

Goals and results of Task 37
„Energy from Biogas“

Current Task 37 members (2007-2009) are Austria, Canada, Denmark, Finland, France, Germany, Holland, Sweden, Switzerland (Task leader), UK and the European Commission (Clean energy unit, JRC, Petten).

The objectives of Task 37 are to review and exchange information on Anaerobic Digestion (AD) and to coordinate national activities, programs and actions. All steps of biogas production from waste or renewable sources (Energy crops), biogas upgrading, -use and digestate treatment, resp. -use as fertiliser, plus integrated processes (Bio-refineries) are covered.

A number of publications, brochures and country status reports have been produced by the National Team Leaders (available on www.iea-biogas.net) over the last years. Several successful biogas applications are presented as "SUCCESS STORIES" on the task website. National and international workshops, seminars and conferences have been organized by task members.

Currently Austria is elaborating a brochure on "BIOGAS FROM ENERGY CROPS, available by end of 2008. A further success story on more difficult degradable, high nitrogen slaughterhouse wastes, will appear soon at the task web site.

Based on successful developments in Sweden, Switzerland and Germany, significant emphasis is given by most task members to BIOGAS UPGRADING to natural gas quality, grid feeding and / or use as a fuel after compression of bio-methane. A new Task 37 brochure on biogas upgrading will appear soon.

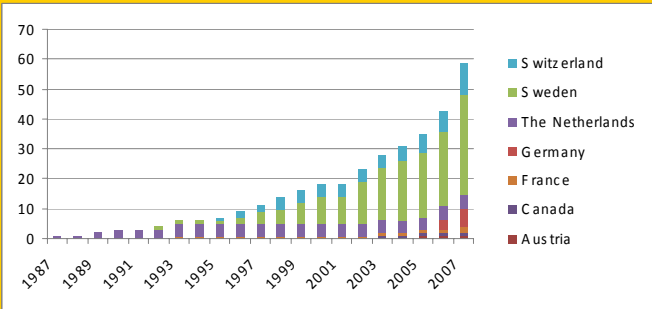
Task 37 - Biogas upgrading brochure

The use of heat from power production in many applications cannot be achieved sufficiently. Experience from 41 Austrian full scale energy crop digestion plants showed a mean value of just 47 % overall use of the energy content of biogas in the course of power generation.

Upgrading of biogas to natural gas quality, i.e. removal of CO2, allows full use of the available energy. Bio-methane can be fed to existing gas grids or compressed for the use as bio-fuel.

The forthcoming new Task 37 brochure "BIOGAS UPGRADING" describes the existing upgrading technologies, i.e. scrubbing, pressure swing absorption and membrane separation. Examples of applications in different countries demonstrate the impressive development and advantages of biogas upgrading.

Applications from Austria are also listed, i.e. Pucking (since 2005), Bruck/Leitha (since 2007), Leoben (from 2009), with capacities from 10-180 Nm3/h raw biogas.



Recent development of biogas upgrading plants in different countries

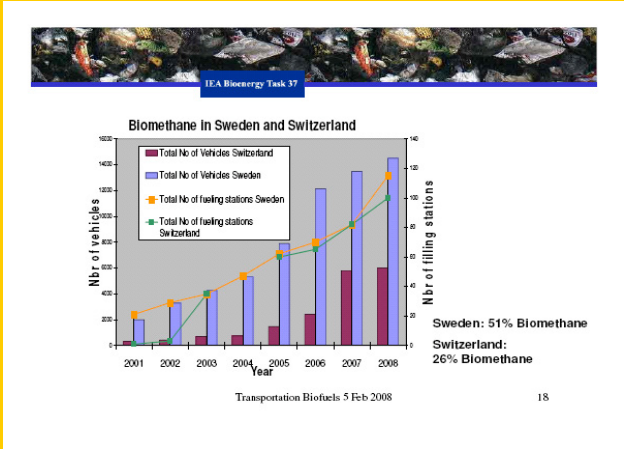
HIGHLIGHTS http://www.iea-biogas.net/
IEA Bioenergy
Task 37 „Energy from Biogas“

Bio-methane as vehicle fuel

Efficient and economically advantageous use of biogas can be achieved through upgrading to natural gas quality, with subsequent compression to vehicle fuel standard.

The Task 37 members Sweden and Switzerland have clearly demonstrated the successful introduction of bio-methane as a fuel, meanwhile replacing considerable shares of 26 % (Switzerland), resp. 51 % (Sweden) of fossil natural gas.

More than 14,000 gas driven vehicles are operated in Sweden, about 6,000 in Switzerland. The number of gas filling stations has been continuously increased, up to more than hundred in each country.



Development of bio-methane fuelling stations and –vehicles in Sweden and Switzerland

Clear advantages for the biogas route

Renewable bio-energy is no longer questioned, but which one fits best?

As a principal basis for an ecological process assessment, the relation between energy provision and energy consumption is generally accepted (Output : Input – ratio). Compared to Biodiesel or Bio-ethanol, biogas results in highest Output to Input ratios (O:I) of up to 16.5.

If the efficiency of land use is considered as a measure, biogas achieves the comparably highest output. While bio-ethanol or bio-diesel result in 170,000 litre / hectare, biogas achieves the threefold output of 500,000 litre / hectare.

Comparative Output : Input - Ratios of Bioenergies

Table with 2 columns: BIO-ENERGY and O : I ratio. Rows include Plant oil\*, Biodiesel\*, Ethanol\*, BtL\* (theoretic calculation), Hydrogen\*, Biogas\*, and a section for BIOGAS-Own measurements (including CED\*\*) listing Biogasplant 1 through 5 with their respective O:I ratios.

\*) Data source: FNR (2006); \*\*) Cumulative Energy Demand