

## Best-Practice Policy, Legal Framework/ Financing Instrument

Subject:	<b>Best-Practice Policy, Legal Framework &amp; Financing Instrument</b>
Region:	<b>Regin Västra Götaland (B-region)</b>
Description:	<b>Market survey of DH systems using solid biofuels in Västra Götaland.</b>
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### Market survey - Summary

Market survey of existing block and district heating plants based on wood fuels in Region Västra Götaland. The following feasibility studies are presented in fact sheet D3.1.

### Initial situation

Region Västra Götaland comprises 1.6 million inhabitants on 24 000 km<sup>2</sup>, i.e. 66 inhabitants per km<sup>2</sup>, which is equal to the average population density within Europe. The region has 49 municipalities, the smallest with 5 000 inhabitants and the largest with 500 000 inhabitants (City of Gothenburg). All municipalities have one or more block and/or district heating plants using solid wood fuels. A couple of municipalities already have a solar heating plant.

Many heating plants using solid biofuels, especially wood chips, have often only one boiler that runs all year around, sometimes with sometimes without a buffer storage tank. This means in many cases that the boiler runs on very low power with low efficiency due to the low heat demand during the summer months. A combination with a storage and solar collectors makes it possible to run the boiler with a higher efficiency (and less emissions) and thereby save more wood fuels than the amount replaced by the solar heat. However, the low price for wood fuels together with lack of awareness about solar collectors, etc. creates small incentives to invest in a solar system.



## Objectives

The aim here is to investigate the interest and the possibilities to complement existing block and district heating systems based on solid biofuels with a solar heating system within Region Västra Götaland. The project will be carried out in three steps as described below.

## Strategy

First, a **market survey** is initiated and evaluated. The survey will result in a list with information about plants in order to enable a selection of potential plants that may be complemented with a solar system.

Second, **feasibility studies** will be carried out for a number of plants identified in the first step. The most feasible plants (site and economics) will go on to a pre-design study and an application for co-financing if and when required.

Third, individual or common calls for tenders will be prepared based on a couple of pre-design studies and communicated to interested contractors, with the aim to realize at least one plant during 2017-2018 that can be used as a demonstration plant for other interested actors.

This fact sheet presents a summary of the work with, and the result of, the **market survey**.

## Measures and actions

There is not one single source that provides information about heating plants with biofuel boilers in Sweden, so data were gathered based on two main sources.

First, a questionnaire was developed and distributed to all municipalities asking for basic information about their heating plants, especially those with biofuel (wood) boilers larger with a nominal power of 200 kW or more.

Second, information available on the homepages of members of the Swedish District Heating Association Region Västra Götaland, was gathered.

Third, the above was evaluated for duplicates and complemented with data from complementary sources.

Fourth, the result of the survey was communicated by e-mail and presented at a seminar in order to be as complete as possible, at least regarding heating plants using biofuels (primarily wood).

## Varying access

The existing information about heating plants had to be gathered from different sources which was rather time consuming.

The information about the heating plants that can be found on internet (municipalities, district heating association, district heating providers themselves, etc.) is very different. Some information contains everything



from detailed data and pictures of heating plants to detailed descriptions of the heat distribution system connected to the plants, while there is lack of any information in some cases.

The same is valid for contact information. Some organisations present lists of employees with their responsibilities, while others only have information how district heating customers can send questions to a help desk.

In our case we were helped by the regional energy office – Hållbar Utveckling Väst - which had contact persons (energy advisors) in all municipalities. The knowledge about the local situation varied however among the contact persons and thereby the quality of data and contacts received.

## Results

There are >40 identified wood chips boilers, out of which >25 are owned by the municipalities and the rest are owned by ESCO's. The sizes of the wood chips boilers vary from a few MW up to 130 MW (often for combined heat and power).

There are >35 identified wood pellets boilers, out of which about 30 are owned by the municipalities and the rest are owned by ESCO's. The sizes of the wood pellet boilers, with one exception (100 MW), vary from 100 kW up to a couple of MW.

There are <10 identified wood briquettes boilers, all owned by the municipalities. The sizes of the wood briquettes boilers vary between 1 and 10 MW.

There are four plants with solar heating plants. The sizes of the solar heating plants vary from 0.4 – 7 MW.

One of the prerequisites to complement an existing heating plant with solar heating is that there is some place where the collector array, and possibly also a storage tank, can be mounted. Therefore, the location of the heating plant has been identified in order to rank them from a feasibility point of view.

## Lessons learned

The existing information about heating plants had to be gathered from different sources which was rather time consuming. The information about the heating plants that could be gathered with a reasonable effort varied a lot. The market survey carried out as, and documented in, a Master thesis (Chalmers University of Technology), is of great value for the continuation of the project. The market survey has also been presented at a regional seminar (in Alingsås) and at the SDH conference in Billund 2016.

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