

RES-e Regions: WP 4: Specific technology promotion

Technology selection for Västra Götaland, Sweden: Biogas CHP

Background

Biogas in Sweden has been developed for a long time especially at sewage treatment plants. The main purpose has been to stabilise the sludge not for energy production purpose which has led to an ineffective use of the biogas if any use at all – much of the gas is just burned without any useful way of using the heat. Larger plants have been established during the 1990s where organic municipal household and slaughter house waste are treated.

The interest of farm scale biogas production has varied over the decades in Sweden. After the oil crises in the 70s the interest grew and a few plants were established. But with low electrical prices and high investment costs the investments have stagnated.

Current situation

In Sweden 1.38 TWh was produced in 2001 at 219 plants. Most of the plants are sewage plants and only about 10 plants are farm scale plants. The focus today is to produce vehicle fuel as much as possible.

The biogas has been used for electricity and heat production for internal use at sewage plant since the 1980s and there are almost 20 plants in Västra Götaland today which produces about 100 GWh/year. Most of the new or planned biogas plants will produce vehicle gas and are large scale plants. But with increasing electricity prices, certificates etc the interest and opportunities for small scale CHP production has increased recently.

Barriers

- Large investment cost - the plant has a relatively high cost for investment due to the gas handling and security aspects
- Low electrical price – Sweden has had low electricity prices for a long time since the large scale hydro power and the nuclear power has low operational costs
- Taxation rules not in favour of CHP production at sewage plants
- Not energy production or use as main purpose for biogas production – since the production is mainly at sewage plants the reason for digestion is to stabilise the sludge not to optimise the gas production and use
- Lack of information amongst specific key actors regarding the environmental and economic advantages, prospects and new technologies etc
- Lack of know-how amongst key stakeholders and lack of specialised actors which can provide this know-how and experience.

Opportunities

- Large amount of produced gas not used for energy production – several sewage plants burn the gas in a torch since they have no use for it
- Raised electrical prices and green certificates
- Technology development in small scale biogas production as well as for CHP production – improved technique and new options for crop use in the production has made it more economical
- Opportunities for farmers – environmentally, economically and technically

Target Groups

New market actors, for example farmers, have shown an increased interest of biogas production with increased prices, cost for fertilizer and demand on ecological growing and food production. The benefits for the farmers are many – increase value of the manure as nutrient, extra income, possibility to be self-supportive of heat and electricity etc.

Sewage plant operators is a target group that mostly have the biogas production but needs help with the use of it. Lots of biogas is just burned in a torch since there has been no use of it. But the same driving forces as for the farmer - increased prices etc, - makes it more interesting to look at CHP production at sewage plants.

The main target groups are:

- Interested farmers
- Local and regional association for farmers (LRF)
- Sewage plant and land fill site operators/managers
- Project developers and consultants
- Local politicians and decision makers
- Local utilities and district heating operators.

Actions needed

The actions needed for decreasing the barriers and to stimulate the development in the region which could be implemented through this project are as follows:

- Information about the technologies available
- Information about demonstrated technology in existing plants
- Information about the economic situation and feasibility of biogas CHP in different applications
- Establishment of a forum or platform for dialogue and project development etc. The forum should consist of members or representatives from the target groups and other key stakeholders such as local decision makers, consultants and technology suppliers etc.