Réseau wallon
de Développement Rural

In Faascht, a high-performance ecosystem based on biomethanation

1. Context

The Faascht farm in Attert (10 km north of Arlon) is a livestock business producing milk and meat. The liquid manure directly feeds an agricultural biomethanation plant which generates electricity (approx. 70% of the commune's electricity consumption) and produces digestate that replaces synthetic fertilisers (sold to neighbouring farms). Biomethanation uses 20 tons of waste every year (5% manure, 5% food industry waste and 10% waste from an organic supermarket). The farm has been ISO 14001 certified since 2012.

2. Business model

The Faascht farm was the second on-farm biomethanation plant to be built in Wallonia (2003). At the time, agriculture was in a state of turmoil following the dioxin crisis and the outbreaks of mad cow and foot-and-mouth disease. Energy production offered an attractive opportunity to diversify in order to compensate for the loss of value of animal agricultural products. Biomethanation produces energy in the form of biogas, which feeds a cogeneration plant, producing electricity and heat.

Only the production of green electricity (6,000 MWe/year, 20% of which is used on the farm) is supported through the payment of Green Certificates (2.5–3 GC/MWh according to heat recovery; 1 GC is worth around €65 depending on market rates). GCs account for nearly 60% of electricity revenue. Thermal energy is used on the plant (10%), for heating of the farm (5%), for hygienisation of the digestate (5%) and for drying digestate and wood (25%).

Digestate can be sold as fertiliser, but administrative burdens, transport costs and competition from chemical fertilisers all weigh on the sale price.

3. Innovation and key success factors in the circular economy

The question was therefore how to make the best local use of these outputs – electricity, heat, digestate, fertilisers and even CO_2 through horticultural production in greenhouses.

Through various Interreg projects (OPTIBIOGAZ then ECOBIOGAZ), the Faascht farm has long partnered with research organisations to enhance the value of the digestate and heat, notably to test its use for algae cultivation in the current PERSEPHONE project. Recently, the farm has also been involved in the H2020 SYSTEMIC project (a project to advance the circular economy).

On the basis of this experience, the current owners of the farm (M. Kessler and L. Peter) have decided to invest in a one-hectare greenhouse project for tomato cultivation in order to respond to climatic, societal and economic challenges. The project aims to be entirely sustainable:

Substrate: solid fraction of the digestate (innovative trials set up with the University of Gembloux) + drip irrigation with the N, P and K elements recovered from the digestate (no chemical fertilisers in the medium term) (trials of the Interreg Persephone project).

Water: recovery (roofs), storage, and recycling of irrigation water.

Air: control of humidity, temperature, and CO_2 levels (recovered from cogeneration) ➔ climate-managed glass greenhouse. Controlled natural light to avoid overheating and artificial light in winter for operational needs.

4. Constraints and lessons learnt

The most significant constraints come from the regulations on waste and on the monitoring of digestate. Support for energy production also leads to distortions because it is currently the only assistance for energy production from agricultural waste or by-products. In its place, direct support for biogas would facilitate control and offer more alternatives depending on the circumstances (electricity, heat, green chemistry, fuel, injection, support for intermittent renewable energies, etc.).

5. Sustainability

Current support for green electricity production contributes to the viability of the project. However, there should be greater support for the other benefits of biomethanation, in particular the production of a high-quality soil improver and fertiliser.

6. Contact(s)

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Faascht Farm: silos, eco-generation plant, digesters.