



### Manure-powered milk logistics

Valio is a Finnish dairy and food manufacturer owned by approximately 4,100 milk producers around Finland. Valio aims to achieve carbon neutral milk production by 2035. One solution to reduce the carbon footprint of milk is biomethane production from cow manure generated in the dairy farms. The produced biomethane is able to substitute fossil-based fuels in Valio's logistic chain, such as in milk trucks. Vuorenmaa dairy farm located in Haapavesi, Finland, produces milk for a local cheese factory owned by Valio. For over a decade, Vuorenmaa farm has been producing biogas from cow manure to generate electricity and heat needed at the farm. As for 2021, Vuorenmaa farm is the first dairy farm of Valio, where biogas is also converted to compressed biomethane and is hence also applicable to be used as a transportation fuel.

The annual biogas yield of the farm is around 1,200 MWh of which approximately half is refined to biomethane. A milk truck in Valio's logistic chain has committed to buy biomethane produced at the farm. The truck fills up its tank meanwhile it collects the milk. The guaranteed demand and market for biomethane is essential for cost-effective production of biomethane. Private passenger cars are also able to buy biomethane from the Vuorenmaa farm.

Dairy farm can benefit from biogas and biomethane production in several ways. The produced electricity and heat from biogas increase the energy self-sufficiency of the farm meanwhile biomethane production creates new business opportunities. Biogas production also reduces the need of purchased chemical fertilizers. During the biogas process, the manure nutrients are transformed into a more soluble form in comparison to ordinary manure and are hence applicable as recycled fertilizers in the fields.



Photo: Valio

#### KEY WORDS

Biomethane, cow manure

#### COUNTRY

Finland

#### AUTHORS

Kirsikka Kiviranta (VTT)

[kirsikka.kiviranta@vtt.fi](mailto:kirsikka.kiviranta@vtt.fi)

Heidi Saastamoinen (VTT)

#### DISCLAIMER

This Practice Abstract reflects only the author's view and the BRANCHES project is not responsible for any use that may be made of the information it contains.

#### DOWNLOAD

[www.branchesproject.eu](http://www.branchesproject.eu)

## ADDITIONAL INFORMATION

Cow manure produced in the dairy farms of Valio composes a great share of the total cow manure amount generated in Finland every year. Currently 20 Valio farms produce biogas for electricity and heat production for the needs of the farms themselves. In the near future, Valio aims to significantly expand and increase the biogas network of dairy farms, in order to efficiently circulate dairy farm manure and to reduce the carbon emissions of the company's own logistics. Valio and Finnish energy company St1 are establishing a joint venture to produce liquified biomethane mainly from cow manure. The nationwide fuelling station network of St1 will be applied to distribute the produced biomethane. The goal of the joint venture is to produce 1 TWh of biogas from cow manure by 2030. An important prerequisite in achieving the target is a demand of biomethane that is high enough to make the biogas investments profitable. To achieve the demand, the amount of biogas-fuelled transportation fleet needs to increase significantly in Finland in the near future.

In addition to utilizing biomethane in substituting fossil-based fuels, Valio aims to reduce the carbon footprint of milk by other means as well. One solution is carbon farming, in which farmers use farming methods which maximize the carbon sequestration capacity of the fields.

**Coordinator:** Johanna Routa - (Luke) [johanna.routa@luke.fi](mailto:johanna.routa@luke.fi)

**Dissemination:** [itabia@mclink.it](mailto:itabia@mclink.it)

[www.branchesproject.eu](http://www.branchesproject.eu)

## ABOUT BRANCHES

**BRANCHES** is a H2020 "Coordination Support Action" project, that brings together 12 partners from 5 different countries. The overall objective of **BRANCHES** is to foster knowledge transfer and innovation in rural areas (agriculture and forestry), enhancing the viability and competitiveness of biomass supply chains and promoting innovative technologies, rural bioeconomy solutions and sustainable agricultural and forest management.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000375

## THE PARTNERSHIP

