Bioenergy in Denmark

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DI Bioenergy – Danish Bioenergy Association
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Photo: DONG Energy
Agenda

1. DI Bioenergy – Danish Bioenergy Association
2. Bioenergy in the Danish Energy System
3. Mapping of the Danish Bioenergy Cluster
4. Conclusion
Danish Bioenergy Association

The voice and forum of the bioenergy industry

Members include technology producers and suppliers, consulting engineers, utilities and developers

Members activities are combustion, biofuels, biogas and biorefining

DI Bioenergy is an industry association within the Confederation of Danish Industry and member of the European Biomass Association
Bioenergy is indispensable in the green transition

- Fast transition from coal
- Greening of the gas grid
- Flexibility in the energy system
- Central in transition to 2030
- Jobs
- Exports
- Transport and agriculture
- Solves waste problem
- Step towards a bio-based society
Production of renewable energy

Source: Danish Energy Agency, 2015
Consumption of renewable energy

Source: Danish Energy Agency, 2015
Imports of Biomass

• Domestic wood pellet production approx. 100,000 tons

• Wood pellet imports approx. 2,100,000 tons

• Consumption will continue to grow due to conversion of central CHP plant from coal and gas to biomass

• Some production of wood chips from Danish forests and wood industry

• New chip-based plant will increase imports of wood chips
Industry agreement to ensure sustainable biomass

- CHP plants recognise sustainability
- Preference for EU-wide criteria
- Industry agreement adopted to ensure sustainability of wood pellets and chips
- Inspired by similar regulation or voluntary agreements in Belgium, the Netherlands and particularly the UK
- Valid for all plants above 20MW capacity
- Plants oblige themselves to document sustainability with implementation from 40% in 2016 to 100% in 2019
Danish energy and climate policy

• Ambitious climate and energy policy, starting 1985 with a decision not to use nuclear energy and later adding incentives for biomass and wind

• Based on energy agreements in parliament adopted by vast parliamentary majority, lasting usually two terms

• Instruments are a mix of non-financial regulation and taxes and subsidies

• Present agreement from 2012 includes a vision of an energy system independent from fossil fuels by 2050

• Lately increased focus on cost-effectiveness
Denmark’s climate targets and effects

- Reduction in energy consumption (2010): 9%
- Reduction in CO₂ emissions (1990): 40%
- Share of renewable energy: 40%
- Share of wind in electricity supply: 50%
- Independence from fossil fuels

2020
2050
Taxes and subsidies in power production and co-generated heat
Conversion of central power plants from coal to biomass

DONG Energy will stop using coal 2023!

Danish power plants are in a historic conversion from coal to wood pellets and chips

Result of the latest energy agreement 2012

The map shows the plans as of 2012 and towards 2020

In addition, there are many local heating plants

Source: Ingeniøren, 2012
New biogas plants for upgrading and injection into the gas-grid

Improved support for biogas and upgrading to natural gas quality since 2014

Support 2016-2020: CHP 15.5 €/GJ
Gas grid 15.5 €/GJ
Industry 10.1 €/GJ
Transport 10.1 €/GJ
Other (heat) 4.9 €/GJ

For all 1.4€/GJ will be phased out towards 2020

Most new biogas plants are built for upgrading to natural gas quality for the gas grid

More new plants are in the pipeline

Source: Ingeniøren, 2014
Bioenergy is challenged

- Sustainability
- Chatham House report
- ILUC LULUCF
- Circular economy
- Is there enough biomass?
- Materials?
- Cascading?
- Transitional technology?
The Danish Bioenergy Cluster

1,200 COMPANIES
11,500 JOBS
3.3 bn. Euro TURN-OVER
1.1 bn. Euro EXPORTS

Source: DI Bioenergy, FORCE, INBIOM
Bioenergy Cluster - Method

1. Identification of 1200 bioenergy-related companies
2. 43 segments, after technology and value chain
3. Employees, turn-over and exports from Statistical Bureau
4. Individual analysis of 71 companies due to complexity
5. Some utilities analysed by sectorial analysis
Turn-over in the Bioenergy Cluster

Total Turn-Over
25 bn. DKK
= Euro 3,3 bn.

Source: DI Bioenergy, FORCE, INBIOM
Jobs in the Bioenergy Cluster

- Raw material Production
- Trade and Logistics
- Operators
- Technology Manufacturers
- Consulting/Services

Source: DI Bioenergy, FORCE, INBIOM
Exports of the Bioenergy Cluster

1,1 Bn Euro

- Combustion Technology 47%
- Biofuels and Biorefining 29%
- Biogas Technology 19%
- Other 5%

Source: DI Bioenergy, FORCE, INBIOM
Result and impact

• Target groups: All stakeholders in bioenergy
• Positive narrative of bioenergy across technologies
• Bioenergy role in Danish green transition - and derived effects in jobs og exports
• Remember bioenergy when designing future regulatory environment
• Continued strengthening of competencies and technology development in national programmes
More on Danish Energy Industry Innovation ...
Danish Bioenergy Association
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For more information:

www.energi.di.dk/dibioenergi – Danish Bioenergy Association
www.energi.di.dk – Danish Energy Industries Federation
www.stateofgreen.com – State of Green, projects and companies
www.ens.dk – Danish Energy Agency