A presentation by Bioenergy Smaland-Expo Växjö –

Bioenergy for municipalities, regions and industry

RES market places

Energikontor Sydost
Energy Agency for Southeast Sweden

Biomass

Fire wood is generally used to heat one family houses. Split logs are trimmed or untrimmed trunk wood (< 50 cm). Boilers for fire wood are usually applied up to 100 kW. Bigger plants are uncommon. Fire wood heatings usually requires a lot of work.

Pellets are small cylindrical pieces that are produced of shavings, wood chips or bark. The moisture content is ususally under 10 percent. Pellets are more expansive but easy to handle, transport, store and enable a fully automated heat production. Pellets are usually applied in the range of 10 to 100 kW. They can be used to heat one family houses or apartment buildings but also in small local heating plants.

Wood powder is fine powdered fuel. The main part is smaller than 1 mm and the moisture content is normally under 10 percent. Wood power is used in big plants around 100 MW.

Wood chips have about the size of a matchbox and enables a fully automated heat production. The moisture content ranges between 20 and 25 percent which demands special care during handling and storage. Wood chips are generally used in bigger plants (1-100 MW) where one supplies heat as a product.

Briquettes have a diameter over 25 mm and consist of dried, pressed shavings. The moisture content is normally under 15 percent. The application range is round about 1 MW. Briquettes can be used in fireplaces and briquette plants to deliver heat via local heating networks.

Grain is a reasonable possible alternative to the wooden fuels, however not as established as wood yet.

Seeing is believing

Energikontor Sydost (Energy Agency for Southeast Sweden) works for encouraging broad development within the field of energy in the counties of Kalmar and Kronoberg. Our main objective is to optimize energy consumption and to increase the share in renewable energies like biomass, solar and wind power.

Seeing is believing and the best way to show the potential of bioenergy application in the region of Energikontor Sydost. This brochure outlines the different possibilities of local heating applications to show the potentials of renewable energies. The different examples range from small-scale biomass boilers for local heating to bigger district heating plants. This brochure shall initiate new initiatives within the bioenergysector and function as a first guideline.

Energikontor Sydost has already carried out 82 information studies on possible changeovers to bioenergy in the counties of Blekinge and Småland over 2004/2005 as part of different projects. You are welcome to visit us in the region of Kronoberg in the south east of Sweden!

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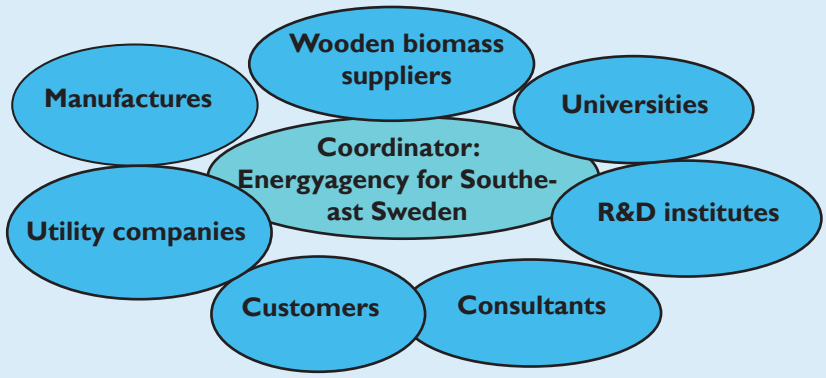
BioEnergy Småland – Expo Växjö
A Public – Private Partnership



The city of Växjö decided in 1996 to become fossil fuel free and the county of Kronoberg adopted a similar goal to strive for. In 1996, bioenergy companies in Växjö and Småland founded the Bioenergy Group Ltd. A few years later did the City of Växjö, Växjö University and the Bioenergy Group Ltd. decide to invite more companies and institutions in the region to cooperate in a closely linked group coordinated by Energikontor Sydost (Energy Agency for South East Sweden). Thus “Bioenergy Småland – Expo Växjö” was formed.

This group is involved in technical visits, bioenergy export programmes and information services. Everything relevant to the bioenergy chain can be found around Växjö, from the forest equipment to the CHP plant were both heat and electricity are produced. Read more about Bioenergy Smaland on the webbsite http://www.energikontor-so.com/BioEnergy/bioenergyindex.htm

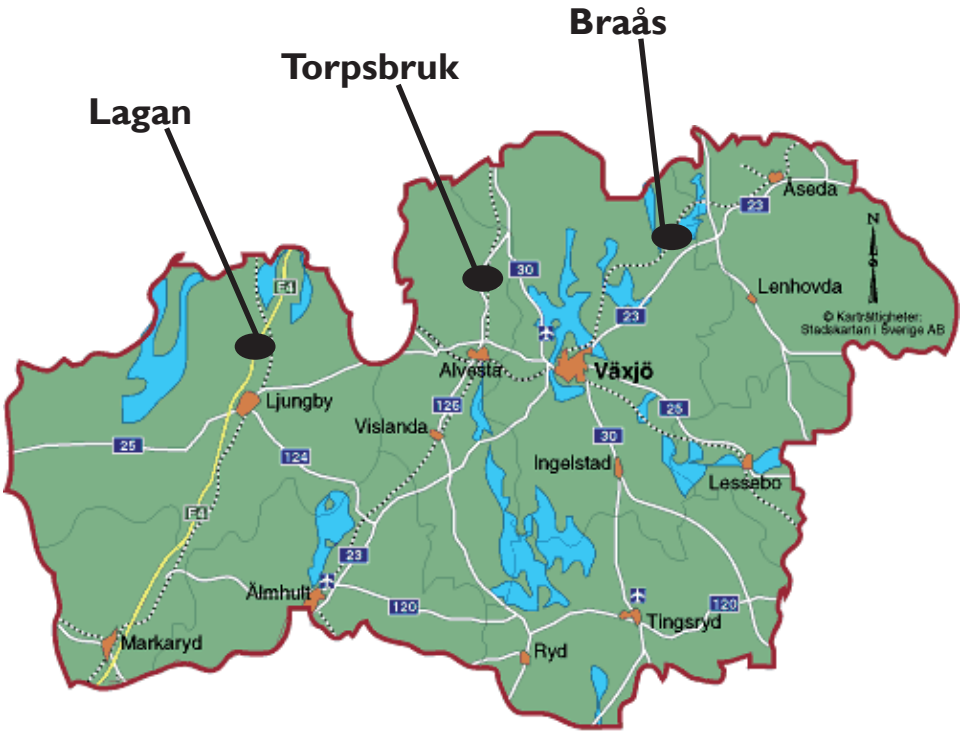
Profitable without grant

Investments can be profitable without grants as you can see amongst others in the following examples. Especially with regard to increasing oil prizes can a changeover be profitable. Fjärrvärme Lagan (district heating) for example has been realized without promotion and is now operated successfully by E.ON.

Biomass usage contributes to strengthen local and regional structures. Bioenergy creates new jobs on local and regional levels, makes independent of fossil fuels, optimizes energy usage by replacing old ineffective plants with new more effective plants and last but not least is environmentally sound – a success across the board.

Three good examples on bioenergy plants in Kronoberg

The following examples shall give a short overview how and for what bionenergy can be used. If you want to visit a plant please contact us. We can help you to organise technical visits.



District heating in Lagan

E.ON has built and is running a district heating network since 2000 on request of the local authority of Ljungby to provide local apartment buildings in Lagan with heat. The field of action was quickly enlarged by further connection of apartment buildings and one family houses. E.ON provides round about 170 customers thereof 130 are one family houses.

A lot of one family house owners changeover to local heat to exchange their 15-20 year old oil boilers, both environmentally sound and economic. Local heat is produced with biomass and oil however 98 percent of the heat production is biomass based. The biomass based district heating replaced round about 7-9 GWh in Lagan since the start in 2000 and by doing so reduced the CO_2 emission according to the calculations.

Key data Lagan

Customers: Municipal appartment buildings, apartment buildings, one family houses (ca 170 customers thereof ca 130 one family houses)
Main unit: Briquettes, 2 MW, Osby PB2
Complement unit. Oil, 3,8 MW
Energy balance:
10.000 MWh/year heat from briquettes
200 MWh/year heat from oil
2300 t/year briquettes demand
Fuel: The briquettes energy content is 4,6 MWh/t, weight per volume 650 kg/m3, moisture content 10-12 percent
Investor, Operator, Planning: E.ON
Initiator: Municipality of Ljungby
Year of commissioning: 2000

District heating in Torpsbruk

Torpsbruk is a little place in the south of Sweden with round about 360 inhabitants. The local housing company AllbuHus AB was interested in converting to biofuel in order to save money for heating costs and to protect the environment.

With regard to this Energikontor Sydost has made an informationstudy in cooperation with the municipality of Alvesta on the possibilities to use renewable energy sources for heating in some of the apartment buildings in Torpsbruk to initiate the changeover. The result was a pellets boiler, which now provides heating energy to round about 64 flats.

Key data Torpsbruk

Customers: Apartment building in Torpsbruk (64 flats plus a few small accomodations for former shops)
Main unit: Pellets 0,75 MW
Complement unit: Oil
Energy balance:
875 MWh/year heat from pellets
200 t/year pellets demand
Fuel: The pellets energy content is 4,8 MWh/t, weight per volume 680 kg/m3, moisture content 10 percent
Investor, Initiator, Operator: AllboHus AB
Planning: Energikontor Sydost
Grant: 30 percent statefunding
Year of commissioning: 2004

District heating in Braås

Braås is located round about 20 km north of Växjö. The plant in Braås consists of one wood chips boiler, one pellets boiler and two oil boilers for reserve. The pellet boiler is mainly used for peak and low load.

Key account is Volvo Articulated Haulers AB who use 60-65 percent of the energy produced at the plant in Braås.

Key data Braås

Customers: 106 customers thereof 32 apartment buildings and industries and 74 one family houses
Main unit: One wood chip boiler 3,5 MW and one pellets boiler 1,5 MW
Complement unit: Oil boilers 3 MW and 6 MW
Energy balance:
16.700 MWh/year heat from wood chips
520 MWh/year heat from oill
979 t/year pellets and 16.500 m3 wood chips per year demand
Fuel: The wood chips and pellets energy content is 0,9 MWh/t, weight per volume 350 kg/m3, moisture content 35-50 percent
Investor, Operator, Planning, Initiator: VEAB
Year of commissioning: 1999

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