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Country Report, Germany

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Mitglied der
Leibniz-Gemeinschaft

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- Utilization of biogas
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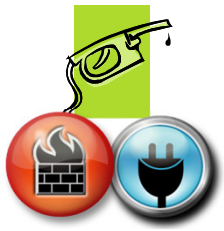
- Bio-energy-village Schlöben, State of Thuringia



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Governmental aims

- June 6, 2011: Redirection of energy policy from the Federal Government of Germany
- Renewable energy a cornerstone of the future energy supply
- By 2020 the share of renewable energy in terms of electricity and whole energy demand should be increased to 35 % and 18%, respectively
- Renewable Energy sources act (EEG) of April 1, 2012 a key element
- Implementation of the EU Directive 2009/28/EC.

Production of biogas

Status of biogas production in Germany from different plants 2012, (BMU, AGEE Stat, supplemented)

Substrate/Plant type	Number of plants	Production GWh/year
Sewage sludge [1)]	1400	3100
Biowaste [2)]	95	4500
Agriculture [3)]	7800	29400
Industrial [4)]	250	3420
Landfills	400	550
Total	**9945**	**40970**

[1)] IFEU (2010) [2)] Witzenhausen Institute (2010), [3)] German biogas association (2012)
[4)] aqua-consult (2011)

Production of biogas

- The technical potential for biogas production in Germany until 2020 amounts to 417 PJ/a (FNR, 2012),

  Thereof →

  - 252 MJ/a energy crops (from 1.6 Mio ha crop land),
  - 105 MJ/a crop residues and animal manure
  - 47 PJ/a organic fraction of municipal solid waste (OFMSW)
  - 13 PJ/a industrial organic wastes

Utilization of biogas, BMU, AGEE Stat, DENA and DBFZ (2012)

Utilisation type	GWh	%
Electricity	26650	65
Heat	14000	34
Vehicle fuel	350	1
Flare	-	-

- 4.4 % of electricity, 1% of heat, and 0.1% of vehicle fuel consumption in Germany is derived from biogas
- 2012; about 120 biomethane feed-in plants were in operation with an installed capacity of 72,000 Nm^3/h
- By 2020 it is planned to have 1000-1400 up-grading plants, most of them with capacities in the range 500-800 Nm^3/h
- Pure biomethane could be fuelled at 119 gas stations
- Approximately 30,000 gasoline-powered passenger cars per year

Financial support systems (EEG 2012)

Plant Size	Basic Bonus (€ ct/kWh)	Substrate category I [1] (€ ct/kWh)	Substrate category II [2] (€ ct/kWh)	bonus for OFMSW [4] (€ ct/kWh)	upgrading bonus (€ ct/kWh)
≤ 75 kWel	25 [3]				3,0 until 700 Nm³/h 2,0 until 1000 Nm³/h 1,0 until 1400 Nm³/h
≤ 150 kWel	14,3	6,0	8,0	16,0	
≤ 500 kWel	12,3	6,0	8,0	16,0	
≤ 750 kWel	11,0	5,0	8,0	14,0	
≤ 5 Mwel	11,0	4,0	8,0	14,0	
≤ 20 MWel	6,0	0,0	0,0	14,0	

[1] Biogas crops, e.g. maize, beets, whole plant silage, > 60 Ma.% animal slurry
[2] Plants from landscape conservation, clover, > 60 Ma.% animal waste,
[3] > 80% animal slurry (Ma.%) [4] organic fraction of municipal solid waste

http://www.bmu.de/en/service/publications/downloads/details/artikel/renewable-energy-sources-act-eeg-2012/

Bioenergy-village Schlöben, State of Thuringia

- All inhabitants of the village, the commune and the farmer are members of a civil-action group
- Operation of a micro-gas grid, of 3 CHP and a local heating system for supplying of 480 inhabitants with heat and electricity

Source: Federal Ministry of Food, Agriculture and Consumer Protection, 2012).

Thank you for your attention!