ANNEX 1 – DOCUMENTS FOR THE ELABORATION OF THE CASE STUDY MATERIAL TO BE INCLUDED IN THE E-LEANING COURSE (IO2).

1.A - Case-studies by country: Finland

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1.A - Case-studies by country: Finland

Case-Studies on innovative development in Peripheral Rural Areas

Template Part A – INTRODUCTION TO PRA – BASELINE ASSESSMENT

corresponding to Module 2 – e-learning course

Part 1 / INTRODUCTION TO FINLAND

Photo by H. Wirta

Finland is a country characterized by its northern location, with a total surface area of 330,905 km². Most of this area is covered by forests, and only 7 % of the land area is utilized agricultural area. Despite this, Finland is largely self-sufficient in producing staple food and agriculture remains an important economic activity in most rural areas. Finland joined the European Union in 1995. Due to the climatic constraints on agricultural production, in comparison to comparable agricultural areas in the EU, the whole country is regarded as an Area of Natural Constraint (ANC) under the Common Agricultural Policy (CAP), which entitles Finnish farmers to an additional public support.

The average temperature in Finland is +2,9 °C. The growing period is short, varying between 110 and 180 days and the thermal-sum varies between 500 and 1,400 °C. The rainfall in the growing period is 340–370 mm in Southern Finland and 220–280 mm in Northern Finland. The annual precipitation greatly exceeds the annual evaporation, except in the middle of the summer. This means that almost all agricultural land is artificially drained, formerly by ditches and nowadays, by subterranean drainage pipes.

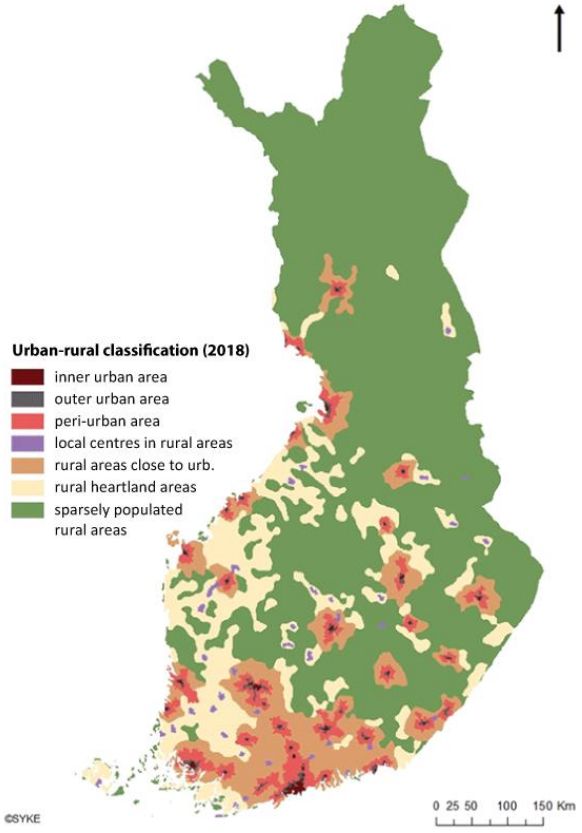
Finland is the most sparsely populated Member State in the EU with the population density of 13.7/km². Compared to most other European countries, Finland has a large share of rural areas and long distances between urban centers

Part 2 / FINLAND FEATURES AND TRENDS

Environmental context

General characteristics

Finland has abundant land and water resources in relation to its population, which allows it to be self-sufficient in most staple food, despite generally low yields. Despite the population increase, the land area in agricultural production has been stable, while the number of cattle has considerably declined (51%) over the last four decades (Luke). In many regions, open field areas remain relatively small interspaced with forests and water bodies. The rate of pesticide use is low, due to the climate. Crop management intensity in terms of inputs is predominantly low in comparison to other EU countries (average cover by high and very high intensity management is about 12%; Rega et al. (2020)). Up to 14.5 % (2021) of arable land is certified organically. Finally, a fairly high area of fallows and long-term set-asides (ca. 10% of arable fields) enhance biodiversity of many taxa on productive farmland, including plants, bumblebees, flies, and butterflies.



All the above features contribute to the benign environmental state of farmland in Finland. Major adverse impacts relate to the pollution of water courses by accessing nutrients; both from manure (especially in regions with concentration of animal husbandry) and mineral fertilizers (in crop-dominated "Cereal Finland"). Agriculture is a source of over 50% of nitrogen and 60% of phosphorus loading into water courses (2019).

Forestry

Of Finland's land area 86% is forestry land, with predominantly conifer stands. Most of the forests are actively managed for intensive timber and pulp production, that is, clear-cut at about 60-year intervals and replanted.

Biodiversity and high nature value farmland

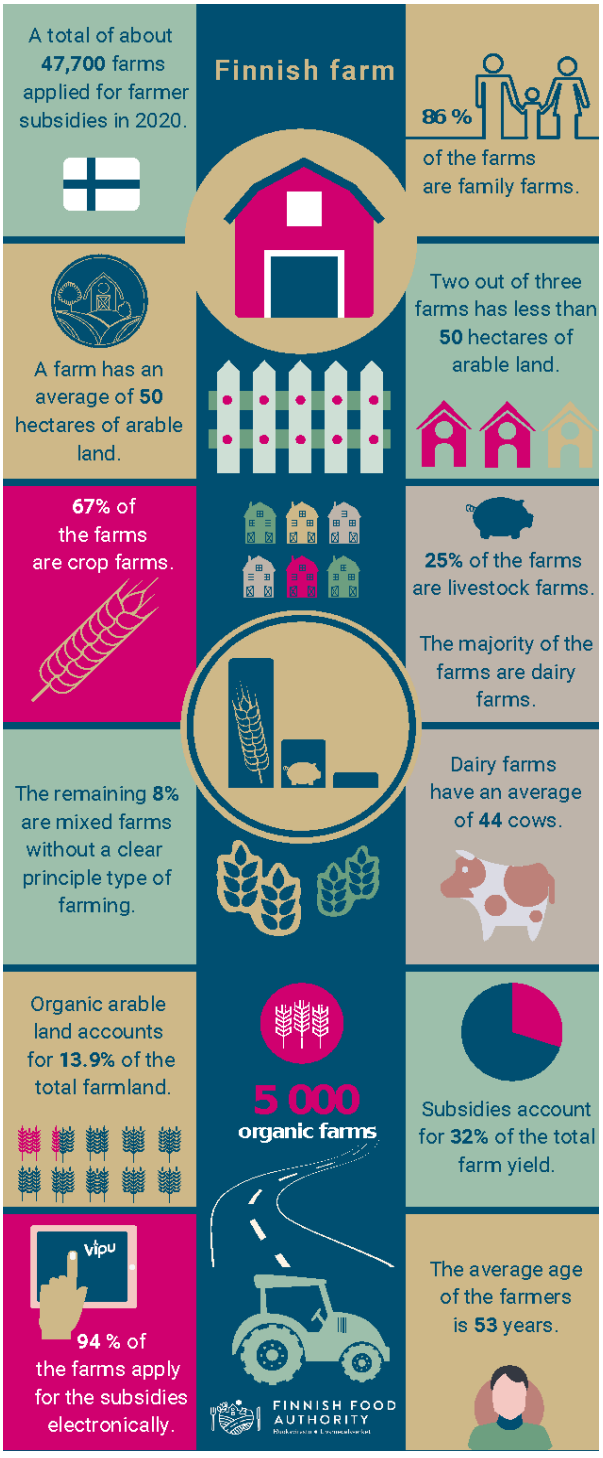
The greatest threat to common biodiversity comes from a continuous simplification in the landscape structure through clearing of various non-cropped features within farmland, such as road and forest verges, removal of open drainage ditches with their margins, increase of field sizes and decline in diversity of crops.

The High Nature Value farmland, which is mostly semi-natural grasslands and other habitats (such as wooded pastures), is presently rare in Finland. Such semi-natural agricultural areas are called traditional rural biotopes and they are characterized by (Pykälä 2000):

1) Dependence on disturbances created by low-intensity mowing or livestock grazing, often accompanied by other management actions such as coppicing;
2) Long-term history as pastures or meadows that has resulted in nutrient impoverishment; and
3) Exceptionally high biodiversity.

Unlike in some other European regions, there are no large areas of continuous semi-natural vegetation in Finland. Even among the countries of the boreal region, Finland has the lowest relative area for permanent and semi-natural grasslands of all grassland cover (approximately 3%). For example, the neighboring Estonia and Sweden have approximately 20%. Most of the semi-natural areas survive as relatively small remnants in places not suitable to arable cropping, for example, coastal and riverside areas, forested and rocky areas. They are present all across the country, not being typical to any particular region (Figure 2), as is the case in some other countries. The use of semi-natural habitats in production is so marginal that managing as little as 20 000 hectares is challenging even with subsidies and national restoration targets.

A dramatic decline of semi-natural areas in historical times (to just 1% since the beginning of 20th century) made traditional rural biotopes by far the most endangered habitat types in Finland. A staggering 93% of the habitat types among traditional rural biotopes are endangered. Of the endangered species in Finland, 22. 3% inhabit traditional rural biotopes.



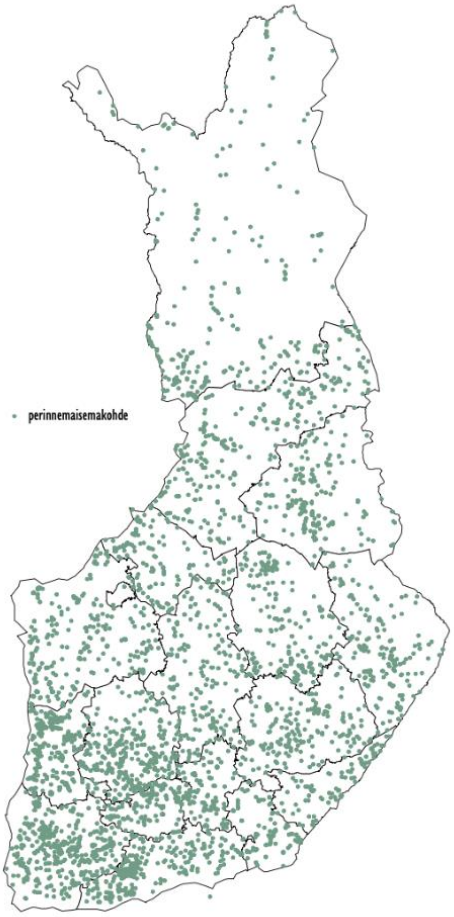


Figure 2: The distribution of traditional biotopes in Finland (Vainio et al. 2001)

Agricultural context

Finland is the northernmost country producing cereals. The climate with a short growing season and small thermal-sums restrict the cultivable plants in Finland, but the cold winter also protects the agriculture from various pests and diseases, which cannot tolerate the winter conditions. On the other hand, the cool summer with long daylight enables many cultivars to produce favorable properties such as strong flavor and high concentrations of flavonoids in berries. For example, caraway seeds from Finland enjoy popularity on the global market.

In 2018, there were 49 200 farms in Finland, with an average cultivated area of 45.4 hectares per farm. In 2021 the total area of cultivated land was 1.063 M hectares. Most of the farms in Finland grow cereals such as barley, oat, wheat and rye. Combined cereals occupy half of the cultivated area. In 2021 barley was grown in 448 000 hectares, oats in 332 000, wheat in 218 000 and rye in 18 000 hectares. Finland exports cereals: for example, 573 million kilos were exported in 2019. Other most common crops are rape seed, caraway, potatoes, sugar beet, broad beans and beans, as of both the cultivated area and the crop in kilos. Measured by the total value of production, dairy husbandry remains the most significant line of production in Finnish agriculture. It also occupies a large part of the cultivated area, since 797 000 hectares are used as grassland for fodder (as in 2021).

While traditionally, most of the farms across the country had animals, mostly dairy cattle, nowadays most of animal husbandry is concentrated in the Central and Northern regions – a so-called "Milk-Finland". The Southern regions, where the climate favors cultivation of cereals and other arable crops became known as "Cereal-Finland".

Socio-economical values

In 2012, the number of those who worked full time in agriculture stood at 78,000 people, a decline of 12% from 2007. Since 1995, when Finland joined the European Union and its internally open market, the number of farms declined by 38% by 2012. Every year, 6–7% of the farms give up agricultural production. The share of the holdings exceeding 150 hectares was only 2.5% of all farms in 2013, but is growing. In the same period, the average size of holdings receiving CAP support increased by nearly 70%, from 22.8 hectares to 38.6 hectares of arable land. Over the long term, the entrepreneurial income from farming has decreased. CAP subsidies make up as much as 32% of the income (Finnish food authority, 2020).

Family farms are a backbone of Finnish production. The number of companies operating in the agricultural sector increased about 2.5-fold between 1995 and 2011. At least two thirds of these had been formed by turning a single farm into a company. The share of companies in all farms remains very small, but their number is growing slowly. Factors influencing this state of affairs include history and attitudes, and additionally, turning a farm into a company should bring genuine financial or other benefits in order to be justified. Rather than operate as companies, farms are increasingly engaging in co-operation and using contracting services. The most common form of co-operation is collective ownership of machinery.

The farms have increased their production volumes through investments in production facilities, at the same time modernizing their production methods. Almost one out of three agricultural and horticultural farms in Finland engages in other business besides farming.

Over the last few decades, the countryside has experienced rapid depopulation. It has become a place where Finnish people like to live and spend their leisure time, while commuting for work. Jobs are strongly concentrated in urban clusters and centers. Rural areas in Finland have long traditions of collective activity and volunteer work. The village association movement that emerged in the early 20th century has its roots in these traditions, as do the local action groups that were created at the time of Finland's accession to the EU in 1995.

The pasture area halved nationally in two last decades (Natural Resources Institute Finland).

Institutional frame

Finland has always had a strong national support to domestic agricultural production through high subsidies and investment aids. At Finland's accession to the EU in 1995, the national support has been replaced in part by that under CAP. However, all farmers in Finland receive support under the Areas facing natural or other specific constraints (ANCs). These areas are delineated as those that are more difficult to effectively farm due to specific problems caused by natural conditions. In order to prevent this land from being abandoned, the EU provides support through both rural development and income support schemes.

Nature conservation and agricultural land-use have traditionally been strongly separated from each other in the Baltic countries and Finland. Entering the EU led to the semi-natural grasslands of Finland receiving recognition of their conservation value in the late 1990s due to the adoption of a less dualistic approach to nature conservation. An understanding emerged that it is not necessary to separate agricultural production and nature conservation in the sense that had been done before.

Part 3 / Challenges and Weaknesses

Infrastructure
The majority of Finland's natural resources are found in sparsely populated rural areas, but their exploitation is impeded by poor accessibility. Also, relatively poor level of cooperation among farms and of farms with the retail, resulting in a small share of direct sales (most farmers are in hands of very few retail houses who dictate the prices).

Regional specialization
The division to "Milk-Finland" and "Cereal-Finland", as explained above, leads to long distances between different types of farms, hindering, for example, the efficient utilization of cattle manure as a fertilizer in crop fields, excess use of manure per field area in the north and subsequent pollution of water courses, and reducing the value of grassland as part of crop rotations in the predominantly arable south.

Demographic development
The greatest threat is the significant aging of the rural population and emigration to urban centers, which are the most rapid in Eastern Finland and in other sparsely populated rural areas.

Poor profitability
The profitability of Finnish farming is generally low, the profitability index and remains below the 1 (that is, the income from the production does not recover all the costs of production). The key reason is the unfavorable natural conditions due to the country's northern location. Arable crops produce one harvest a year. Because of the short growing period, demanding or high-yield crops or species can in most cases only be cultivated in Southern Finland. Even at their best, the crop yields remain lower in Finland than in European reference areas. For example the average yield for barley was 3.56 tons/ha when in Denmark it was 6.36 tons/ha (Eurostat).

Small rural companies have little resources for developing themselves, and their profitability on average is modest. The weakness of small rural enterprises lies in their narrow product range, seasonal nature of their activities and thin local markets.

High dependence on agricultural inputs
Finland is a net importer of feed and energy, and the dependency has been constantly increasing since the 1990 (Lehikoinen et al. 2021). Some sectors, such as greenhouse production, are increasingly dependent on foreign seasonal labor.

Part 4 – PRA Strengths and Opportunities

High self-sufficiency in staple food
Food sufficiency level has been nearly 80% for the key staple food items.

High level of education
Multi-level and comprehensive networks of education, training and advisory services, versatile expertise, good projects completed in the past and a high level of IT skills provide a convincing skills base for rural development and a solid foundation for responding to the challenges posed by a changing operating environment.

Clean environment and appreciation of nature
Finnish producers only recently started to learn to use these as added values in their marketing strategies. Especially popular is the national marketing of Finnish produce with low levels of pesticide residue and low use of antibiotics in animal production. However, the only labels of environmentally-sensitive production are those of organic and biodynamic production. There are no regional labels of distinction on environmental values.

Appreciation of farmland biodiversity, including that of traditional biotopes, has been growing in the society, but remains marginal. Individual farms market their produce as nature-friendly mainy when selling it directly. No national or regional branding exists.

High level of responsibility in food chain
The strengths of the Finnish food production chain include a good status of animal health, limited use of medications (incl. antibiotics), a high standard of food safety, high quality, and high consumer confidence. There is a high level of transparency and efficient control over the production conditions.

Part 5 / Current and Future challenges

There are several current and future challenges facing the rural areas that are dependent on farming. The population share in the rural heartland, and especially in sparsely populated rural areas, is expected to further decline. The income per capita is significantly lower in rural areas compared to the average income per capita of the whole country, and in recent years, the development of the rural economy has been lagging the national average. In rural areas there is limited access to a high-speed broadband network.

Climate change, agricultural intensification and changes in land use cause many risks and challenges for the future. Due to the warming climate the amount of snow cover and frost will decrease in Southern Finland. This will cause more erosion and increase the amount of nutrient leaching. Farming is the most important source for diffuse pollution, and the status of the Finnish maritime areas and the rivers discharging into them remains unsatisfactory.

The specialization of agricultural production has caused livestock and crop production to concentrate in different regions. Such long-distance separation of animal husbandry and crop production makes the efficient use of manure challenging: on one hand, animal producers end up with high manure levels

in relation to crop areas, and on the other, crop producers are dependent on artificial fertilizers. Ammonia emissions have also increased, and the majority of the emissions come from manure storage and animal housing. This also increases the amount of nutrients that end up in water bodies.

The area of grasslands has decreased, especially in Southern Finland. The loss of grasslands and traditional rural biotopes, increased holding size and homogenous selection of field crops has resulted in poorer soil structure and less diverse agricultural environments. This enables the plant pests to develop resistance which has increased the need to use plant protection products. As reduced tillage and direct seeding become more common, certain plant diseases are becoming more widespread in plant wastes, and some weeds are thriving. The risk of compacting the soil may increase further due to the weight of agricultural machinery, direct seeding, reduced tillage and increasing holding sizes.

The total greenhouse gas emissions from agriculture have increased. The main reason is attributed to reclamation of new arable land on peatlands during the 2000s. The additional field area was needed for spreading cattle manure in regions with a concentration of livestock farming. The share of agriculture in Finland's total emissions was some 20% in 2010. The warming climate will make the growing period longer in Finland, making it possible to grow more productive species and increase the yields. However the increasing risks like extreme weather events and pests that are associated with climate change are estimated to be more significant than the potential benefits.

Sources:

Eurostat

Rural Development Programme for Mainland Finland 2014–2020

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ruokavirasto.fi

Vainio, M., Kekäläinen, H., Alanen, A & Pykälä, J. Traditional rural biotopes in Finland. Final report of the nationwide inventory. [Suomen perinnebiotoopit: perinnemaisemaprojektin valtakunnallinen loppuraportti]. Helsinki: Suomen ympäristökeskus, 2001. 166 s. In Finnish with English summary.

Case-Study on innovative development in Peripheral Rural Areas

Part B – BUILDING A COMMON VISION FOR THE PERIPHERAL RURAL AREA: THE PARTICIPATORY PROCESS AND THE IDENTIFICATION OF SOLUTIONS AND INNOVATIONS FOR THE SUSTAINABLE DEVELOPMENT OF THE PRA

corresponding to Module 3– e-learning course

Building a common vision for Carbon Action

Part 1 / Mapping the Participatory Process

The foundation Baltic Sea Action Group (BSAG) was set with the ultimate goal of improving the state of the Baltic Sea, by bringing together different actors and sectors around a common vision. The BSAG initiates and participates in diverse projects advancing the vision. Since agriculture is the main source of nutrient loading in the Baltic Sea, many projects target agriculture and farmers. From the very beginning, the BSAG participatory approach has been using a central tool in finding practical solutions towards the vision.

Since 2009, the BSAG has been running a project to enhance sustainable agriculture and biodiversity, called Järki-project ("common sense", in English). During it, the BSAG team discovered a rising issue of the potential of soils as carbon storage in the public debate. This led to an idea of a new project focusing on improving carbon sequestration and retention in agriculture soils. Such a project would tackle two key challenges - climate change and eutrophication of the Baltic Sea - and, indirectly, also biodiversity.

In 2017, the Finnish Innovation Fund Sitra funded a pilot project named **Carbon Action**, with a focus on carbon sequestration and storage. The BSAG has invited the Finnish Meteorological Institute to conduct research in the project. The research part was important because little is known about carbon exchange processes and storage potential on soils predominant in Finland (heavy clay) and under northern conditions. From the very beginning, both partners strongly wanted to include farmers into the project. A Finnish main newspaper for the rural issues Future of the Countryside (Maaseudun tulevaisuus) published a short article about the project inviting farmers to join it. Straight away tens of farmers contacted Carbon Action. At this stage, the project did not yet have a detailed implementation plan, which meant that such a plan was developed during the project itself in collaboration among the actors. A steering group included members of all participating actors: researchers, farmers, Carbon Action representatives, producers from different parts of the food production chain, advisory groups (ProAgria – main national advisory body). The group created the initial implementation plan, outlined the goals, activities, and tools into a conceptual framework (Figure 1).

Link to Carbon Action introduction -video: https://www.youtube.com/watch?v=BrKbnCLF010

Link to Carbon Action Multiple benefits -video: https://www.youtube.com/watch?v=3dffjikt2rQ

Language is English for both videos.

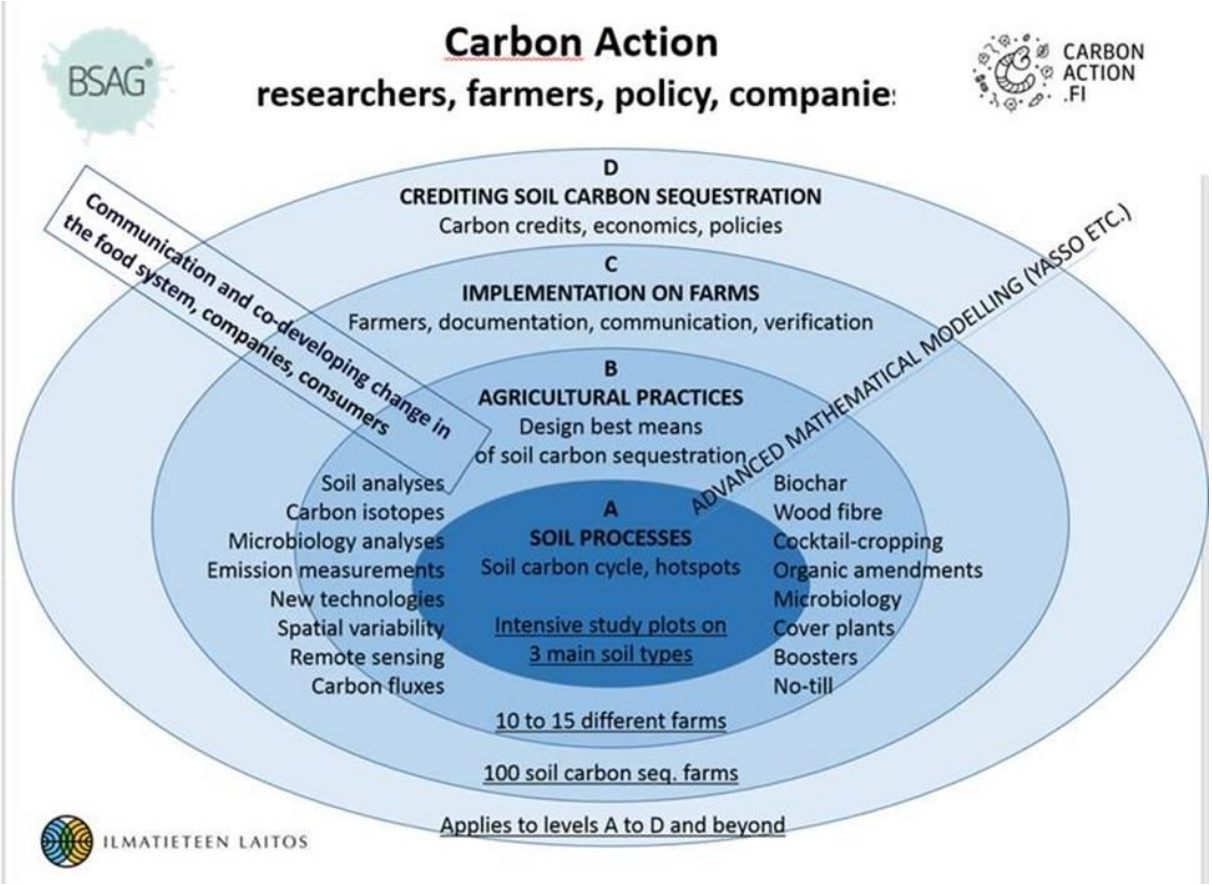

Figure 1. Framework of Carbon Action.

Part 2 / implementation and Assessment of the participatory process

The main research of the Carbon Action was to study how to increase the soil carbon by different management practices on collaborative farms. Additionally to many farmers who joined at the beginning, The Central Union of Agricultural Producers and Forest Owners (MTK) asked among their members about the interested to participate in the project. Soon 130 farmers got enrolled. The first training for the farmers was held in summer 2018, and first soil samples were taken in autumn 2018.

The project team asked the farmers about how they would like to participate in the research and which specific management practices they would like to choose from a list of options. Each farmer allocated a study field on her/his farm for research, which was divided into an experimental half and (new management) and control half (under normal practices). A small group of researchers and farmers composed a list of management practices likely to increase carbon sequestration and storage but early into the project some participating farmers suggested more practices to add to the list. The farmers then made a "carbon farming plan'' for their farms. An expert group from the steering group revised the plans and suggested improvements.

The project team also asked farmers about their motivations to participate, and their personal aims. Though getting involved in the project meant sharing the vision at some level, different actors have somewhat different motivating factors for participation. For example, for farmers the two main motivating factors were: i) to improve the economic security of their farms through the enhancement

of soil health and better yield stability, and ii) to improve the environmental state through carbon sequestration and associated benefits such as better nutrient and water retention. Although the BSAG set the Vision for Carbon Action, the solutions are being created together with diverse actors, and this contributes to the success of the ongoing project. The project has therefore been developed alongside its implementation, together with the actors. It has been a challenge, but it has allowed the implementation to be sufficiently flexible and to evolve based on the knowledge gained from the project. This is unfortunately an unusual level of flexibility because many funding agencies would prefer to have a priori designed implementation plan with specified details.

The participatory process as such in Carbon Action has not been assessed, as it is not a formal process. However, ideas are freely and openly discussed, and considered for development. Through common actions and other associated projects, new ideas on how to improve and develop different parts of the food chain towards a more profitable and sustainable food production arise. Once an idea for a new project or an activity has been formulated, the BSAG content and managing directors make a decision.

Link to Carbon Action Companies, Valio -video: https://www.youtube.com/watch?v=0mJ7lmLwQcc

Language of the video is English.

Part 3 /Creating the vision for preventing eutrophication of Baltic Sea and climate change

a/ Taking knowledge on the strengths

The key strength of Carbon Action is in its functioning as a collaborative hub for farmers, researchers and other actors, such as the private sector (e.g companies at all levels of food production), experts from different organizations, administration (including local, regional and national bodies). Farmers are part of the development process throughout, assuring the outcomes are of value to them.

A strong motivation of the participating farmers is a key success factor. By increasing the soil health, the farmers can increase resilience of the production, which leads to a more secure future for farming. In the future, some of the public subsidies might be bound to the levels of soil carbon, and for farmers it is good to be prepared for that possibility. Diversifying crop rotations have already resulted in additional income from growing more valuable specialized crops. In addition to improving their financial security, farmers are motivated to improve the state of their local environment as well as being a part of the solution to mitigate climate change. A healthy environment also supports hobbies in rural countryside, such as observing birds and insects (popular with Finns, as well as hunting). In Carbon Action, the farmers are seen as part of the solution, which has been an appealing perspective for them, enhancing their feeling of being heard.

Collaboration with food companies is also an important success factor. Food companies are increasingly aware of the need to make their production more sustainable and adapt to climate change. Carbon Action collaborates with several companies by, for example, organizing training for their producers, which is an effective way to share knowledge. Such focused training is a far more efficient way of disseminating know-how, as compared, for example, to the basic advisory under Common Agricultural Policy of the EU.

b / Taking knowledge on the vulnerability factors and challenges

The state of Baltic Sea needs urgent action, as does the changing climate. The enhancement of agricultural soils, and increasing carbon storage in them could address both. The need for most efficient farming practices is great, both existing and novel.

One of the vulnerability factors of the boreal region are long distances between farms. Participation for some highly motivated farmers is impeded by this. As peer learning and peer support are valuable elements for a successful project, lack of these due to too long distances is a considerable disadvantage.

c / What needs to be done

More research into what works best and under what conditions, accompanied by effective communication across farmers. The process should be efficient because the problems need urgent solutions. Funding that enables flexible and adaptive implementation, in which actors can easily react to new challenges or knowledge, is important.

d/ The Vision

The vision for the BSAG is a healthy Baltic sea. This ultimate goal leads to all the foundation's actions. This vision is shared among diverse projects and actors, even though few of them have been involved in its creation.

To reach the vision, three goals need addressing: supporting marine biodiversity, controlling risks and mitigating emissions from maritime traffic, and restraining eutrophication and the impacts of climate change (Figure 2). By improving practices in agriculture, Carbon Action addresses the third goal. For Carbon Action, the vision is to increase carbon sequestration and storage on fields.

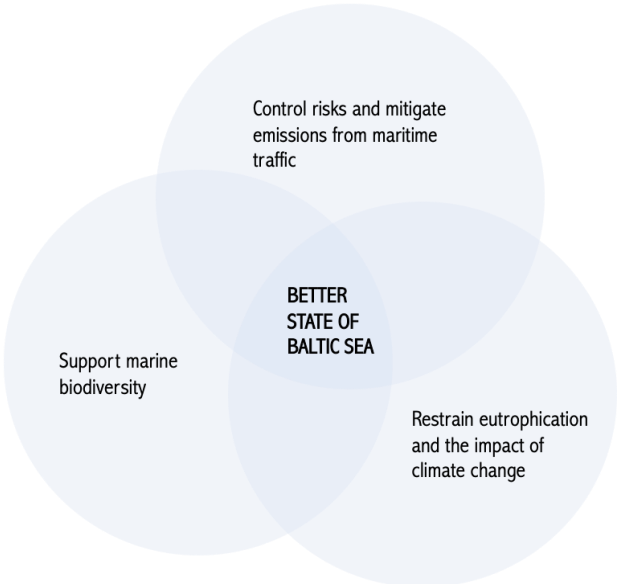

Figure 2. The three highly linked goals to reach the vision of the BSAG.

"Things happen when the right people meet and information is shared. Baltic Sea Action Group speeds up the work for the Baltic Sea by finding and bringing together relevant companies, scientists, politicians or anyone else needed"

Case-Studies on innovative development in Peripheral Rural Areas

Template C - INNOVATION FICHE FOR PERIPHERAL RURAL AREAS

included under material for Module 4 – e-learning course

1 / PRA and innovation identification

1.1 - Peripheral Rural Area name: Southern Finland

1.2 - Innovation short name: Laidunpankki (Pasture Bank)

1.3 - Agricultural system to which the innovation relates: Mixed with animals (cattle, horse and sheep), arable with former semi-natural pastures

1.4 - The story in a nutshell:

Laidunpankki (Pasture Bank) is a service bringing together people who keep grazing animals and those with pastures to be grazed, to support contract-based collaboration. It was established in 2005 by ProAgria (association of local centers providing services and know-how in agriculture and rural businesses), Rural Women's Advisory Organisation (Maa-ja kotitalousnaiset), and Agrifood Research Finland (MTT, Maa- ja elintarviketalouden tutkimuskeskus). Currently the service is funded by Metsähallitus (a state-owned enterprise that produces environmental services on forest land) and Fingrid (Finland's transmission system operator).

The innovation came up through the need to maintain so-called traditional rural biotopes, which in Finland refer to semi-natural grasslands, wooded meadows and grazed forest. Their continuous management by grazing is currently impaired by production specialization: farms with former semi-natural pastures lack animals, while some animal keepers do not own such traditional rural biotopes. The service provides a free online search tool to connect landowners with potential grazing sites and animal owners, contract templates and guidelines on how to agree on responsibilities and costs.

2 / What specific challenges does the innovation address?

Semi-natural grasslands and other habitats, as listed above, are among the most biodiverse habitats in Finland and are considered High Nature Value Farmlands (HNVf). In Finland, they are called traditional rural biotopes as they have been formed by traditional grazing and fodder collection. Since the 1960s, their area has decreased by over 90% to about 40 000 ha, as they have been replaced by cultivated grasslands, mostly rotational, and crop fields. Grazing outside of fields - in forests, on coastal areas and bogs - became extremely rare. Because of such dramatic decline in the area and management of the remaining sites, semi-natural habitats are by far the most endangered habitat types in Finland with several types extinct (Lehtomaa et al. 2018). Up to one fourth of the threatened species live and 40% of all extinct species lived in such habitats (Hyvärinen et al. 2019), including a variety of typical flowering plants, fungi, butterflies, moths and birds (Mäkeläinen et al. 2019).

Link to video about traditional rural biotopes: https://www.youtube.com/watch?v=L-f6Z6l-pnM
Language of the video is Finnish.

Grazing sheep, cows and horses, as well as biomass collection are essential in preventing successional overgrowing with bushes and trees, which is a rapid process in the boreal zone. Grazing of animals itself has been on decline in Finland, due to modernization of both dairy and beef production. Yet, there are attempts to maintain it for animal welfare and biodiversity reasons.

One of the reasons causing the decline of grazing specifically on semi-natural areas is the lack of suitable animals (e.g., sheep, beef cattle, heifers, horses) for suitable areas within individual farms, and complicated contractual and subsidy arrangements for cooperation. Laidunpankki addresses this.

MAA- JA KOTITALOUSNAISET

Figure 1. *Illustration of the multiple benefits of grazing animals on semi-natural grasslands, including the promotion of the well-being of the grazing animals, open landscapes, diversity of habitats and species living in them, waterbodies' wealth as well as the well-being of humans. Further, it is an economical way to produce food and to take care of the landscape.*

3/ Description of the innovation

3.1 - Where does this innovation fit in the four innovation themes identified?

This innovation fits in with the Social and Institutional as well as the Farm Techniques and Management-themes.

3.2 - Which theme(s) is most relevant:

Products and Markets

Farm Techniques and Management

Social and Institutional

Regulation and Policy

Laidunpankki addresses especially the theme of Farm Techniques and Management, focusing on the management of habitat and grazing animals as a collaborative effort. By creating collaboration among animal keepers and landowners, it also supports the social development of the area.

4 / What are the overall achievements of the innovation?

4.1 What was the process that made it happen?

Laidunpankki was developed as a collaboration of two actors, ProAgria and Agrifood Research Finland MTT (Maa- ja elintarviketalouden tutkimuskeskus). ProAgria is the main national advisory association supporting agriculture by providing services and know-how to develop the competitiveness of agriculture. MTT (now part of Natural Resources Institute Luke) is a sectoral research institute focusing on agriculture and food. A project called Grazing Animal Bank (Laiduneläinpankki) of ProAgria in Pirkanmaa province started in 2003 with the aim of testing contract-based grazing in practice. By chance, MTT had a project called Nature Pasture (Lumolaidun) at the same time, 2003-2005. The latter project aimed at developing guidelines for landscape grazing, which is to use grazing livestock to keep targeted areas open, to restore and maintain grassland ecosystems. It developed guidelines taking productivity and natural values into account. The two actors agreed on developing a common project. MTT worked on the technical side, producing the web service, while ProAgria provided the content benefiting from their practical knowledge on pilot pastures, where they tested contract-based grazing and different contract templates.

4.2 What were the enabling and success factors?

Initially, the users with animals had to pay for the service, but it did not work well. Through the support of sponsors, the service became free of charge in 2010. Fingrid, Finland's transmission system operator of electricity, became a sponsor of Laidunpankki through a collaboration to keep areas around power lines open. A project with sheep grazing in a Natura protected area, through which power lines run, was started in 2010. The project benefited both the power lines' upkeeping by keeping the areas open, the sheep owners through compensation and biodiversity by offering diversity in habitats. The other sponsor is Metsähallitus, a state-owned enterprise that produces environmental services on forest land.

Another factor necessary for the present success of the service is its visibility among potential users, promoted by related projects. In 2017, the service gained considerable visibility due to a project called Ymppi run by ProAgria in Pirkanmaa province, and many new users started to use the service. The service was updated again in 2021 under a national high-profile project focusing on biodiversity Helmi, funded by the Ministry of Environment. And again, new users have found the service.

When the Laidunpankki was initiated in 2003, the time was not ripe for its success because biodiversity conservation was not high on the public and producer agenda. During the last years, needs for biodiversity conservation have become much more visible in the society, which also increases the demand for such a service.

Figure 2. *A site managed through a collaboration established through Laidunpankki.*

4.3 Is it improving socio-economic viability of HNV farms and communities while maintaining HNV characteristics? How?

Laidunpankki supports the economic viability of farms and communities with grazing animals or land suitable for grazing and in need of such management by connecting these actors. Through the subsidies from the state for maintaining traditional rural biotopes and natural pastures, the landowner is supported for keeping up such biotopes. The landowner then compensates the animal owner financially for taking their animals to such a semi-natural site. Also, either the animal owner or another actor gets compensation from the landowner to take care of the animals during the grazing season. This way the agri-environmental agreements of the state offer significant funding opportunities for grazing in many locations.

4.4 Does it include conservation of nature values as an explicit objective, or is this effect incidental? How?

The innovation Laidunpankki does have the conservation of nature values as an explicit objective. By allowing suitable management on sites of highly nature-rich and threatened habitats, a key outcome is biodiversity conservation.

4.5 On what scale is the innovation successful?

The innovation is successful at the level of individual farms. There is a lot of regional variation, but the service works well in Southern Finland, with many landowners and animal keepers announcing their needs for grazing animals or areas to be grazed actively. Towards north, the pastures became smaller and more scattered, hindering the contract-based grazing.

5 / Why did the innovation work and why did not? Which was the process, the enabling factors, and the limiting factors, for preventing full realization of the innovation's potential?

The main reason for the success of Laidunpankki is its benefits to the users, either financially or through the increase of biodiversity or recreational values. Some of the users have found all the contacts they need quickly and no longer use the service, while some users seek for new contacts, to supplement their prior contacts.

The most used parts of the service are the contract templates. They are practical tools, which are used as they are, or as a basis for a modified contract. The templates have been tested in practice and they are updated based on new experience and knowledge. They provide a tool to prevent challenging situations in the future, such as financial inclarities in case of injured animals, broken fences or other disagreements, by having all responsibilities clearly set.

Among the limiting factors is lack of continuous funding for marketing and communicating. This limits the realization of the service's full potential. Every time the service has got funding for promotion, it has attracted new users.

Another limiting factor is the size of pastures. The larger the pastures are, the better financial compensation the owners gain in relation to the amount of work. However, it is problematic to initiate collaboration on grazing for many small sites. Maintaining these small and scattered areas would be easier, if it was possible to make a grazing contract including multiple landowners. The pasture area needed for one animal keeper could be covered by multiple landowners, then making only one contract that would provide the animal keeper with enough pasture land and offer flexibility on managing the pastures during the grazing period. Such a service does not yet exist, but it would be highly beneficial as part of Laidunpankki.

6 / What lessons can we draw from this experience?

Based on the experiences from Laidunpankki, finding suitable partners is essential to support the continuity and further development. Long-term contracts are needed to allow a continuous development of the service according to novel opportunities and needs. The more you can engage the actors in the process, the better in the long-term. Creating and maintaining a network of actors is essential for maintaining the functionality of the service. It needs regular updating to avoid providing outdated information.

Figure 3. *Cattle on a Laidunpankki site, keeping the landscape open.*

Openness and neutrality of the service are also beneficial. Recently, Metsähallitus have started to use the service to inform about former pastures on the state-owned forested land under their jurisdiction. Also, regional Centers for Economic Development, Transport and the Environment (regional administration body) has started to use this not-for-profit service.

This innovation is scalable and suitable for many other areas. Transferring it to another country would require not only translations but also adaptation to the local regulations for collaborative agreements and on animal keeping. Further, one needs to consider specific national subsidies or compensations for maintaining semi-natural pastures. The availability of the public and private subsidy systems is not a prerequisite for the service itself but is likely to be an important promoter for the grazing collaborations.

Photos

Riikka Söyrinki

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Case-Studies on innovative development in Peripheral Rural Areas

Template C - INNOVATION FICHE FOR PERIPHERAL RURAL AREAS

included under material for Module 4 – e-learning course

Association's logo.

1 / PRA and innovation identification

1.1 - Peripheral Rural Area name: South-Finland

1.2 - Innovation short name: Luonnonlaidunlihan tuottajat ry

1.3 - Agricultural system to which the innovation relates: Semi-natural grasslands and traditional biotopes

1.4 - The story in a nutshell:

In 2020 a farmers' association was established for farmers who utilize semi-natural grasslands in their production in Finland. The most important aim of the association is to spread knowledge of the management style to customers to increase the value and demand of nature-pasture based meat, which could in a long run increase the amount of semi-natural grasslands that are maintained by grazing. The aim is to bring the concept of nature-pasture based meat to public debate and to consumers' knowledge and to increase the products' availability to customers. This aim was created together with the farmer members.

The association has so far 40 farmers as members. To be accepted as a member, the production has to fill certain criteria created by the association. Main criteria is that the animals have to spend at least half of their grazing period on semi-natural grasslands. Semi-

natural grasslands include traditional rural biotopes and other areas that are not fertilized or cultivated, like forest pastures and grasslands.

The association is fairly new and has just started to operate. It plans to organize marketing campaigns to add visibility to nature-pasture based meat and different networking events for its members. The association aims to work on a certificate for nature-pasture based meat in the future.

Picture from the association's website. https://luonnonlaidunlihantuottajat.fi/

2 / What specific challenges does innovation address?

Main challenges that the innovation addresses is the profitability of farms that utilize seminatural grasslands in production and the decreasing amount of endangered habitats that relate to the abandonment of semi-natural grasslands and traditional rural biotopes. The association aims to increase the visibility of nature-pasture based meat, making it more appealing to customers and thus adding value to the product. The aim is to make the general discussion around meat production more diverse and make the nature-pasture based meat seen as an option for conventionally produced meat.

At the moment 32 000 hectares of semi-natural grasslands are maintained either by grazing or mowing. The Helmi programme that is set by the ministry of environment aims to increase the amount by 15 000 hectares by the end of 2023. By increasing the demand for nature-pasture based meat the association aims to make this production style more appealing and increase the amount of maintained semi-natural grasslands in Finland.

Semi-natural grasslands like meadows and pastures are the most diverse habitats in Finland. As these agricultural lands have high species and habitat diversities, they are also considered High Nature Value

Farmlands (HNVf). Some semi-natural grasslands are considered as traditional rural biotopes which have been formed by traditional grazing and fodder collection. These biotopes used to be abundant, but since the 1960s the land cover of these biotopes has decreased by over 90%, and they have been replaced by cultivated, fertilized grasslands and crop fields. With the decline of these traditional rural biotopes also the biodiversity they contain have declined strongly, including flowers and pollinators as well as birds, leading to the habitats themselves as well as many species inhabiting them to be critically endangered.

The association offers farmers a community and a supportive narrative that frames them as part of the solution to biodiversity loss.

3/ Description of the innovation

3.1 - Where does this innovation fit in the four innovation themes identified?

3.2 - Which theme(s) is most relevant:

Products and Markets;

Farm Techniques and Management;

Social and Institutional;

Regulation and Policy

The innovation aims to improve the value of the products and their visibility in the market.

4 / What are the overall achievements of the innovation?

4.1 What was the process that made it happen?

In 2013 WWF Finland organized a working group to design a brand for nature-pasture-based meat. A similar approach had been highly successful in Sweden, resulting in a well-known brand, which is now available in large supermarkets and even offered in state-run institutions like kindergartens. Based on the criteria created in Sweden, WWF Finland and local Finnish producers formulated a criteria for Finland for nature-pasture-based meat, but the criteria was never taken into practice. In spring 2020 Nature and Game Management Trust Finland (Luonnon- ja riistanhoitosäätiö) ordered a report about the use of semi-natural grasslands in Finland. Based on the report, the Trust wanted to promote the maintenance of semi-natural grasslands by grazing, but soon realized that they could not assist in promoting commercial products as a Trust. An association was established together with the producers to promote nature-pasture based products and to support the producers with this management style. Most of the producers were the same ones who initially took part in creating the criteria together with WWF in 2013 and were excited about creating an association to promote these issues. The timing was considered better now since issues related to biodiversity were more frequently discussed in the media. The association was set up and now has 40 members, a website and a Facebook group for promoting nature-pasture based meat.

4.2 What were the enabling and success factors?

The successful example from Sweden and the criteria created together with WWF, both in Sweden and Finland. Support from other stakeholders, like WWF. The public debate around biodiversity has been

increasing, so the timing seemed right. Active farmers who created the association together with Nature and Game Management Trust Finland.

4.3 Is it improving socio-economic viability of HNV farms and communities while maintaining HNV characteristics? How?

Yes. The association aims to increase the value of their farmers' products by informing the customers about the positive impacts of the production methods, making it a more appealing product compared to conventionally produced meat.

4.4 Does it include conservation of nature values as an explicit objective, or is this effect incidental? How?

Yes. The association aims to increase the amount of semi-natural grasslands in Finland by increasing the demand of the nature-pasture based meat and making the production style more profitable for farmers.

4.5 On what scale is the innovation successful?

On an individual farm holding the association could increase the visibility of the farm's products. On a larger scale, the association could increase the profitability of this specific management style and even increase the amount of semi-natural grasslands in Finland.

5 / Why did the innovation work and why did not? Which was the process, the enabling factors, and the limiting factors, for preventing full realization of the innovation's potential?

The full potential of the innovation is yet to be seen, since the association is fairly new.
Finding and obtaining members has turned out to be slightly challenging, but as the planned actions begin, more farmers are expected to find the association. Also the amount of producers that utilize semi-natural grassland in Finland is unknown, making it hard to determine what is the full potential of the number of members.

6 / What lessons can we draw from this experience?

The innovation is itself an example of replicability, since it has been based on a similar project done in Sweden. The criteria made in Sweden needed to be adapted to Finland. To really kick off in Finland, the innovation needed the right actors to meet and the timing to be right.

Sources:

https://luonnonlaidunlihantuottajat.fi/

An interview with Eriika Lundström from Nature and Game Management Trust Finland, 1.12.2021

Case-Studies on innovative development in Peripheral Rural Areas

Template C - INNOVATION FICHE FOR PERIPHERAL RURAL AREAS

included under material for Module 4 – e-learning course

1 / PRA and innovation identification

1.1 - Peripheral Rural Area name: Finland/Baltic Sea catchment area

1.2 - Innovation short name: E-college for regenerative farming

1.3 - Agricultural system to which the innovation relates: All agricultural systems in Finland

1.4 - The story in a nutshell:

E-college for regenerative farming in Finland is a free online course that provides a comprehensive overview on regenerative farming and its main methods. It is targeted to farmers and students in agriculture. The course was launched in April 2021 by the Carbon Action group and is offered both in Finnish and Swedish (two state languages in Finland). By that time, many farmers were already involved in several projects on regenerative farming organized by the Carbon Action group. The group is a platform operating under Baltic Sea Action Group (BSAG) that targets specifically agriculture in order to decrease nutrient loading and other impacts in Baltic Sea region. This work resulted in new practical knowledge. For example, over a thousand farmers currently take part in a so-called Carbon

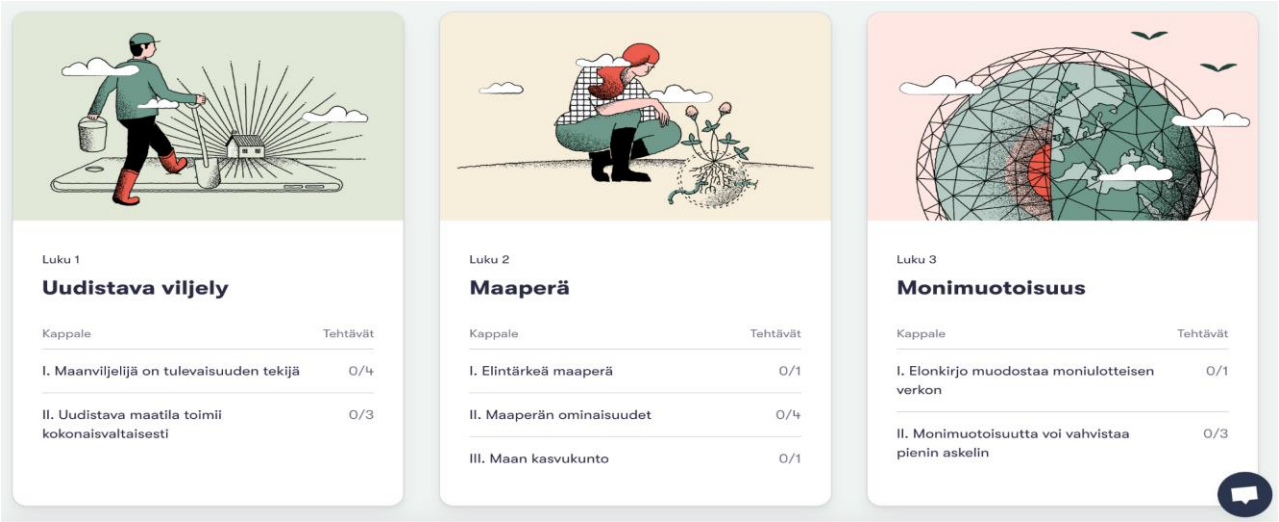
Picture from the e-college's website. https://www.uudistavaviljely.fi/

Club, which aims to promote carbon farming. The actors in such projects wanted to share their knowledge and experiences among larger audiences, to scale communication and offer it in an easily digestible format.

Link to the video promoting the course of regenerative farming:

https://www.youtube.com/watch?v=h1ML7gAZzDE (Language is Finnish and Swedish)

The other main participant in E-college, firm Reaktor, created a similar online course on a different topic and had a template. The Carbon Action project group was responsible for developing the learning material on regenerative farming. The project was financially supported by Sitra (The Finnish Innovation Fund) and numerous stakeholders within the food chain, such as food and retail companies.



Picture from the course platform with themes on Regenerative farming, Soil and Biodiversity. https://courses.reaktor.education/fi/courses/regenfarming/overview/

2 / What specific challenges does innovation address?

Agriculture is the biggest source of nutrients in the Baltic Sea catchment area, and therefore much better nutrient management and cycling are needed. There is also a need to increase carbon storage in the agricultural soils as a way to mitigate climate change. Finally, the state of agricultural soils has been declining through decades in Finland due to soil compaction and loss of organic matter. Farmers increasingly are concerned about the long-term health of soils as a foundation for more secured and higher yields.

There are also adverse impacts of agriculture that need to be reversed, such as decline in diversity of crop rotations, and loss of biodiversity. The latter concerns also functionally important groups, such as pollinators and soil biota.

The e-college addresses all the above by offering free education on farming practices that could improve agricultural sustainability. It offers an easy and accessible way for farmers to upgrade their education. The course also frames farmers as part of the solution to improve the state of the environment and tackle climate change. Such focus on farming as part of the solution has received positive feedback from farmers.


Pictures from Sanna Söderlund.

3/ Description of the innovation

3.1 - Where does this innovation fit in the four innovation themes identified?

3.2 - Which theme(s) is most relevant:

Products and Markets

Farm Techniques and Management

Social and Institutional

Regulation and Policy

The E-college aims to improve farm techniques and management. It could be considered also as social innovation because of the educational aspect.

4 / What are the overall achievements of the innovation?

4.1 What was the process that made it happen?

BSAG had previously organized a Carbon Action Club for farmers who participated in research on regenerative agriculture and the impact of farming management practices on soil carbon. The club has 1000 members who are mostly farmers but also advisors, researchers, and other stakeholders. It has an active Facebook group for disseminating information and, for its farmer members, to share experiences and knowledge. The idea for E-college came from the need to share the knowledge to a bigger audience.

4.2 What were the enabling and success factors?

- The existing communication platform between farmers and BSAG personnel from a previous project Carbon Action. This led to understanding of a need for an effective way to spread knowledge on regenerative farming outside the Carbon Action Club.

- Co-operation between Reaktor and BSAG. Reaktor has the experience of creating successful courses with an engaging e-learning platform, and BSAG has content and audience from previous projects.

- Diverse group engaged in producing the educational material, including farmers themselves who contributed to the learning material.

- Funding from SITRA.

4.3 Is it improving socio-economic viability of HNV farms and communities while maintaining HNV characteristics? How?

By implementing methods of regenerative agriculture, the farmers can improve the economic security of their farms. The methods require less economic inputs, and improved soil health can contribute to more secure yields. Increased interest in better crop rotations has encouraged some farmers to experiment with more profitable crops, leading to greater income.

4.4 Does it include conservation of nature values as an explicit objective, or is this effect incidental? How?

The course promotes farming practices that aim to mitigate the negative environmental impacts of agriculture, such as nutrient run-off. This includes the conservation of nature values as an explicit objective (with the focus on aquatic biodiversity, but additional benefits for the soil biota and other groups).

4.5 On what scale is the innovation successful?

Several vocational schools have integrated the course into their teaching, which came as a positive surprise to the course organizers. The course has had 1300 participants so far, and the impact on an individual farm level can be considered successful.

The goal for E-college is to have 4000 users in the first year, which would represent 10% of the farmers in Finland.

5 / Why did the innovation work and why did not? Which was the process, the enabling factors, and the limiting factors, for preventing full realization of the innovation's potential?

The course was launched during the spring, which turned out to be a challenging time for farmers to attend the course. The course had good media coverage and it was advertised on many platforms by different actors.

6 / What lessons can we draw from this experience?

The cooperation between different actors and sectors, though sometimes challenging to organize, was described to be the most positively surprising aspect of the project. Timing of launching the course targeted at farmers should be considered carefully, so that it is outside the busiest field work period. Finding the essential pedagogical material was time consuming and challenging.

The course could be replicated in other countries. There has been an international interest in the course. To successfully replicate the course outside Finland, the content needs to be adjusted to the local agricultural and learning contexts.

Sources:

https://www.uudistavaviljely.fi/

Interview with Sanna Söderlund 7.6.2021 and 11.10.2021

Case-studies on innovative sustainable development in Peripheral Rural Areas

Template Part D – INNOVATION EXCHANGE, TRANSFER AND DISSEMINATION

corresponding to Module 5 – e-learning course

Part D: Innovation exchange, transfer and dissemination

Part 1 / Engaging Communication and Dissemination Actions for a sustainable development of the PRA

As the E-college for regenerative farming was launched in 9.2.2021, both in Finnish and in Swedish, a press release was provided describing the contents and benefits of the E-college. A numerical target was set to 5000 people would take the course during the first year, equaling to about 10% of the Finnish farmers, as well as agricultural students and others interested.

The press release led to a large media visibility. The E-college was presented in some major national newspapers such Maaseudun Tulevaisuus (key countryside newspaper) and Uusi Suomi, as well as private blogs and blogs of various companies. Also a major public broadcasting company Yle publicized it.

Asiakaspalvelu
Mediamyynti
Yhteystiedot

MAASEUDUN TULEVAISUUS

Etusivu Metsä Maatalous Hevoset Erä Ruoka Näköislehti Helsinki +6

Maatalous

Uudistavaa viljelyä avataan 60 tunnin ilmaisessa verkkokoulutuksessa

Maatalous 09.02.2021
Satu Lehtonen

E-opisto tuo sadan pilottitilan kanssa tehdyn työn tulokset kaikkien saataville.

ALEKSI LUMME

Since the E-college is a collaborative effort of many organizations and partners, it has been presented through many channels since its release. Sitra, an independent funding agency established by the Finnish parliament in 1967, supports E-college and offers it on their webpages as a timed and supported course. The same applies to many companies and associations, such as Fazer Mills, one of the biggest mill and bakery companies of Finland. It offers the E-college for regenerative farming and encourages farmers to take the course through their webpages, as well as Atria, one of the leading food companies in North-Europe and Valio, the biggest Finnish dairy manufacturer.

By November 2020, the E-college has been running for half a year, and slightly over 1000 people registered on the course. Carbon Action, the main project of BSAG under which the E-college operates, has been present in a wide variety of platforms, including the UN Climate meeting in UK in November 2021. With the communication activities of Carbon Action, also the E-college has been brought up in their blog.

Overall, the communication has reached a wide audience, but the target of 4000-5000 farmers taking the course is lagging behind the objective. The dissemination thus might require even more activities, to ensure the engagement of more farmers.

Part 2 / Focus on Cross-Visits

Although there has not been Cross-Visit, the E-college has been presented in both national and international seminars and webinars by BSAG.

E-college is one of the projects that runs under Carbon Action, which organizes most of the dissemination activities. Carbon Action organizes multiple events and webinars that support their projects, most of them targeted to farmers that are taking part in their projects. These include events like Peltopäivät (Field days) that are organized multiple times a year. The event is held usually in a farm

and the program includes practical training and talks held by the Advisory sector and research institutes. The webinars are organized around one theme and have speakers representing different actors. Themes include subjects like agroforestry or the use of manure. The aim is to offer the farmers an access to the newest information and practices.

Picture from BSAG website.

An important part of Carbon Action is Carbon Action Club that was initially targeted to Pilot Carbon Farms, the farms who took part in the research project. Now anyone is able to sign up to the club on Carbon Actions' website. The club offers to its members a newsletter, events, webinars and a facebook group to network and for discussion. The club members also have their own website under the BSAG:s website with all the material.

The Carbon Action considers dissemination also to other countries. However, this would require not only a translation to another language but also adaptation of the material to different farming systems, soil types and biophysical conditions. This would also require collection of farmer experiences with regenerative farming and its practices in a target country.

Further information / Sources: with link to the HNV-Link material

References:

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