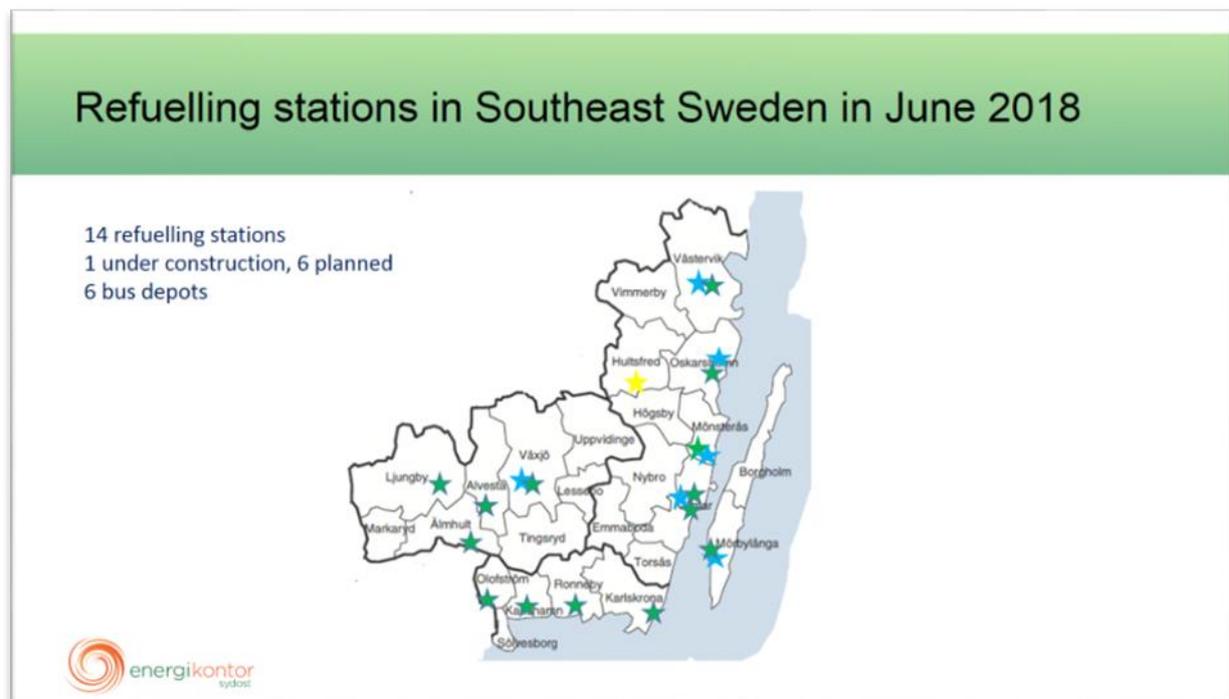


Building a network of refuelling stations for BioGNV in Southeast Sweden



In Sweden, major part of the biomethane produced is used as vehicle fuel. In 2017, 86 % of the CNG was in fact BioCNG i.e. biomethane, which also means that the refuelling stations build the main distribution infrastructure for biomethane. In the whole country there are approx. 170 refuelling stations for NGVs.

Until lately our region seemed to be a white spot on the biomethane map. Since the Biogas Action project started in January 2016, six new refuelling stations and three bus depots have been built in our three counties Blekinge, Kalmar and Kronoberg by two Biogas Sydost members, namely E.ON and Småländska Bränslen. Altogether we have now 14 refuelling stations and six bus depots in our 25 municipalities. Six more refuelling stations are planned and are starting the process described in the case study below.



We were the ones that made it! Representatives of the Local Authority, E.ON and the Municipality of Karlskrona in front of the new public refuelling station in the city of Karlskrona 30th May, 2018.

Background and description of the good practice

Distribution of biomethane

When there is no gas grid, solving the distribution problem becomes crucial if we wish to introduce BioGNVs on the market. The refuelling stations are expensive, between 0.8 and 1.2 M€. Generally, it is an energy company that buys the biomethane from a producer and sells it to customers at a refuelling station that they have built for this purpose. To break even a refuelling station needs to sell approx. 5 GWh i.e. serve 500 passenger cars running 15 000 km/yr or 10 buses. Accordingly, the biomethane markets have traditionally been built on public procurement of buses. Not only do the buses consume a lot of biomethane, even the contracts are made for a longer period, most often ten years, which makes it possible to get a bank loan, invest in production plants etc.

This is however not enough. If we wish to build a network of refuelling stations we even need passenger cars and garbage trucks. For people that wish to buy a car running on biomethane, it is important that they have a refuelling station in their own municipality. For the counties in Southeast Sweden, it means 25 refuelling stations, which is a huge cost for a distributor and a classical catch 22 situation i.e. without a refuelling station there will be no GNVs and without GNVs there will be no refuelling stations. The solution is the same as for buses i.e. public procurement.

Aims and objectives of this action

Between 2011 and 2014, during the Biomethane Regions project, the regional biomethane network, Biogas Sydost, prepared a Regional Strategy and Action Plan for biomethane in the three counties Kalmar, Kronoberg and Blekinge together with their County Administrative Boards that are in charge of the regional climate targets. The strategy was sent for comments to all public stakeholders and many others. We received comments from 35 bodies which was much considering the fact that we only have 25 municipalities, three regions and three county councils. One of the targets that we agreed upon for each country was the number of refuelling stations. Most of the targets set have been implemented during the Biogas Action project.

For Blekinge the goal is one refuelling station in each of the five municipalities. The County also agreed about a goal that the public bodies should make the establishment of refuelling stations possible by procurement of light vehicles and garbage trucks. Today, four of the five municipalities have a refuelling station and a fifth has received support from the Swedish Environmental Agency that supports investments in biomethane, especially production plants and refuelling stations. As soon as the number of cars is sufficient, the fifth refuelling station will be built.

Also, Kalmar County has a goal of one refuelling station in each of the twelve municipalities. Today there are five bus depots and six refuelling stations. Another four refuelling stations are being planned.

In Kronoberg County, they already had one refuelling station, close to IKEA in Älmhult. In addition, they put a goal of three more refuelling stations i.e. one in Växjö, Alvesta and Ljunby. They have all been built by E.ON and a local distributor, Smäländska Bränslen. Three more refuelling stations are planned and have already received support from the Swedish Environmental Agency. Växjö even has a bus depot as well as a goal to have a refuelling station for liquefied biomethane.



The latest refuelling station was opened in Ljungby 19th June 2018

Technical and/or Financial Implementation

When a distributor starts to plan for a refuelling station the establishment process consist of following steps:

Phase 1:

Estimation of the potential volume in the municipality concerned. The process can be triggered by a big customer that shows interest in biomethane or the distributor itself will initiate the process due to the size and/or location of the municipality or another reason. Since the Swedish Environmental Agency grants subsidies for biomethane infrastructure, there is in general an application process in parallel.

When the distributor estimates the potential, they look at the number of vehicles in general but also the number of cars owned by potential bigger customers, especially in the public sector. At the same time a dialog with the public bodies is started to investigate the interest to buy BioCNG vehicles. The volumes that the public bodies represent consist of their own vehicles and the requirements that they present in their procurements (service vehicles, buses, garbage trucks etc.). If it seems that there is an interest and that the volumes in total motivate the establishment of a refuelling station then the distributor needs a letter of intent or similar from the municipality concerned. The additional volumes from e.g. companies and private persons are added on the calculation.

Phase 2: Location

The location is in general a compromise between the price of land and what is suitable for the public bodies (central location) and other actors i.e. bigger traffic lanes.

Phase 3: Estimated time

The time required varies between one, two or three years and depends on the time it takes to find a location, establish letters of intent and get the permissions needed.

Results and contribution from BiogasAction

Project outcomes in terms of BiogasAction's performance indicators

When it comes to the development of biomethane sector, many of the decisions are proceeded by discussions between the Biogas Sydost (Biogas Southeast) partners during the network meetings. Major part of the implementation of the actions included in the Regional Strategy and Action Plan have been implemented during the Biogas Action project. When it comes to distribution of biomethane, the number is three bus depots, six refuelling stations and 8 new refuelling stations waiting to be built. All investments are made by Biogas Sydost members.

The Partners and Stakeholders

Description of project consortium

Who were the stakeholders (utilities, citizens, etc) and how were they involved?

Stakeholders are municipalities, local and regional administrations etc. They invent their needs of vehicles and how they are used to find out which of them are suitable to run on biomethane. They need to make decisions and write letters of intent so that the distributors can be sure that there will be cars using the refuelling station. Other stakeholders are the citizens and companies that can buy biomethane cars and also of course the distributors themselves.

How this Action could be Replicated

The model could be implemented in all regions that don't have a gas grid. But the public procurement is a powerful tool where ever a market for renewables or other products that has a socio-economic value needs to be built.

Lessons Learnt

Cooperation is important whenever different parts of the value chain and/or public as well as private interests need to be synchronized.



The PM for Biogas Action in Sweden and the PM for Biogas Sydost, Hannele Johansson holds a speech at the inauguration of the refuelling station at Mönsterås, Kalmar County in September 2017.

Find out more about this and other BiogasAction topics at: <http://biogasaction.eu/>

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