Biomass and District Heating in Sweden

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Large scale biomass in Västerås
District Heating in Sweden

- Half of the heat market, 51 TWh
- Yearly turn over 2,3 billion Euro
- 650 urban areas has district heating
- Present in every community with more than 10 000 inhabitants

- Municipal: 70%
- Private/foreign: 22%
- Government: 8%
District Heating as we see it

- Industrial Waste Heat
- Energy from Waste
- Bio Fuels
- Fuel production
- Combined Heat and Power
- Fossil Fuels, peak load
- Heat market
The idea of District Heating

- The basic thinking of DH is to find cheap energy sources for the system, energy sources which can not be used without DH
  - industrial surplus energy,
  - energy from waste,
  - energy from electricity production (CHP)
  - other difficult fuel..“
- Energy with very low primary resource factor
The change in use of fuel/energy for District Heating in Sweden 1980 to 2007

Carbon dioxide

TWh

Årta

CO2 (kg/MWh)

Wood
Others
Surplus heat
Waste
Peat
Heatpumps
El. boilers
Coal
Natural gas
Oil
Why? - continues increasing taxes has changed the DH

Källa: Svensk Fjärrvärme
Development of CHP on biomass

Electricity production in CHP (TWh)

Planed electricity production CHP up to 2015

Driving force – Green certificates
Over- and undersupply areas for forest biomass

(Johanna Enström, Skogforsk)
The Opportunity for DH -
Internalization of environmental impact

- Energy taxes as a means of changing the use of energy from fossil fuel to renewable energy has been used. From 1990 Carbon tax
- DH has been successful in implementing the idea to phase out fossil fuels
- DH can provide cheaper energy to the customer by using cheaper energy sources, such as energy from waste, CHP, industrial surplus heat and biomass

But…
The situation today

- Dependence of biomass
- Dependence of the forest industry
- Rising prices
  - From 13 euro/MWh to almost 20 in 5 years
Changes needed in the supply side(1)

- A broader assortment of fuel for the market:
  - more fuel from the forest, such as the stumps and thin trees. Energy harvesting?
  - peat needed for difficult fuels and as complement
  - more fuel from other sectors such as agriculture
  - “Energy” statistics for biofuel and biomass

- This can be done through R&D, lobbying, cooperation within the sector
Changes needed in the supply side (2)

- New business strategies –
  - biofuel combine: produce heat, electricity and biofuels
  - become forest owner, integrate up stream
  - logistic solutions, train, terminal, storage
- Sustainability criteria– CSR, control over the whole chain from forest to ash
- More knowledge about support systems all over EU
Thank you for your attention

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District Heating expansion, why?

1948
The First DH/CHP in Karlstad

1948-2007
Need for more Electricity
Urbanisation
The Million Program
Oil crisis
Fast economic and social growth
Green House Gases
Kyoto
Deregulation

2009-06-22

Aebiom - Biomass for District Heating and Cooling