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# COUNTRY REPORT 2012

## Denmark

**13-14 November 2012**

**Vienna, Austria**

# Danish biogas

## Production and potential



2020

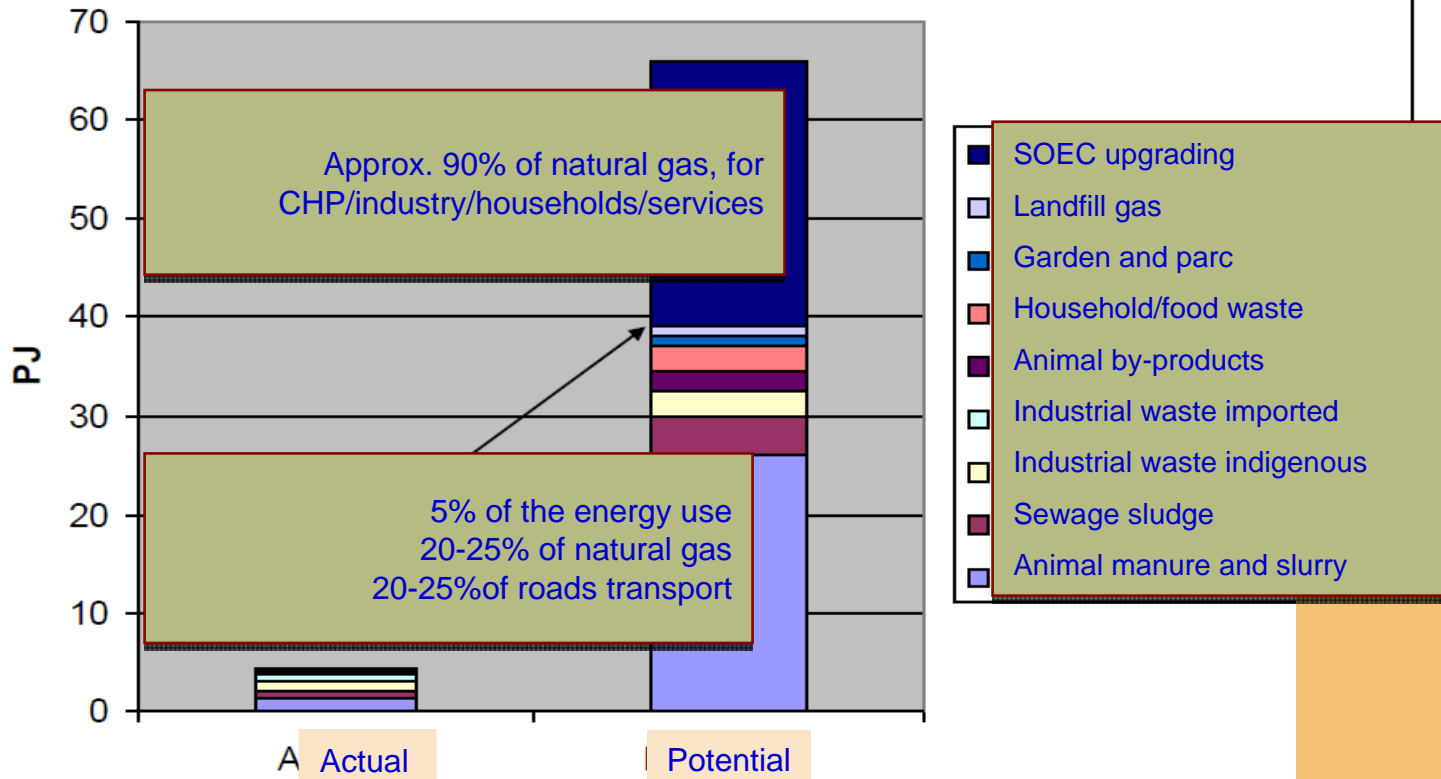
- **40 PJ of energy from biogas** (*Potential estimated by Danish Energy Agency is based on manure, waste and residues from the food industry, sewage sludge etc.*)
- **50% of the produced animal manure will be supplied as feedstock for biogas**
- **It requires the establishment of 40-50 new large biogas plants.**

2012

- **4PJ of energy produced on biogas**
- **6 % of the produced animal manure is supplied to biogas plants in Denmark.**



# Biogas - actual and potential



## Challenges

Energy crops  
Organic biogas  
Natural areas  
Aquatic biomass

Brancheforeningen for Biogas

# SOEC process for biogas upgrading

- SOEC = Solid Oxide Electrolyses Cell, and is in principle the same as a SOFC fuel cell
- The process is reversed, so that instead of producing power, it uses the fuel cell for electrolysis
- Power from wind mills and CO<sub>2</sub> from power plants are converted into storage-stable fuel as synthesis gas( hydrogen and CO )
- The 40 percent of CO<sub>2</sub> from biogas can be used as well
  
- In Denmark, Risø DTU, Haldor Topsoe Fuel Cell and Dong Energy are some of the companies currently working with SOEC development for biogas upgrading
- A massive market introduction is expected in the period 2018-2020
- The energy potential of biogas will increase from 40 PJ to 67 PJ
- Biogas will cover 10% of the energy consumption in Denmark.



# Initiative for promotion of organic biogas



## Competence Centre for Organic Biogas

Established in 2010 by Organic Farming Association

### Objectives:

- Collect theoretical and practical knowledge about biogas
- Document synergies between ecology and biogas production
- Collect results from existing farm and common facilities
- Store and transmit the information collected
- Design prototypes
- Build networks and farmers' groups on organic biogas production
- Courses, study tours, technical material
- Feasibility studies

# The new Danish Energy Agreement from March 2012

## Biogas is a key area !!!!!

*On 22 in March 2012, the Danish government entered into a broad energy policy agreement for the period 2012-2020. The agreement calls for a significant change of the Danish energy supply. Biogas is a key area, where the agreement includes the elements described below:*

**Biogas support increased to 115 DKK per GJ in 2012 (for biogas used in power plants and for distribution through the gas network, after upgrading).**

### The support is divided into:

- - a continuation of the current subsidy of 79 per GJ
- - an additional grant of 26 DKK per GJ, but tapered off when gas prices rise
- - an additional grant of DKK 10 per GJ, tapered off with 2 DKK per GJ per year from 2016 to 2020
  
- • New subsidies for the use of biogas for process purposes in companies and for transport, which is composed of the following elements:
  - basic subsidy of 39 DKK per GJ
  - an additional grant of 26 DKK per GJ, tapered off when gas prices rise
  - an additional grant of 10 DKK / GJ, scaled down with 2 DKK per GJ per year from 2016 to 2020
  
- • Start-up grant increased from 20 to 30 per cent from 2012
  
- • Clean biogas-based power plants can voluntarily switch from fixed electricity price to price surcharges
  
- • The local natural gas companies are allowed to engage in biogas production

# Biogas Task Force

## 2012-2015

**A Task Force for biogas was established, to evaluate and support new biogas projects**

### Objectives:

1. Development of biogas takes place in a way that meets the political expectations and goals
2. Barriers, including financial and how they can be overcome
3. Actual integration of biogas in the energy system - technical, organizational etc
4. Possible roles of biogas in the energy system in the long term
5. New policy initiatives that may be needed to meet policy goals in the short and long term

### Tasks:

The specific incorporation of the new biogas in energy supply, including the use of gas, the cost of the necessary infrastructure and contractual relationships

Ensure effective and appropriate inclusion of biogas in energy supply, which is consistent with policy objectives and targets, including that 50% of the manure must be supplied to biogas plants in 2020

### Three themes:

1. Analysis of market opportunities for biogas/ alternative integration of biogas in the energy system in the short and long term
2. Biomass resources/Mapping the potential of biomass for biogas.
3. Financing/Analysis of opportunities to promote investment in biogas