COUNTRY REPORT
April 2013 Denmark

16-19 April 2013
Bern, Switzerland
Biogas plants in Denmark

- 22 Centralised biogas plants (CAD)
- 60 Farm biogas plants

53 new biogas projects in 2013, of which:

19 projects received government grants in 2012 (a total of 268 mil.DKK)

- 10 CAD projects (including up-grading existing plants at Filskov and Thorsø)
- 4 projects of organic farm biogas plants
- 5 projects of conventional farm biogas plants
The role of biogas in the Danish society

• Stabilization of wind power dominated energy - Security of supply
• Efficient and cost reduction of greenhouse gases
• Environmental Effects (aquatic environment, smell)
• Recycling of nutrients
• Cleaner transport (CO2, health, noise)
• Creation of jobs
• Exports of technology and food
Wind energy to the gas grid

Principle diagram (Hansen, 2013)
A possible scenario for the use of biogas as vehicle fuel in Denmark
(Ea Energianalyse)

Estimated fuel saving up to 1 bill. DKK /year by 2035

• Hot topic for the Danish energy and transport sector
• Many actors involved (state, regions, municipalities, transport providers, automakers and energy companies).
• Much lobby and a strong focus on gas; many conferences and much debate.
• Need for tests to provide facts and data.
• A network is under way in cooperation with TINV, DEA and the Traffic Authority.

Main barriers:

• Low economic gain due switching to the new technology
• Expensive investments in infrastructure
• More expensive vehicles and relatively few models
• Uncertainty concerning the real vehicle performance, durability, used car prices, etc., thus difficult to take political decisions
• Green value of biogas/CO2 gains difficult to calculate

What should be done:

• Need to have combined focused efforts, not only on infrastructure
• Possible combinations of demonstration support for fleet vehicles, tax reductions etc
A possible scenario for the use of gas /biogas as vehicle fuel in Denmark (Ea Energianalyse)

The scenario assumes that biogas represents 40% of the gas used for transport in 2035 (6.5 PJ of biogas).

<table>
<thead>
<tr>
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<th>Cars</th>
<th>Vans</th>
<th>Trucks</th>
<th>Buses</th>
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<tbody>
<tr>
<td></td>
<td>Number 1000 pcs</td>
<td>%</td>
<td>Number 1000 pcs</td>
<td>%</td>
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<tr>
<td>2020</td>
<td>9</td>
<td>-</td>
<td>4</td>
<td>1%</td>
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<tr>
<td>2035</td>
<td>199</td>
<td>7%</td>
<td>71</td>
<td>10%</td>
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Biogas and “green transport” in the Middle Jutland Region

- Reduction of CO2 emissions is the main aim of the future of transport
- It requires alternative fuels
- Natural gas and GTL are not the solution for the long-term
- Biogas (and landfill gas) are the best alternatives to reduce emissions of CO2
- Methane emissions must be limited

Several projects in the pipeline
Holstebro Municipality will have biogas city buses

- Total fleet of 9 buses
- Operator investment 25 mil. DKK
- Costs for tanks 5.9 mil. DKK

- The required volume of gas bus operations comes from natural gas network in the form of biogas is upgraded to natural gas quality - renewable gas - from Maabjerg BioEnergy.
- Documentation done by Energinet.dk 's certification system.
- Vestforsyning will be responsible for the construction and operation of the service station

Next step

- New city bus network - roadmaps developed April-June 2013
- Preparation of tender
- Questions in the contract negotiations - political decisions
- Result of contract negotiations - responsibilities and the need for facilities
- Preparation of project - involving operator
- Construction phase for supply, service stations and tank farms
- The project is in operation (June 2014)
Biogas for transport - project in Fredericia Municipality

• Establishment of a filling station in connection with the existing biogas
• Testing the use of biogas as vehicle fuel in city buses

Budget: 5 mil.DKK

Status:

• Licensing Round closed
• Operator chosen
• Buses will come into operation during autumn 2013