

FINLAND

Bioeconomy

Location

Lyöttilä

Programming period

2014 – 2020

Priority

P5 – Resource-efficient,
Climate-resilient Economy

Measure

M07 – Basic services &
village renewal

Funding (EUR)

Total budget 141 391

EAFRD 47 365

National/Regional 42 854

Private: 28 617

Other: 22 555

Project duration

2015-2019

Project promoter

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In Finland, trialling the winter harvesting of the common reed provides a greater availability of sustainable resources with collateral environmental benefits.

Summary

This project combines the use of a material often considered as a hazardous waste (the common reed) and a recent innovation (the winter mowing of the reeds). This has resulted in products that, in the spirit of the circular economy, are transformable and offer various uses; the development of new ecologically sustainable sources of livelihood; the improvement of the environmental health and recreational use of water areas, and the promotion of a community spirit. All these elements were achieved in one extremely cost-effective package.



The project developed a winter-time harvesting chain for the common reed, enabling cultivation in difficult conditions such as ice and snow. This includes the development of mowing equipment to be used on ice, for the bundling, baling or shredding, and the storage of the reed. In addition, the project tested the use of the common reed for roofs in parks and gardens, as well as for handicrafts, small structures, and as a filter. The project found that winter mowing has positive environmental effects and that the reed mowed in the winter can be used in similar ways, such as ditch water cleaning and small-scale construction. As a result of the project, small-scale entrepreneurship can now develop around the cultivation of the common reed in Finland.

Results

The project resulted in the creation of a new company (cooperative) based on the use of the common reed. The cooperative includes around 10 members who have continued to develop the use and commercialisation of the common reed, even after the end of the project.

Winter mowing has proven to have a positive environmental impact and the reed mowed in the winter can be used in different ways, such as an outdoor roofing material, for ditch water cleaning, and small-scale construction, for example.

Lessons and recommendations:

- ❑ The project can be expanded so that small-scale entrepreneurship based on the common reed can be developed in Finland, and the practice can also be transferred to neighbouring countries such as Sweden and Estonia.
- ❑ Winter mowing not only has a variety of uses, it also has a positive environmental impact.

Context

The common reed is a perennial grass that is found around the globe in moist habitats such as shores, shallow waters, and ditches. As a competitive species, it often produces extensive vegetation. The reed has benefited from climate change, eutrophication, the end of grazing on shores and possibly also from dredging. Finland's lakes and bays have been heavily eutrophied in recent years and the reed beds' growth has been rapid.

There are reed beds in Åland and all the way up to Lapland. The number of reed beds in the coastal areas of Finland is estimated to be about 30 000 hectares, with no reliable estimates for inland waters. The significant spread of reed beds has caused organisations such as the ELY Centre, SYKE, and many others to consider what should be done. The topic has been studied from many different points of view over the last ten years, but the activities prior to this project had largely remained at the level of research. There have been numerous publications and studies on the subject, but less concrete experimentation.

In the past, as the common reed had not grown so extensively in Finland's lake areas, there was no experience of using it. In other European countries such as Estonia and Sweden there are around 1 500 and 2 500 reed roofs respectively, compared to about 80-100 in Finland. There are several companies in the Netherlands that sell reed, and reed bundles are imported all the way from China. In Estonia, the best reeds are made into bundles for roofs, and the remainder used in products such as insulation, plaster, or interior panels, and sold to Finland.

Objectives

Solid research carried out in Finland supported the launch of a pilot project. Prior to this project, due to the difficult conditions of harvesting in snow and ice, there had been little winter-time reed mowing in Finland, while summer mowing had been carried out for approximately 30 years. A practical experiment was needed on how to tackle the innovation of mowing in the winter and how to use the winter-mowed reed.

The project had four objectives:

- to create a model for reed utilisation that could support small local businesses;
- to create a functional common reed harvesting chain;
- to create local markets; and
- to investigate the impact of several years of winter mowing on the reed quality and growth decline.

Activities

The project approached reed harvesting from the point of view of the communities located in water areas. As managers and the foremost experts of their own water areas, they play a key role in the harvesting chain and in practical activities. The project application was made by a community in an area where reed harvesting was tested in cooperation with different actors.

Initially, the project developed harvesting equipment suitable for winter mowing, since none had previously existed. In Finland, winter mowing is conducted on ice. This poses a challenge in the equipment to be used, since there is often a variation in the weight bearing capacity of the ice. The mowing was tested with local entrepreneurs on Lake Urajärvi in Litti, on the water area managed by the project applicant. The harvest chain developer and the reed mower lived close to the mowing area, which helped the mower to get on the ice during suitable weather, ice and snow conditions.

The common reed harvested was transported to the warehouse near the shore with equipment suitable for the weather and ice conditions. During the first two years, in addition to storage, the common reeds were sorted directly on the ice during the bundling. In the last two years, with the development of a bundling mower machine, the reed was mainly processed in the warehouse where it was transported in raw bundles. The best common reeds were sorted into bundles, and the remainder baled or shredded for use in drainage or filtering. An interesting aspect of the harvesting was that during the first winter, some of the voluntary project staff were asylum seekers. Getting to discover Finland's nature and population provided them with a welcome change from the daily routine of the reception centre where they were staying in, and provided social inclusion in their community.

In terms of awareness-raising, special product cards were made about the harvesting chain showing the mowing, transport, and storage, further processing (bundles, baling, shredding) and the resulting products (construction, gardening and environment, and handicrafts).

A publication outlining the common reed chain from the lake to the final product was also produced, as well as a video highlighting the project's main stages.

After harvesting, the common reed was further processed and commercialised experimentally. The reeds were made into bundles for roofs, garden sheds, bedding for pigs and hutches, handicraft materials, and construction products.

Lessons on common reed construction were taught by an Estonian reed construction master. The products were placed in the Kettumäki National Park in Kouvola, where a reed modelling environment has begun to be built and people can see and touch reed products. The project also organised free open workshops and showcased pilot products at various events, like the 2019 Kouvola Housing Fair. The project reached over 1 600 people through these workshops and demonstrations, and the Kettumäki National Park has around 30 000 visitors each year. The reed was also tested as a filter pulp to clean drains. The result was that the reed filter was not dammed and that most of the filters were measured to retain solids, Phosphorus, and Nitrogen.

The project also looked at the effects mowing on ice over several years had on the quality of the reed and on the decline in its growth. Winter mowing was also conducted in the Urajärvi Nature Reserve of Mukulanlahti Bay, which protects, among other things, the Western marsh harrier and the Eurasian bittern. Both bird species nest inside the shelter of an old reed bed in the spring. For this reason, winter mowing had to be carefully planned and its impacts assessed. There was no need for surveys when mowing was done outside the Natura 2000 protected areas. Empirically, winter mowing has been shown to have positive effects. Removing the dead reed from the ice prevents the formation of reed peat and the descent of the shoreline further into the water area.

Winter mowing also improves the water flow and reduces methane emissions from the rotting mass. There are 20-30% more nutrients in the reed harvested in winter. The improvement in the reed's viability has led an improvement in the nutrient binding capacity of the new crop. The new reed that grows after winter mowing is cleaner and rarer than before.

In the Autumn of 2019, a biologist from the ELY Centre for South-eastern Finland conducted a mapping of the vegetation in a reed area within the project.

This area had been mowed in the winter over several years in Mukulanlahti Bay, a Natura 2000 protected area. He noted that after the first winter mowing, the reed bed

is less dense and may be shorter than in unmown areas. The underwater plants therefore benefit from increased light and improved vegetation to increase hiding places for water-insects and thus provide food for water birds.

Birds nesting in old reed beds were left plenty of reed in areas marked for conservation in the winter mowing plan, as only part of the reed bed of Mukulanlahti Bay was mowed and thereby ecosystems have been preserved. Inhabitants have praised the improvement of the view and the fact that as the free water areas increase, there are now more species at the mowed spots.

In Finland, the common reed has been considered a waste problem and there has been little entrepreneurial activity around it, except for the summer mowers. The project resulted in a functional winter harvesting chain and in various opportunities for the use of the reed. New work has been created for professionals in the harvesting chain and in its further processing. As awareness grows, there is greater interest in the process and the use of the common reed. The project formed a good network around the exploitation of reeds, and one new company was created as a result of the project.

Main results

- A new company (cooperative) was created based on the use of the common reed and includes around 10 members who have continued developing the use and commercialisation of the reed, even after the project ended.
- The project discovered that the winter-mowed common reed is suitable for various uses, e.g. roofing, construction, ditch filters, and handicrafts.
- Winter mowing also has a positive environmental impact.

Main lessons

The project demonstrates that EU support facilitates the development of sustainable methods for rural development and environmental benefits. The presence of several project partners made the project highly beneficial.

Additional sources of information

n/a

*This project has been categorised under 'Bioeconomy' by the nominating National Rural Network