



EAFRD-funded projects

# A biogas plant investment

## From local farming to a new partnership in circular economy

Investment in a biogas plant allows for formation of a new partnership between local farmers and a food producer contributing to the circular economy.

Orkla Confectionary & Snacks, a subsidiary of Orkla Group, located in the Åland islands, has sourced potatoes from local farmers to produce snacks for years. To contribute to Orkla's overall goal of reducing its greenhouse gas emissions by 60 % by 2025, Orkla's factory on the Åland islands must reduce its carbon dioxide emissions by at least 20 %. Thus, the company invested in a biogas plant and aimed to build an agro-ecological symbiotic system with local farmers who could supply manure to increase the efficiency of the biodigester. That process then results in digestates which the farmers can apply to their arable land as fertiliser as well as purified wastewater they can use for irrigation.



### Location

The Åland Islands (Finland)

### Programming period

2014 - 2020

### Priority

P5 - Resource-efficient,  
Climate-resilient Economy

### Measure

M04 - Investments in  
physical assets

### Funding (EUR)

Total budget 1 500 265  
EAFRD 136 899  
National/regional 238 167  
Private 1 125 199

### Project duration

2020 - 2021

### Project promoter

Orkla Confectionary & Snacks  
Finland Ab

### Contact

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### Website

[www.orkla.fi](http://www.orkla.fi)

## Results

- Reduced carbon dioxide emissions by 1,000 tonnes per year, resulting in 15-20 % total net emissions decrease
- Reduced costs due to increased renewable energy production
- Reduced costs through recycling by-products of digestate and wastewater rather than paying for removal and treatment off-site
- Reduced fertiliser costs for cooperating farmers
- Increased supply of irrigation water for cooperating farmers

## Lessons & Recommendations

The project demonstrates how to create productive collaborations between the food industry and farming, or an agro-ecological symbiotic system. The formation of a common system between farmers, small and/or medium-size food producers and a biogas energy producer who are close in proximity creates the conditions for a closed business cycle contributing to the circular economy.

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# Context

The production of potatoes on the Åland islands has historically had a major impact on the food supply chain, but it is also important for the local and regional economy of the islands. One of the factories for Orkla Confectionary & Snacks, a subsidiary of Orkla Group, is in Haraldsby on Åland. The local factory team, together with the local community, has struggled for years to maintain the production of snacks on Åland, including following its acquisition by Orkla.

The factory produces 14,000 tonnes of finished product annually, including potato-based snacks and deep-frozen potato products for the Finnish market. The two main brands are Tafel and Oolannin, of which the first is market leader in snacks. The factory consumes about 35,000 tonnes of potatoes per year, of which about 60 % comes from the local farmers. Today, the factory employs approximately 100 people.

All companies in the Orkla Group follow an ambitious sustainability strategy, of which one pillar is environmental engagement. The ambition is to reduce GHG emissions by 60 % by 2025 through various measures, e.g. investing in fossil-free energy and halving their food waste. At the factory in Åland, this requires a reduction of carbon dioxide emissions by at least 20 % in order to meet the Group's environmental goals.

The Haraldsby factory has produced biogas from potato peelings since the late 1980s. In 2019, the factory invested in a biogas plant that would utilise the manure from the local farmers, stabilise the energy production process, generate renewable energy for the factory's operation, and supply contributing farmers with digestates to apply as fertiliser on their fields.

# Objectives

The project aimed to implement a transformative symbiotic system for adaptable and resilient local food production and consumption and producing agro-ecological benefits. As the cost of fertilisers have gone up, there is a need for new bio-based fertilisers that offer versatile nitrogen-phosphorus ratios. The project and the partnership aimed to offer new fertiliser residues for their suppliers – both potato producers and dairy farmers – to enhance their nutrient cycling.

The overall objective of the project was to reduce total emissions of the Orkla factory in Åland by 1,000 tonnes per year, reduce carbon dioxide emissions by 20 % annually, create a waste recycling solution, and reduce energy and wastewater costs.

In addition, the aim was to enhance the overall nutrient cy-

cling and provide fertilisers with desirable nutrient content to be used on local farms. When manure is used as a raw material in a biogas plant, the nutrient content of the residuals can be optimised and result in more targeted fertiliser.

# Activities

The project consists of two parts: 1) a better waste digestion process with the company's new investment – an extension of the existing biogas plant, and 2) better nutrient and water cycling at farm level. This means that in addition to the organic waste from the factory's production, farmers supply cow manure to the Orkla factory to power the biogas plant. Previously, due to limited raw material content, the biogas process has been imbalanced and leftover organic waste has had to be delivered to an external composting plant. Adding manure has made the current biodigester more efficient and enabled a doubling of biogas production. Now a much higher percentage of the organic waste can be used in the process and less leftover waste must be taken to a treatment plant for composting. The investment has therefore saved costs from leftover waste logistics and treatment. In addition, utilising the manure from the local farms at the factory has also reduced the amount of organic fertiliser loss into the Baltic Sea.

To benefit the farmers in the partnership, the biogas process produces digestates as a residual product from the biodigester. The biodigester investment included sanitation equipment, so the produced digestates can also be used as fertiliser on potato farms as they are rich in nutrients and have varying nutrient ratios. In addition, compared to cow manure the digestates are relatively fragrance-free, which reduces inconvenience to the neighbours when the digestate is spread onto arable land. A system is being set up whereby wastewater from the process is made available to the cooperating farmers to be used for irrigating arable land. Thus, Orkla reduces its costs for sewage fees to the municipal treatment plant and the treatment plant's capacity is under less pressure. This creates a closed cycle with the potential to be developed further by connecting additional farms in the future.



# Main results

The circular economy investment made through the project has allowed Orkla Confectionary & Snacks to reduce its climate footprint and take significant steps towards its ambitious environmental goals. Through the partnership, Orkla has reduced the need for propane gas and oil and doubled the use of locally produced biogas. The annual production of biogas amounts to 1.4 million m<sup>3</sup>. Due to this, the factory has decreased its annual carbon footprint by about 1,000 tonnes, resulting in a 15-20 % decrease in total net emissions. Additionally, the company has reduced costs due to increased renewable energy production and lower waste disposal.

With the annual amount of 25,000-30,000 tonnes of fertiliser delivered to cooperating farmers annually, they have been able to reduce fertiliser costs, which is important due to the drastic shortage and increase in the price of fertiliser due to the current shortage, and access to a recycled supply of irrigation water. The latter has also reduced pressure on public infrastructure.

# Key lessons

The project is exemplary regarding the possibility to create productive collaborations between the food industry and farming. As a demonstration of an agro-ecological symbiotic system, the formation of a common system between farmers, small and/or medium-size food producers and a biogas energy producer who are close in proximity creates the conditions for a closed business cycle contributing to the circular economy.

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## Additional sources of information

[www.hungryforland.fi/orkla-i-saltvik-storsatsar-pa-biogas](http://www.hungryforland.fi/orkla-i-saltvik-storsatsar-pa-biogas)

This project has been categorised under 'Green futures' by the nominating National Rural Network