemination of good agronomic practices to protect the territory;
5. Supporting farmer's viability.
6. Increase the capability to observe the territory and increase positive attitude towards non-productive investments.

Indirect effects:
Increasing the value of the agricultural landscape; Increasing green infrastructure to support fauna; Enhancing the supply local productions.

COLLECTIVE

A territorial partnership agreement within an ITP project

PUBLIC GOODS

Landscape and scenery

(Farmland) biodiversity

Soil quality (and health)

Water retention

Resilience to natural hazards

Rural viability and vitality

Cultural heritage

LOCATION

ITALY

Tuscan Archipelago
(Elba, Capraia, Giglio)

Problem description

The rapid and uncontrolled urban expansion due to tourism has consumed much of the rural and natural areas in the territory of the Tuscan Archipelago. In its major islands (Elba, Capraia, Giglio) serious damage for biodiversity and for the hydrogeological balance of the territories are caused by this intense development. In addition, the recent pressure of the ungulates (wild boar and mouflon in particular, both alien species introduced by man to the island) is causing damage both to crops and to hydraulic and agricultural arrangements and slopes. The Tourism expansion together with the process of agricultural modernization have led to a strong decline in traditional agricultural activities with an increasing land abandonment and the consequent degradation of natural and traditional landscapes. On the other side, the intensification of olive and vine cultivation has led to landscape simplification and to the increase in hydrogeological risk, especially in the hilly systems with the abandonment of the terraces. Such circumstances are amplified by the effect of the ongoing climate change, which is revealed by the increase in heavy rainfall events with a cumulative exceeding 300 mm/d, in the face of a reduction in overall rainfall and the increase in heatwaves. The recurrence of alluvial episodes subjects the territory to the risk of landslides and valley flooding, but also to widespread erosion phenomena.

Data and Facts - Contract

Contract features combination: The contract is an agreement between the Tuscany Region and a territorial partnership subscribed by private and public subjects within a MULTI-MEASURE CALL of the RDP 2014-2020. The ITPs mainly combine with the following set of RDP measures:

> *4.4.1 – Landscape protection and enhancement of biodiversity; 4.1.4 - Management of water resources; 4.4.2 - Non-productive investments for improving management and protection of water resources; 5.1 - Preventive actions to reduce the effects of natural disasters, adverse weather conditions and catastrophic events; 16.4 - Horizontal and vertical supply chain cooperation for the creation and development of short supply chains and local markets; 16.5 - Joint actions for climate change mitigation;*

The first level of compliance corresponds to the execution of the planned interventions (investments), which is fixed at least 85% of the investments proposed. The second concerns the individual instances which must comply with the compliance rules established by the individual measures and sub-measures of the Tuscan RDP. Thus the eligibility of the individual instances is mainly guaranteed by the adherence and the coherence with the ITP proposal.

Participation: With the participation of 36 private and public subjects the contract covers over 4,300 ha, of hilly and semi-flat orography, which winds along the edge and in correspondence with the territory of the National Park, on the islands of Elba, Capraia, and Giglio.

Involved parties: The ITP involves one public leader (DISPAA UniFi), 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: Legambientee Arcipelago (environmental stakeholder) and BCC Banca dell'Elba that facilitates the access to credit.

The benefits for leader: Direct management and coordination of this network of innovation;

The benefits for the private direct participants: Environmentally related to the opportunity of upgrading their farming area and activities;

The benefits for the public direct participants: Environmentally related to the opportunity of securing large investments necessary for the development of the territory; growing expertise and local knowledge through the network to manage identified problems;

Funding/payments: Incentive payments within the EU funding scheme for RDP measures. Payments are directed towards those direct participants responsible for the planned interventions with percentages that vary according to the planned intervention. The financing can cover all the costs, as well as only a part of them. For productive investments about 80% is covered by the Region and 20% by the participants, while for sub-measure 4.4.1 the support is set at 100% by the Region.

CONTRACT

The financing party in the contract solution is the Government with EU-funding. The partnership in the contract is **public – private and public - private - civil society.**

Contract conclusion: Written agreement (contract)

Payment mechanism: Incentive payments

Length of the contract: 5 years

Length of participation: 4 years

Start of the program: 2016

End: 2020-still running

PRODUCT

There is an interest in the development of short-chain productions, but a specific product has not yet been identified.

Resource/investments allocation:

- More than 45% of the ITP costs are allocated for measure 4.4.1 (landscape protection, management of wetland, enhancement of biodiversity and harmonizing the presence of ungulates with agricultural activities);
- More than 50% is allocated for measure 4.1.4 (promoting irrigation efficiency, reducing hydrogeological risks and recovering of landscape elements such as terraces);
- Less than 5% is allocated to measure 16.4/5 (dissemination, promoting horizontal coordination and local products);

Management requirements:
Participants are bound to carry out the planned investments, but not to achieve the desired environmental results (action-based). In the Territorial Agreement, the direct participants, duly informed, undertake all the necessary provisions to guarantee the correct implementation, as well as to carry out the relevant interventions within the timeframe established by the project. The partnership is ensured by the lead partner that bears the burden of damages caused by his own possible defaults acting as guarantor by the other participants in the ITP. Each direct participant is responsible for the interventions for which it is responsible (Art. 6), and for the economic damages, it causes to the partnership for failure to implement them. Indirect participants are only committed to the activities for which they are responsible. If the direct participant cannot fulfill his responsibilities, he has to find a substitute participant who guarantees the same quantitative and qualitative level of his interventions. In case of violations or non-compliance, the contract provides sanctions to the responsible in proportion to the economic damage caused to the project and to the other participants (Art. 18); unilateral withdrawal from the agreement is possible and carried out with communication to the lead partner.

Controls/monitoring: The region requires a final report on the state of execution of the project and can intervene at any time with specific controls.

Conditions of participation: Minimum of 15/max of 100 participants for each ITP proposal; requirements are defined by the region through an open call. Non-compliance determines the exclusion from the payment.

Legal status of the contracting parties: The 29 private subjects are mainly landowners and individual entrepreneurs, 1 is an agricultural cooperative. The payments cover the cost of the planned interventions that can be at territorial level for what concern the intervention planned by public subjects and at farm level for what concern those interventions at that scale.

Renewal / termination: The contract provides for the realization of the planned investments. At the end, the payment is made by the Region. If the interventions do not reach 85% of the allocated budget, no payment is made.

Risk/uncertainties of participants: Since the core of the territorial agreement is the final realization of the ITP, which depends on at least 2/3 of the investments made by participants, the main risk is the failure of the entire project due to the fault of one or some participants. In this case, the project must be re-evaluated by the Region. So the main benefit, as well as the main risks, are related to the strong interdependence between participants.

Context features

Landscape and climate: The contract established with the ITP aims to upgrade the environmental and landscape conditions on the main Tuscan islands (Elba, Giglio and Capraia). Climate change and urban transformations linked to Tourism, the change in agricultural practices have exerted strong pressure on these environments. Key are the maintenance of biodiversity, erosion control, the reduction of hydrogeological risk, the recovery of ancient terraces and traditional and less intensive agricultural practices. The extreme drought, the presence of extraordinary and catastrophic weather events, the presence of invasive animal species represent the main problems. The various agricultural landscapes on the islands, both in the plains and on the hills and especially in the mountains, represent strategic resources for the Tuscan territory. So-called heroic viticulture has gained considerable attention recently. Maintaining these practices and developing and improving these environments is a regional priority. The investments planned through the territorial agreement want to create those conditions for the maintenance and future development of these environments.

Farm structure: Small and medium-sized wineries (from an average 2 to 20 ha of land planted with vines), so-called heroic viticulture. Some who produce organically others who aim to recover the agricultural traditions of the islands, such as production on the terracing. They are mainly full-time agricultural entrepreneurs or family businesses.

UNIVERSITÀ DI PISA

CONSOLE

SUCCESS OR FAILURE?

The contract solution can be considered successful from the point of view of achieving participation, carrying out interventions and producing environmental benefits at territorial level. From this point of view, however, it is currently difficult to assess the progress of the project and therefore consequently the improvement of the resources or environmental assets subject to investment. In the event that the project is completed as planned, benefits can be observed from the point of view:

- coordinated monitoring and management of hydrogeological instability;
- increase in the overall resilience of the territory to calamitous events originated by climate change;
- improvement of the state of conservation and functionality of some elements of the historical landscape;
- increase in the widespread aesthetic and perceptive value of the agricultural landscape;
- diffusion of good agronomic practices to protect the territory;
- the overall improvement of some sites with high naturalistic value accompanied by the enhancement of the ecosystem capacity of the green infrastructure to support fauna in the agricultural sector.

Reasons for success:

- Promote active participation;
- Promote the strong link with agricultural supply chain and the territory;
- Realize key investments for the sustainable development of the territory;
- Reach several indirect benefits (creation of a management and control network for the territory, coordination, and promotion of the supply chains at a territorial level, etc.)

The main risks are related to any changes compared to what has been planned, the waiver of some participants, as well as the non-completion of the investments.

SWOT analysis

Main Strengths

1. Geographical concentration of investments.
2. Enhance the planning and integrated design of key interventions.
3. Increases the sensitivity of the territories with respect to key issues.

Main Weaknesses

1. The strong interdependence of the subjects, can cause failure, if someone does not meet expectations.
2. Extreme complexity of the contract
3. Long and complex management

Main Opportunities

1. Reduce the complexity and difficulties encountered in contract management.
2. Develop a ITP budget, at present the financial envelope depends on the RDP measures.
3. Shorten the time required to complete contracts.

Main Threats

1. The interventions depend on the RDP measures, do not have their own financial envelope.
2. Risk of making a call that does not have capacity on individual measures (reshaping the financial plan of the RDP).

Horizon 2020 European Union Funding for Research & Innovation

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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

AECPG losses in production systems have negative effects: damages caused by ungulates on both crops and hydraulic and agricultural arrangements and slopes seriously affected productivity. The development of modern agriculture and the mass tourism industry has favoured the progressive abandonment of the most remote and traditional areas that combined with changes in precipitation patterns due to climate change caused 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.

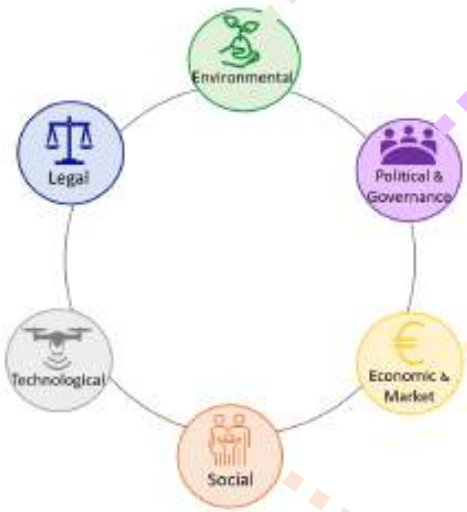
Sound orchestration of three policies streams in one measure of integrated territorial projects , namely

(1) the Tuscan RDP,

(2) the regional landscape plan and

(3) the regional legislation for integrated supply chain projects.

While, in the past, these three tools have operated individually, with the development of the ITP the region aimed at providing an integrated solution within a **single operating tool**.



Market conditions influencing the success:

With reference to the wine sector where the majority of the ITP's private participants come from, there are three main conditions that allowed the formation of the consortium and the development of the ITP:

(1) **Quality-driven innovations**. - Quality has passed from the bottle to the territory understood as a set of environmental resources and goods, whose conservation and maintenance becomes an integral part of the product and consumption

(2) **Change in lifestyles and consumption patterns** - for higher quality products, such as healthy, sustainable and origin certified foods)

(3) **Competitive pressures**

Roles and social impact:

>> With regard to the ITP of the archipelago, since it is a collective agreement and its success depends on the realization of at least 85% of the planned investments, all direct participants are mainly responsible for its development and for the success in the provision of the related public goods. <<

- DISPAA UniFi has the role of technical and administrative management of the PIT, monitoring the progress of material investments, managing network activities and innovation aimed at increasing sustainability, carrying out tests and trials, disseminating the results of the project.
- Having established this first level of responsibility, the project itself and the actions it develops, as well as the results it will give rise, also depend on the institutional context, 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).

Additional page added June 2022

NUTRINFLOW

Good practice examples of environmentally friendly drainage systems were introduced.

Summary

The project aimed at establishing good practical examples of win-win measures for agricultural producers in water management for the retention of nitrogen and phosphorus. Through working with farmers and landowners, the project promotes and demonstrates with concrete investments the benefits gained from holistic planning and coordinated implementation of water retention and on-farm drainage management measures. To show good practice examples on the Ailes stream a project was developed and contracts with landowners signed. The overall project was lead by Proagria (Finland). Union "Farmers Parliament" (Latvia) was one of the project partners.

Problem description

The project responded to the common pan-Baltic challenge to implement more effective and acceptable measures to reduce nutrient inflows to the surface waters and the Baltic Sea from agriculture. It is evident from recent history of implementing on-farm agri-environment measures, that they have not yielded the results needed in terms of reduced nutrient losses and that complementary measures in the drainage network and landscape are needed. In part, this is due to the multifaceted hydro-morphological, physical and biochemical processes in the soil and the aquatic environment, which also makes the effect of these individual measures difficult to measure. Through addressing water flow, water storage and retention it is possible to tackle the problem of nutrient losses outside the growing season when there is no uptake by the crops. According to studies and estimates, up to 90% of nutrients are lost outside growing season which indicates great potential for nutrient loss reductions by the above mentioned measures. At the same time, there is great potential to be gained for agricultural production, but also for the production of ecosystem services for the society from measures targeting water flows and retention in the landscape. Through a holistic catchment level management, an optimal combination of measures in the landscape, the stream network and on farm could ensure sustainability and viability of agriculture while reducing the external nutrient loading to the sea.

CONSOLE

COLLECTIVE

All 72 landowners along the Ailes stream were contracted.

PUBLIC GOODS

Water quality – to reduce nutrient inputs in the Baltic Sea and to have increased attractiveness and feasibility of a holistic water management approach for agricultural catchments across the Central Baltic Region.

INDIRECT EFFECTS

Local innovation and action groups stimulating voluntary action and entrepreneurship in water management.

LOCATION

LATVIA

NUTS 3, LV009 (Zemgale)

Regional/Local contract, but could be applied to the whole country

CONTRACT

Contracts with landowners for the introduction of the environmentally friendly elements on the drainage systems connected to the Ailes stream. Landowners agreed that they allow access to the Ailes stream and manage the coastline (buffer zones) of their land near the Ailes stream for construction of pilot (4) elements.

Public – private – civil society contract
State – landowner - NGO

Contract conclusion:
Written agreement

Payment mechanism:
Tender and/or price comparison for the implementation of construction work

Financing party:
Government (with EU-funding), Union "Farmers Parliament" (10% for the design of technical project)

Length of participation in scheme:
2 years

Start of the program:
2016 spring
End: 2018 autumn

Objectives

1. Control and reduce nutrient inputs into natural watercourses and water bodies;
2. Control soil erosion;
3. Enrich oxygen content in water;
4. Promote natural self-purification processes in water;
5. Increase 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.

Data and Facts - Contract

Involved parties: Landowners/managers with agriculture production and their land lying next to the Ailes stream. State Limited Liability Company "Real Estates of Ministry of Agriculture", which are responsible for maintenance of the drainage systems in Latvia. Union Farmers Parliament, with the objective to educate farmers.
Management requirements for farmers: The contract solution was foreseen for collaboration between landowners and the company contracted by Union "Farmers Parliament" to develop the construction plan.
Controls/monitoring: The results are controlled and monitored by State Limited Liability Company "Real Estates of Ministry of Agriculture" staff of the Zemgale Region. They control functionality and physical presence of demo elements (stones, plants etc.) on the spot. For 5 years State Limited Liability Company "Real Estates of Ministry of Agriculture" is responsible for removal of overgrowth, removal of beaver dams, cutting of shrub shoots. The State Rural Support Service is the control authority. In case of complaince, building board implement on site control to prevent illegal construction activities. Fine can be assigned to the landowners in case of law infringement.

PARTICIPATION

- Landowners - 72
- Catchment area- 35,6 km2
- Agriculture land - 90%
- Length of the stream - 14,2 km

Conditions of participation: All 72 landowners along the Aile stream were contracted. The demonstration areas were chosen on the places where landowners agreed to allow access to the stream with the construction machinery. The protocol (agreement) was developed professionally by the construction plan developer. There are no consequences planned for the landowners at the agreement. State Limited Liability Company "Real Estates of Ministry of Agriculture" staff does the follow up that the drainage systems are managed properly. If requirements are not respected, landowners can be penalized which can lead to reduction of direct payments.

Risk/uncertainties of participants: Financial risks, regarding the management of the environmental elements to be financed in the long term;
Administrative risks - Objects are publicly accessible on a national watercourse, but adjacent areas are privately owned and the question is how the shores will be managed?
Knowledge and understanding of the public so that objects are not destroyed.
Natural Risks – damaged by beaver and other invasive species.
Water Analysis - effectiveness of measures.

Funding/Payments: The demonstration area technical project was financed by Union "Farmers Parliament" (ZSA) partner budget (75% Central Baltic Sea Region programme 2014-2020, 5% Latvian state and 10 % ZSA). ZSA contracted the company for the design of the technical project. The implementation of the construction works was done by the company contracted by State Limited Liability Company "Real Estates of Ministry of Agriculture".

Context features

Farm structure: Traditionally, the most important specialization in Latvia are arable farming (42.6% of the total number of farms), dairy farming (15.1% of the total number of farms), as well as mixed crop and livestock farming (14.8% of the total number of farms). Farms in Latvia are mainly family-owned businesses. In 2016, 69,000 or 98.7% of farms belonged to one natural person, of which 31,400 or 45.5% of the farms were owned by women. Cereal farming is one of the most important agricultural sectors in Latvia - it provides the population with both food and feed in the livestock sector. Almost no livestock sector can survive without grain. Recently, cereal production is increasingly being used in other sectors, such as for energy.

SUCCESS OR FAILURE?

The NUTRINFLOW case is successful in terms of environmental elements demonstration. Good practice examples stated by Latvian Agriculture policy are presented and tested «on the ground». The investments demonstrate a holistic, cooperative approach and lead to reduced nutrient losses from agricultural land to the watershed. The investments will decrease nutrient load to rivers on the pilot territories, and this is a concrete improvement to the water quality of those water bodies and coastal regions, but wider objective is to spread the results to the whole Baltic Sea Region. Reduction of nutrient flows from agricultural lands is a complex issue, and the holistic approach to flow and nutrient management on fields, soils and waters aims to develop and assess the most effective measures and practices for this. To scale up the impact of the project in leading to nutrient loss reduction and nutrient retention measures in other areas, the project communicates actively about the process of designing the measures and their results across the Baltic Sea Region.

Reasons for success:

- The results and experiences are sustained.
- The experiences are shared internationally and the project will transfer the experiences from the practical measures and the planning process across the national advisory service operations

SWOT analysis

Main Strengths

1. The combination, the holistic approach, should allow continuation of effective agricultural production with less nutrient load to natural waters.
2. More effective use of nutrients, better nutrient balance, causes less mineral nutrients used for production of the same amount of crops.
3. The dialogue between agricultural producers and environment protection authorities to find the best ways into develop production to environmentally friendly and sustainable direction, finding mutual benefits for ecology and agriculture: cooperation instead of confrontation.

Main Weaknesses

1. They have not yielded the expected results in terms of reduced nutrient losses, thus complementary measures in the drainage network and landscape are needed. In part, this is due to the multifaced hydro-morphological, physical and biochemical processes in the soil and the aquatic environment, which also makes the effect of these individual measures difficult to measure.
2. Effectiveness will be evaluated in the long term period
3. The contracts for the surrounding farmers were not signed for the maintenance

Main Opportunities

1. Great potential to be gained for agricultural production, but also the production of ecosystem services for the society from measures targeting water flows and retention in the landscape
2. Attention to sustainable drainage management is especially critical in the foreseeable climate change with increased precipitation and on the other hand increased summertime water shortages
3. Continue monitoring water quality and show good practice examples in other projects
4. Good water quality demo site open for public.

Main Threats

1. Some of the investments need periodical maintenance, for example, sedimentation ponds need to be dredged with intervals of some years, and dams and other constructions should be investigated annually and renovated if needed.
2. The loss of interest and termination of support and cooperation by landowners and land managers as a result of the above circumstances.

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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

The right timing:

The fact that the project's partner countries are **faced with the need to renovate agricultural drainage infrastructure**, provides an ideal ground to introduce new, more sustainable measures to meet the needs of agricultural production and the aquatic environment.

Attention to sustainable drainage management is especially critical against the background of the foreseeable climate change with, on the one hand, increased precipitation and, on the other hand, increased summertime water shortages.

Win-Win Situation: 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.

The project builds on the knowledge and understanding that measures to improve water quality in the agricultural context have to be integrated with the farm management and field drainage.
In particular, it provides a setting to combine both:

(1) **environmental** and
(2) **productive goals**, with the possibility of expanding the scope of measures in the adjacent landscape.

Developments in the Program since 2020:

1. The State Limited Liability Company "Real Estates of Ministry of Agriculture" maintains the Ailes stream pilot site. The state funding is dedicated for:
   - cutting the grass on the slopes and cleaning the bottom of the river;
   - cutting and removing bushes;
   - destroying and removing the beaver dam.
2. Latvia University of Applied Sciences and Technologies is considering to take water samples and analyze them.
3. The pilot site is used for training and demonstration activities for the national and international specialists, like scientists, advisors, students, farmers and others.

Additional page added May 2022

DVIETE LIFE

Demonstrates and promotes the use of complex Corncrake habitat restoration techniques (e.g. contract solutions) in degraded floodplain meadows, as well as raises the level of knowledge and involvement of landowners and local authorities in the environmentally friendly management of the Dviete floodplain.

Summary

LIFE+ project "Restoration of Corncrake habitats in Dviete floodplain Natura 2000 site " 2010-2015

The Nature Park and Natura 2000 site 'Dviete floodplain' was established in 2004 and covers an area of 4,989 hectares. It is one of the largest and best-preserved functioning river floodplains, and one of the most important breeding areas of the Spotted Crake, Corncrake and Great Snipe in Latvia. It is also a globally important stop-over site for waterfowl during spring migrations. The area and biological quality of Dviete floodplain grasslands have been remarkably decreased by alteration of the hydrological regime during the 20th century. Drained and abandoned grasslands overgrown with bushes, becoming unsuitable for the breeding of the Corncrake and other protected grassland bird species. Some measures have been taken to improve the conservation status of Corncrake (Crex crex in Latvia). For example, the straightened section of the river Dviete with a length of about 2 km has been restored in its natural hydrological regime of the flood plain favourable to the corncrake, by preventing overgrowth of the surrounding grassland and to increase the common biodiversity of the flood plain. Shrubs and trees on an area of at least 100 ha were removed in cooperation with the landowners to restore the corncrake's habitats - open floodplain grasslands. By removing shrub barriers, a continuous area of approximately 300 ha of corncrake habitat was restored. The contracts were signed in the project for the restoration of the meadows and grazing of biologically valuable grasslands.

Dviete floodplain landscapes before and after restoration of grasslands (24.05.2011. and 22.10.2015). Photo: E. Račinskis

Objectives

- Restoration of a straightened section of the Dviete River to its natural bed above Lake Skuķu to improve the hydrological conditions of the floodplain and prevent overgrowth of the meadows while restoring the historical floodplain landscape;
- Restoration of floodplain grasslands by cutting shrubs and trees overgrown with them;
- Establishment of grazing areas for cattle and horses in restored floodplain meadows for their subsequent maintenance in a state suitable for meadow birds

LAND TENURE

Land tenure after the implementation of a LIFE+ restoration project.

PUBLIC GOODS

Farmland biodiversity (Corncrake habitat)

Landscape and scenery

Dviete floodplain nature park, restoration of the hydrological regime of the meliorated floodplain.

LOCATION

COUNTRY

Ilukste and Jekabpils counties, Selija region, the south east part of Latvia

CONTRACT

It is a public-private-civil society contract (EU, landowners, Latvian Fund for Nature (LFN) , Dviete Valley Parish Association)

Contract conclusion:
Written agreement

Funding/Payments:
The project was co-funded by EC LIFE+ programme and Latvian Environmental Protection Fund

Duration of LIFE+ project
2010 – 2015

Length land lease agreements for maintenance: Initially, the contracts were for a period of 4-5 years, now for 10 years

Problem description

During the 20 century, natural values of the Dviete floodplain suffered from the straightening of watercourses, drainage of wetlands, intensification of agriculture and later also the abandonment of grasslands. Parts of Dviete floodplains of former grasslands are overgrown with shrubs and trees, losing their importance to both grassland birds and migratory waterfowl. Shortly after the creation of the Dviete Floodplain nature park, a nature protection plan for the site was developed in 2005 as part of the LIFE project "Restoration of Latvian floodplain meadows for the conservation of EU priority species and habitats" (LIFE04NAT / LV / 000198; 2004-2008). One of the objectives of the plan was to restore the hydrological regime of the drained floodplain. This included restoring river bends in the floodplain following existing stretches of old riverbeds, and gradual downstream restoration. After the implementation of the project, the area needs to be agriculturally maintained under consideration of environmental aspects.

Data and Facts – Contract

Participation: 27 landowners are involved in this contract solution.

Area of implementation: The Dviete River is located in the southeastern part of Latvia with a total length of 37 km. Most of the river's flow (about 20 km), is located in Dviete ancient valley and Dviete floodplain nature park, and the water level and the area of flooded areas during the floods are determined by the biggest river of Latvia -Daugava.

Involved parties: The confirmation for the technical project by landowners- one of the most difficult stages of a project. This was done the company contracted by the LIFE project coordinator and landowners. The next stage contracts are for the restoration of the meadows along the river.
The grassland restoration contracts between the Latvian Fund for Nature (LFN) and the landowners who carried out the grassland restoration included the requirement to maintain the restored areas. The farmers got reimbursed for their activities. In addition, land lease agreements or agreements on "grazing of biologically valuable grasslands" have been concluded between the Dviete Valley Parish Association and the landowners for grazing management. These contracts cover both grassland areas restored to pasture land within the framework of the LIFE + project DVIETE and areas pastured before the LIFE + project. Currently, contracts cover an area of 371 ha. Land leases have different periods of operation because they are not concurrent. Initially, the contracts were 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 Dviete Valley Parish Association (DVPA).
There is an agreement between LFN and DSPA to maintain the results of the LIFE + project DVIETE. Under the agreement, DSPA commits itself organizing and implementing, over the next 20 years (until 30 September 2035), measures to maintain project results in restored grasslands managed by DSPA.

Location: The Dviete River is located in the southeastern part of Latvia, on the left bank of the Daugava (in Augšzeme), in the territories of Ilūkste and Jēkabpils municipalities. It has a total length of 37 km and a fall of 49 m (1.32 m / km; Pastors 1995). Most of the river's flow (about 20 km), from Kaldabruņa to the mouth of the river Daugava, is located in Dviete ancient valley and Dviete floodplain nature park. This part of the valley includes the Dviete and Skuķu lakes, as well as the lower Ilūkste floodplain. Riverbeds in the nature park have been historically regulated several times (Indriksons 2008) during the melioration in the 20th century. Dviete and its riverbed Ilūkste form part of the largest natural floodplain system in Latvia, which affects the Daugava floodplains, their volume and duration (Škute et al. 2008). The hydrological regime of Dviete floodplain, the water level and the area of flooded areas during the floods are determined by the Daugava (Gruberts 2004, 2015). Floodplain floods are mainly due to floodwaters flowing into the river Dviete upstream from the Daugava.

Requirements for farmers: Do not damage or destroy (also by plowing or cultivating) floodplain and terrace meadows, drain wetlands, no reforestation by planting or sowing and afforestation or not allowing natural afforestation of agricultural land, only- restorative mowing and grazing.

Controls/monitoring:

- Corncrake habitats
- Plants monitoring
- Hydrological monitoring

Risk/uncertainties of participants: The project also showed that small and fragmented land properties can make large-scale management difficult. The main disadvantage of the LIFE + DVIETE project in terms of cooperation with landowners was the fact that no written support agreements for the implementation of the project activities were already in place during the project preparation. Instead, the project team made the mistake of relying on the good faith that most of the landowners in the Dviete floodplain were (and will continue to be) supportive to the project's intentions. However, the bitter experience of subsequent events has shown that one landowner who refuses to cooperate may be sufficient to significantly influence the course and outcome of the project.

It is important to note that the technical project for river restoration developed by the LIFE + project DVIETE also includes a separate appendix, which was not renewed due to one landowner. Since the original technical design for the restoration of the river's natural stretch of 2.3 km also included this fragment in full, further efforts to fill this unfinished gap would benefit from the work already done. The main planned restoration work for the alternative route is as follows: length 600 m, excavation of the bed 2263 m3, two/bed embankments (240 m3) and construction of one reinforced beam.

Dviete floodplain landscapes before and after restoration of grasslands (11.11.2011 and 21.03.2012). Photo: E. Račinskis

Context features

Landscape and climate: After the restoration of the Dviete River section above Skuķu Lake, the landscape of the floodplain has changed significantly. The river is partly restored into its historic curves and, together with the open grasslands restored under the LIFE + project DVIETE, and regained its former shape when the floodplain was used for traditional agriculture - mowing and grazing.

Farm structure: As a result of the project activities, the landscape of the Dviete floodplain has undergone significant changes, and monitoring of breeding corncrakes indicated that their population in the project area was on the increase. For the restoration of grasslands in similar floodplain areas it is recommended to implement a complex of restoration measures used in the LIFE + project DVIETE - shrub and tree felling, stump milling and grazing, varying the proportion of each operation as necessary.

There are still quite several active farms in the area, mainly on the banks of the Dviete Valley and the Ilukste Valley, which are engaged in livestock farming. The largest livestock herdsmen here are the Zemgale Ltd and Skaidrite cooperative societies in Pilskalnes parish, the Bebrene vocational secondary school in Bebrene and the farm Mežare in Rubene parish. These farms use the Dviete floodplain meadows for both mowing and grazing livestock.

In the Dviete parish's south-eastern part (Sosnovka), on the terrace of the headwaters of the Daugava between the lower reaches of Ilukste and the Daugava there are large fields used for cereal production and attracting large numbers of migrating geese every year. Potatoes, fodder beets, etc. vegetables also are grown in small areas near the villages and farmsteads of Dviete and Bebrene. Elsewhere, floodplain meadows are mainly used for hay mowing.

Although most of the area is privately owned, some of the land is also owned by municipalities. A small part of municipal land is leased to local people for agricultural purposes, but most of it is currently unmanaged.

SUCCESS OR FAILURE?

Showcase of success and failure. The future of Dviete floodplain grasslands, as in other parts of Latvia, is largely dependent on the amount of RDP funding available - the amount of the support payment and the conditions for maintaining biodiversity on grasslands along with access to other payments (eg. single area payment), as well as support opportunities for other economic activities (rural tourism, organic farming) that promote the existence of viable farms. Unfortunately, the conditions for these payments and the amount of aid are very variable.

SWOT analysis

Main Strengths

1. EU financial support for the implementation
2. 113 hectares of open grassland have been restored, removing shrubs and trees from abandoned and overgrown areas with support of the project funding and voluntary activities
3. Contracts have been concluded to ensure the ongoing maintenance of the grassland areas restored as part of the LIFE+ project DVIETE.

Main Weaknesses

1. No agreements between landowners at the pre/phase (project planning) of the project. Insufficient pre-project negotiations with key stakeholders, especially landowners, and lack of written and legally binding agreements to cooperate on specific project activities.
2. The project application did not foresee, nor did the landowners, before the project, discuss land purchase at key sites for habitat restoration.
3. Landowners reliance on unpredictably changing conditions of the Latvian Rural Development Programme

Main Opportunities

1. Continued and developed cooperation with local NGOs, municipalities, landowners and other local people.
2. Landowners in the territory of the nature park, whose properties have been identified as biologically valuable grasslands, may apply for support payments by the Rural Development Programme the grasslands are properly managed.

Main Threats

1. Changing attitudes of landowners and land managers regarding further management and restoration of floodplain meadows due to changing funding conditions of the Latvian Rural Development Program and high bureaucracy, as well as insufficient and reduced support payments.
2. The loss of interest and termination of support and cooperation by landowners and land managers as a result of the above circumstances.
3. Lack of funding for long-term habitat management and restoration in Dviete floodplain nature park

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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Historical transformation of the nature an the consequences:

During the 20th century, rivers were straightened, deepened and dammed in order to use more land for agriculture. Latvian rivers have also been partially transformed (about 36% of rivers are regulated), with negative consequences for biodiversity and weakening of ecosystem functions in wetlands, including floodplains.

The Dviete floodplain is a particularly valuable area that has also suffered from river network transformation and drainage → An environmental condition that requires action. An area management plan from 2005 already foresaw the restoration of the meadows covered with shrubs and the reduction of the adverse effects of drainage on the landscape and the biodiversity of the floodplain.

Timely information and involvement of landowners:

The experience of the LIFE + project DVIETE has shown that timely information and involvement of landowners in the planning and implementation of nature management activities is crucial.

Even with relatively few land properties could happen that cooperation is impossible.

At least part of the problem could be solved by the agreements with the landowners already made before the start of the project on the implementation of the measures planned in the project.

Developments in the Program since 2020:

Activities in the Dviete floodplain have been implemented according to the After-LIFE Conservation Plan.

- Sow far, the management of the restored open grasslands of the site continues mainly by grazing (still provided by landowners who have contracts with the association). There are intentions for futher maintainance work and territory development in the future.
- The contracts for the restoration of grasslands between the LNF and the landowners included requirements to maintain the restored areas, which are also being fulfilled.
- Dviete floodplain Information centre is still carrying out educational activities.
- The Dviete floodplain observation platform is maintained by Ilukste municipality.

Additional page added May 2022

Bauska Nature Park tidy up of territory

A good practice example for the motivation of environmentally friendly activities supported by the local authority.

Summary

The Bauska County's natural environment is a resource of active recreation and tourism. The Bauska County has several particularly protected areas, and the nature park „Bauska" (NATURA 2000 – EU protected natural area of 892.9 ha) is the most important of them. There are also several natural monuments and natural restricted areas.

Investment in public property of Bauska local municipality, adjacent to private person's property, is promoted by regulations on real estate tax rebate. The landowners can apply for a reduction of the real estate tax when implementing specific measures, such as tidying up the bordering territories, improving sidewalks, contributing to the construction or reconstruction of streets and/or children's and sports grounds, water parks, sewerage systems etc.

Objectives

1. To bring new ideas and insights to the development of the area, to improve the landscape and the environment by bringing in valuable experience.
2. To promote the development of the landscape and the maintenance of the public territory.
3. To stimulate the active participation of landowners in the maintenance of clean and tidy public spaces and the creation of a good environment.

Problem description

Landscape degradation in Bauska is caused by several objects– such as abandoned buildings, ruins, overhead transmission lines. To remove such objects or to plant rows of trees to cover them is therefore desirable. Also landscaped areas exist, where serious work is still needed to improve the landscape and the environment. In these areas it is necessary to cut bushes, to level the terrain by removing scraps, and to preserve and create ponds. In many places, the landscape is defaced by shrubs or old ruins of agricultural or industrial structures, as is the case on the right bank of the Ceplis and Jumpravmuiza manor.

Data and Facts – Contract

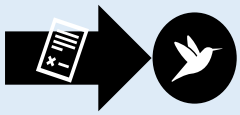
Participation: The territorial authority of Bauska is located in the central part of Latvia and Zemgale region, bordering the Republic of Lithuania, Iecava, Vecumnieki, Rundāle and Ozolnieki. The area of the county is 786.7 km2, of which 6.14 km2 is occupied by the city of Bauska. Forest areas occupy 17837.7 ha, agriculture utilized land 52970.5 ha.

Involved parties:

Local authority – responsible for paying the tidying up of territory.

Landowners – carrying out the tidying up and getting reimbursement for it.

RESULT-ORIENTED



Result-oriented tax relief scheme, reimbursing landscape improvements.

PUBLIC GOODS

Landscape and scenery

INDIRECT EFFECTS

Encourage entrepreneur activities: reduce unused agricultural land, promote tourism. Social effects – neighbors seeing adjacent area being tidied up, also are motivated to pay more attention to the improvement of their own area.

LOCATION

COUNTRY

Bauska Nature Park located near the boarder with Lithuania.

CONTRACT

The presented contract solution represents a public-private contract between local authority and landowners.

Contract conclusion:
Written agreement

Payment mechanism:
Incentive payments, tax reduction

The financing party is the local authority.

Funding/Payments:
The payment is issued by the local authority. If an applicant wants to perform tidy up activities on the territory of the local authority, first he/she needs an agreement with the authority first, then prove the expenses (eg. fuel, excavator costs, etc.) With the offial and documented acceptance of the delivery of the activities,the costs are then reimbursed.

Start of the program:
2013
End: ongoing

Length of contract:
1 year

Management requirements for farmers: The landowners should follow the binding regulations of the Bauska local authority and Nature Protection Plan of the Bauska Nature Park.
The Nature Protection Plan of Bauska Nature park defines the territories 1.) in which the work can be done without asking alignment with the Nature Conservation Agency and 2.) in which territories the activities should have approval from Nature Conservation Agency.

Controls/monitoring: The results of the activities are monitored by the Bauska local authority.

Risk/uncertainties of participant:
Managerial risk – if landowners have not followed the binding regulations when applying for reimbursement and if they are not able to present the works done with justified documents etc.), cost reimbursement is not granted.

Context features

Landscape and climate: In the confluence of the Mūsa and Mēmele rivers, where the Lielupe River forms, many beautiful castles exist. The Nature Park "Bauska" has been established for the protection of natural, as well as cultural and historical heritage. The park unites the most important outcrops of calcareous earth in Latvia in a single protection complex, preserves the wilderness of parts of the Mūsa, Mēmele and Lielupe River, includes important spawning grounds of river lampreys and vimba fish as well as habitats of bats and hermit beetles of deciduous trees. In other words, many unique values can be found here, in and area being just a bit bigger than 1,000 hectares.
The Nature Park "Bauska" forms not only a natural value, but represents also a very rich territory in terms of cultural and historical value. One of the most beautiful castles near Bauska is Mežotne Castle, with its special castle mound. It is located on the left bank of Lielupe River, opposite to Mežotne Castle, and just like in movies, it is protected by an 8-metre tall rampart and a moat. It is believed to be one of the biggest Ancient Semigallians' fortifications where nowadays Mežotne Castle Mound Festival takes place on the third Saturday of May. A legend says that a Semigallians' port had been here. Mežotne castle mound and Vine hill are connected by a wooden footbridge going along the bank of the old valley of Lielupe River. From May to October, Mežotne castle mound and Mežotne Castle are connected by a small pontoon bridge across Lielupe River allowing the easier reach of objects in both banks of the river.
The rich world of the Nature Park "Bauska" can be discovered also during a cycle tour that leads cyclists from Bauska along the Lielupe River and allows the view and visit of the nearby castles, Bauska Castle, Rundāle Castle, and Mežotne Castle, as well as other objects.
Farm structure: As regards agricultural entrepreneurship, Bauska County is first and foremost associated with agricultural production for local residents and guests.
It must be acknowledged that the development of the agricultural sector in the region is an essential precondition for the sustainable growth of the territory, however, alongside traditional agriculture, also production, construction, transport, and service, as well as retail companies are successful in the region. In total, in 2018, there were 2,004 economically active companies currently registered in local authority of Bauska, of which 38% are farms, 41% are limited liability companies, and 9% are associations, as well as sole proprietorships.

SUCCESS OR FAILURE?

In general, the result-oriented tax relief scheme, reimbursing landscape improvements, can be classified as a successful contract solution.

The municipality, through EU projects, concludes contracts with local businesses (farmers/landowners) to clean up the area. Also, the Hunters' and fishermen's association of Bauska announces tenders for entrepreneurs to clean the Lielupe river bed. Practically, however, local landowners are often hampered to take advantage of this opportunity as they need to prepare a large number of documents before starting work.

Reasons for success:

- It is an innovative program supporting the tidying up of the territory – it stimulates active participation of landowners in the maintenance of clean and tidy local territory and the creation of clean environment.
- The reduction of the real estate tax is an attractive incentive for the landowners.
- The allowed/restriction activities are clearly defined in nature protection regulations.

SWOT analysis

Main Strengths

1. Local municipality is aware of environmental questions' importance and financially supports the tidying up of the territory.
2. With the Nature Park Bauska being a famous tourists' destination, Bauska Local authority benefits from the tidying up.
3. The Hunters' and Fishermens'Association of Bauska follow the cleaning of the Lielupe river and restocking the fish stock.

Main Weaknesses

1. Too much bureaucracy and documentation for applying for the payment
2. Little information about the contract/payment possibilities
3. Cases that persons/entrepreneurs apply after the job is done, but the agreement should be done before to receive payments

Main Opportunities

1. Information campaigns and activities to promote the tidy up activities
2. Possibility to list local municipality objects for tidying up
3. Other activities:

project competition "We lead our region" (10 projects X 1000 euros per year)

co-financing for associations in other environmental project competitions; EUR 10,000 per year

Main Threats

1. Regional reform (2021) that will merge the municipalities with new regulations foreseen
2. Lack of financial resources for contract solutions
3. Less objects (also very good) to carry out activities

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Forest Management

Contractual agreements (cooperation) are concluded with forest owners on a voluntary basis for the organisation of seminars and practical training for other forest owners, students, etc. Topics of sustainable and environmentally friendly forest management are dealt with.

Summary

The forest management demonstration plots of the Pasaules dabas fonds (associate partner of WWF Latvia), being the basis for the contract solution, have different owners, but their views on the forest are similar: forest owners work for the benefit of the present values while retaining the ability to exploit the vast forest values of tomorrow. There are three demonstration areas:

- "Kalna Gavniesi" in Skujene parish, Amata municipality of Vidzeme region
- "Lejas Kleperi" in Launkalne parish, Smiltene municipality of Vidzeme region
- "Pūpoli", the territory forms the farm "Pūpoli" in Kurmene parish, Vecumnieki municipality, the farm "Alksnāji" in Mazzalve parish, Nereta municipality, and the farm "Renderi' in Jaunjelgava parish, Jaunjelgava municipality of Zemgale region.

The demonstration areas differ in size, forest stand and natural conditions. Through contractual agreements (cooperation) with forest owners on a voluntary basis, seminars and internships are organized for other forest owners, students, etc. to maintain the forest and not to cut down all trees, to manage the forest in an environmentally friendly way and also to achieve economic benefits. There are about 5-10 events per year with a total number of 200-300 participants.

Purpose

- To promote a responsible and sustainable management of privately-owned forests in Latvia.

Objective

- To improve the knowledge of forest owners about responsible forest management.
- To ensure the distribution of demonstration territory experience and management practice in private-owned forests.

COOPERATION

Cooperation for knowledge sharing

PUBLIC GOODS

Biodiversity – Enhancement of biodiversity by forest management

Social collaboration

PARTNERS

Three farms within the demonstration areas

–

Pasaules dabas fonds (associate partner of WWF Latvia)

Pasaules Dabas Fonds

sadarbībā ar WWF

CONTRACT

Public – private – civil society contract

Contract conclusion:
Written agreement

Incentive mechanism:
Support for knowledge sharing

Financing party:
Government (with EU-funding)

Length of participation in scheme:
No termination

Start of the program:
2011
End: ongoing

PARTICIPATION

- 3 Demonstration areas
- Collaboration experience 10-20 years
- Participation – 300 participants (annually)
- Area – 1000ha, 87 ha, 23 ha

Problem description

Balancing social and economic needs with nature is a challenge. The effects of climate change need to be reconciled with the characteristics of today's market, the growing demand for wood, the preservation of biodiversity and the necessary green solutions for energy supply. Society's needs for forests are also growing. These - the challenges of the past decade - must be addressed in a multi-purpose forestry program. The education system of the forest owners, the forest workers, shall ensure the acquisition of knowledge about the adaptation of forests as a natural system and economic activity to the processes and characteristics of the natural system. Knowledge of the wide range of forest ecosystem services, public interest and business sector responsibilities is needed. From the nature of the natural forest ecosystem and the public interest, it should be deduced what goods and services Latvian forests are based on and what value they have. Without denying the role of wood as a renewable natural resource in the economy, it is necessary to find a compromise in forest management - balancing social and economic needs with what is happening in nature. It is wrong to regard forests as agricultural crops, thus equating forest management models.
The average risk of forest damage is higher in silvicultural forestry than with continuous cover or selective cutting methods in forestry. Types of risk include fungal diseases, malnutrition, damage by strong winds and rodents. However, the calculations of the likelihood of risk vary considerably. This is due to the fact that in the clearcut management method, the money invested to create and maintain new stands after clearing is only available after the forest is felled and the timber is sold.

Data and facts - Contract

Participation: Three farms are involved in the forest management project, about 300 people annually participate in the seminars. Cooperation is based on a cooperation agreement.
Involved parties: The contracting parties are the Pasaules dabas fonds and the three demonstration farms.

Management requirements: No requirements for forest management
Controls/monitoring: No monitoring as it is an educational programme
Renewal / termination: No regulations

Conditions of participation:

- Pasaules Dabas Fonds supports the establishment of infrastructure and provides the facilities for seminars;
- Pasaules Dabas Fonds supports and organizes the training for the owners of the demonstration territory;
- All forest management activity in the forest is economically justified by the demonstration territory owner and does not receive financial support from Pasaules Dabas Fonds;
- Pasaules Dabas Fonds does not offer financial compensation for owners' time spent organising/managing seminars.

Risk/uncertainties of participants: Risks of the long term cooperation, risk that there are too many participants and high interest from target groups in the forest farms.
Funding/Payments: State funding, private funding, EU project support (in collaboration with Latvian Rural Advisory and Training Centre). In some periods, there is no external funding for educational activities in demonstration areas, then the costs are covered by Pasaules Dabas Fonds.

Requirements: The demonstration areas are managed with non-clear cutting methods, which, as opposed to widely used clearcutting, is more environmentally friendly and often more beneficial to the owner than the opportunities and risks of random felling. During the seminar, participants are able to ask questions and discuss own experiences. The method of avoiding clear cut allows to obtain money from the forest all the time without diminishing its value. Practically, anyone can see the demonstration areas. Interested forest owners are able to learn about different types of forest growing conditions, and listen to interesting experiences. Examples of good forest management practices to demonstrate adaptive forestry practices that promote forest value are shown. To stop and prevent unsustainable forest management leading to forest degradation, depletion of forest resources in Latvia.
Full-time forest owners.

Data and facts – Demonstration areas

Demonstration area "Kalna Gaviesi"

The area is located in Skujene parish, Amata region of Vidzeme region. The farm is well-developed for firewood trade, pond farming and beekeeping. Forest is about 1000ha, divided into several properties. The demonstration area was established in 2003. In spring 2001, 160 ha of forest were certified according to FSC standard requirements. These 160 ha include areas that have been fully preserved for natural development and where no economic activity is planned, such as broadleaf, spruce forest on the Amata slope, old spruce forest.

Demonstration area "Lejas Kleperi"

The territory is located in the Launkalne parish, Smiltene municipality of Vidzeme region. The farm is owned by a family and has a local history, forest museum. The total area of the farmland is 119,4ha including 86.1ha forests. The demonstration area was established in 2004. Due to the hilly terrain, the farmland is used mainly for grazing and hay production. Inferior agricultural land is gradually being naturally forested. Forest management is carried out, using the equipment from the farm. The area depicts the use of random felling, planning, care felling.

Forestry demonstration area "Pūpoli"

The territory is made up of the Kurmene parish farm "Pūpoli" in Vecumnieki municipality, the Alksnāji farm in Mazzalve parish in Nereta district and the Renderi farm in Jaunjelgava parish in Jaunjelgava municipality. The demonstration area was established in 2012. The total area of participating farms in the demonstration area is 37.6 hectares. Out of these, 23.2 hectares are covered by forest land. Deforestation of overgrown agriculture land is not planned in the future.

Context features

Landscape and climate: Unfortunately, despite the ecological, economic and social benefits that the forest brings to us as human beings, deforestation in the world as a whole continues to progress at a tremendous pace, with 13 million ha of forests being destroyed every year, with irreparable consequences for the climate. The forest ecosystem accounts for one third of the Earth's terrestrial area. In Europe, forests account for more than 44% of the country's continental territory and, apart from traditional timber and other forest products, provide many benefits to European society and the environment, including clean air, clean water, homes, over 80% of terrestrial biodiversity. Forests represent a nature protection against climate change. Sustainably managed forests not only provide environmental benefits, they also maintain sustainable economic development and growth, creating green jobs through climate friendly and renewable raw materials. Forests provide livelihoods for millions of private forest owners as well as budget revenues. Sustainable management of Europe's forests is implemented by the Europe 2020 Strategy: "Innovation for Sustainable Growth: A Bioeconomy for Europe", the latest "Climate and Energy Program 2030" and the "EU Biodiversity Strategy 2020". To manage following the principles of sustainable forest management and to reduce deforestation globally by 2020, all countries were encouraged to take local, national and international measures.

Farm structure: Two farms are located in the central highlands of Vidzeme and one in southern Latvia in the lowlands of Central Latvia. Forests in Latvia have a great variety of natural conditions, which are more pronounced in the alternation of hills and valleys and the diversity of soils. In the central part of Vidzeme, spring arrives a few weeks later than in other parts of Latvia, also precipitation is higher.
A small proportion of the forests in the demonstration areas exists since 100 years. Most forests have however developed over the past 40 to 70 years. The demonstration areas include both artificially forested grasslands and pastures with coniferous cultures of the same age and natural forests of different tree species at different ages.

LOCATION

COUNTRY

Demonstration areas:

1."Kalna Gaviesi" in Amata municipality of Vidzeme region;

2."Lejas Kleperi" in Smiltene municipality of Vidzeme region

3. "Pūpoli", the territory forms the farm "Pūpoli" in Vecumnieki municipality, the farm "Alksnāji" Nereta municipality, and the farm "Renderi' in Jaunjelgava municipality of Zemgale region.

SUCCESS OR FAILURE?

Successful collaboration experience with demonstration site owners 10-20 years, demonstration of practical, environmentally friendly forest management in private forestry.

Reasons for success:

- Formulation and analysis of an idea to a successful goal.
- Evaluation of potential demonstrability.
- Identification of cooperation partners.
- Analysis of target audiences.
- Selection of demonstration areas, incl. applicability of site owners.
- Integration of the results of the demonstration project into a wider goal realization.

SWOT analysis

Main Strengths

1. Mutual understanding, good partnership
2. All forest management activity in the forest is economically justified by the demonstration territory owner and does not receive financial compensation
3. Demonstration practice for more than 15 years
4. Used by various target audiences for field seminars

Main Weaknesses

1. The development of new demonstration plots in the demonstration territories is linked to the owner's interest in forest management (Pasaules dabas fonds does not influence site owner decisions)
2. The planned educational activities are adapted to the area owner's ability to accommodate target groups in his property

Main Opportunities

1. Accumulated experience on the part of people involved in the project explaining models, successes and mistakes
2. Following new forest management trends, the development of new objects paying even more attention to the structure of biodiversity, habitats and their management.

Main Threats

1. Institutional cooperation has gradually become an expert co-operation with the owner of demonstration areas and the future of demonstration areas may be jeopardized by changing owners or the working environment of experts

Horizon 2020 European Union Funding for Research & Innovation

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Kromme Rijn Collective management

In the Netherlands, the implementation of agri-environmental measures and nature conservation measures in farmland is partly arranged collectively, where local cooperatives arrange and execute measures. The Kromme Rijn is a region in the Dutch province of Utrecht, where such a cooperative is active. It executes agri-environmental management and there are a few volunteer groups e.g. involved in pollarding willows.

Summary

Collective implementation of agri-environmental management has been started up throughout the Netherlands since 2016. After individual management had proven to fail to deliver the desired agri-environmental-climate public goods (AECPGs), a larger-scale implementation of agri-environmental management was considered a more feasible and promising solution. In the central Dutch province of Utrecht, a wide variety of AECPGs is required by society and farmers. This includes improvement of water quality, enhancing and emphasizing the landscape diversity that supports recreation, and providing a habitat for species including bats and owls. In the eastern half of the province, the Kromme Rijn region, the "Agrarisch Natuur Collectief Utrecht Oost" (agricultural nature collective Utrecht East) organizes the large-scale nature management. Land owners are members of the collective, which organizes payment for specific nature management actions performed by farmers, monitors, and brokers between land owners and organizations / companies that implement some specific nature management actions, based on a common regional management plan. The collective is certified by the national certification institute for agri- environmental management and has its own quality assurance controllers.

Objectives

Objectives are set by the provinces. In the case of Kromme Rijn, the province of Utrecht defines targets in its annual nature management plan. Defined are targets for nature, landscape, agricultural nature and landscape management. Landscape management targets at fostering landscape diversity. The ANLM aims at maintaining landscape elements: characteristic on the levees are tree lines, small patches of forests, wooded banks, ponds, and small traditional orchards. The lower and wetter part of the region. Langbroekerwetering, contains small patches of wet species-rich grasslands that are extensively managed through mowing, combined with tree lines and small fields.
Creating habitat for amphibians, including the great crested newt, for several owls, and several bat species. Creating habitats for threatened species of extensive traditional arable lands.


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Problem description

Agri-environmental management has been introduced in the Netherlands in 1975. 1000 km2 were assigned as agriculture-nature area and managed by nature organizations, another 1000 km2 included "normal" farmland, on which farmers planned their farmland and management practices in a nature-friendly way. Since the year 2000, it became increasingly apparent that farm-level agri-environmental management was not effective, because target species required a larger mosaic of land use and land cover than can be provided on a single farm. In 2016, agri- environmental management by nature collectives has been introduced by the Dutch government.

COLLECTIVE

PUBLIC GOODS

Landscape and scenery

(Farmland) biodiversity

Soil quality (and health)

Water quantity

Water quality

Cultural heritage

Recreational access / Improvements to physical and mental health

CONTRACT

Financing party:
Government (with EU-funding)
It is a public-private contract (government - collective – farmer).

Contract conclusion:

Written agreement

Payment mechanism:

Compensation payments: Measure-based, unit based (per meter or piece)
Basic and premium payments

Length of participation in scheme:
all contracts run until 31 December 2021

Start of the program: 2016
End: ongoing

Advantages of participation

- *Province:* easier subsidy allocation because of dealing with fewer partners; better nature management
- *Farmers and other land owners:* fewer administrative barriers
- *Private nature management companies:* better contracts for nature management

Data and Facts – Contract

Participation: The agricultural nature collective *Utrecht East* has approximately 300 members, who are farmers, estate owners, and other private land owners. The collective manages the Kromme Rijn, Utrechtse Heuvelrug, and the Utrecht part of the Gelderse Vallei regions, altogether approximately 500 km2.

Involved parties:

- *Province:* defines the areas eligible for agri-environmental management; sets the goals for nature management
- *Collective:* makes the province level nature management plan operational by specifying management actions for specific areas; brokering with regard to implementation of plans; applies for and distributes funding
- *Farmers and other land owners:* performing part of the management
- *Private nature management companies:* performing part of the management

Management requirements for farmers: There is a catalogue of measures that farmers can or should apply. These are specified as management requirements. For example, using specific seed mixtures for herb rich field boundaries supplied by the collective or the pollarding frequency for willows.


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Funding/ Payments:

- Collectives ask for subsidy at the province, based on a province-level nature management plan and an agri-nature management strategy developed by the collective as a response to the province plan. 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 actor that does the management. In many cases, that will be the farmer, but in other cases this is a private company that e.g. cleans ditches in an environmentally friendly way.
- The province level cap to the Utrecht Oost region is 833 k€, split up into 675 k€ for grassland and small natural elements, and 158 k€ for water.
- Payments are vary for different nature elements and for different implementation levels.
  - For part of the measures, payment is area based. This e.g. applies for meadow bird friendly management, botanically special grassland, bird feed croplands, or herb rich croplands. Payment ranges from 115.55 €/ha for the application of dry animal manure, to 2527.39 €/ha for establishment of species/herb-rich cropland field margins with a special seed mix on clay soils.
  - Another part of the measures is payed for per meter. This applies e.g. to ditches, hedgerows, and tree lanes. Payments vary between €0.10 per meter for ecological ditch cleaning to €5490.48 per hectar and year for hedgerow management.
  - Some measures are paid per piece. E.g. small pools or individual trees. Payment ranges between €2.52 for a<20 cm diameter tree to €105.85 for a large pool / pond.
- Some of the measures have basic and premium levels. Depending on the tree age, or the frequency of growing cereals on croplands, or the tree coverage, payments can vary up to a factor 3 between the basic and premium levels.
- Payment modalities: The collective receives payment from the Netherlands Enterprise Agency. This needs to be requested before May 15 and is paid annually, through a bank transfer.

LOCATION

NETHERLAND

The specific collective in focus, Utrecht Oost, is active in the eastern two-thirds of the Utrecht province, NUTS2 region NL31. The contract solution is implemented in the whole country by 40 different collectives that deal with province-specific nature development plans.

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Data and Facts – Contract

Contract feature combination: Subsidies for a few specific agri-environmental measures are result-based. For example, subsidies for botanical grasslands are only provided upon the presence of 4 (out of 72) indicator species.

Risk/uncertainties of participants: A few of the measures are monitored based on results, meaning that a risk of not reaching the objectives can emerge.
Indirect effects: The management packages of which the collective is in charge do not aim at carbon sequestration and reduction of greenhouse gas emission, but this is a side effect. Furthermore, resilience against floods might be improved by setting aside land for water storage or maintaining or establishing small landscape elements. Finally, farm animal health might benefit from an increased density of shade trees in grazing lands.

Controls/monitoring: Provinces and national government are in charge of monitoring the ecological effects of agri-environmental management. This is delegated to NGOs that do regular species monitoring and provide data to the National Flora and Fauna Database. Monitoring is performed by trained volunteers. Indicators used are trends of target species in comparison between areas with and without agri-environmental management. Collectives themselves monitor if the agri-environmental management that has been agreed on is implemented. A special committee is in charge of this monitoring. Indicators used are binary; assessing if the the measures are implemented or not. The Dutch Food Safety Authority (Nederlandse Voedsel- en Warenauthoriteit, NVWA) inspects at least 5% of the agri-environmental management in the field.

Renewal / termination: The contract can be terminated during the term through a registered letter. This can be done if both parties agree, by the collective in case of non-performance (either quantified result-based or effort based) or if the participant in the collective receives subsidy elsewhere for the same measures as specified through the collective, or by the participant if the collective fails to commit to its payment duties.

Conditions of participation: All farmers in a specific area can join the collective and a collective exists of a minimum of two farmers. There is a detailed catalogue that describes the different management actions that can be performed. Some are specified result-based, some are specified action-based. There is a monitoring scheme. Non-compliance can lead to termination of the contract.

Links to other contractual relationships: The package of measures consists of the basic AEMs, but contains a considerable province level top-up. Province funding in some cases is compensated by a decrease of CAP greening funding.

Context features

Landscape and climate: The regions included in the collective management include (1) Kromme Rijn; (2) Gelderse Vallei; (3) Noorderpark, and (4) Soest. 1, 3, and 4 are peri-urban areas while 2 is a more remote agricultural area. Utrecht province is characterized by a temperate climate with mild winters and summers, and approx. 800mm of precipitation annually. Soils are sandy in Gelderse Vallei en Soest but also clay soils are common. Kromme Rijn region is characterized by a small tributary of the Rhine river. Gelderse Vallei, Noorderpark, and Soest are dominated by grassland with a relatively high density of tree lines. This also applies to most of Kromme Rijn, where 18th and 19th century estates have created a varied landscape. The river levees are in use as fruit orchards.
Farm structure: All farmers and private land owners can join the collective. The region is characterized by a mix of livestock farmers who almost exclusively focus on dairy, and fruit farmers. A few pig farmers and arable farmers are present as well. Dairy farms are on average 40 ha, fruit farms 12 ha. 6% of farms is organic. Farms are very intensively managed. Most farmers are fulltime farmers.

SUCCESS OR FAILURE?

The collective agri-environmental management solution can be considered being successful because of the high participation in collectives. Nevertheless, many environmental and landscape problems still are apparent, and because of the short runtime, it isn't obvious yet if this solution will yield results in terms of species abundance or landscape quality. The contract solution allows for a targeted portfolio of measures that enable optimal solutions for each farm, and the 5-year term allows for real improvement of the situation.

Reasons for success:

The contract solution matches the scale of public good delivery. In previous contract solutions for nature management in agricultural land, it was observed that farm scale implementation doesn't deliver the expected results because of the fragmented implementation. The collective implementation takes away administrative burden.

SWOT analysis

Horizon 2020 European Union Funding for Research & Innovation

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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

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. 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.

Combining CAP and regional policies as the backbone

In the collective management of the Kromme Rjin in line with 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.

Complex legal regulations within collective RDPs

(1) On the one hand needed to secure the objectives of the program and the fair distribution of subsidies.

(2) On the other potentially hindering participation as well as transferability to other context situations.

- 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**.

One of the most important legal conditions 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.

Additional page added May 2022

Green Deal Dutch Soy

Parties in the Green Deal Dutch Soy aim to explore the suitability of soy varieties for soy production in the Netherlands. They strive for a viable soy production sector in the Netherlands and target at expanding the harvested area of soy to 10 000 ha per year.

Summary

The Green Deal Dutch Soy is a contract between national government, regional governments, a soy processer / feed producer, and farmers. They aim at establishing a viable production chain for soy in the Netherlands, by identifying the most suitable varieties and ensuring a solid soy production volume that allows a viable chain, with fair prices for soy farmers. Being a legume crop, soy can sequester nitrogen in the soil, with that reducing the need for fertilizers in the follow up crop and benefiting soil quality in the long run. Furthermore, increasing the soy area in the Netherlands can have a positive impact on biodiversity. The Green Deal Dutch Soy is a set of non-binding commitments. .

Objectives

The Green Deal Dutch Soy aims to realise 10 000 ha/year harvested area and an average yield of at least 3500 kg/ha.

Problem description

Green deals have been established in the Netherlands to stimulate entrepreneurship and to enable entrepreneurs and societal partners to test and implement green solutions in a bottom-up, solid, quick, but robust way. They aim to overcome bureaucratic and related time consumption barriers that normally hamper innovation. The specific Green Deal Dutch Soy specifically responds to the unsustainable soy production standards in the current Dutch trade partners for this crop.

Data and Facts - Contract

Participation: The Green Deal Dutch Soy is a contract between the national government (ministries of Ecomomic Affairs, and Infrastructure and Environment), the province level governments (Friesland, Groningen, Drenthe), and a feed company (Agrifirm) that has contracts with soy producing farmers. In 2018, 91 farmers harvested 475 ha of soy.

VALUE CHAIN COLLECTIVE

PUBLIC GOODS

(Farmland) biodiversity

Soil quality (and health)

Climate regulation - carbon storage

Climate regulation- greenhouse gas emissions

Quality and security of products

CONTRACT

Financing party:
It is a market sector-oriented contract solution.
It is a public-private contract.

Contract conclusion:
Written agreement

Payment mechanism:
Product price

Length of participation in scheme:
1 year

Start of the program:
2016
End of the program:
2019

LOCATION

NETHERLAND

Throughout the Netherlands

Data and Facts - Contract

Involved parties:

- *Governments, national and regional:* are key discussion partners for legislative and regulation issues. In this contract, dedicated administrators are in close contact and provide easy access for the other partners.
- *Soy processer:* is the key partner in setting up value chains, and in experimenting with specific processor – farmer contracts. They provide support to farmers through establishing knowledge exchange with regard to soy and provide practical support through brokering for seeds, inoculation, and management tools.
- *Farmers:* shifting to soy and expanding their soy production leading to crop diversification.

Advantages of participating:

- *National government:* increasing independence with regard to fulfilling soy demands
- *Regional government:* increasing rural viability
- *Soy processer:* increasing independence with regard to fulfilling soy demands, higher quality soy, decreasing transport costs, more reliable soy chains
- *Farmers:* increasing soil quality, more stable sales, higher income

Management requirements for farmers: The farmers need to use non-GMO seed, and have to comply with hygiene related conditions.

Funding/ Payments:
The relation between governmental parties and the market party is one of non-binding, non financial agreements. Additionally, the soy processor has established contracts with soy growers. This is done through a "soy pool", framed as a collective contract. At the start of the growing season, a contract between Agrifirm and the farmers is established, where price is set based on global market prices. A premium for non-GMO soy is given. The pool price is €500-550 / ton dry beans.

Controls/monitoring: The processor controls the end product.

Risk/uncertainties of participants: The processor and the farmers agree on an area sown with soy and on a price per ton. Yields are of course uncertain, which makes costs and income uncertain for processor and farmers.

Conditions of participation: No minimum and maximum number of participants was defined. A clear list of requirements with regard to the soy bean quality is established. Consequences of non-compliance are not outlined, but there is a disputes committee.

Context features

Farm structure: Soy can be included in several arable rotations. The contract solution is therefore open to arable farmers. These currently use rotations dominated by wheat-sugar beet – maize – grass. There is no data available on the number of organic farmers, but anecdotical evidence suggests that pesticide control requires non-organic practices. The farms currently included in the contracts are on average 5.2 hectares.

SUCCESS OR FAILURE?

The contract solution targeted at 10 000 ha of soy by the end of the Green Deal Dutch Soy. This target has by far not been met. The contract also targeted at 2020 kg protein produced per ha. In 2019, the top 25% farmers achieved 1376 kg protein. The contract solution can therefore be considered as not fully successful. However, there's an increasing trend in the area and the number of farmers participating, and apart from a low yield in the extremely dry year of 2018 trends in yields are also positive.

Reasons for failure:

1. Lack of insight in what the best soy cultivars are
2. Lack of insight in the best management practices
3. Despite the commitment of government in providing experimenting space, regulatory barriers with regard to including a novel crop are still considered high.

SWOT analysis

Main Strengths

1. clear and direct contracts between main parties
2. all relevant parties are included

Main Weaknesses

1. uncertainties about financial benefits for all parties
2. uncertainties about achievable yields and production

Main Opportunities

1. increasing soy production in the Netherlands will remain hugely relevant for the future.
2. many farmers are looking formore profitable crops

Main Threats

1. price driven international markets
2. lack of innovative capacity among farmers

Horizon 2020 European Union Funding for Research & Innovation

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Biodiversity monitor for DAIRY farming

The Biodiversity Monitor is a results-based methodology to measure and reward the performance for biodiversity (including soil, landscape, environment and climate) per dairy farm in the Netherlands. The scores per farm on biodiversity-stimulating key performance indicators (KPIs) can be used as the basis for new revenue models. In this way, ecosystem-based dairy farming can be stimulated.

Summary

The Biodiversity Monitor for dairy farming is a result-based methodology, with a primary focus on the public good biodiversity (including strong links with soils, landscape, environment and climate). The aim of the methodology is to make biodiversity-enhancing performance per dairy farm measurable. In this way we can benchmark farms and allow multiple stakeholders to reward positive biodiversity performance. These stacked financial rewards should lead to new revenue models for ecosystem-based dairy farming. As a consequence, it will stimulate farmers towards more sustainable production practices. The methodology is developed by WWF-NL, Rabobank and Duurzame Zuivelketen (sustainable dairy initiative); in collaboration with scientists, experts, and stakeholders. FrieslandCampina is an important stakeholder, which was involved in the prototype development, and has used the methodology since 2018 to reward farmers.

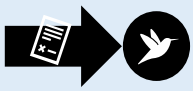
The biodiversity-enhancing performance per dairy farm is measured with an integrated set of seven Key Performance Indicators (KPIs): permanent grassland (%), protein from own farm/region (%), soil nitrogen surplus (kg/ha), ammonia emissions (kg/ha), greenhouse gas emissions (kg/ha and kg/kg milk), herb-rich grassland (%) and nature conservation management & landscape elements (%). These KPIs are selected based on multiple criteria, including their scientifically proven relation with biodiversity, and that performance can be influenced in the short term by taking measures on the farm. For all KPIs, scientists determine threshold- and target values based on existing legislation and policies, and best available scientific knowledge. Good performance on the integrated set of KPIs can be linked with financial rewards from multiple stakeholders. Note that the Biodiversity Monitor provides a scientifically substantiated methodology to measure biodiversity-enhancing performance per farm, while contracting parties who use this data are free to decide how they reward the farmer.

Currently, the Biodiversity Monitor is used in 2 private-private contract mechanisms (by FrieslandCampina and Rabobank) and 1 private-public contract mechanism (by province Drenthe) to reward and stimulate ecosystem-based dairy farming. FrieslandCampina incorporated the integrated set of KPIs in their sustainability monitoring program, Foqus planet. All farmers can be rewarded for KPI performance improvements over time; and the best performing dairy farmers who comply with the certification standards of 'On the way to PlanetProof dairy' (which includes the KPIs), receive a higher milk price. Rabobank is piloting with green financing funding to reward farmers with a loan interest discount. Drenthe runs a program which grants financial rewards to good performing local farmers. The methodology can be used in multiple other contracts, and there is much potential for integrating it in the new Common Agricultural Policy (CAP). The aim is to involve more rewarding parties (e.g. businesses, banks, land leaseholders, water boards, governments) to use the biodiversity monitor to reward ecosystem-based dairy production.

Objectives

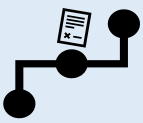
The objective of the Biodiversity Monitor is to make biodiversity-enhancing performances per dairy farm measurable. This allows multiple stakeholders to financially reward positive biodiversity impacts based on unambiguous scientifically relevant results. The stacked financial rewards from multiple stakeholders, based on the same KPIs, stimulates farmer incentive for ecosystem-based dairy farming. In this way, the Biodiversity Monitor stimulates the transition towards more sustainable production while enhancing biodiversity recovery, additional farmer income, and a future perspective for the dairy sector.

RESULT-BASED



The Biodiversity Monitor measures per dairy farm the performance on seven biodiversity-enhancing Key Performance Indicators (KPIs). Following, these results can be linked with financial rewards from supply chain stakeholders – this is the contract solution. Stacked rewards from multiple stakeholders can form the new revenue model for ecosystem-based dairy farming.

VALUE CHAIN



Applied:

A) Farmer – buyer – certification – store – consumer (milk price)
B) Farmer – bank – (interest discount)
C) Farmer – province (subsidy)

Potential, not yet applied:

A) Farmer – water board (tax rate)
B) Farmer – government (e.g. CAP reward)
C) Etc.

LAND TENURE

Potential, not yet applied:

A) Farmer – land leaseholder (favorable lease conditions)

COMBINATIONS

Farms can have different contracts with multiple parties. For example, a farm can have a contract with the product buyer, bank, and government - which all sent financial rewards for good performance on the same set of KPIs.

PUBLIC GOODS

(Farmland) biodiversity

Landscape and scenery

Soil quality (and health)

Climate regulation - carbon storage and greenhouse gas emissions

Water quality

LOCATION

NETHERLANDS

The Biodiversity Monitor can be applied on all ~18k dairy farms in the Netherlands (green dots on map). Source: CBS, 2019.

Problem description

The Netherlands are among the worst performers in Europe when it comes to protecting biodiversity. Populations of wild animals in the agricultural landscape decreased by 50% since 1990 (WWF-NL, 2020). These massive losses for nature are largely related to increased intensification and scale of agricultural production systems over the past decades.

With a 30% land share (CBS, 2019), the dairy sector is one of the biggest land users of the Netherlands and puts significant pressure on biodiversity - both on farmland and on adjacent nature areas as well as in production areas of imported animal feeds (e.g. soy from Brazil). The grasslands are generally intensively managed with monoculture crops (*perennial ryegrass*), early mowing, fertilizers and herbicides. This type of management threatens grassland species such as meadow birds, which suffer from the mowing during breeding season and limited availability of herbs and insect to feed the chicks. Most non-agricultural landscape elements, such as hedges and flowery corners, have disappeared during land consolidation processes for grassland scaling. This leaves less and less space for birds, butterflies, and other animals to forage, seek shelter and nest. Moreover, the quality of these habitats declines due to environmental pollution caused by agricultural activities. Especially nitrogen deposition and leaching causes eutrophication of soils and water, leading to losses of plant species and life in freshwater. Herbicides sprayed on grass are generally harmful for soil life and insects. All these practices together affect the entire food-web, leading to the massive loss of biodiversity in the agricultural landscape and beyond.

Changes in farming practices are urgently needed to stop and reverse biodiversity losses, but also to ensure the continuation of agricultural production which depends on ecosystem services (e.g. clean water and healthy soils). However, current markets provide small margins on milk, resulting in low farmers' income what stimulated intensification even further.

In order to create a future perspective for nature and dairy farmers, new business models are required to make ecosystem-based dairy farming a sustainable, profitable and attractive practice for farmers. In the light of that challenge, the Biodiversity Monitor for dairy farming has been established by a multi-stakeholder coalition consisting of WWF-Netherlands, Duurzame Zuivelketen (including FrieslandCampina – the largest dairy cooperative in NL with >19k members spread over >11k farms) and Rabobank (largest agricultural financer in NL).

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CONTRACT

Financing parties:
- Market sector (FrieslandCampina and Rabobank)
- Government without EU funding (province Drenthe)

High potential for government with EU funding (ecoschemes for post 2020 CAP)

The types of contract solutions are:
- Private – public (farm - government)
- Private – private (farm - business)

Contract conclusion:
Written agreement

Payment mechanism:
Currently:
- Higher product price (FrieslandCampina)
- Loan interest discount (Rabobank)
- Subsidy (Province Drenthe)

Other possibilities:
- CAP rewards
- Favorable land lease conditions
- Water tax discount
- Etc.

Data and Facts - Contract

(In)direct effects: The primary focus is on (farmland) biodiversity, with strong links to soil quality and health, climate regulation (carbon storage and greenhouse gas emissions), and landscape and scenery. Indirect beneficial effects are on air quality (e.g. less ammonia emissions), recreational access (improved landscape quality), resilience to natural hazards (improved soil health), rural viability and vitality (increased farmer income and social appreciation), farm animal health and welfare (more grazing), and water quality (less soil-N surplus).

Involved parties: The initiators of the biodiversity monitor for dairy farming are WWF-NL, Rabobank and FrieslandCampina. Duurzame Zuivelketen, the sustainable dairy chain initiative for a responsible future-proof sector, later substituted FrieslandCampina in order to increase commitment of the wider dairy sector. These parties together developed the biodiversity monitor in close collaboration with researchers from Wageningen University & Research and the Louis Bolk Institute. During the development process (2014-ongoing) farmer organizations have continuously been consulted, pilots have been undertaken, and multiple stakeholder meetings took place. Since 2020, the Biodiversity Monitor Foundation manages the methodology development, monitoring and evaluation. Current contracting parties are FrieslandCampina, Rabobank and province Drenthe. In the future, many other stakeholders can also become contracting party.

Participation: FrieslandCampina is a dairy cooperative with >11.000 farms who are currently all obliged to participate in the sustainability monitoring program Foqus planet. Amongst other indicators for milk quality and animal welfare, this program also includes all seven KPIs to measure biodiversity impacts. Farms can receive a higher milk price for good performance and an extra bonus for improvements over time on the sustainability indicators. Besides, the best performing dairy farms which comply with the certification standards of 'On the way to PlanetProof dairy' (which includes the KPIs), receive an even higher milk price. Currently (Jan. 2019), about 600 farms are certified. These farms are spread throughout the Netherlands. Together with FrieslandCampina and Province Drenthe, Rabobank runs a pilot with Green bonds, which currently includes about 15 dairy farms and can grow to 50 farms in total. Farms with a good score on all KPIs or a PlanetProof certification can receive a loan interest discount. The ambition is to implement this nationally in the future. Province Drenthe currently runs a program to financially rewards 250 local dairy farms which score well on KPIs.

Advantage for involved parties

- ❑ Dairy farmer: financial support for biodiversity-enhancing efforts, what contributes to a better business model for ecosystem-based dairy farming.
- ❑ FrieslandCampina: sustainable dairy supply chain (future-proof), and safeguard of societal support for the sector (license to produce).
- ❑ Rabobank: financial risks minimalization, a sustainable perspective (future-proof), and a corporate responsible image.
- ❑ Assumed advantages for other potential contracting parties: sustainable soil management (land leaseholders), improved water quality (water boards), and enhanced conservation of nature reserves, ecosystem services and landscape quality (governments).

Funding/ Payments

- ❖ By Rabobank: The interest loan discount can be granted at moments of refinancing or at the start of a new contract. The discount can be max. 0,5% on a loan of max. 1 million euros (so max. 5.000 euros per year), for a contract period of max. 5 years. When the contract duration is shorter, then the discount also decreases. In the future, Rabobank aims to standardize all contracts at 0,4% for all contract durations, in order to simplify the system. Rabobank retrieved this money from own resources.
- ❖ By FrieslandCampina**:** Rewards for good performance in Foqus planet are retrieved from a redistribution of the cooperative's milk revenues. Instead of a fixed milk price for all farms, now the milk price is determined per dairy farm based on its performance. The best performing farmers can receive max. 0,20 cents extra per 100 kg milk. Besides, farms can receive an extra bonus for improvements over time on the sustainability indicators of max. 0,29 cents per 100 kg milk. At last, milk certified as 'On the way to PlanetProof' is rewarded with a higher milk price of 2 euro extra per 100 kg milk (Jan. 2020).

Length of participation in scheme:

- 1 year (FrieslandCampina),
- max. 5 years (Rabobank),
- max 3 years (province Drenthe)

Start of the program: 2014 (contracts since 2018)
End: open end

❖ By Province Drenthe: Drenthe provides farms an annual amount of max 2.500 euro (depending on performance), for max. 3 year. Besides, farms can count on about 1.500 euro per farm (only once) for education and consult about sustainable farm management. This money comes from provincial budgets to stimulate sustainable farming.

Controls/monitoring: The Biodiversity Monitor Foundation manages the methodology development and is responsible for data monitoring and evaluation. Independent data quality assurance is executed by a third party (Qlip). Most KPI data are obtained and calculated into scores within the program Kringloopwijzer – a farm management tool which dairy farms are obliged to use. Data about the KPI Herb-rich grassland and KPI Nature & landscape elements are not registered in Kringloopwijzer. Currently, the data from the Agricultural Nature and Landscape Management (ANLb; CAP 2) schemes are used for those farmers involved in this program. Simultaneously, a national registration system is being build in order to gather and monitor data on these KPIs for all Dutch dairy farms.

Conditions of participation: All contracting (rewarding) parties use the Biodiversity Monitor KPIs to determine contract qualifications. Contracting parties can determine their own contract conditions, and are free to determine goals per KPI and the extend of rewards per farm. For example Rabobank determined the top 25% dairy farms with best scores on all KPIs as eligible for a loan interest discount. FrieslandCampina used the roughly top 10% .

Risk/uncertainties of participants: Current reward are only for short period of time (contract length) – no longer term rewarding guaranties are provided.

Context features

Landscape and climate: The geography of the Netherlands can roughly be split into two areas: the low and flat lands in the West and North, and the higher lands with some hills (max. 300 meter) in the East and South. Much of the lower lands have been reclaimed from the sea (polders) and are below sea level, protected by dikes. The water is continuously pumped away through many small canals, and the groundwater level is in most places regulated at low levels. Soils in the lower lands are predominantly peat and loam, while the higher lands are more sandy-peat, sand and clay. The Netherlands have a temperate maritime climate, with cool summers (average daytime temperatures varies from 17-20 °C) and moderate winters (2-6 °C).

Farm system: The Netherlands is for 44% covered with agricultural land (1,82 million ha, out of the total country area of 4,15 million ha), which is for more than half in use as grassland (0.98 million ha – 24% of the country, 30% of total land area, and 54% of total agricultural area; CBS, 2019). See the light green areas on the map here at the right (number 1 in legend).
Consequently, the dairy sector is the largest land user in the Netherlands. The grasslands are spread over the entire country. The grasslands are mostly used by the nearly 18.000 dairy farms for grazing and/or mowing for cattle feed, which together house a total of 1,58 million dairy cows - predominantly Holstein Friesian (CBS, 2019). Together they produce about 15k million liters of milk per year - what is for about 65% exported (CBS, 2016). An average dairy farm has about 100 cows on 54 ha for grass and silage maize (CBS, 2018) - leaving on average about 1.9 cows per ha. About 5% of the grasslands are organically managed. Most farmers work full-time. Different kinds of grassland management are executed: 70% as permanent grassland, 22% as temporary grassland, and 8% as natural/biodiverse grassland (CBS, 2019). The permanent and temporary grasslands are generally intensively managed with monoculture crops (perennial ryegrass), early mowing, fertilizers and herbicides. The natural/biodiverse grasslands are generally very extensively managed, and most farmers receive yield loss compensation from Pillar 2 CAP. Most non-agricultural landscape elements, such as hedges and herbal-rich corners, have disappeared over the past decades during land consolidation processes for grassland scaling. Consequently, very little suitable habitat is left over for wildlife – contributing substantially to the massive biodiversity losses in the agricultural area in NL (WWF-NL, 2020).

SUCCESS OR FAILURE? And reasons for success:

We (WWF-NL) consider the establishment of the Biodiversity Monitor for dairy farming with this multi-stakeholder coalition as a major (factor for) success. Particularly the adoption of the monitor in the sustainability programs of the two key stakeholders FrieslandCampina and Rabobank is a major step into the right direction. The Biodiversity Monitor is also acknowledged in national policies as a good and useful example to work on the dual challenge of nature restoration and future perspective for farmers within the entire agricultural sector.

Also the innovative Delta Plan for Biodiversity Recovery (an ambitious plan signed by 30+ leading Dutch agri- and horticulture retail, agro-industry, nature and environmental organizations and science institutions) embraced the Biodiversity Monitor as key methodology for monitoring and rewarding best performances. The key success factors determined by the Delta Plan for Biodiversity Recovery are: shared values, coherent laws and regulations, knowledge and innovation, collaboration at the landscape level, and new business models. The Biodiversity monitor enhances all success factors, and particularly the new business models. Provinces and businesses have shown interest to implement the monitor and reward farmers for their performance on biodiversity. In general, the Biodiversity Monitor methodology is quite innovative and widely acknowledged as a high-potential contract solution. Especially the use of KPIs to quantify impact (performance) instead of prescribing measures or best agricultural practices, is critical to enhance impactful change. The methodology has potential to be unrolled in other sectors and regions, as done now for the arable farming sector in the Netherlands (see other Console case 'Biodiversity monitor Arable farming'). However, whether this contract solution contributes substantially to biodiversity recovery requires verification. Monitoring of the relationship between KPI performance and actual biodiversity enhancement, is scheduled for future trajectories.

SWOT analysis

Main Strengths

1. The result-based approach based on Key Performance Indicators (KPIs)
2. The integrated approach (aiming for positive results on all KPIs, on each farm) is powerful to stimulate biodiversity recovery without allowance for trade-offs
3. The Biodiversity monitor will become available for all Dutch dairy farms and can be used by all relevant stakeholders for result-based financial rewards.
4. Minimal extra administrative burden as most data comes from already obliged farm management data tools.

Main Weaknesses

1. Availability and reliability of data needed to calculate the KPI performance per farm. For two KPIs, the data is not yet nationally registered and therefore only available at farms where audits have taken place. The development of a national registration system for these KPIs is currently ongoing.
2. Environmental effectiveness requires verification by on-site monitoring. This is scheduled for future trajectories.

Main Opportunities

1. The Biodiversity monitor can be used in many different private-private and private-public contracts
2. High potential for integration in eco-schemes for the CAP
3. Multiple stakeholders can reward farmers based on the same biodiversity-enhancing results, enabling farmers to manage on clear unambiguous goals.
4. Stacking financial rewards based on the same KPIs can enhance new revenue model for ecosystem-based dairy farming.

Main Threats

1. Contracting parties can determine their own rewarding system and goals per KPI, allowing for the risk of rewarding targets below the required levels for biodiversity recovery (from ecological perspective).
2. Even though this methodology is theoretically very promising, the instrument is sometimes perceived as rather complex and difficult to apply. Information exchange and practical education is essential here.

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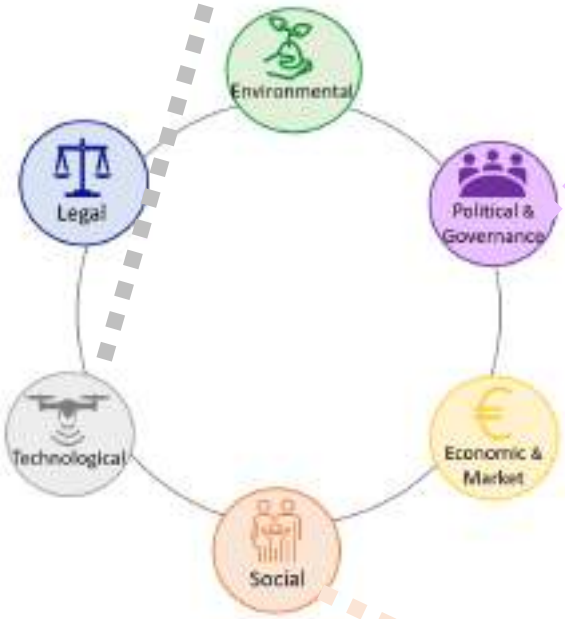
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Technological development could influence the further effectiveness and efficacy of the biodiversity monitor. Particularly digitalization, monitoring and evaluation of farm data could improve the basis for the assessment of the key-performance indicators: for two of the seven KPI so far no nation-wide data registration system is available. For herb-rich grassland detection, use of satellite monitoring is currently developed.



Also political conditions and political pressure "outside" the CAP create momentum for the initiation and implementation of new contractual solutions:

In the Biodiversity monitor for dairy farming 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. <<

Broad consensus by a rather large group of actors and institutions: In 2020, the Biodiversity Monitor Foundation has been established, formalizing the long-term governance and development structure of the tool.

- A larger group of initiating parties, including the **NGO WWF-NL**, the **bank Rabobank**, and **FrieslandCampina**, a **sustainable dairy chain initiative**, all have been Involved in the decisions about the entire concept and the design of the tool.
- **Scientists**, **farmer organizations** and other **environmental organizations** have had significant influence as well through research, pilots, consultations and stakeholder meetings.
- Also **Dairy farmers** themselves had some say in the process, due to their voice as members of the **cooperation FrieslandCampina**.

>> Establishment of the Biodiversity Monitor Foundation can make decision making more equal. 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. <<

Additional page added May 2022

Biodiversity monitor for ARABLE farming

The Biodiversity Monitor is a results-based methodology to measure and reward the performance for biodiversity (including soil, landscape, environment and climate) per arable farm in the Netherlands. The scores per farm on biodiversity-stimulating key performance indicators (KPIs) can be used as the basis for rewarding, and as such new revenue models. In this way, ecosystem-based arable farming can be stimulated.

Summary

With the successes with the Biodiversity Monitor dairy farming (started in 2014 – see other Console case study), the arable farming sector has been inspired to create a Biodiversity Monitor specifically for arable farming in the Netherlands (started in 2018). The concept is similar; differences include the stakeholder coalition and KPIs.

The Biodiversity Monitor for arable farming is a result-based methodology, with a primary focus on the public good biodiversity (including strong links with soils, landscape, environment and climate). The aim of the methodology is to make biodiversity-enhancing performance per arable farm measurable. In this way it becomes possible to benchmark farms and allow multiple stakeholders to appreciate and reward positive biodiversity performance. These stacked financial rewards should lead to new revenue models for ecosystem-based arable farming. As a consequence, it offers farmers action perspective to improve practices for more sustainable production. The methodology is currently being developed by WWF-NL, Branch Organization Arable Farming, province Groningen and Rabobank, in collaboration with scientists, experts, stakeholders and farmers.

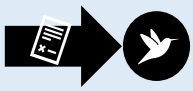
The biodiversity-enhancing performance per arable farm is measured with an integrated set of Key Performance Indicators (KPIs). The set of KPIs is currently (Jan. 2020) still under construction, but will likely include indicators on topics around emissions, inputs, soil management and nature & landscape elements on the farm. These KPIs will be selected based on multiple criteria, including their scientifically proven relation with biodiversity, connection to existing data systems (minimize extra admin), and that performance can be influenced in the short term by taking on farm measures. The KPI research, selection and piloting will be executed in 2020-2022 by scientists from Wageningen University & Research and Louis Bolk Institute, in collaboration with Boerennatuur and farmers. For each KPI, scientists will also determine threshold- and target values based on existing legislation and policies, and the best available scientific knowledge. Good performance on the integrated set of KPIs can be linked with financial rewards from multiple stakeholders. Note that the Biodiversity Monitor provides a scientifically substantiated methodology to measure biodiversity-enhancing performance per farm, while contracting parties who use this data are free to decide how they reward the farmer.

Because the research/development and piloting of KPIs is still ongoing, no contracts using the Biodiversity Monitor systems have been implemented yet. Similar to the dairy sector, the arable sector can use the Biodiversity Monitor KPIs in private-private and private-public contracts, and there is much potential for integrating it in the new Common Agricultural Policy (CAP). It is foreseen to involve multiple rewarding parties (e.g. arable produce buyers, cooperatives, banks, land leaseholders, water boards, governments) to use the Biodiversity monitor to reward and stimulate ecosystem-based arable production.

Objectives

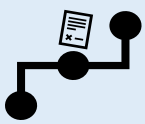
The objective of the Biodiversity Monitor is to make biodiversity-enhancing performances per arable farm measurable (using an integrated approach). This allows multiple stakeholders to financially reward positive biodiversity impacts based on unambiguous scientifically relevant results. The stacked financial rewards from multiple stakeholders, based on the same KPIs, will stimulate farmer to practice ecosystem-based arable farming. In this way, the Biodiversity Monitor stimulates the transition towards more sustainable production while enhancing biodiversity recovery, additional farmer income, and a future perspective for the arable sector.

RESULT-BASED



The Biodiversity Monitor measures per arable farm the performance on multiple biodiversity-enhancing Key performance Indicators (KPIs). Following, these results can be linked with financial rewards from supply chain stakeholders – this is the contract solution. Stacked rewards from multiple stakeholders can form the new revenue model for ecosystem-based arable farming.

VALUE CHAIN



Potential, not yet applied:

A) Farmer – buyer – certification – store – consumer (product price)
B) Farmer – bank – (interest discount)
C) Farmer – government (compensation)
D) Farmer – water board (tax rate)
E) Etc.

LAND TENURE

Potential, not yet applied:

A) Farmer – land leaseholder (favorable
B) lease conditions)

COMBINATIONS

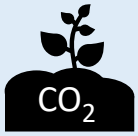
Farms can have different contracts with multiple parties. For example, a farm can have a contract with the product buyer, bank, and government - which all sent financial rewards for good performance on the same set of KPIs.

PUBLIC GOODS

(Farmland) biodiversity

Landscape and scenery

Soil quality (and health)



Climate regulation - carbon storage and greenhouse gas emissions

Water quality

LOCATION

NETHERLANDS

The Biodiversity Monitor can be applied on all appx. 11.000 arable farms in the Netherlands (red dots on map). Source: CBS, 2019.

Problem description

The Netherlands are among the European countries with the biggest challenge when it comes to protecting biodiversity (EEA, 2015). Populations of wild animals in the agricultural landscape decreased by 50% since 1990 (WWF-NL, 2020). These massive losses of nature are largely related to increased intensification and scale of agricultural production over the past decades.

With a 29% land share (CBS, 2019), the arable sector is one of the biggest users of agricultural land in the Netherlands and puts significant pressure on biodiversity – both on farmland and on adjacent nature areas. The arable lands are generally intensively managed with short rotations, high input levels of fertilizers, pesticides and soil tillage. This type of management threatens wildlife species such as field birds and insects. Most non-agricultural landscape elements, such as hedges and flowery corners, have disappeared during land consolidation processes for scaling. This leaves less and less space for birds, butterflies, and other animals to forage, seek shelter and nest. Moreover, the quality of these habitats declines due to environmental pollution caused by agricultural (and other) activities. Especially nitrogen deposition and leaching causes eutrophication of soils and water, leading to losses of plant species and life in freshwater. All these practices together affect the entire wildlife food-web, leading to a massive loss of biodiversity in the agricultural landscape and beyond.

Changes in farming practices are urgently needed to stop and reverse biodiversity losses, but also to ensure the continuation of agricultural production which depends on ecosystem services (e.g. clean water and healthy soils). However, current markets provide small margins on arable produce, resulting in low income for farmers what stimulates intensification even further.

In order to create a future perspective for nature and arable farmers, new business models are required to make ecosystem-based arable farming a sustainable, profitable and attractive practice for farmers. In the light of that challenge, the Biodiversity Monitor for arable farming has been established by a multi-stakeholder coalition consisting of WWF-Netherlands, BO Akkerbouw (branch organization arable farming Netherlands), province Groningen, and Rabobank (largest agricultural financer in the Netherlands).

CONTRACT

So far, there are no official contract partnerships, but this instrument provides full potential for:

Financing parties:
- Market sector: food industry, bank, landowner
- Government: province, municipality, waterboard, EU

Contract types:
- Private-public (farm-government)
- Private-private (farm-business)

Payment mechanisms:
- Higher product price
- Loan interest discount
- Favourable land lease conditions
- Water tax discount
- Subsidy
- CAP rewards
- Etc.

Data and Facts – Contract

Indirect effects: The primary focus is on (farmland) biodiversity, with strong links to soil quality and health, climate regulation (carbon storage and greenhouse gas emissions), and landscape and scenery. Indirect beneficial effects are on air quality (e.g. less ammonia emissions), recreational access (improved landscape quality), resilience to natural hazards (improved soil health), rural viability and vitality (increased farmer income and social appreciation), and water quality (less soil-N surplus).

Involved parties: The initiators of the Biodiversity monitor arable farming are WWF-NL, Rabobank, BO Akkerbouw (branch organization arable farming Netherlands) and province Groningen. These parties together currently (2018-ongoing) develop the Biodiversity monitor in close collaboration with researchers from Wageningen University & Research and the Louis Bolk Institute. These parties have a public-private-partnership (2020-2022) which includes KPI research and field pilots in close collaboration with farmer organization Boerennatuur (represents 40 farmer collectives for agricultural nature conservation). During the development process, farmers, farmer organizations, experts and relevant stakeholders will continuously be consulted.

Participation: So far, no contracts have been implemented, as the research/development and piloting phase is yet ongoing. The Biodiversity monitor should become available for all arable farms in the Netherlands (~11.000 farms) and all potential contracting parties.

Advantage for involved parties

- ❑ Arable farmer: financial support for biodiversity-enhancing efforts, what contributes to a improved revenue model for ecosystem-based arable farming.
- ❑ Assumed advantages for potential contract parties: sustainable/future-proof supply chain and safeguarding of societal support for the sector (supply chain stakeholders), financial risks minimalization and corporate responsible image (banks), sustainable soil management (land leaseholders), improved water quality (water boards), enhanced conservation of nature reserves, ecosystem services and landscape quality (governments).

Funding/payments: So far, there are no official contracting parties. Rabobank (market-sector-oriented) will implement the Biodiversity moninor in the sustainability policy for each individual farmer. Besides, arable sector supply chain businesses (market-sector-oriented) are interested, and there is much potential for governments (both with and without EU funding) to apply this instrument in contract solutions.

Context features

Landscape and climate: The geography of the Netherlands can roughly be split into two areas: the low and flat lands in the West and North, and the higher lands with some hills (max. 300 meter) in the East and South. Much of the lower lands have been reclaimed from the sea (polders) and are below sea level, protected by dikes. The water is continuously pumped away through many small canals, and the groundwater level is in most places regulated at low levels. Soils in the lower lands are predominantly peat and loam, while the higher lands are more sandy-peat, sand and clay. The Netherlands have a temperate maritime climate, with cool summers (average daytime temperatures varies from 17-20 °C) and moderate winters (2-6 °C).

Farm system: The Netherlands is for 44% covered with agricultural land (1,82 million ha out of the total country area of 4,15 million ha), which is for about one-third in use for arable farming (0,53 million ha – 13% of the country, 16% of total land area, and 29% of all agricultural land; this excludes temporary grasslands and silage maize; CBS, 2019). Therewith, arable farming is one of the largest land use categories in the Netherlands. Arable farms are spread throughout the Netherlands, with hotspots in the Northeast, Southwest and center (see Fig. 2). The area includes about 11.000 arable farms, which have an average size of 62 ha (BIN, 2019). The main cultivated crops are grains (34% of arable land), potatoes (31% of arable land) and sugar beets (15% of arable land), which are often cultivated in rotation with potatoes once every 2-4 years. Other common crops (20% of arable land) include seed onion, grass seed, chicory, flax seed, fiber flax, rapeseed, hemp and kidney beans (CBS, 2020). The crops are conventionally grown in short rotations and relatively intensively managed with chemical fertilizers and crop protection agents. Most non-agricultural landscape elements, such as hedges and bushes, have disappeared over the past decades during land consolidation processes for scaling. Consequently, very little suitable habitat is left over for wild plants and animals to live in and around arable land in the Netherlands – contributing substantially to the biodiversity losses in the agricultural area in NL. Especially typical farmland birds have declined massively (WWF-NL, 2020).

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SUCCESS OR FAILURE? And reasons for success:

The success of the Biodiversity monitor for arable farming is unknown until today, as the content is yet under research & development and contracts have not yet been implemented. However, we (WWF-NL) consider the initiation of this methodology with a motivated coalition of key stakeholders, upon the arable sector's own request, already as a major step into the right direction. In general, the Biodiversity monitor (for both dairy and arable farming) is acknowledged in national policies as a good and useful example to work on the dual challenge of nature restoration and future perspective for farmers across the entire agricultural sector.

Also the innovative Delta Plan for Biodiversity Recovery (an ambitious plan signed by 50+ leading Dutch agri- and horticulture retail, agro-industry, nature and environmental organizations and science institutions) embraced the Biodiversity monitor as key methodology for monitoring and rewarding best performances. The key success factors determined by the Delta Plan for Biodiversity Recovery are: shared values, coherent laws and regulations, knowledge and innovation, collaboration at the landscape level, and new business models. The Biodiversity monitor enhances all success factors, and particularly the new business models. Provinces and businesses have shown interest to implement the monitor and reward farmers for their performance on biodiversity. In general, the Biodiversity monitor methodology is quite innovative and widely acknowledged as a high-potential contract solution. Especially the use of KPIs to quantify impact (performance) instead of prescribing measures or best agricultural practices, is critical to enhance impactful change. The methodology has potential to be unrolled in other sectors and regions, as has also been done for the dairy farming sector in the Netherlands. However, whether this contract solution contributes substantially to biodiversity recovery requires verification. Monitoring of the relationship between KPI performance and actual biodiversity enhancement, is scheduled for future trajectories.

SWOT analysis

Main Strengths

1. The result-based approach based on Key Performance Indicators (KPIs)
2. The integrated approach (aiming for positive results on all KPIs, on each farm) is powerful to stimulate biodiversity recovery without allowance for trade-offs
3. The Biodiversity monitor will become available for all Dutch arable farms and can be used by all relevant stakeholders for result-based financial rewards.
4. Minimal extra administrative burden as most data comes from already obliged farm management data tools.

Main Weaknesses

1. Uncertainty about availability and reliability of data needed to calculated the KPI performance per farm.
2. The environmental effectiveness requires verification by monitoring. This is scheduled for future trajectories.

Main Opportunities

1. The Biodiversity monitor can be used in many different private-private and private-public contracts
2. High potential for integration in ecoschemes for the post 2020 CAP.
3. Multiple stakeholders can reward farmers based on the same biodiversity-enhancing results, enabling farmers to manage on clear unambiguous goals.
4. Stacking financial rewards based on the same KPIs can enhance new revenue model for ecosystem-based arable farming.

Main Threats

1. Contracting parties can determine their own rewarding system and goals per KPI, allowing for the risk of rewarding targets below the required levels for biodiversity recovery (from ecological perspective).
2. Even though this methodology is theoretically very promising, the instrument is sometimes perceived as rather complex and difficult to apply. Information exchange and practical education is essential here.

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

Natural Grazing in Podkarpackie Region

The Natural Grazing in Podkarpackie program was introduced to preserve, protect and restore the biodiversity in valuable natural areas in Podkarpackie region, through extensive grazing of livestock in the permanent grassland areas, while maintaining animal welfare and appropriate stocking rate.

Summary

The program "Podkarpacki Naturalny Wypas" was established in 2012 as a public initiative, in order to preserve, protect and restore the biodiversity in valuable natural areas 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). The program currently runs as a long term initiative (2017-2020). Each year an open call is organized in which non-profit organizations (e.g. foundations, associations, NGO cooperatives) and other eligible parties present offers to arrange grazing on specific grasslands by subcontracted farmers, who provide animals (cattle, horses, sheep, goats and deers) and plots of land for grazing. In the pilot year (2012), 7 organizations took part, representing a total of 321 farmers, grazing 5,981 animals on the area of 4,700 hectares. In 2019, there were 7 organizations involved and 715 farmers, grazing on an area of 15,100 ha (about 13,236 animals). The study of Ruda et al. (2019) shows that the program brings measurable benefits. Over half of the interviewed breeders increased the grazed area and number of animals, a significant part systematically performs pasture care activities, or built pastoral infrastructure. The program contributes to the protection of biodiversity in valuable natural areas and brings measurable economic and social benefits.

Objectives

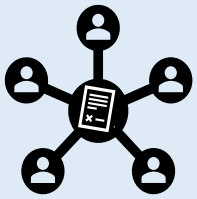
- Preservation, protection and restoration of the biodiversity in valuable natural areas, based on extensive grazing of livestock while maintaining animal welfare.
- Restoration of valuable natural and landscape areas for grazing.
- Maintenance and restoration of architecture associated with traditional pastoral grazing;
- Protection of cultural heritage, supporting and sustaining the traditions, customs and other related elements of folk culture of pastoralism;
- Economic and tourist activation of the Podkarpackie province

Source. Fot. https://horb.org.pl

Problem description

The program responds to the need for economic and tourist activation of the Podkarpackie Voivodeship, and in particular for the protection of naturally valuable meadow and pasture areas while maintaining biodiversity. Among the factors justifying the implementation of the Program the most important are: a large share of protected areas in the region (44.9% of the total area), a progressive decline in livestock numbers and the low utilization of permanent grasslands (below 50%).

COLLECTIVE

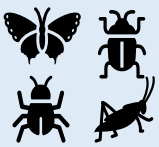


Collective implementation – the contract is between: NGO (associaton) and farmers

LAND TENURE

Land tenure: some areas which are subject of the contract are rented by farmers. For example the land in National Parks or in the mountain areas, where the farmer is not the owner of the land, but may rent it for the purpose of grazing.

PUBLIC GOODS



(Farmland) biodiversity

Data and Facts - Contract

Indirect effects:

- Soil quality (and health) - grazing promotes grass propagation, prevents soil erosion, and trampling and leaving droppings stimulate turf development;
- 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;
- Rural viability and vitality, the program brings measurable economic and social benefits, which contribute to rural viability and vitality.

Participation:

- Number of farms: in 2019 - 715 farmers/ 13,200 animals (70% cattle),
- Area of implementation: in 2019 – 15,200. ha.
- Other participants: in 2019 - 7 associations.

Involved parties: The contracting parties could be NGOs - associations and cooperatives, churches, sports clubs, non-profit companies. In the first year of the program implementation (2012), 7 organizations took part, representing a total of 321 farmers, grazing on the area of 4,700 ha (about 5,981 animals). In 2019, the number of farms was over twice bigger than in 2012 and the number of grazed animals and hectares tripled. Both, NGO organizations and their subcontractors (farmers with grazing animals) must provide a document, which implies the right to dispose of the premises/plots (lease agreement, lending, property right) and of the animals that will be involved in grazing.

Advantages of participation:

- Farmers have the possibility of financial remuneration for the use of land for grazing animals;
- NGOs raise funds for statutory activities and demonstrate activity in priority areas.
- Voivodship self-government contributes to preservation, protection and restoration of the biodiversity in valuable natural areas and to economic and tourist activation of the Podkarpackie Region.


Source. Fot. Robert garstka, Kik Batowice CC-By-SA-4.0

Management requirements for farmers: The program is addressed to breeders of cattle, horses, sheep, goats and deer in Podkarpacie Region. Animals registered for the program must stay on the farm throughout the entire pasture period - it is assumed to be from May 20 to September 30, i.e. 134 days (it is possible to swap animals provided that the stocking ratio is maintained). The program involves grazing animals in the meadow and pasture areas of the Podkarpackie Voivodeship with a stocking of 0.4 - 1.0 LU/ha. Animals must be kept in compliance with animal welfare norms (e.g. have assured access to water, protection against predators). 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. On the other hand the contracted NGO organisations must organize at least 4 trainings for farmers, beekeepers, and school pupils concerning specific topics related to biodiversity and ecological awareness. The budget available for organising trainings was 5,800 Euro per year per association, in 2019.

Landscape and scenery

Cultural heritage

Farm animal health and welfare

CONTRACT

It is a public-private contract: farmers are subcontracted by the NGO (association). The NGOs have a contract with the public organization (Podkarpackie Voivodenship Government – Urząd Samorządu Terytorialnego).

Contract conclusion: Written agreement

Payment mechanism: Incentive payments

Financing party: Local Government (without EU-funding

Start of the program: 2012
End: still running

PODKARPACKIE

LOCATION

POLAND

Podkarpackie Region (PL82)

Controls/monitoring: Controls on the implementation of the program are carried out by the voivodship office representatives, which assesses the status of task implementation, effectiveness, reliability and quality of implementation, correctness of spending public funds and properness of record keeping. At least 10% of beneficiaries are controlled.

Conditions of participation: Each year an open call is organized in which non-profit organizations (e.g. foundations, associations, NGO cooperatives) and other eligible parties present offers to arrange grazing on specific areas of land by subcontracted farmers, who provide animals (cattle, horses, sheep, goats and deers) and plots of land for grazing. The tasks of the program must be implemented in the Podkarpackie region.

Risk/uncertainties of participants: The main risk of the associations which take part in the call are that the sub-contracted farmers/other parties will not fulfill the requirements of the contract concerning for example number of animals kept for the grazing season or animal density etc.

Funding/Payments: The funds come from the Local Government Budget of Podkarpackie Voivedship. The amount allocated to the program is set annually by the Podkarpackie Voivodship Board. The payment is made to contracted NGOs organisations, which were approved by the commission, and then those organisations transfer funds to the sub-contracted farmers (or producer groups). The amount of subsidy per hectare is estimated on the basis of the expected interest in the program (estimated area on which animals will be grazed) and the funds available for this purpose. The level of payment therefore differs from one year to another and in 2019 was: 120 PLN (ca. 30 euro)/ha of utilized meadows/pastures; 160 PLN (ca 40 euro)/ ha if meadow/pasture it is located in the nature-protected area, 200 PLN (ca. 47 euro)/ha if the meadow/pasture is maintained in an organic system of production, and supplementary 150 PLN (ca 35 euro) payment (additional to the abovementioned) if the land is restored to usage after not being used for agricultural purposes before.

Context features

Landscape and climate: Podkarpackie Voivodeship is located in south-eastern Poland, bordering with Ukraine and Slovakia. It covers an area of 17,844 km², which is 5.7% of the area of Poland. About 35% of the area is covered by forests, and almost 45% of the area belongs to various forms of nature and landscape protection.

Podkarpackie Voivodship covers three separate physiographic regions. The northern part of the province is occupied by the Sandomierz Basin lowland, the middle part by the Carpathian Foothills, while the southern part includes the mountains of the Low Beskids and the Bieszczady Mountains. Due to its location, the area of the Podkarpackie Voivodeship is characterized by a significant variety of terrain, the difference between the highest hills and the lowest places is over 1000 meters. Thanks to the advantages of nature and the environment, Podkarpackie is one of the most popular tourist regions in Poland, particularly attractive because of the beauty of its landscape and the cultural richness. A great attraction of the region are well-preserved sacred and secular buildings. The tourist trail includes wooden temples, palaces and manors leads through 175 villages in the region. Podkarpackie lies at the intersection of North-West Europe's maritime climate and East European continental climate. Its climate is also influenced by its surface shape and physiographic division, which is why we distinguish three climate zones here: lowland - Sandomierz Basin; Podgórze - the Carpathian Foothills; mountain - Beskid Niski and Bieszczady.

Farm structure: Farm structure in the Podkarpackie Voivodeship is characterized by very high fragmentation. Farms with agricultural land area of 2-5 ha dominate, and the share of farms with more than 15 ha of agricultural land accounts for only 2.9% of all farms, however their share in the agricultural land utilisation is 31.3%. The average size of farm in 2016 was 4.36 ha. The share of permanent grassland, i.e. meadows and pastures, constitutes about 40% of arable land in the region. Podkarpackie has favorable natural conditions for agricultural production, but cultural landscape and extensive farming also provides a good basis for tourism.

Contact: http://www.rolnictwo.wrotapodkarpackie.pl/index.php/podkarpackie-naturalny-wypas-ii

SUCCESS OR FAILURE?

The Natural Grazing in Podkarpackie program presents a successful contract solution. The contract solution is judged successful, as the number of participants increased over the years. The program is implemented continuously since 2012. The study of Ruda et al. (2019) shows that the program brings measurable benefits. Over half of the interviewed breeders increased the grazed area and number of animals, a significant part systematically performs pasture care activities or built pastoral infrastructure. The program contributes to the protection of biodiversity in valuable natural areas and brings measurable economic and social benefits.

Reasons for success:

- Farmers have the possibility of financial remuneration for the use of land for grazing animals;
- High share of grasslands, tourist attractiveness of the region as well as fragmented, extensive structure of agriculture favors the implementation of the program.
- NGOs raise funds for statutory activities and demonstrate activity in priority areas.
- Voivodship self-government contributes to preservation, protection and restoration of the biodiversity in valuable natural areas and improvement of economic and tourist activation of the Podkarpackie Region.

SWOT analysis

Main Strengths

1. The program fits well into the needs of the region, and is well evaluated by the beneficiaries
2. Farmers and contracted organizations have the possibility to obtain some economic benefits, while preserving, protecting and restoringbiodiversity in valuable natural areas
3. Protection of cultural heritage, supporting and sustaining the traditions, customs and other related elements of folk culture of pastoralism

Main Weaknesses

1. The amount of subsidy per ha of permanent grassland is not constant and if it is reduced the number of farmers willing to participate in the program may be lower
2. Administrative burden
3. Not all funds planned for program implementation are used

Main Opportunities

1. Development of tourism may increase demand for landscape areas with grazing animals
2. Increased demand for regional and traditional products may encourage farmers to run extensive livestock production to produce organic or regional food. This could increase an interest in the program

Main Threats

1. The program budget is assigned on the yearly basis, there is a risk that one day the program could be decreased or discontinued
2. Decreasing animal population and abandoning agriculture may cause a lesser interest in the program

Horizon 2020 European Union Funding for Research & Innovation

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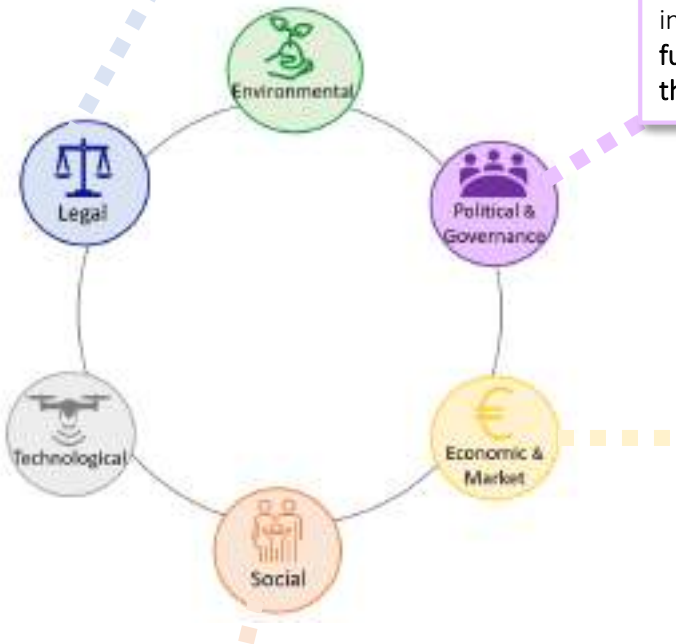
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Legal: In Natural Grazing in Podkarpackie Region **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.



Regional political **will towards new instruments:**

The initiative bases on a public initiative that was established in 2012 by the Podkarpackie Voivodeship (local) government in order to support the realization of the Region Development Strategy, where **preservation and protection of biodiversity** is one of the **priority actions.**

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 2021-2025. **The program will be continued in the future. Funds for its implementation are secured in the Voivodship's budget.**

Economic: **Natural Grazing in Podkarpackie Region represents a contract solution able to prevent and turnaround the abandonment of agricultural activity due to its boosting effect on agricultural income.** Farm structure in the Podkarpackie Voivodeship is characterized by very high fragmentation and large share of small farms. 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.

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.

Social: **The role of the NGOs**

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 farmers 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".*

Additional page added May 2022

Program “Sheep Plus” - Provincial Program of Economic Activation and Preservation of the Cultural Heritage of the Beskids and Kraków-Częstochowa Upland

The Program Owca Plus (Sheep Plus) was introduced in 2008 to preserve, protect and restore biodiversity and pastoral cultural heritage in valuable natural areas of the Beskids and the Kraków-Częstochowa Upland based on sheep and goats grazing.

Summary

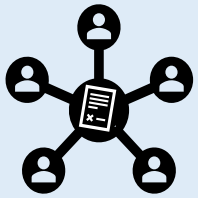
The program “Owca Plus” was established in 2008 as a public initiative in order to preserve, protect and restore the biodiversity in valuable natural areas, through extensive grazing of sheep in the meadow-pasture areas of the Śląskie Voivodeship. The program is coordinated by the Marshal's Office of the Śląskie Voivodeship (Local Government). The program currently runs as a long term initiative 2015-2020 with a total budget exceeding 1 mio. Euro. Each year an open call is organized in which non-profit organizations (e.g. foundations, associations, NGO cooperatives) and other eligible parties present offers to arrange grazing on specific areas of land by subcontracted farmers, who provide animals (sheep and goats) and plots of land for grazing. The list of recommended areas offered for grazing by the program includes 168 plots in the Beskids and 73 plots of the Kraków-Częstochowa Upland. The bidding organizations assure grazing on the area covering at least 550 ha of land in Beskids or at least 100 ha in Kraków-Częstochowa Upland. There are two organisations representing over 100 farmers, grazing about 4-6 thousand animals on over 600 hectares of land. The program brings measurable environmental, cultural and economic benefits. The outcomes of the environmental monitoring showed significant improvement of biodiversity. In the economic aspect, the tourist infrastructure was modernized and expanded to improve the accessibility and attractiveness of the areas included in the program. Thanks to the implementation of the program, the sheep population increased and the availability of meat and sheep products expanded. The program has indirectly contributed also to the development of tourism (by an increase in the number of entities offering accommodation, meals, employment in tourist services, trade and transport).

Source: slaskie.pl

Objectives

- Preservation, protection and restoration of the biodiversity in valuable natural areas, based on extensive grazing of sheep and goats while maintaining animal welfare
- Maintenance and improvement of valuable natural habitats and species, depending on agricultural, especially pastoral use
- Restoration of valuable natural and landscape areas for grazing
- Protection of local breeds of farm animals
- Maintenance and restoration of architecture associated with traditional pastoral grazing
- Protection of cultural heritage, supporting and sustaining the traditions, customs and other related elements of folk culture of pastoralism

COLLECTIVE

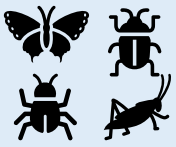


The contract is between: public organization (Śląskie Voivodenship Government) - NGO (association) - farmer

LAND TENURE

Some areas which are subject of the contract are rented by farmers.

PUBLIC GOODS



(Farmland) biodiversity

Landscape and scenery

Cultural heritage

Farm animal health and welfare

CONTRACT

It is a public-private contract: farmer – NGO (association) – public organization (Śląskie Voivodship Government)

Contract conclusion: Written agreement

Payment mechanism: Incentive payments

Financing party: Local Government (without EU-funding)

Start of the program: 2008
End: still running

Length of participating in scheme: 1 grazing season – end of April - September

Śląskie.

Data and Facts - Contract

Indirect effects:

- Soil quality (and health) - grazing promotes grass propagation, prevents soil erosion, and trampling and leaving droppings stimulate turf development
- 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
- Rural viability and vitality - the program brings measurable economic and social benefits, which contribute to rural viability and vitality.

Participation:

- Number of farms: Every year the program is realized by 2 organisations representing over 100 farmers.
- Area of implementation: grazing about 4-6 thousand animals on 600-700 hectares of land

Involved parties: The contracting parties are the NGOs whose statutory activities are consistent with the assumptions of the program or legal entities which provide extension services. The program is usually contracted with 2 organizations representing over 100 farmers.

Problem description

The gradual disappearance of sheep grazing observed over the years due to a significant reduction in the demand for sheep products (wool, cheese, meat) almost irreversibly affected the overgrowing of naturally valuable areas of the Beskids and the Kraków-Częstochowa Upland with expansive plant species and self-sown trees. This, in turn, led to the impoverishment of nature that may cause irreversible changes in the traditional landscape, depriving it of, among others tourist values. The program, introduced in 2008, responds to the needs for preservation of natural and cultural heritage of the Śląskie Voivodeship, and in particular for restoration of pastoral economy in the Beskids and Kraków-Częstochowa Upland, in order to stop adverse natural changes, as well as to protect the cultural heritage of these areas.

Management requirements for farmers: The program is addressed to breeders of sheep and goats in Śląskie Region. Animals registered for the program must stay on the farm throughout the entire grazing period – end of April – September. The program involves grazing animals with a stocking of 0.5 - 1.0 LU/ ha. It is preferred that in the Beskids, grazing takes place on pastures situated 550 m above sea level. Animals must be kept in compliance with animal welfare norms (e.g. have assured access to water, protection against predators). Animals must be registered in the database of the Agency for Restructuring and Modernization of Agriculture. Farmers, besides grazing, are required to perform special care treatments planned for individual plots (eg. felling trees and shrubs, mowing some parts of the plots) and where necessary constructing shepherd infrastructure (shepherds' huts, sheep fence).

On the other hand the contracted NGO organizations are obliged to promote natural and landscape values and tourism, promote sheep and goat products and popularize folk and pastoral culture.

Source: Marek i Ewa Wojciechowscy / Trips over Poland / CC-BY-SA-3.0, 2.5, 2.0, 1.0 & GDFL

Information: https://www.slaskie.pl/content/program-owca-plus

LOCATION

POLAND

Śląskie province (PL22)
Beskidy, Kraków-Częstochowa Upland

Source: Barto146, CC-BY-SA-3.0

Controls/monitoring: The program implementation control is carried out for all beneficiaries. The audit covers effectiveness, reliability and quality of tasks implementation as well as environmental monitoring of grazed plots.

Conditions of participation: The contracting parties could be NGOs whose statutory activities are consistent with the assumptions of the program, and legal entities which provide extension services. The tasks of the program must be implemented in certain recommended areas (168 plots in Beskids and 73 plots in Kraków-Częstochowa Upland) indicated in the program description document.

Risk/uncertainties of participants: The main risk of the associations which take part in the call is that the sub-contracted farmers/other parties will not fulfil the requirement of the contract concerning for example number of animals kept for the grazing season or animal density etc.

Funding/Payments: The funds come from the Local Government Budget of Śląskie Voivedship. The amount allocated to the program is planned for the programming period (currently 2015-2020). Annually an open call is organized in which NGOs, associations, cooperatives and other eligible parties offer the required number of sheep and goats made available by subcontracted farmers for grazing. The payment is made to contracted NGOs organizations, and then those organisations transfer funds to the sub-contracted parties (farmers, producer groups). The amount of subsidy is fixed and relates to size of the area offered for grazing (ca. 100 thousand euro for the area of minimum 550 ha in Beskids, and/or 15 thousand euro for minimum 100 ha area in Kraków-Częstochowa Upland.

Source: owcaplus.pl

Context features

Landscape and climate: The Beskids are medium-high mountains within 800-1400 m above sea level. The landscape is characteristic for this type of mountains overgrown with beech, oak, spruce, pine and fir, as well as scythe in the highest parts. In the Beskids, there is a temperate mountain climate with continental features. It is characterized by high weather variability, significant rainfall and strong and frequent winds. Precipitation in the Beskids sometimes exceeds 1200 mm per year. The average annual temperature ranges from 5.4 C in the dorsal parts to 8.5 C in the valley of the Olza River. The Kraków-Częstochowa Upland has a landscape that is a bit different. The area rises to a height of about 300 - 500m above sea level and 20% is covered by forests. In former times the area was often the bottom of the sea, which created many layers of rocks (dolomites, marls, limestones). Characteristic for the landscape are numerous calcareous outliers rising above the surface, rising to a height of several dozen meters. The climate of the highlands is milder than the climate of the mountainous Beskids. One of the most important factors influencing the landscape and nature of both regions was and still is pastoralism. Sheep graze in beautiful mountain halls and areas that, due to natural conditions (e.g. slope), cannot be cultivated. Shepherds' buildings, sheep fences and shepherd's huts are typical elements of the landscape.

Farm structure: Agriculture, due to natural conditions, is not of great importance in the region of the Beskids and the Kraków-Częstochowa Upland. The average farm size is 4.5 ha, which in consequence makes the agriculture of the Śląskie Voivodeship one of the most fragmented in Poland. Tourism, which is becoming an important source of income for local people, is starting to play an increasingly important role in the economy of these regions. Sheep breeding is also important, which after a drastic period of decline, is slowly recovering in these areas, also due to the Sheep Plus program.

SUCCESS OR FAILURE?

The program "Owca Plus" represents a successful contract solution. The number of participants increased over the years. The program is implemented continuously since 2008. The program brings measurable environmental, cultural and economic benefits. The outcomes of the environmental monitoring showed significant improvement of biodiversity in natural habitats. From economic perspective, the tourist infrastructure was modernized and expanded to improve the accessibility and attractiveness of the areas included in the program. Thanks to the implementation of the program, the sheep population increased and the availability of meat and sheep products expanded. Indirectly the program also contributed to the development of tourism (by an increase in the number of entities offering accommodation, meals, employment in tourist services, trade and transport).

Reasons for success:

- Farmers receive financial remunaration for grazing animals on specific areas (plots), which preserves pastoral traditions and cultivate this culture in the region.
- High share of grasslands, tourist attractiveness of the region as well as fragmented, extensive structure of agriculture favours the implementation of the program;
- NGOs raise funds for statutory activities and demonstrate activity in priority areas.
- Self-government of the Province, by financing this program, contributes to preservation, protection and restoration of the biodiversity in the most valuable natural areas of Beskids and Kraków-Częstochowa Upland, and improvement of economic and tourist activation of the Śląskie Region.

SWOT analysis

Main Strengths

1. The program fits into the traditions and culture of the region
2. Farmers have the possibility of co-financing the construction of shepherd infrastructure and the conditions for ensuring animal welfare on pastures
3. The program brings measurable environmental, cultural and economic benefits

Main Weaknesses

1. Some administrative burden
2. Some plots are distant from areas where farms and animals are located - it is necessary to transport and monitor animals, and protect them against predators.

Main Opportunities

1. The development of tourism promotes the preservation of the traditional pastoral landscape
2. It is an opportunity for the development of traditional and regional products – which justifies the continuation of the program

Main Threats

1. Possibly loosing interests of NGO´s due to administrative requirements and the risks associated with contracting farmers

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

Program “Flowering meadows” - contracts for protection of biodiversity and water resources by regular mowing of meadows

The Program “Flowering meadows” was introduced in 2011 by the company Żywiec Zdrój S.A. to preserve and protect biodiversity and water resources of the Żywiec Region, through adapted mowing of meadows.

Summary

The program “Flowering meadows” has been introduced in 2011 by the Żywiec Zdrój S.A. company (one of the largest producers of bottled water and other soft drinks in Poland) within their Corporate Social Responsibility policy. Under the program, farmers/land owners in the communes of Jeleśnia, Węgierska Górka, Radziechowy-Wieprz regularly mow meadows respecting certain rules in order to protect biodiversity as well as water resources used by the company. Since 2017 the program has been managed by National Foundation of Environmental Protection Centrum UNEP/GRID-Warsaw. Farmers may take an advantage of the compensation of PLN 2.5 thousand/ha (ca. 580 euro/ha) of mowed area. In 2019, the project covered 52 ha of land owned by 97 farmers. The target area planned for protection is 120 ha of sensitive plots surrounding the water springs of Żywiec Zdrój S.A. As a result of this program, overgrowing of valuable grassland habitats was inhibited, and the infiltration of water was improved. The project allowed to secure populations of plant species subject to legal protection, which are highly threatened due to the abandonment of the use of mountain meadows - e.g. it prevented the extinction of the Spisz saffron in Sopotnia Mała in Polana Monarska.

Objectives

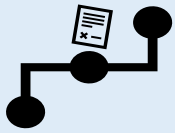
- Preservation, protection and restoration of the biodiversity in valuable natural areas.
- Protection of clean water resources of the region.
- Maintenance and improvement of valuable natural habitats.

Zapolanka, Beskid Żywiecki Source: fot. Jerzy Opioła CC-BY-SA-3.0

Problem description

Abandonment of mowing accelerates the processes of secondary plant succession in the meadows by the influx of self-seeding invasive plant species and of trees. As a result, this affects the natural biodiversity of meadows, and reduces the water infiltration of these areas. Many species of valuable plants are being displaced from their natural habitats. Mowing meadows has a positive effect on the preservation of these habitats and improves water retention.

VALUE CHAIN



Value chain initiative – the contract is between private company Żywiec Zdrój S.A., UNEP/GRID (foundation who manages the program on behalf of the company) and farmers

PUBLIC GOODS

(Farmland) biodiversity

Water quality

Landscape and scenery

INDIRECT EFFECTS

The requirements for farmers, except mowing, also include the ecological maintenance of meadows and avoidance of all possible ways of its contamination (e.g. by fertilizing, chemical protection, silage storage, manure spreading, etc.). Therefore, the program also contributes to the protection of the natural environment, improvement of soil quality, as well as protection of water resources against pollution of agricultural origin.

CONTRACT

It is a market sector-oriented contract. The contract partnership is private – private: Żywiec Zdrój S.A. – UNEP/GRID (NGO) – farmer

Contract conclusion: Written agreement (contract)

Payment mechanism: Incentive payments

Length of the contract: 1 year, renewable

Start of the program: 2011
End: still running

LOCATION

POLAND

Żywiec Region, PL225

Data and Facts - Contract

Participation: In 2019, the program covered 52 ha of land owned by 97 farmers. Since 2017 the number of farmers and area covered by the program tripled.

Involved parties: The funding body: company Żywiec Zdrój S.A. - one of the largest producer of bottled water and other soft drinks in Poland. Organisation managing the program - The UNEP/GRID-Warsaw Centre (NGO – the branch of National Foundation for the Environmental Protection in Poland) – which is a member of the GRID (Global Resource Information Database) network, established by the UN Environment (United Nations Environment Programme – UNEP). Beneficiaries: farmers having land in the areas covered by this program.

Management requirements for farmers: The program is addressed to farmers/landowners having their land in the communes of Jeleśnia, Węgierska Górka and Radziechowy-Wieprz of Żywiec Zdrój Region. For the contracted farmers, besides mowing the plot twice per year (July and September), it is forbidden to use pesticides and fertilisers including sewage (manure, slurry), they are not allowed to perform drainage works and land excavations, to collect surface water or wastes, to burry dead animals, to build silage piles, and to wash motor vehicles.

Controls/monitoring: The program implementation controls are carried out by UNEP/GRID. The control covers implementation of the required activities, as well as environmental monitoring of mowed plots.

Risk/uncertainties of participants: The main risk of the program is that farmers will not fulfil the requirement of the contract. However this risk is limited by regular controls and support services offered by the foundation UNEP/GRID.

Funding/Payments: The program is financed by the Żywiec Zdrój S.A company, within its CSR policy. The target budget allocated to the program covers yearly 120 ha of land (ca. 70,000 Euro). The program is managed by the partner institution - National Foundation of Environmental Protection Centrum UNEP/GRID-Warsaw, who signs agreements with farmers. The foundation also offers additional services of mowing the meadows upon farmer's request. The amount of subsidy is settled at the level of 2,500 PLN (ca. 580€) per hectare.

Source: http://www.kwietnelaki.karpatylacza.pl

Context features

Landscape and climate: The case study region – Żywiec is located in the Beskids - medium-high mountains within 800-1400m above the sea level. The landscape is characteristic for this type of mountains overgrown with beech, oak, spruce, pine and fir, as well as scythe in the highest parts. In the Beskids, there is a temperate, cold mountain climate with continental features. It is characterized by high weather variability, significant rainfall and strong and frequent winds. Precipitation in the Żywiec Region reaches on average 828 mm per year. The average annual temperature is 8° C.

Farm structure: Agriculture, due to natural conditions, is not of great importance in the region. Agricultural land accounts for about 35% of the Żywiecki province area, forests for 52%. The average farm size is 4.5 ha, which in consequence makes the agriculture of the region one of the most fragmented in Poland. Tourism, which is becoming an important source of income for local people, is starting to play an increasingly important role in the economy of this region.

Contact: http://www.kwietnelaki.karpatylacza.pl/

GRID WARSZAWA
In partnership with UN Environment

SUCCESS OR FAILURE?

The program “Flowering Meadows” represents a successful contract solution implemented on the basis of a private initiative within the Corporate Social Responsibility policy of the Żywiec Zdrój S.A. company, producer of water and soft drinks. The program is implemented continuously since 2011, and in 2019 it covered 52 hectares, out of 120 hectares targeted for the program. The number of farmers participating in this initiative increased over the years, and the initiative is positively evaluated by residents of Żywiec region. As a result of this program, overgrowing of valuable habitats was inhibited, and the infiltration of water was improved. The project allowed to secure the populations of plant species subject to legal protection, which are highly threatened due to the abandonment of mowing of mountain meadows.

Reasons for success:

- The location of water springs of Żywiec Zdrój S.A. in this area and the company's policy aimed at socially responsible production and environmental protection is a key factor in the success of this program.
- The program is also successful thanks to the activity of the UNEP / GRID-Warsaw Center foundation, which, in cooperation with Żywiec Zdrój S.A., manages the program and very actively encourages and supports farmers from protected areas.
- Farmers receive fair financial remuneration for maintenance and mowing of the meadows.

SWOT analysis

Main Strengths

1. The program is funded by the large and financially strong company Żywiec Zdrój S.A. within its CSR policy
2. UNEP / GRID-Warsaw Center foundation, manages the program in a very good way and actively encourages and supports farmers from protected areas
3. Farmers receive fair financial remuneration for mowing meadows

Main Weaknesses

1. Very fragmented land structure (targeted 120 ha are divided into 1600 plots of land)
2. Some plots are small and unreachable by the program due to distrust, reluctance or passive attitude of landowners to participation
3. Some administrative burden to farmers and foundation

Main Opportunities

1. The presence of regional leaders / active farmers strengthens the chances of implementing the program
2. Growing consciousness and interest of farmers and companies in environmental protection and socially responsible production
3. protection of clean water sources is one of the elements of the success of Żywiec Zdrój S.A., which also contributes to maintaining the program in the future

Main Threats

1. Possible decreasing interest of farmers due to administrative requirements
2. Moving the water abstraction by the company to another location
3. Coverage of this area by an other, more competitive program

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

Bio-Babalscy - organic pasta chain preserving old varieties of cereals

The Bio-Babalscy organic pasta company is a family business, which together with about 90 supplying farmers preserves rare varieties of wheat, which are cultivated to produce seeds and grains for processing to various cereal products: flakes, flour and pasta.

Summary

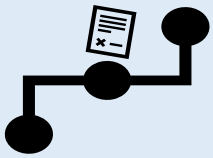
The initiative of Bio-Babalscy company represents a case of the integrated value chain, and is an example of the very successful integration process resulting in strong organizational and financial synergy effects, while protecting the environmental public goods. Cooperation within the chain is largely based on mutual trust and friendly relations between farmers (grains suppliers) and the processor. Most of the seeds used by contracted farmers are provided by Bio Babalski company, closely co-operating among others with the Gene Bank in Poland. Each year on the plots on Babalski's farm in Pokrzydowo about 70 varieties of old species of cereals are cultivated. The best species and varieties are promoted (1 hectare of land can be sown after 5-7 years from the reproduction of 100 seeds) and reproduced in order to provide seeds to other farmers. In total over 600 tons of grains are being processed annually, and the annual sales of final products reach about 350 tons. In addition to pasta and flakes also wholemeal flour, bran, and even spelt coffee are produced. All products from Bio-Babalscy company are certified as organic. Wholegrain pasta with Bio Babalscy brand, especially this made of spelt wheat, costs even 50% more than the conventional one. Nevertheless, the number of consumers who believe in quality of Bio Babalscy products is growing, assuring good prospects for the future of the company and the entire integrated supply chain. The organic farm and processing Bio-Babalscy plant are visited by about two thousand persons every year. The visitors are groups of students, farmers and consumers from all over Poland and also from abroad - all who want to see and learn how to successfully run a model eco-farm and to protect environment.

Source: https://biobabalscy.pl/

Objectives

- Preservation, protection and restoration of old varieties of wheat, thus supporting biodiversity and culinary heritage of the region
- Securing economic viability of farms in the Brodnica County
- Protecting environment by organic production
- Maintaining family traditions of organic production

VALUE CHAIN



farmers – Bio-Babalscy processor and shop

PUBLIC GOODS

(Farmland) biodiversity

Rural viability and vitality

Quality and security of products

CONTRACT

It is a private-private contract between farmer and processor.

Contract conclusion: verbal agreement/ handshake

Payment mechanism: Product price

Financing party: Consumer-oriented

Start of the program: 1993
End: still running

Length of participating in scheme: There is no written contract needed. The cooperation lasts for many years already (with some farmers even since 1993). In practice - they meet twice a year and agree on deliveries, usually on the occasion of the Ekołan Association meetings, they have also regular telephone contact.

Data and Facts - Contract

Indirect effects:

- Soil quality (and health) - through methods of organic production
- Rural viability and vitality, the program brings measurable economic and social benefits to farmers, which contributes to rural viability and vitality.
- Cultural heritage - mainly culinary

Participation:

- Number of farms: over 90 farmers delivering to Bio-Babalscy, most of them being members of the EKOLAN association - Association of Organic Producers in Cuiavia and Pomerania. Farmers are located in the Brodnica County. The average size of farm is 19 ha, all farms can be classified as mixed: with cereals and animal production, cereals and vegetables, and with all these types of products.
- Other participants: Bio-Babalscy processing plant and shop

Involved parties: Bio-Babalscy company cooperates with about 90 farmers, most of them - members of the EKOLAN association. EKOLAN farmers have a unique relationship with the pasta producer. The processing company owner, Mr. Babalski, has a strong authority as a pioneer of organic farming in Poland, respected for the broad knowledge of ecological production methods. Hei provides seeds and advice to farmers, always offers good prices for grains to his suppliers and provides all support they may require. That is why the relationship between farmers – suppliers of grains to Bio Babalscy company and the processor (Mr Babalski) may be described as a close partnership rather, than a typical buyer – seller connection. 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.

Management requirements for farmers: Organic production.

Initial situation

Aleksandra and Mieczysław Babalski belong to the pioneers of organic farming in Poland. At the beginning of the 80's Babalski decided to cultivate the land on his farm using ecological methods, based on his experience from longer stays and short visits to organic farms in Switzerland, Austria and Germany. The family started farming on the area of 9 hectares of agricultural land. After conversion, his farm has been certified by the Agro Bio Test Certification Body (PL EKO 07 90001) as the first certified organic farm in Poland. In 1991 a plant for pasta production was built, which is operating along with the farm. One of the most important products of the company is wholemeal pasta, which is made from traditional, old varieities of grains. The flour used for making pasta at “Bio Babalscy”, unlike standard flour, contains remnants of shells and peels which provide a healthy fiber. The Babalscy are passionate about ecology and environment protection. They contribute to these by producing and protecting old varieties of cereals (such as spelt, flatfish and samarium), which have unique nutritional and health values, as well as through disseminating organic methods of production. They also cultivate old varieties of fruits (mainly apples) in their orchard. In 2010, Babalski's farm won the competition for the Best Ecological Farm in Poland in the category „Ecology and Environment”. Since 2012 the company is a member of the Regional Network called "Culinary Heritage of Kujawy and Pomerania”, and is also engaged in the activities of the Association for Old Varieties and Breeds and Cuiavia and Pomerania Association of Ecological Producers EKOŁAN.

Controls/monitoring: The quality controls are performed by the processor and cover such parameters as: variety, taste, smell, presence of diseases, moisture of grains, grain contamination.

LOCATION

POLAND

Brodnica County PL613

Context features

Landscape and climate: The Brodnica County is called the land of 101 lakes, and it is located in the north-eastern part of the Kuyavian-Pomeranian Voivodeship, in the northern part of Poland.

The region is characterized by a varied terrain with postglacial features (lakes, gentle hills). In terms of the percentage of forests, the Kuyavian-Pomeranian Voivodship belongs to the least forested in the country. Forest complexes in the voivodeship are small and occur in a large dispersion. The climate in the region is temperate. The average annual temperature is 7.6 °C. and the average annual rainfall is 568 mm.

Conditions of participation: There are two conditions for participation - first, the farm must be certified as organic, and secondly, it must produce varieties of cereals as required by the processor (usually old, even ancient varieties of cereals).

Risk/uncertainties of participants: The main risk of the processor is that the farmers will not deliver the required amount of grains because of reasons such as low yields caused by poor weather conditions or diseases, but also because of potential decisions of the farmer to sell grains to another buyer offerring a better price. Farmers take the common risks typical for agricultural production, strengthened by the fact that they produce old varieties of cereals, which could be more sensitive to some external factors.

Funding/Payments: The case is a typical market oriented-scheme, where the key payment is the price for the value added products. The indicators of the economic performance show that price premium for organic pasta/wheat production is high at both, farm and processing levels. The organic wheat price (0,43 €/kg) almost doubles the price of conventional wheat (0,22 €/kg) and prices of organic pasta are about 50% higher compared with conventional. This premium is additionally relatively high because of the old varieties of wheat used by the organic pasta producer which usually are very low performing (have lower yields), but are valued by consumers. Unique is also a close relationship between pasta producer and farmers, which enhances extra premium for supplying very specific cereals to the processor.

Source: https://biobabalscy.pl/

Farm structure: The natural conditions for agriculture in the Kuyavian-Pomeranian Voivodeship are favorable. The agricultural sector in the region is characterized by a high share of arable land (57%, compared to 45% of the average in the country) and a high farming culture. The region has a significant share of good arable land - 76% of the total area, including 36.7% of particularly productive and protected soils. There are about 60,000 individual farms with an area of at least 1 ha. In terms of the value of production from 1 ha of arable land, the Kuyavian-Pomeranian agriculture is ranked second in the country. The share of the region's agriculture in creating the gross global agricultural product is higher than the national average and amounts to about 10%. The main crops are sugar beet (17% of the country production), rapeseed (13%) and cereals (9%), while in animal production considering pigs population and meat production the region takes 2-3 place in the country. The average size of farm delivering to Bio-Babalscy is about 19 hectares, what is above an average farm size for Poland (10,56 ha in 2016) and also in kujawsko-pomorskie voivodeship (15,51 ha). Majority of farms delivering to processor can be classified as mixed: with cereals and animal production, cereals and vegetables, and with all these categories of products.

Information/Contact: https://biobabalscy.pl/

SUCCESS OR FAILURE?

The case study "Bio-Babalscy" on integrated organic pasta chain" represents a successful contract solution. The initiative increases the share of organic farming and preserves, protects and restores old varieties of wheat, thus supporting biodiversity and culinary heritage of the region. Through a price premium at farm levels, it also secures economic viability of the farmers in the Brodnica County.

Source: https://biobabalscy.pl/

Excluding transport, the carbon footprint of organic pasta is lower than its conventional production. Most of this difference is driven by the absence of mineral fertilizers and pesticides in the cultivation of organic cereals. Unique is also a close relationship between pasta producer and farmers, based on mutual trust and friendly relations.

SWOT analysis

Main Strengths

1. Preserves and protects old varieties of wheat in organic production system, thus supporting biodiversity and environment
2. Fair price premium at farm and processing levels, secures economic viability of the chain members
3. Cooperation within the chain is largely based on mutual trust and friendly relations between farmers and the processor

Main Weaknesses

1. There is some uncertainty related to oral (not written) form of the contract
2. Old varieties of grains have much lower yields than the conventional cereals
3. In many cases the size of cereals production with specific varieties is small so it is difficult to utilize the benefits of scale

Main Opportunities

1. Growing demand for organic products and traditional food
2. Improvement of organic distribution, could allow for a market expansion

Main Threats

1. Decreasing number of small and medium size farms which are the main suppliers to Bio-Babalscy
2. Increasing competition on the organic market.
3. "Softening" the organic production regulation allowing some substances which previously were prohibited

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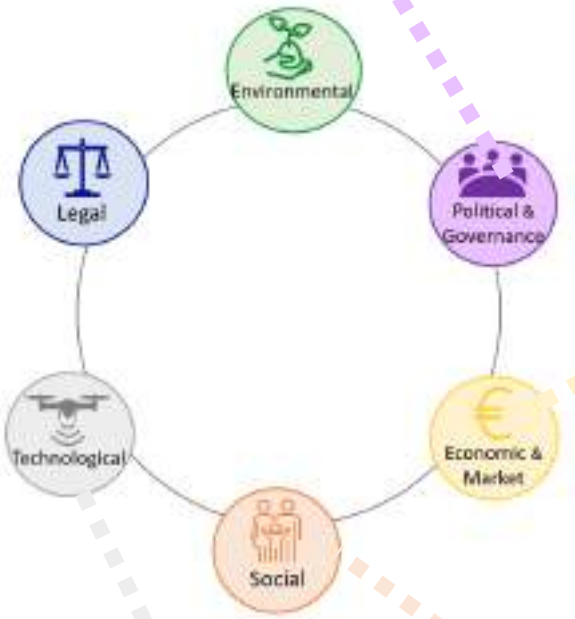
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

Political: **Support for organic farming:**

As regards the organic grain production for BioBabalscy, the CAP 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.



Economic: **Growing consumer demand for organic products:**

Increasing organic food consumption in neighbouring *Western European market*, as well as in *Poland*, offers producers good prospects for higher, profitable sales on both the domestic and European markets.

Key facts about organic farming in Poland

- Total organically farmed area amounted about 3,5% of total cultivated area in Poland (509 th. ha in 2020).
- In 2020, there were 20 274 organic farms in Poland and 1022 organic processors. An average organic farm carried out production on an area of 27.41 ha.
- About 52% of the land in 2018 was allocated under fodder crops (permanent grassland and green fodder from arable land) important for the organic certified livestock production and cereals accounted for 23,5 % of the land.

The sales of organic food in Poland is mainly run by:

- specialized grocery stores (e.g. Carrefour Bio, Organic Farma Zdrowia, BioFamily),
- hypermarket chains,
- Internet shops,
- market places and directly by farmers.

It is estimated that the prices of organic food are 10% - 40% higher than those of the conventional food products.

Traditional Technology:

Technology play an important role in this contract solution.

⟹ It is not a modern, but traditional technology. Wholegrain pasta is made with grain which was ground only once. There are, unlike standard flour, remnants of shells and peels of cereal, with healthy fiber. Only old, traditional varieties of cereals are used, such as spelt, flatfish and samarium. Most of the seeds are provided to farmers by Bio Babalski company, closely co-operating with the Gene Bank in Poland.

Social relations are a key success factor influencing this initiative. Unique relationship between pasta producer and farmers is based on mutual trust and friendly relations. Cooperation within the chain may be described as a close partnership rather, than a typical buyer – seller contract. All partners in the chain are aware of their mutual interests. There is no written contract.

Additional page added May 2022

Top Farms Group – cooperation in the supply chain in the „Symbiotic Model”

The Top Farms Group, one of the largest agricultural enterprises in Poland, bases its development on building synergistic relations with partner farms in three dimensions: economic, technological and social as part of cooperation in the multidimensional "Symbiotic Model".

Summary

Cooperation within the "Symbiotic Model" between the Top Farms Group as a leading entity and partner family farms generates synergy effects and is an example of co-operation in the integrated value chain.

So far cooperation is limited to cultivation of selected crops (mainly cereals and vegetables). Resources of the leading farm can be used in partner farms allowing to increase profitability and production efficiency. An access to know-how, technology, machinery services and the supply chain of the leading company gives a chance to optimize production costs and increase incomes.

In the **economic** dimension, the leading farm – the Top Farms Group, contracts specific crops on partner farms, provides means of production (costs might be settled after the harvests), guarantees purchase prices and certainty of commercial transactions, ensures collection and storage of crops, etc.

In terms of the **technology**, the leading farm provides desired varieties of crops as well as agronomic advises that support implementation of good agricultural practices including methods increasing soil fertility based on and the foundations of regenerative agriculture in particular. Top Farms, which is the largest producer of nonGMO soybean in Poland is actively promoting cultivation of this valuable crop. Depending on the needs, specialized services using state-of-the-art equipment might be provided.

In the **social** sphere, the leading farm supports local development. Different actions undertaken improve the quality of life of local residents and benefit natural environment. Building water reservoirs which, apart from their retention and recreational functions, are a habitat for many species of animals, may serve as an example. The leading farm cultivates the culture and traditions of agriculture, among others enlarging the system of windbreaks in the area of the Dezydery Chłapowski Park through planting new and caring for the existing strips of trees and shrubs that protect the fields from wind erosion.

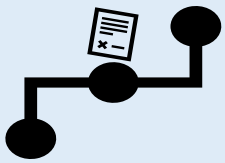
Cooperation in the social dimension also means support and education of local children and adolescents – the creation of a training center, apprenticeships for students, an educational program for children, subsidies for local agricultural schools, which are used by the families of the hosts cooperating with Top Farms.

The leading farm also invests in infrastructure so that local partner farms can more effectively carry out the tasks entrusted to them. An additional aspect is the support of local cultural, sports and rehabilitation institutions, local administration units as well as places of worship.

Objectives

- Integration within the supply chain (farmer – Top Farms – processor) and within the local community around educational, cultural and infrastructural needs.
- Ensuring the profitability of smaller farms by enabling the implementation of the most advanced cultivation technologies, including the most suitable varieties of crop, and an access to large customers in the supply chain.
- Protection of the environment by promoting and implementing solutions based on the foundations of regenerative agriculture.
- Supporting the local community in meeting educational, cultural and infrastructural needs.

VALUE CHAIN



Farmers – Top farms – Processing industry

PUBLIC GOODS

Water and soil quality
+
CO^2 storage in soil
+
increasing biodiversity

Vitality of rural areas

Food quality and safety

CONTRACT TYPE

Private – private contract between a farmer and an agricultural enterprise

Contract form:
written and oral

Payment mechanism:
Purchase price of agricultural produce determined in advance, settlement of means of production after harvest

Project financing:
The Top Farms Group provides high prices thanks to the production method

Start: 2017
End: ongoing

Duration of contract:
Until post-harvest

Data and Facts – cooperation terms

Indirect Effects:

- Development of the local community along with integration around the leading farm
- The fertility and "health" of the soil through the application of the principles of biology (regenerative agriculture) in the framework of contracts for partner farms;
- Viability of rural areas - the program provides tangible economic and social benefits for farmers, which contribute to the vitality of the areas in which they operate;
- Technological development of partner farms (specialized advanced varieties, access to the latest agricultural technologies).

Participation:
Number of farms: *151*
Location: *farms located in the Wielkopolskie and Opolskie provinces*
Average size of contracted agricultural land per farmer: *16 hectares*

Total area of agricultural land included in the collaboration within the symbiotic model amounts to 2,460 hectares in 2021.

Contracted crops	(hectares)
Wheat (including seed wheat)	900
Potatoes	350
Spring barley	630
Canola	50
Triticale and rye (including seed triticale)	205
Other	325

Involved parties:
Cooperation between the parties requires trust, willingness to open communication

Farmer requirements:

- Openness to cooperation with a large-scale agricultural enterprise
- Willingness to take the risk of growing specialized crops
- Appropriate quality and size of arable fields
- Adequate distance from the warehouse infrastructure of the Top Farms Group

Cooperation within the "Symbiotic Model" generates synergy effects with the farm environment: in the area of support for local communities, infrastructure development, youth education, cooperation with science, promotion of soybean production, regenerative agriculture.

TOP FARMS

LOCATION

POLAND

The cooperation within the symbiotic model concerns mainly the Wielkopolskie and Opolskie provinces, where the Top Farms Group has its largest economic centers and where cooperation with large-scale farms has been a phenomenon that has been occurring for many years

Conditions of participation: cooperation under the „Symbiotic Model" can be undertaken with the Top Farms Group by any farm that will be able to meet the basic quality requirements for crops selected for cooperation and which is located at an appropriate distance from the Top Farms Group infrastructure. Commencement of cooperation is also based on a joint decision of the evaluating parties: profitability of production on the given land, availability of infrastructure necessary to maintain an effective supply chain. The cooperation is dedicated to those farms that seek long-term stabilization under predetermined conditions.

Risks/uncertainties for participants:

- Yield & weather risk
- Commercial risk related to a significant increase (decrease) of SPOT prices

Financing/payments (possibly benefits):

- Stable and transparent cooperation
- Attractive purchase price
- Purchase of crops immediately after harvest
- Specialized machinery services and consulting – which reduces the risk for the farmer, especially in the case of specialized crops
- The possibility of examining the soil and developing an individual cultivation technology, including a fertilization plan

Information / contact: http://topfarms.pl/en/

SUCCESS OR FAILURE?

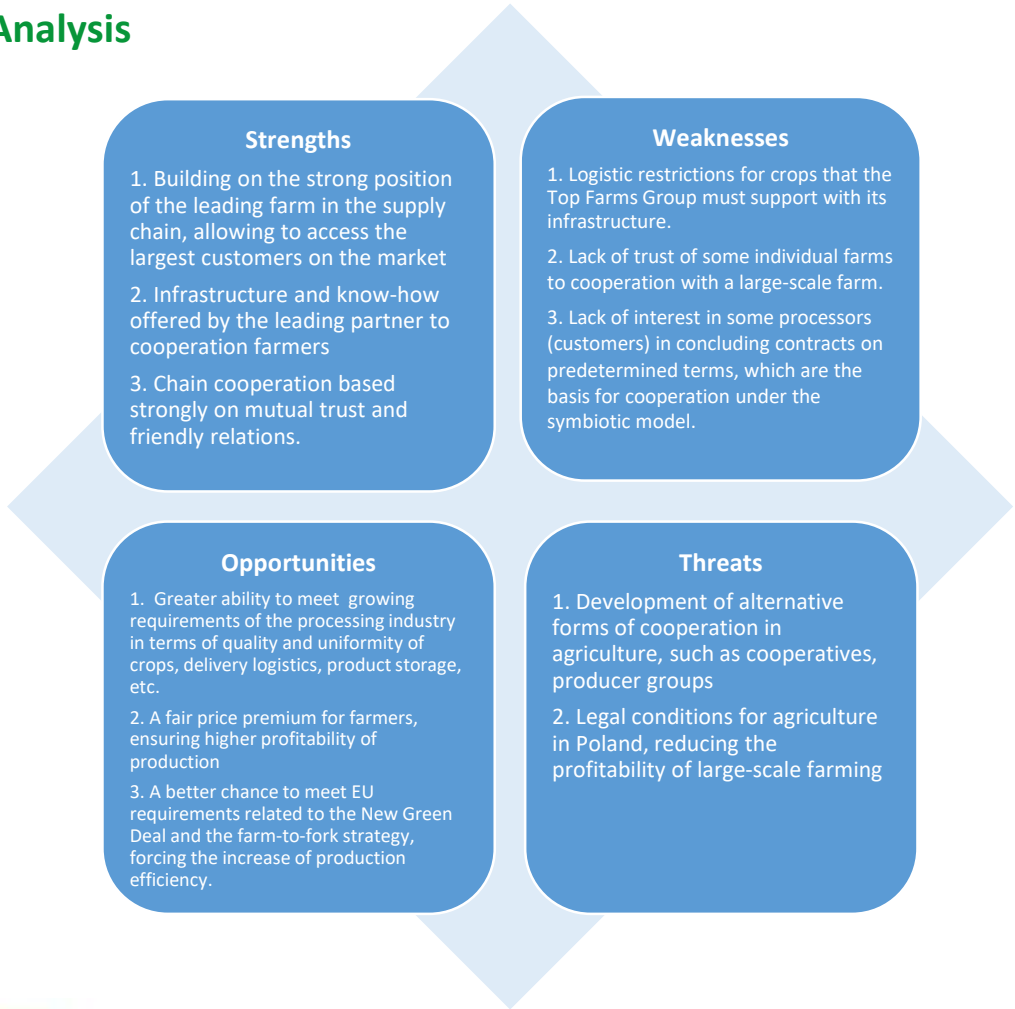
<u>Briefly - the evaluation of the effects</u>

From the very beginning, the cooperation under the „Symbiotic Model" has been a success both for the Top Farms Group and the participating farms.

It brings measurable financial benefits, reduces production risks and thus stabilizes cooperation within the supply chain. For farms, cooperation with the Top Farms Group reduces revenue risks related to price volatility, the need to finance production, and looking for recipients.

Every year, an increasing number of farmers join the cooperation. The only limitation for the further development of this type of contracts is logistics and storage capacity of the Top Farms Group.

SWOT Analysis



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The Countryside Stewardship facilitation fund (CSFF) – Implementation example SOUTH PENNINES

The Countryside Stewardship facilitation fund (CSFF) provides funding for a person or organisation (Facilitator) to help a group of farmers and other land managers work together to improve the natural environment at a landscape rather than single-farm scale and to achieve greater improvements than individual holdings could on their own

Data and Facts – The CSFF Contract

Involved parties: Three major types of partners are involved in the CSFF group; farmers, network facilitator and funding body. The facilitator of the group is employed to bring the group together, organise meetings and invite key stakeholders and experts to provide training as well as bring new members into the scheme. They also oversee the expenses of participants and will apply for funding renewal as appropriate. Natural England provides funding, oversees the functioning of the group and provides crucial information on pressing environmental needs in the region and the actions of other CSFF groups in the area.

Management requirements for farmers: The maximum salary that the CSFF facilitator can get is £50k. While there is no set requirement for numbers of meeting between the members, progress reports are required every quarter along with expenses claims.

Controls/monitoring: Results are not monitored yet, but monitoring and evaluation is conducted through the claim expenses of the CSFF facilitators. Natural England determines whether farmers and CSFFs' case is offering good value for money.

Conditions of participation: The minimum number of farmers needed for a CSFF to be set up and be eligible for funding is 4 and the network should have no more than 80 members. The land covered by all members' farms must exceed 2,000 hectares; land cannot be included if it belongs to a public body. The farmer's/land manager's land should be part of a catchment area to be included.

Implementation example – Delivering multiple environmental benefits in the South Pennines

Several key environmental benefits from the Countryside Stewardship Facilitation Fund (CSFF) presence in the South Pennines area have been identified in order to improve habitat connectivity across and adjacent to Special Protection Areas (SPA), Special Areas of Conservation (SAC) and the South Pennines Moor Site of Special Scientific Interest (SSSI). These activities include moorland restoration and enhancement, grassland habitat creation, and enhancing and expanding riparian habitats to benefit flood risk management and water quality while addressing sub-optimal land management

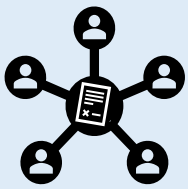
Credit: N. Green

Credit: D. Warland

Problem description

The South Pennines network includes areas of protected status including SSSIs, SACs and SPAs. However unlike many other CSFFs in the Yorkshire region it is not in a National Park so does not benefit from the additional Government funding that those areas receive. Farming incomes in this area are built on a long history of mixed livelihoods, from weaving on hand looms to working in the mills during the industrial revolution. The requirement for farmers to supplement their income with out-of-farm activities continues, and can lead to sub-optimal land management. The CSFF strives for a future free from the threat of financial constraints and is aiming for continued land stewardship not intensification of farming.

COLLECTIVE



CONTRACT

The financing party is the government (with EU-funding).
It is a public – private contract.
Contract conclusion: Written agreement

Payment mechanism: Incentive payments

Financing party: Government with EU-funding
Funding/Payments: Government funding, up to £500 per year, per farmer in the CSFF group to cover costs of training and attending meetings.

Length of participation in scheme: The length of the contract is 3 years

PUBLIC GOODS

Landscape and scenery

(Farmland) biodiversity

Soil quality (and health)

Resilience to natural hazards

Rural viability and vitality

Cultural heritage

Water quality

Further PG's

Woodland creation and management

LOCATION

UNITED KINGDOM

North Yorkshire
UKE2

Summary

The network was initially set up by a farm advisor who had good contacts with farmers, local authorities and other large landowners. Land managers in this area have previously struggled to access funding because it is not located in a National Park or Area of Outstanding Natural Beauty which receive additional funding from the Government. This is further compounded by the small size of many of the farms which makes it hard for them to apply to certain farm support payment schemes.

A particular highlight of this network was working with a local council that had been allocated £2 million following the 2015 floods. The group worked to ensure £500k was allocated to an Agri-Environmental Scheme (AES) which the network developed and Calderdale Council oversees. The network has also worked with the Woodland Trust to enhance the woodland creation offer.

Objectives

- Improvements in water quality, in particular reductions in sediment and phosphate throughout the catchment, from Natural Flood Management measures
- Increased biodiversity in blanket bog, upland heath and hay meadows
- Improvements in habitats for species, in particular wading birds
- Training to provide greater knowledge and understanding of flood risk reduction and to build a holistic view of the catchment

Participation: At its outset in 2016 the network had 8 members and has grown to over 60 with a further 20 non-members attending meetings. The total land area encompassed by the network is 8,630 hectares made up of clough woodlands and upland livestock farms; it includes SSSI, SPA and SAC-designated sites to benefit habitat connectivity.

Credit: Creative Commons

Credit: J. Bancroft

Risk/uncertainties: Seasonal fluctuations due to the nature of agricultural activities means participation of members varies throughout the year. A large proportion of the farmers in the network rely on out-of-farm income and additional jobs meaning their time is limited for participation in the network. Most of the farmers are heavily reliant on environmental payment schemes which in some cases makes up the majority of the farm's income. There is a possibility that fellow farmers are viewed as competitors and not as collaborators.

Context features

Landscape and climate: The South Pennines CSFF land holdings are characterized by mainly upland farms 250 – 400m above sea level. These include a variety of habitats and land types ranging from upland heath, blanket bog, moorlands, riparian habitats, acid grasslands, low-input grasslands and pastures for livestock which is the major activity in the area. Towards the bottom of the catchment there are clough woodlands: woodlands that are in valleys connecting open moorland to the towns below. The area encompassed includes SSSI, SPA and SAC-designated sites to benefit habitat connectivity.

Farm structure: The South Pennines CSFF network land holdings are in an upland area with mainly livestock, predominantly sheep with some beef cattle, used for meat, and a small number of dairy farms and arable in the area. The sheep are usually not finished in the area but sold on for fattening in lower ground where the grassland can provide sufficient nutrients; this creates an obstacle for farmers who wish to set up community supported agriculture schemes or sell direct to the consumer as they are unable to produce animals ready for slaughter. There is no organized forestry in the area and most of the woodlands are under-managed. Many of the farms in the network are owned although some are rented.

ASSESSMENT OF CONTRACT SOLUTION

There are a mixture of different contract solutions being operated by CSFF members and an overall assessment of their success is not possible at this time. The South Pennines CSFF group of land managers benefit from the proximity with other CSFFs that allow for positive spill-overs and common meetings between the groups. Many of the targets are difficult to evaluate as the results will become apparent over a long period of time, however, member feedback is positive and attendance at monthly meetings increases month on month. So far over 30 meetings have taken place covering topics ranging from the Climate Emergency to the marketing of rare breed mutton.

SWOT analysis

Main Strengths

1. Farmers have well-formed preferences on what type of farming they want to focus on
2. The group's remit included a broad range of environmental benefits
3. Cohesion of the group as members have common goals which are easier to achieve as part of a group

Main Weaknesses

1. The area has a low farming income and the absence of national parks in the vicinity doesn't bring additional funding to further support the quality of the environment.
2. Small average farm size hindering wider implementation and increased environmental benefits
3. Risk of sub-optimal land management reduces Agri-Environmental Schemes delivery

Main Opportunities

1. Successes with woodland creation through working with Woodland Trust and others to get some projects through
2. Group can act as a lobbying tool, especially for the new Environmental Land Management scheme (ELMs) development: being able to deliver interventions and have access to farmers is a considerable benefit

Main Threats

1. Low farm income and dependence of farmers upon payment schemes and non-farm incomes can lead to sub-optimal land management
2. Financial barriers to farmers needing to move into farming practices which promote carbon sequestration and biodiversity.

Horizon 2020 European Union Funding for Research & Innovation

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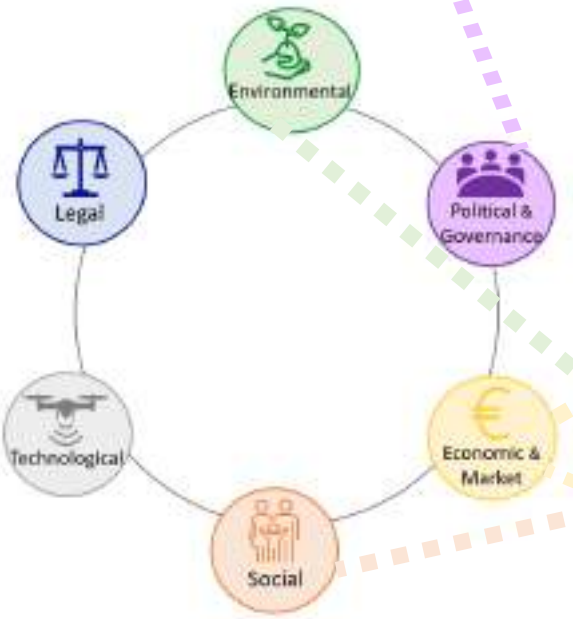
Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

The indirect impact of the CAP:

In the cases of the CSFF networking, 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.



Small farms with high dependence on subsidies:

The majority of the South Pennines CSFF network farmers have small holdings (average size is 30 hectares) and are involved in sheep and beef farming while there are no dairy farmers or arable/mixed farmers in the network either. Given the grass quality, **sheep are being sold elsewhere for fattening which results in lower market prices for the local farmers.**

As a result farmers have been **engaging in other economic activities to supplement their farm income** with the majority of network members having such **"out-of-farm" income**. The low price of beef is also resulting in reduced farm income. Additionally, farmers in the area have been **dependent on income from various environmental management schemes**, mainly the Basic Payment Scheme (on average, 75% of farm income comes from payment schemes).

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 £19.3k per year, lower than the England average.

Constraints by the landscape:

Due to the landscape, farmers in the South Pennines CSFF network cannot diversify their production and are faced with land abandonment in neighbouring farms that further impedes delivery of public goods.

Brexit and new schemes: influence on contract solution and development

The announced agri-environment scheme in England are intended to replace financial support to farmers and involve them in new and innovative ways in the delivery of public goods, both in local and landscape-wide projects. These scheme is called Environment Land Management (ELM) scheme and has three different categories, starting with farm-level interventions all the way to landscape recovery and restoration across multiple holdings. This scheme's payment levels and frequency, although not yet announced, are intended to replace the soon-to-be phased-out (by 2024) Basic Payment Scheme payments for farmers that have enrolled in an ELM scheme. This development would mean that English farmers would first have to carry out some activities that support and/or delivery agri-environment climate public goods so that they can receive their payment.

Additional page added June 2022

The Countryside Stewardship facilitation fund (CSFF) – Implementation example WHARFDALE

The Countryside Stewardship facilitation fund (CSFF) provides funding for a person or organisation (Facilitator) to help a group of farmers and other land managers work together to improve the natural environment at a landscape rather than single-farm scale and to achieve greater improvements than individual holdings could on their own

Data and Facts – The CSFF Contract

Involved parties: Three major types of partners are involved in the CSFF group; farmers, network facilitator and funding body. The facilitator of the group is employed to bring the group together, organise meetings and invite key stakeholders and experts to provide training as well as bring new members into the scheme. They also oversee the expenses of participants and will apply for funding renewal as appropriate. Natural England provides funding, oversees the functioning of the group and provides crucial information on pressing environmental needs in the region and the actions of other CSFF groups in the area.

Management requirements for farmers: The maximum salary that the CSFF facilitator can get is £50k. While there is no set requirement for numbers of meeting between the members, progress reports are required every quarter along with expenses claims.

Controls/monitoring: Results are not monitored yet, but monitoring and evaluation is conducted through the claim expenses of the CSFF facilitators. Natural England determines whether farmers and CSFFs' case is offering good value for money.

Conditions of participation: The minimum number of farmers needed for a CSFF to be set up and be eligible for funding is 4 and the network should have no more than 80 members. The land covered by all members' farms must exceed 2,000 hectares; land cannot be included if it belongs to a public body. The farmer's/land manager's land should be part of a catchment area to be included.

Implementation example – Using natural flood management to achieve multiple environmental benefits in Wharfedale

The Wharfedale Countryside Stewardship Facilitation Fund (CSFF) network was set up to provide multiple environmental benefits through increased biodiversity, protection of historic landscapes, wetland management and improvements in water quality. The network was brought together by, and is now coordinated through the Yorkshire Dales Rivers Trust which allows greater connectivity with, and knowledge of, similar activity taking place across the region


Credit: D. Turner

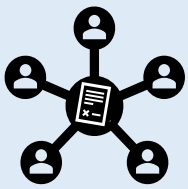

Credit: D. Turner

Problem description

The Wharfedale NFM CSFF network was funded through the CSFF Northern Flood round in 2017 as a response to the flooding in the North of England caused by Storm Desmond in December 2015.

Flood events happen in this area several times a year and there are longstanding issues such as sedimentation, soil loss and pollution levels in the Wharfe catchment. While the flooding itself is further downstream from where network members are based, there was a desire amongst farmers to use NFM measures to tackle these problems and work together collectively.

COLLECTIVE



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Financing party: Government with EU-funding
Funding/Payments: Government funding, up to £500 per year, per farmer in the CSFF group to cover costs of training and attending meetings.

Length of participation in scheme: The length of the contract is 3 years

PUBLIC GOODS

Water quality

(Farmland) biodiversity

Resilience to natural hazards

Water quantity

Rural viability and vitality

Cultural heritage

Landscape and scenery

LOCATION

UNITED KINGDOM

North Yorkshire
UKE2

Summary

Natural flood management (NFM) was one of the reasons for establishment of the Wharfedale CSFF network in 2017; it brought together 16 farmers to tackle issues across the catchment using NFM and other measures. Flooding happens several times a year in the catchment and there are long-term problems with soil loss and pollution; Storm Desmond in 2015 provided a North of England focus for action to address flooding.
A key aspect of this network was to bring together a group of neighbouring farmers and identify their priorities. The group has focused on key issues they want to tackle; some related to flood risk mitigation, but many others on topics including improving the value chain for their products, public goods such as habitat restoration and understanding and reducing their carbon footprints.

Objectives

- Improvements in water quality, in particular reductions in sediment and phosphate throughout the catchment, from Natural Flood Management measures
- Increased biodiversity in blanket bog, upland heath and hay meadows
- Improvements in habitats for species, in particular wading birds
- Training to provide greater knowledge and understanding of flood risk reduction and to build a holistic view of the catchment

Participation: The membership is 16 farmers with a total land of adjacent holding of 6456 hectares, with the participation and oversight of Natural England (government agency).

Credit: D. Turner

Risk/uncertainties of participants: Due to the type of farming and its profitability all the farms rely on additional sources of income either through part-time working by the farmer, a second income through family members, diversification of activities or a combination of these. The majority of sheep farming is also making a loss. These factors can both be a distraction and a reason for farmers to participate in the network. The former can lead to adverse effects on environmental quality and delivery of AES.

Context features

Landscape and Climate: The Wharfedale NFM CSFF network is located in the Yorkshire Dales National Park and the land the network members farm contains upland habitats such as blanket bog, upland heathland and hay meadows, ancient/native woodland, upland flushes, fens and swamps, riparian habitats, and wader breeding habitat. Some of the land is Common Land with several farmers having access rights to it. Across the wider region there is a lot of hay meadow and moorland restoration taking place; for example the Yorkshire Peat Partnership is undertaking peatland restoration in the area.

Farm structure: All 16 farms in the network have upland sheep, some are transitioning to including hairy cattle and there is one dairy farm. There is a mix of ownership and tenanted farms and several of the farmers have access to Common Land which has a variety of different arrangements for getting grazing rights. The majority of the land under tenancy agreements belongs to the National Trust and the tenancy agreements vary in their terms: some date back several generations. Some of the tenancy agreements have high rents which impact farmer income and profitability. The farms vary in size, but all are low input and all are part of Countryside Stewardship schemes. Upland farmers in this network receive 25% of their income from Basic Payment Schemes (the most basic type of Agri-Environmental Schemes (AES) in the UK), 25% from Countryside Stewardship (another AES), and then a large amount from diversification of income sources outside of farming and forestry.

ASSESSMENT OF CONTRACT SOLUTION

There are a mixture of different contract solutions being operated by CSFF members and an overall assessment of their success is not possible at this time The Wharfedale CSFF group of farmers benefits from the proximity with other CSFF that allows for positive spill overs and common meetings between the groups. The expected target of NFM cannot be evaluated but attendance has been solid and several meetings have taken place.

SWOT analysis

Main Strengths

1. Homogeneous farming practices (sheep) with common interests in NFM
2. Proximity to National Trust land provides higher benefits due to higher environmental quality of such areas and potential tourism income due to increased visits
3. A change of perspective on what constitutes a successful AES has developed with farmers seeing the opportunity to deliver benefits across the catchment.

Main Weaknesses

1. Meetings are held when topics of interest have been identified (this results in 8-9 meetings per year with varying levels of attendance)
2. Tenancy agreements can be burdened by high land rents reducing farm profitability
3. The differences between size of holdings of members of the CSFF results in network members having a different focus and priorities.

Main Opportunities

1. Better environmental benefits from close cooperation with other CSFF and Natural Flood Management groups. Extended support by the Yorkshire Dales Rivers Trust (a local charity) is of benefit and a critical support factor
2. The formation of the network provides opportunities for members to exchange knowledge and ideas about novel farm products and services and taking them towards commercialisation.
3. CSFF brings people together, allowing easier comparison between owners and tenants, and highlights the different pressures they are under.

Main Threats

1. The varied interests of different farmers makes CSFF facilitation and coordination difficult
2. Large dependency on out-of-farm income may impact the environment and participation in AES
3. Continued funding and support for group working is not guaranteed.

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The Countryside Stewardship facilitation fund (CSFF) – Implementation example WENSLEYSDALE

The Countryside Stewardship facilitation fund (CSFF) provides funding for a person or organisation (Facilitator) to help a group of farmers and other land managers work together to improve the natural environment at a landscape rather than single-farm scale and to achieve greater improvements than individual holdings could on their own

Data and Facts – The CSFF Contract

Involved parties: Three major types of partners are involved in the CSFF group; farmers, network facilitator and funding body. The facilitator of the group is employed to bring the group together, organise meetings and invite key stakeholders and experts to provide training as well as bring new members into the scheme. They also oversee the expenses of participants and will apply for funding renewal as appropriate. Natural England provides funding, oversees the functioning of the group and provides crucial information on pressing environmental needs in the region and the actions of other CSFF groups in the area.

Management requirements for farmers: The maximum salary that the CSFF facilitator can get is £50k. While there is no set requirement for numbers of meeting between the members, progress reports are required every quarter along with expenses claims.

Controls/monitoring: Results are not monitored yet, but monitoring and evaluation is conducted through the claim expenses of the CSFF facilitators. Natural England determines whether farmers and CSFFs' case is offering good value for money.

Conditions of participation: The minimum number of farmers needed for a CSFF to be set up and be eligible for funding is 4 and the network should have no more than 80 members. The land covered by all members' farms must exceed 2,000 hectares; land cannot be included if it belongs to a public body. The farmer's/land manager's land should be part of a catchment area to be included.

Implementation example –

Building natural flood management knowledge and capacity in Wensleydale

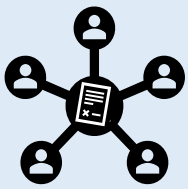
The Wensleydale Countryside Stewardship Facilitation Fund (CSFF) group was set up to improve knowledge sharing and provide training in farm practices aimed at improving natural flood management (NFM). The group is also focused on how NFM can be delivered in conjunction with positive land management for landscape, biodiversity and water quality.

Problem description

The Wensleydale NFM CSFF group was set up as part of the 2017 Northern Flood Round of the CSFF to tackle issues brought into sharp focus following Storm Desmond in 2015. Surface water run-off, coupled with high river water flows during periods of heavy or prolonged rainfall, was contributing to flooding in the area which was happening more regularly and with increasing intensity. Flooding and high water levels were not just affecting farmland, but local roads and communities too.

An additional driver was the need to improve water quality as phosphate and sediments were reaching the upper and middle reaches of the Ure catchment and the Semer Water SSSI.

COLLECTIVE



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Length of participation in scheme: The length of the contract is 3 years

PUBLIC GOODS

Resilience to natural hazards

(Farmland) biodiversity

Landscape and scenery

Soil quality (and health)

Rural viability and vitality

Cultural heritage

LOCATION

UNITED KINGDOM

North Yorkshire UKE2

Summary

The Wensleydale CSFF network was set up in April 2017 by a group of 29 farmers with a common interest in natural flood management. The group has subsequently grown and members tend to naturally group according to their farming/land management practices, although all have benefited from other similar CSFFs being set up at the same time in the same geographical area. The group has several aims including exploring Countryside Stewardship priorities and funding that can help deliver NFM and management for priority habitats and species. By working as a group the farmers are also able to provide sufficient information to help inform and influence future funding allocations such as Agri-Environment Schemes (AES) and the priorities of organisations including Yorkshire Water and the Environment Agency. The group has constant contact with other nearby NFM CSFF groups including Upper Wharfedale, Swaledale and Lunesdale to agree ways of joint working to share expertise and training delivery which increases farmer participation and outcomes. The group also works with the 'Yorkshire Dales Catchment Partnership' to improve water quality

Objectives

- To explore what NFM measures could be considered and installed to help address surface water run-off and high river and stream levels during periods of heavy and/or prolonged rainfall.
- Identify what services farmers provide/can provide to help downstream communities recognise the value of 'buying in' to NFM carried out on farmland upstream
- Improved management of ancient and native woodland
- Native woodland creation and habitat creation for black grouse and red squirrel
- Management of purple moor grass and rush pasture for breeding waders
- Traditional hay meadow management and restoration
- Riparian habitat management and creation

Participation: The network started with 29 farmers and has now grown to 34 farmers. The area of focus is the upper River Ure catchment and the total land involved is 7,853 hectares.

(credit: T. Wilson)

Risk/uncertainties of participants: This group is big and covers a large geographical area. Members of the group can be different in terms of what they want to focus on. It has been a challenge focusing on such a diverse group with differing interests and has meant holding meetings that capture everyone's interest can be difficult. Most members are upland farmers whose businesses rely on Basic Payment Scheme (BPS) and Agri-Environmental Scheme (AES) support. BPS is being phased out and AES is changing causing concerns about payments suddenly stopping. Farmer retirement and the subsequent splitting up and in-corporation of some farms into neighbouring farms creating a large variability between small and large holdings amplifies the differences in farming methods and focus which can impact upon participation in AES.

Sleddale-Wenslydale (credit: T. Wilson)

Context features

Landscape and climate: The Wensleydale landscape is predominantly upland rocky with a steep topography and varied soils from clay and acidic in the uplands to rich fertile loam and clay river alluvium in the valley floors. The land that members farm includes upland heath, blanket bog and flushes and fens, ancient and native woodlands, traditional hay meadows and riparian habitats. The area encompassed includes SSSI, SPA and SAC-designated sites and many of the landholdings are in a National Park.

Farm structure: The farms of members of the Wensleydale CSFF group cover a wide variety of agricultural and forestry practices ranging from beef and sheep systems up in the fells (the majority of farmers belong in this category), to dairy and sheep in the valley bottoms. There are some forms of agroforestry in place too. The majority of the farms are medium-sized of 50 – 250 hectares although some are significantly smaller (10 hectares) and there are also some large farms with one estate of 2,500 hectares. Few are able to support more than one person working full-time on the farm and they are typical of upland areas in being very reliant upon subsidies. Basic Payment Scheme has become a key part of the business. Some of the farms have been involved with AES for over 20 years.

UNIVERSITY OF LEEDS

CONSOLE

ASSESSMENT OF CONTRACT SOLUTION

There are a mixture of different contract solutions being operated by CSFF members and an overall assessment of their success is not possible at this time. The group benefits from proximity with other CSFF groups that allow for positive spillovers and common meetings between the groups. The expected target of NFM cannot be evaluated but attendance at group meetings and farm walks has been good.

SWOT analysis

Main Strengths

1. Committed and active 'Steering group'; 3 of the 4 farmer members have continued to be a member of the steering group since the start and are members of the local community
2. Partnership involving the farmer members plus Yorkshire Dales National Park Authority (YDNPA), Yorkshire Dales Rivers Trust (YDRT) and Dales Farmer Network (DFN)- all sit on the 'Steering group'. Many of the farmer members have already worked with or know officers who work for YDNPA, YDRT and DFN
3. Members are able to benefit from other projects run by partners, examples include those based in Bishopdale to install practical NFM features on their land ,and benefits from monitoring and modelling projects

Main Weaknesses

1. Large number of members with very diverse farm practices and interests with farm holdings located across a large geographical area means it has taken a while to build up relationships
2. Some of the members are also involved on a voluntary basis in other projects/partnerships and thus struggle with time commitments
3. Focus on NFM sometimes limits what the group can spend their time on

Main Opportunities

1. It has taken time for the members to understand the benefits of involvement with the Facilitation Fund Group and engage and attend group events/farm walks. The momentum is just starting as the end of the 3 year project approaches: a majority of the group members wish the CSFF group to continue for a further 2 years.
2. Ability to signpost members to other initiatives and funding opportunities such as future Environmental Land Management Scheme (ELMs), potential future funding allocations from other organizations such as Yorkshire Water, and the Environment Agency and as a group to engage with, and influence, the roll-out of alternative funding
3. Identifying what services group members can provide to help downstream communities recognise the value of NFM carried out on land upstream as a 'public good'.

Main Threats

1. Lack of funding through DEFRA and links to wider Facilitation Fund group network
2. Key partners such as the YDRT struggling to commit continued support due to other work commitments
3. Brexit and no longer funding through CAP

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Main external factors influencing success

Political/governance, economic/market, social, technological, legal and environmental factors can all have a strong impact on the success of contract solutions. In this case study an in-depth analysis found that the following, selected factors were of specific importance.

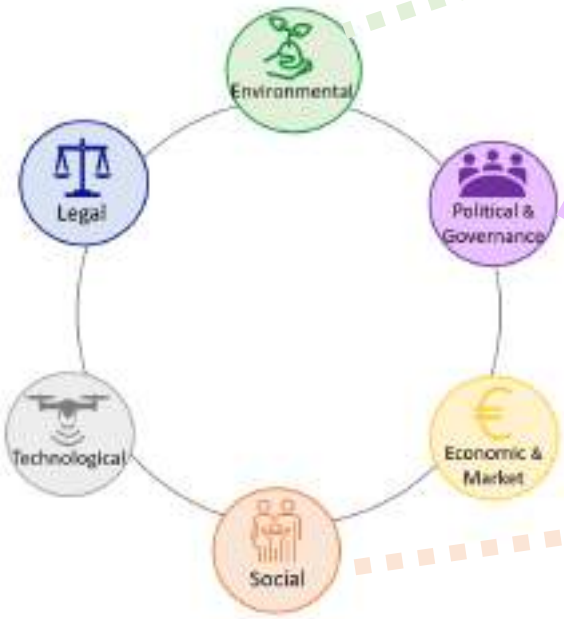
Weather event as a trigger for becoming active:

The Wensleydale CSFF group was set up in 2017 as part of the multiple activities set up in the Yorkshire area in the eve of storm Desmond in 2015 that resulted in **extensive flooding** and **damages** in upland, lowland and heavily populated areas.

The aim of these activities was to **improve resilience to flooding through area-wide approaches**.

Farmers and land managers, were encouraged to implement natural flood management (NFM) e.g.

- woodland management and creation,
- riparian buffer strips,
- hedge and "leaky dams" (wooden structures meant to slow down the speed of water).



Multiple actors involved:

The CSFF allows for multiple actors from farming communities to come together.

The Wensleydale group is working with

- Yorkshire Dales National Park Authority (YDNPA),
- Yorkshire Dales Farmer Network (DFN) and the
- Yorkshire Dales Rivers Trust (YDRT)

In addition, many of the farmer members (in the CSFF) have already worked with or know officers who work for YDNPA, YDRT and DFN and, therefore, build on existing relationships.

Brexit and new schemes: influence on contract solution and development

The announced agri-environment scheme in England are intended to replace financial support to farmers and involve them in new and innovative ways in the delivery of public goods, both in local and landscape-wide projects. These scheme is called Environment Land Management (ELM) scheme and has three different categories, starting with farm-level interventions all the way to landscape recovery and restoration across multiple holdings. This scheme's payment levels and frequency, although not yet announced, are intended to replace the soon-to-be phased-out (by 2024) Basic Payment Scheme payments for farmers that have enrolled in an ELM scheme. This development would mean that English farmers would first have to carry out some activities that support and/or delivery agri-environment climate public goods so that they can receive their payment.

Additional page added June 2022

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Implementation example –

Natural Flood Management in the River Swale catchment in Yorkshire

Farmers and land managers in eastern Yorkshire make up the small Swaledale Countryside Stewardship Facilitation Fund (CSFF) network to share knowledge on how to provide Natural Flood Management (NFM) and maintain soil health.

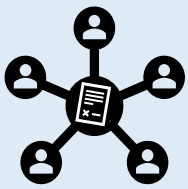
Credit: Creative Commons

Problem description

The Swaledale NFM CSFF was funded through the Northern Flood Round of the CSFF in response to impacts in the area from Storm Desmond in 2015. Damage to farmland, flash flooding and high flood waters were all strong driving forces for collective action and the group were keen to begin working together better; CSFF was a good way to support this.

Water often backs up and floods where the rivers meet, for instance at Arkle Beck, but the worst effects are felt further downstream as the water takes longer to drain away in the flatter areas. There was a desire to work collectively to slow the flow of water moving downstream and also reduce pollution washing downstream. Awareness has been raised about different types of NFM as well.

COLLECTIVE



CONTRACT

The financing party is the government (with EU-funding).
It is a public – private contract.
Contract conclusion: Written agreement

Payment mechanism: Incentive payments

Financing party: Government with EU-funding
Funding/Payments: Government funding, up to £500 per year, per farmer in the CSFF group to cover costs of training and attending meetings.

Length of participation in scheme: The length of the contract is 3 years

PUBLIC GOODS

Water quality

Soil quality (and health)

Landscape and scenery

Resilience to natural hazards

Rural viability and vitality

Cultural heritage

LOCATION

UNITED KINGDOM

North Yorkshire
UKE2

Summary

The Swaledale CSFF group was one of the first to be set up in the UK and has benefited from other similar CSFFs being set up across the North of England region as part of the 2017 Northern Flood Round. This was viewed both as a necessity given the magnitude of the flooding issue, both on farms and further downstream, but also due to the need for farmers to diversify their income sources due to low farm incomes. The 17 farmers involved at the outset wanted to engage with NFM measures and had expressed particular interests in soil management, flood water infiltration and planting of trees and hedges; all these are issues that are addressed in the monthly meetings to build up knowledge of different practices.

Objectives

- NFM such as woody debris dams to improve water quality by reducing phosphate and sediment within the catchment
- Soil health
- Tree Planting/woodland creation
- Maintenance of field boundaries to reduce flooding
- Understanding catchment flood risks
- Funding streams through Countryside Stewardship

Participation: The Swaledale NFM CSFF started with 17 farmers; potentially up to 20 farmers attend meetings. The area of focus is the River Swale catchment. The land coverage is 4,009 ha.
Risk/uncertainties of participants: More than three-quarters of the income comes from Basic Payment Schemes (BPS) contracts. The grass quality is not sufficient for finishing sheep for market meaning they have to be sold on for fattening elsewhere removing some opportunities for the farmers. Lack of certainty for the future of AES payments and farming income brings CSFF farmers together but there are no guarantees for the future.

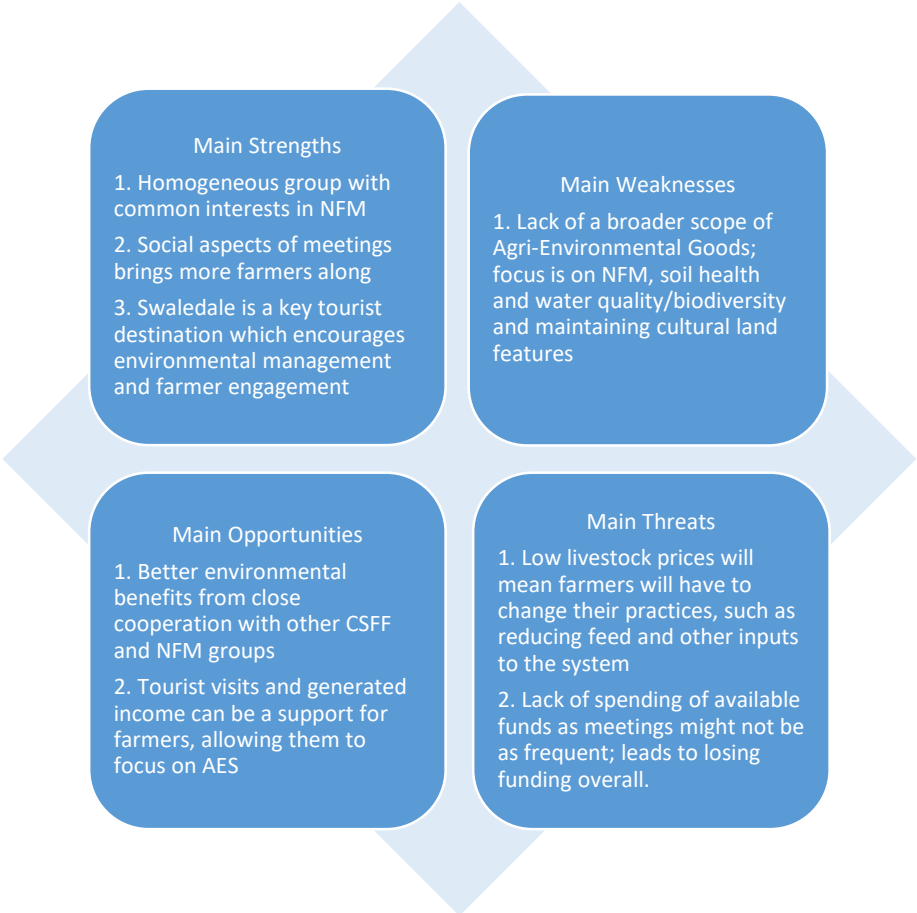
Context features

Landscape and climate: The Swaledale NFM CSFF network is located in a high rainfall upland area with very shallow soils, lots of limestone and a history of lead mining. Many of the farmers have access to common land in the upland areas, and much of the land area is permanent pasture. Woodland and tree cover is low, and trees that are present tend to follow the river system. Iconic stone walls and field barns are scattered across the landscape. Several of the meadows in the area are SSSIs while National Parks are also in the vicinity of the farms. Historic features such as drystone farm walls and boundaries are important to local cultural heritage and tourism.
Farm structure: All the farms in the Swaledale CSFF are sheep and beef farms apart from the one dairy farm. Most of the finishing for the sheep is done elsewhere as it is not possible to do in the area due to the quality of the grass, some finishing of the sheep is indoor. All of the farmers rely on an additional income from other activities, such as second jobs, or through diversification of what is done on the farm, such as bed and breakfast accommodation, holiday cottages or tea rooms. Swaledale is a very popular holiday destination within an iconic Yorkshire landscape. The average farm size is about 200 ha, but this does not include access to moorland and common land with grazing rights which many of the farmers also rely upon. Half the farms are owner-occupied and half are tenanted. In the bottom reaches of the catchment many of the farms are rented; this can be a problem for these tenants as they can be tied by what the land-owner wishes to do and those wanting to install certain NFM measures need to seek permission. Experience shows this can be an extremely lengthy process.

ASSESSMENT OF CONTRACT SOLUTION

There are a mixture of different contract solutions being operated by CSFF members and an overall assessment of their success is not possible at this time. The Swaledale CSFF group of farmers benefit from the proximity with other CSFFs which allows for positive spill-overs and common meetings between the groups. The expected target of NFM cannot be evaluated but attendance has been solid and several meetings have taken place.

SWOT analysis



Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 817949. The results presented reflect only the authors' view, the Agency is not responsible for any use that may be made of the information it contains.

The Countryside Stewardship facilitation fund (CSFF) – Implementation example ESK VALLEY

The Countryside Stewardship facilitation fund (CSFF) provides funding for a person or organisation (Facilitator) to help a group of farmers and other land managers work together to improve the natural environment at a landscape rather than single-farm scale and to achieve greater improvements than individual holdings could on their own

Data and Facts – The CSFF Contract

Involved parties: Three major types of partners are involved in the CSFF group; farmers, network facilitator and funding body. The facilitator of the group is employed to bring the group together, organise meetings and invite key stakeholders and experts to provide training as well as bring new members into the scheme. They also oversee the expenses of participants and will apply for funding renewal as appropriate. Natural England provides funding, oversees the functioning of the group and provides crucial information on pressing environmental needs in the region and the actions of other CSFF groups in the area.

Management requirements for farmers: The maximum salary that the CSFF facilitator can get is £50k. While there is no set requirement for numbers of meeting between the members, progress reports are required every quarter along with expenses claims.

Controls/monitoring: Results are not monitored yet, but monitoring and evaluation is conducted through the claim expenses of the CSFF facilitators. Natural England determines whether farmers and CSFFs' case is offering good value for money.

Conditions of participation: The minimum number of farmers needed for a CSFF to be set up and be eligible for funding is 4 and the network should have no more than 80 members. The land covered by all members' farms must exceed 2,000 hectares; land cannot be included if it belongs to a public body. The farmer's/land manager's land should be part of a catchment area to be included.

Implementation example – Environmental improvement across a whole catchment: Esk Valley

Farmers across the catchment are working together to implement solutions to improve the water quality in the Esk Valley. The river contains salmon and trout and efforts are underway to boost the freshwater pearl mussels and migratory fish through tackling problems with sediment and pollutants.


Credit: F. Hugill

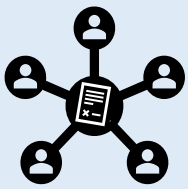

Credit: Creative Commons

Problem description

There is a long history of action in the River Esk catchment seeking to improve its ecological status so that an iconic species previously found in the river such as the Freshwater Pearl Mussel and species such as salmon and migratory trout do not ultimately go extinct. As a salmon and trout river that has supported recreational fishing, previous action and funding has often focused at the economic level.

The CSFF is focused on the environmental and ecological aspects of the catchment, specifically from the perspective of those farming and managing the land. The CSFF aims to support efforts by the Esk Pearl Mussel and Salmon Recovery Project to re-introduce the Pearl Mussel to bolster the remnants of the existing population, through improving the water quality in the river. For this iconic species 'good' is not good enough, pristine conditions are required. This needs collective action from farmers in both upper and lower reaches of the catchment to reduce pollution and sedimentation problems.

COLLECTIVE



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PUBLIC GOODS

Water quality

Pearl mussel; Migratory fish species' juvenile recruitment to the river

Cultural heritage

Landscape and scenery

Soil quality (and health)

Rural viability and vitality

Quality and security of products

Recreational access / Improvements to physical and mental health

LOCATION

UNITED KINGDOM

North Yorkshire
UKE2

Summary

The network covers the whole catchment and 30% of the land area is farmed by Countryside Stewardship Facilitation Fund (CSFF) network members. A key focus is what can be done to improve water quality across the catchment, especially as it is a salmon and trout river and sediment in the water is a major factor in the lack of recruitment of juvenile migratory fish. Water quality is generally good across the catchment and of Good Ecological Status according to the Water Framework Directive. Many other additional environmental improvements have been added; sedimentation, nitrate and phosphate pollution due to the agricultural and farming activities in the area, and complement the main focus. For example wading birds benefit from the network tackling issues of water quality.

Objectives

- Support for the Pearl Mussel and Salmon Recovery Project.
- Improvements to water quality across the whole catchment by tackling sediment and pollution issues.
- Maintenance and support for historic and traditional National Park landscapes and features.
- Address disconnect between maintenance of the iconic traditional landscapes in the catchment and the systems designed to reward this
- Improving skills and understanding of issues and the measures to tackle them

Participation: 59 farms are involved in the contract solution at the current time. The area of implementation is the Esk Valley catchment, including both upper and lower reaches. The total land area encompassed by the network is 10,514 hectares.

Credit: F. Hugill

Context features

Landscape and climate: The area encompassed by the Esk Valley CSFF is the whole Esk Catchment which extends from the source of the Esk all the way to the sea at Whitby: it is inside the National Park. This catchment includes a range of land types from heather moorland to arable fields, and includes SSSI, SPA and SAC-designated land as well as highly intensive farmland. There is little woodland in the region, with less than 13% of the total region designated as woodland; what there is tends to be in linear strips. In the 1950/60s the Esk Valley was noted for its haymeadows; there are few left now.

As much of the farming is very intensive, low numbers of farmers have joined the Countryside Stewardship payment scheme. The activities carried out by those who have joined are limited in the payments they attract and are mainly related to physical features such as walls that are iconic of the wider region. The majority of the river is under Good Ecological Status according to the Water Framework Directive while the grassland soil pH is 6.0 for more than 68% in the Esk Valley in comparison to the 53% average for the whole of the UK.

Farm structure: Along the entire length of the catchment the types of farms vary according to the land and immediate microclimate. In the upper reaches there are moorland flocks of sheep and herds of beef cattle. Lower down in the valley dairy farms are seen; over time there has been a shift to a smaller number of larger dairy farms of which there are 8 in the group. There are some small pockets of arable land in the valley as well. The farms tend to be small compared to the average size of farms in the Yorkshire Dales, with an average farm size of about 100 hectares. The farms are a mixture of owner-occupied and tenanted and this is seen across the whole catchment. Land farmed by group members covers approximately 1/3 of the whole Esk catchment. Large numbers of the farmers are reliant upon farm payments to stay in operation, and many of the farmers also have second jobs to bring in additional income.

UNIVERSITY OF LEEDS

CONSOLE

ASSESSMENT OF CONTRACT SOLUTION

There are a mixture of different contract solutions being operated by CSFF members and an overall assessment of their success is not possible at this time. The Esk Valley CSFF group of farmers benefits from the proximity with other CSFFs that allow for positive spill-overs and common meetings between the groups. The expected target of water quality improvements cannot be evaluated but attendance has been solid and several meetings have taken place. Group participation and numbers have facilitated the uptake of funding to conduct capital works of £300k value.

Developments since 2020

Contract solution is included in a Test and Trial for the agri-environment schemes replacing Pillar II payments in England called "Environment Land Management" scheme. In particular, the Test and Trial referred to Landscape Recovery which is 1 of 3 new environmental land management schemes, alongside the Sustainable Farming Incentive and Local Nature Recovery scheme. Farmers from the Esk Valley CSFF network participated in March 2022 in a government-funded workshop intended to present the aims of Landscape Recovery and scope potential interest for applying for the scheme. Esk Valley farmers were offered this opportunity as the Landscape Recovery scheme requires several activities and practices to be carried out that Esk Valley CSFF network participants already carry out or posses such as collaborating across farms, using a facilitator to support the group's delivery of public goods and securing external private funding to support public good delivery.

SWOT analysis

Main Strengths

1. Group identity: led to securing additional income for environmental management, stewardship and training
2. At least 30% of the land in the catchment area is farmed by members of the CSFF (large enough to influence environmental conditions)
3. More members in the upper part of the catchment results in better delivery of environmental benefits

Main Weaknesses

1. Lack of more farmers signing up to the group as they are uncertain of the benefits
2. Lack of consensus between group farmers on changing/improving farming practices; not all see a personal benefit from ushering changes

Main Opportunities

1. Good knowledge basis due to free soil testing allows for a good start to the network and solid goals to be set
2. Farmers taking ownership of stewardship by embracing the environmental objectives set by governmental organisations

Main Threats

1. Some concerns about stewardship in post-Brexit agriculture
2. A focus on iconic fish species requires excellent water quality; current water quality is not good enough so investing may not yield benefits as high as they might be

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