

IEA Bioenergy - Task 37

Country Report

Norway

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To keep in mind...

- The main energy sources used in Norway are petroleum and hydropower
- Close to 60% of the energy consumption in Norway is based on renewable sources, mainly hydropower and wood
- Energy production 2010:
 - 0.5 TWh biogas
 - 118 TWh hydropower
 - 1 000 TWh of natural gas (excluding LNG)

Political background and goals

- White paper to Parliament No. 39 (2008-2009), 30% (4-5 Mtonnes /year) of manure + 600 000 tonnes of food waste. Main incentive was to **reduce emissions of GHG from agriculture** by 0.5 Mton of CO₂- equivalents.
- In 2012 another white paper (Meld St 21, 2011-2012): the costs analysis of this measure was not completed. Later reports (Klimakur, 2020) have claimed relatively **high costs** due to high costs of production and distribution of biogas. Parliament compromise; to prepare a biogas strategy. Still, the development of biogas plants, especially those treating manure has been limited.
- The political platform for the new government formed by the Conservative Party and the Progress Party (7th Oct. 2013) confirms that a **strategy for biogas fuel** shall be prepared.

Status biogas production in Norway (2010)

Substrate/Plant type	Number of plants	Production (GWh/year)
Sewage sludge ¹⁾	25	164
Biowaste	11	63
Agriculture	4	3
Industrial	3	
Landfills	85	270
Total	120	500

Present production capacity excluding Landfills: 300 GWh

^[1] 2008

Production potential

Status	GWh
Theoretical potential	5 800
Total realistic potential 2020	2 300
Produced today	500
Specific plans presented	300
Remaining realistic potential 2020	1 500

2030 potential:

- Amount of available substrates may increase
- Increased yield per unit of substrate
- When wood becomes a substrate, estimated additional 20 TWh/y

Utilization estimates (Enova, 2008)

Type	GWh	%
Electricity		18
Heat		53
Vehicle fuel		2
Flare		19
Unknown		9
Total	500	

- 60% of produced biogas used at plant, 40% distributed
- Approximately 50% of landfill gas for heat and electricity, the rest is flared.

Vehicles

2012: 384 busses operating on gas, of this 72 on biomethane.

Other vehicles operating on biomethane:
Mostly heavy transport and fleet vehicles.

Waste collection trucks in Oslo: 64

Norwegian Mail: 100

Dairy trucks: 4

Political means and financial support systems

Substrate availability:

Landfill guidelines (ban on biodegradables, 2009)

Delivery support system for manure (€ 3.5/t)

Production

Investment aid - depends on size of plant

Use

Transport sector - tax-exemption on road use

Investment aid - infrastructure/sustainable mobility solutions

Green Electricity certificates may affect CHP development