

## **Business case ID Card**

**Name of the company:** Biogas Brålanda

**Country:** Sweden

### **Background**

Back in the nineties, a group of farmers in the West of Sweden started discussing with the local energy company, the science park Innovatum and some municipalities about the new opportunities offered by energy crops. Progressively, the idea of creating a local biogas company started to take shape. In 2008, a group of ten local farmers supporting the biogas initiative united their forces to form the Biogas Dalsland economic Association. Together with the local public energy company Trollhättan Energi AB and in collaboration with the knowledge and technology centre Innovatum, they launched the company Biogas Brålanda AB, whose role is to collect, upgrade and distribute biogas to the local communities, while maintaining and upgrading the infrastructures. In the meantime, the neighbouring municipalities Vänersborg and Mellerud, under the lead of Trollhättan Energi AB, financed the construction of a local biogas distribution network and gas grid, operated by the company Näktaktiebolaget Biogas Brålanda. Following their initial discussions, the local energy company Trollhättan Energi AB signed a contract with Biogas Brålanda AB, through which the energy supplier promised to buy the entire biogas production of the company for at least five years. This contract enabled the farmers in the Biogas Dalsland economic Association to obtain the necessary loans and funding to start building their biogas plants in 2011. Two years later, in 2013, the four biogas plants were operational and Biogas Brålanda AB started distributing sustainable energy to the local community. Instead of transporting the raw material over long distances to a bigger biogas plant, it was decided that the gas production would be performed directly on the farms, or closeby. After this first production step, the raw biogas is fed into the local gas grid, and transported to a plant where it is upgraded to biomethane and fuel, which is then distributed to the municipalities and sold to local citizens and businesses.

### **Main activities**

Biogas Brålanda AB is the company upgrading and distributing the raw biogas produced by four biogas plants in the neighbourhood of Trollhättan and Vänersborg, in the Southwest of Sweden. Biogas is produced from a mix of feedstocks; manure (80%), agricultural waste (10%) provided by local farmers, and organic waste (10%) from local industries, such as slaughterhouses and a nearby candy factory. From the four digesters located next to the farms, the raw biogas is transported to a dedicated infrastructure operated by Biogas Brålanda AB, where it is upgraded into biomethane as biofuel. The biomethane is then sold at local filling stations to customers and is also used to power the public buses. Driven by the



desire to be part of the energy transition, the members of Biogas Brålanda AB and Biogas Dalsland economic Association not only help reduce greenhouse gases emissions from manure but also replace fossil fuels with a more sustainable option.

Biogas Brålanda is 33% owned by the local farmers of the Biogas Dalsland economic Association, who provide the raw material and operate the biogas plants, and 67% by the local public energy company Trollhättan Energi AB, who is also the one and only customer purchasing the gas. The company Biogas Brålanda AB has no employees, but all shareholders are active members of the company and cooperate closely with each other for the business to run smoothly. Shareholders are represented in the company's board, and, occasionally, external consultants are hired to take care of maintenance or for technical upgrades planned on the plants.

### **Market**

Developed in cooperation with all market actors, the business model of Biogas Brålanda truly shows the benefits of collaboration and knowledge exchange. Building upon previous exchanges, the group of farmers from Biogas Dalsland accessed early knowledge on their future client, the energy company Trollhättan Energi AB, and thus tailored their activities to their customer's needs.

The activities of Biogas Brålanda AB focus on the local level and the company is the main provider of bioenergy in the neighbourhood. The local business does face competition from larger fuel companies, but the contract with local energy company Trollhättan Energi AB means Biogas Brålanda AB can always offload their production.

Interest in bioenergy has been growing continuously over the last years and Biogas Brålanda AB is already planning to increase its production. Currently, only half of the manure collected from the 10 farms taking part in the project is used to produce biogas. Since the size of the four biogas digesters does not allow yet to process more raw material, the farmers started upgrading their infrastructures to be able to increase bioenergy production in the future. The additional biogas produced could be sold to the municipalities and private clients, in order to diversify Biogas Brålanda's local customer base.

### **Challenges and solutions**

Public subsidies have been crucial for the farmers to obtain the necessary funding to build the initial infrastructures. Nonetheless, at that time, subsidies were only granted to small-scale digesters. Because of that, the farmers of Biogas Brålanda decided to build four small-scale digesters, instead of a larger one. Since large digesters are more common, it was quite difficult for Biogas Brålanda to find consultants with the necessary expertise on smaller scale plants to build the company's infrastructure. Compared to the small-scale digesters, a larger biogas plant would also have been easier to update and upgrade, and this choice still has an impact today, since the digesters can process only half of the manure produced on the farms. Anyway, this problem may be addressed soon as Biogas Brålanda AB



and Biogas Dalsland economic Association are currently planning to extend the plants to increase production.

The value chain from biogas production to distribution involves a lot of different actors. On the administrative side, it was also a challenge for Biogas Brålanda AB to get the different government and funding bodies supervising each part of the value chain to validate the process in due time. On this point, the help of the municipalities, Trollhättan Energi AB and the local research Centre Innovatum was essential to support the dialogue between relevant authorities and get the different steps of the process validated before the relevant deadlines.

Running a biogas plant is very technical and when Biogas Brålanda started, there was still too little knowledge available to guide the farmers towards the most efficient way to manage their biogas plants. As pioneers of small-scale biogas production, the farmers of Biogas Brålanda had to self-educate themselves, and learn by doing, which of course was a time-consuming process, and ended up causing a few issues in the first years. Since the farmers also still had to run their farms, they had to call on the expertise of local research institutes, such as RISE (formerly JTI), to find adapted solutions. Very little funding was made available to finance the access to technical expertise, and since the concept of small-scale biogas digesters was still quite new at that time, unlike large biogas plants, it cost the farmers a lot of time to find the right experts and fix the issues.

Besides the technical problems, the pioneers of Biogas Brålanda also experienced some troubles with the first Swedish biogas regulations, as their interpretation of the law was considered incorrect. Since the company was using offal as a substrate for biogas production, the residual product from the biogas digestion (digestate), spread as a fertiliser on the fields, was not considered organic. This meant they had to stop using offal for biogas production, until a new European regulation changed the criteria. In addition, the plants must be inspected on an annual basis to comply with environmental and fire safety regulations, which is a heavy burden for the farmers, already busy running their regular businesses.

### **Funding**

The total investment to build the entire infrastructure, including the digesters, the plant transforming raw biogas into biofuel and the distribution grid, amounted to between €7 and €8 million, among which 25% was financed through various subsidies.

The digesters themselves cost nearly €3 million and are owned by the farmers, who received 30% of that amount as investment support from a dedicated European funding programme. Since a maximum of €160,000 could be awarded for each plant, the farmers chose to build four small digesters instead of one larger one. This led to several issues, including higher maintenance costs.

In parallel, the municipalities financed the construction of the distribution grid, for a total amount of €1.9 million, and the company Biogas Brålanda AB built the filling stations and the biogas upgrading plant, for approximately the same price, benefiting from 30-40% subsidies from the Swedish Environment Protection Agency.



The rest of the investment was covered through bank loans, granted after the local energy company Trollhättan Energi AB signed a contract with Biogas Brålanda AB, committing to buy their whole biogas production for five years. In addition, the company benefitted from national climate and innovation support funds; the Swedish government provides incentives for the production and sale of biogas, including tax exemptions.

### **What makes this case innovative?**

From the very beginning, the close collaboration between local actors has been key to the success of Biogas Brålanda AB. Thanks to the support of the local science park Innovatum, the municipalities and the local energy provider Trollhättan Energi AB, the farmers in the region have been one of the first in the country to build and operate small biogas plants connected to a local gas grid providing sustainable energy to the local community. With an innovative cooperative business model, the company is one of the main drivers for the development of the biogas market in the region.

### **Lessons learnt**

In the early stages, the support of the local knowledge centre Innovatum was instrumental in developing the concept. They also acted as project leader until the creation of Biogas Brålanda AB. Of course, the project would not have seen the light of day without the active engagement of the neighbouring municipalities and the local energy provider Trollhättan Energi AB, who worked tirelessly with the farmers to create a viable business model and obtain the necessary funds. Working in close collaboration with local actors also facilitated the investment, as those were split between different organisations, with the municipalities for example financing the construction of the distribution grid. As all partners in Biogas Brålanda AB are dependent on each other in, a solid dialogue between local actors is necessary for the business to operate smoothly.

The location of the plants is ideal, far away from residential areas, and at the same time well connected to the feedstock like manure and the distribution grid thanks to a good logistic chain. Even though the construction of four small biogas plants secures a stable delivery in case one of the plants encounters some issues, the farmers would have preferred to build only one large biogas plant, to facilitate maintenance and upgrading. The funding rules have subsequently been updated, so the advice to future entrepreneurs would be to go for a larger structure if they have enough feedstock. In fact, the farmers of Biogas Dalsland are currently planning to upgrade their biogas plants in order to increase their production and deliver biogas to new local customers in the future. This should also enable them to use different kinds of feedstock, such as municipal waste, food waste, and other types of organic waste available in the region.

