



Innovative contract solutions for the delivery of agri-environmental benefits by agriculture and forestry

Factsheets of the German case studies

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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.

Initial situation

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.



Facts

Participation: 35 winegrowers with approximately 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 and a public service centre responsible for the 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



Environmental 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

Rhineland-Palatine



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 wine-growers' organisation

Duration of contract:

Maximum from 2015 until project end

Start: 1st Mai 2015

End: ongoing (secured financing until 12/2020)

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

www.lebendige-agrarlandschaften.de/moselprojekt/

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 inter-row. 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 additional 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. It was necessary to repeat seeding the following year in some vineyards, because of the spring drought in 2017.

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.

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 characterise 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



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.

Value chain

Organic farmer – organic farming federation – retailer – consumer



Result-oriented

Credit points for nature protection achievements



Environmental public goods

Biodiversity



Further public goods

Product quality

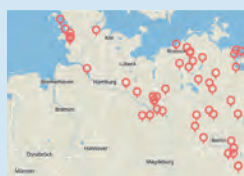


Rural viability and vitality



Location

GERMANY



The core area of the project is situated in northeast of Germany with focus on Mecklenburg-Western Pomerania and Brandenburg. Since 2018 agricultural holdings from other regions in Germany participate too.

Summary

The initiative called 'Farming for biodiversity (Landwirtschaft für Artenvielfalt)' aims to increase the diversity of wild flora and fauna on organic farms. With participation of the value chain a novel approach is pursued, which gives farmers a great flexibility in the choice of measures. In 2012 farmers and an association of organic farming have started the initiative in Mecklenburg-Western Pomerania with involvement of the retailer EDEKA and the ZALF. A nature protection module going beyond the requirements for the organic certification has been developed. It is based on a credit point system with 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 those 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 minimum of credit points, he gets a supplement for selected products (pork, beef, lamb, and potatoes). The farmer is rewarded 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

Initial situation

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.



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Facts

Participation: 72 farmers, the associations of organic farming BIOPARK and Bioland, the retailer, first EDEKA North, now in addition EDEKA Southwest. The organic farmers cultivate approximately 39.000 hectares with 60 % of grassland (November 2019).

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

Participation in the nature protection module:

1. **Advice:** The nature protection advisor assesses the farm, the nature protection achievements until now 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, landscape elements and farmyard. 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 back-to-back with the mandatory controls for organic farming if they have successfully implemented the chosen measures on their farm and if the necessary credit points are obtained.

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 a minimum number of credit points 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). Consumers can recognise these products thanks to the logo of 'farming for biodiversity' alongside with the WWF logo. In addition, the products are labelled with the organic label. All organic farms belonging to an association of organic farming can join the initiative.

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 characterised by large-scale farming.

Farm system: The initiative focuses on organic farming. Organic farming takes place in M-V on 12.6 % 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.

Contract

Oral 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 (should be open ended)

End of the project funding: 31.05.2022

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, landscape elements and farmyard are eligible for the credits

www.landwirtschaft-artenvielfalt.de

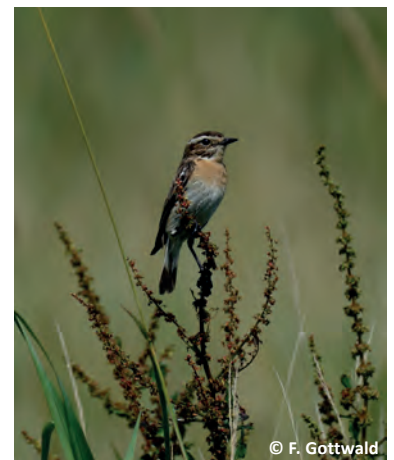
SUCCESSFUL CONTRACT SOLUTION



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 nearly fivefold since the start of the initiative in 2012. The transferability into other regions could be demonstrated with its enlargement. 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 recognise 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



COLLABORATION FOR SUSTAINABILITY BETWEEN INSTITUTIONAL LAND OWNERS 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 to joining forces by setting up the initiative called "Greifswalder Agrarinitiative (agricultural initiative for Greifswald)" and has coordinated it until June 2019. The foundation supported the transfer into an association with the same name to ensure continuation of the cooperative approach after project ending. 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

Initial situation

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.



Facts

Participation: 54 farms (mainly arable farms) rent 10.000 ha owned by institutional land owners: the city of Greifswald, the University of Greifswald, Peter-Warschow Sammelstiftung (a foundation) and the protestant parish St. Nikolai. The land is predominantly under conventional farming.

Further participation: The Michael Succow foundation has led the project until June 2019, assistance and project support by scientists from the university of Greifswald as well as independent external experts.

Land tenure contract with sustainability clauses

Institutional land owners (city, university, church) – private tenants and farm managers



Environmental public goods

Biodiversity



In addition:

Soil quality



Water quality



Climate regulation

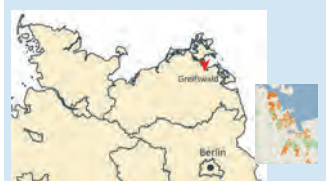


Further public goods

Improvement of the social and economic sustainability of land use

Location

Mecklenburg-Western Pomerania



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, in future supplemented by funds to be collected by association (1 €/ha and year, paid by land owners and tenants) and possibly external funds

Project financing:

German Federal Environmental Foundation (DBU), institutional land owners

Duration of contract:

During the whole term of lease, as a general rule 12 years

Start: 2013

End: ongoing (should continue long-term)

Project funding:

08.12.2015 until 30.06.2019

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

www.greifswalder-agrarinitiative.de/

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



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The conclusion of the cooperation agreement is a prerequisite for land lease. The objectives are formulated as intended improvement, however, without specific targets. 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 lending criteria, connected to ecological (and social) aspects.

Controls/monitoring: Advisors perform an analysis of deficits taking into account landscape-ecological aspects and give recommendations for the implementation of environmental and nature protection measures. There is no systematic control; however, this is foreseen to be carried out by the newly established association.

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, during project lifetime 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, measures for water and soil protection, remains voluntary and the cooperation partners provide 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.

SUCCESS



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 church) 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 project 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 pre-judging its outcome.



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Temporary water body created by the ice age in wheat field

SWOT analysis



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.



Cooperation and 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.



Environmental public goods

Biodiversity



Water quality



as well as environmental
sustainability in general

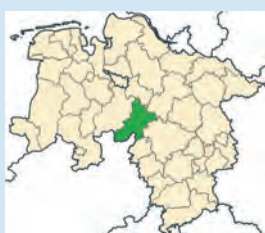
Further public goods

Rural viability
and vitality



LOCATION

Lower Saxony



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

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 allow improving biodiversity and water quality while minimizing negative impacts on the economic viability

Initial situation

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.



Facts

Participation: 9 arable farms with 140 ha on average (100 to 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.

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 consider 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 specialised conventional arable farms with 100 to 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 flower-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 characterised 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 1,500 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.

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: 01.05.2018

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

www.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.

Reasons for success

- Recognition of the influential role of land owners for an 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



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 input 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)” is led by the government of Lower Franconia and has started in 2014 with one water supplier, one farmer, one mill, and one bakery. Today, in 2019, 32 farmers are participating. The farmers deliver the wheat to the mills that are processing it to flour for regional bakeries, keeping it separated from other wheat. The bakeries sell the bakery product labelled with 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 to groundwater. Wheat from selected varieties has good baking properties despite a lower protein content of 11 to 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 from this wheat in more than 100 selling points.

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.

Initial situation

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.



Facts

Facts: 32 farmers, 6 mills and 26 bakeries with 110 selling points, 9 water suppliers (November 2019). The area of implementation 330 ha on which 2 200t of wheat have been harvested in 2019.

Further participation: The government of Upper Franconia, section water management, has initiated “water protection bread” as contribution to a dedicated action on water protection that started in 2001 in Bavaria; public water suppliers from the region; FiBL Germany as external service provider.

Value chain

farmer – mill
– bakery –
consumer
and water supplier



Environmental public goods

Groundwater quality
Climate mitigation through less mineral fertilisers



Further public goods

Rural viability and vitality



LOCATION

Bavaria



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

Contract

No contracts signed

Instead:

Participants sign a voluntary commitment declaration



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

Payment:

The participating farmers, mills and bakeries aren't paid by the project.

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 2022)

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

www.wasserschutzbrot.de/

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 fertiliser conditions (max, 160 kg N/ha, no late fertilisation); regularly soil analysis from the participating wheat fields; a detailed field recording with all management practices; no desiccation treatment

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 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 fertiliser 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 each of 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, therefore the farmers do not know exactly if they can supply their wheat to the participating mills when sowing it in autumn. But the 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 the bread 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 fertiliser application in order to respect the rules for the production of water protection wheat.



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 5 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 50 % on the participating fields and to save 23,000 kg of nitrogen.

Reasons for success

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



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SWOT analysis



FOREST CONVERSION FROM CONIFEROUS TO DECIDUOUS STANDS – A PRIVATE 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. One hundred hectares of forest are ecologically upgraded while maintaining the subsurface industrial use. Nature enhancement of forest aisles complements this measure.



Cooperation

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

Environmental public goods

Biodiversity



In addition:

Soil protection



Climate protection



Other public goods

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

Location

Bavaria



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.

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.

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

Initial situation

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.



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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.

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 recognised by the specialised 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 characterised by deciduous trees, and individual old trees have been preserved, including over 100 year-old oaks.

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.



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



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