

Legal framework, policy developments and support schemes on renewable energy in the German biogas sector

Tallin, Estonia
10th February 2010

Agency for Renewable Resources (FNR)



Aino Martikainen

- Who we are: Central coordinating agency in the area of
“Renewable Resources” in Germany
- Founded: October 1993
- Main office: Gülzow, Mecklenburg-Western Pomerania
- Support: Federal Ministry of Food,
Agriculture and Consumer
Protection (BMELV)
- Members: 69
- Employees: 64
- Legal status: Registered Association



- ▶ Status quo
- ▶ Legal framework
- ▶ Development of biogas production and use in Germany
- ▶ Potential
- ▶ Problems
- ▶ Future prospects

► State-of-the-art (2010)

- About 5800 plants with 2300 MW_{el} performance
- Approx. 15 bill. kWh electricity from biogas, equals 2.6 % of the electricity consumption
- Cultivation area of crops for biogas in 2010 circa 650,000 ha
- Approx. 17,000 jobs



► Use of biogas

- Various uses of biogas (electricity, heat, fuel; actually mainly use of decentralised combined heat and power generation (CHP))
- First filling station provides biomethane since 2006
- 48 plants inject biomethane into the German natural gas grid (2010)

► Potential

- Biogas has an energetic potential of 417 PJ/a , this equals about 8 % of the total electricity consumption in Germany

▶ **Power production**

The Renewable Energy Source Act (-> EEG)

▶ **Heat production**

The Renewable Energy Heat Act (-> EEWärmeG)

▶ **Biofuel production**

The Biofuel Quota Act (-> BioKraftQuG)

▶ **Biomethane production**

Acts and guidelines for feed in upgraded biogas into the natural gas grid - Gas Grid Access Ordinance (GasNZV) & Gas Grid Tariff Ordinance (GasNEV)

▶ **Governmental aid**

- Incentive programme for renewable energy projects
- Granting loans with low interest for RES projects
- Promotion of investments in local heat and biogas pipelines (GAK)
- Promotion of investments by the Agro-Investment-Programme (AFP) or by supporting programmes of the Federal States

- ▶ **Renewable Energy Sources Act (EEG) (first version 2000, the newest version of 1 Jan 2009):**
- ▶ The EEG, enacted by the government of Germany, promotes the development of renewable energy sources with a feed-in tariff scheme
- ▶ On 1 January 2009 the latest version of the EEG came into force.
- ▶ Specific conditions for each type of RES
- ▶ Power supply industry is compelled to connect the plants to the grid and to secure the feed in

	Share of capacity	€cents/kWh
Basic tariff	up to 150 kW _{el}	11.55*
	from 150 to 500 kW _{el}	9.09
	from 500 kW _{el} to 5 MW _{el}	8.17
	from 5 MW _{el} to 20 MW _{el}	7.71
Cultivated biomass bonus	up to 150 kW _{el}	6.93
	from 150 to 500 kW _{el}	6.93
	from 500 kW _{el} to 5 MW _{el}	3.96
Manure bonus	up to 150 kW _{el}	3.96
	from 150 to 500 kW _{el}	0.99
Landscape conservation material bonus	up to 500 kW _{el}	1.98
Emission reduction bonus	up to 500 kW _{el}	0.99
Technology bonus	up to 5 MW _{el}	1.98
	– Biomethan production (350 – 700 Nm ³ /h)	0.99
CHP bonus	up to 20 MW _{el}	2.97

- ▶ **Biogas:**
 - Payments guaranteed for 20 years plus year when operation starts
 - Bonuses are cumulative
 - Annual degression of 1 % for basic tariffs and bonuses

- ▶ Costs of the EEG are allocated on every kWh of conventional power

*Payments for 2010

- ▶ **Renewable Energy Heat Act (EEWärmeG) (since 1st Jan 2009):**
- ▶ New buildings have to use a defined share (dependent of energy source) of renewable energies for heating.
- ▶ Target is a share of 14 % renewable energies of energy for heating.
- ▶ When using biogas, at least 30 % of heat needs must be covered by biogas.

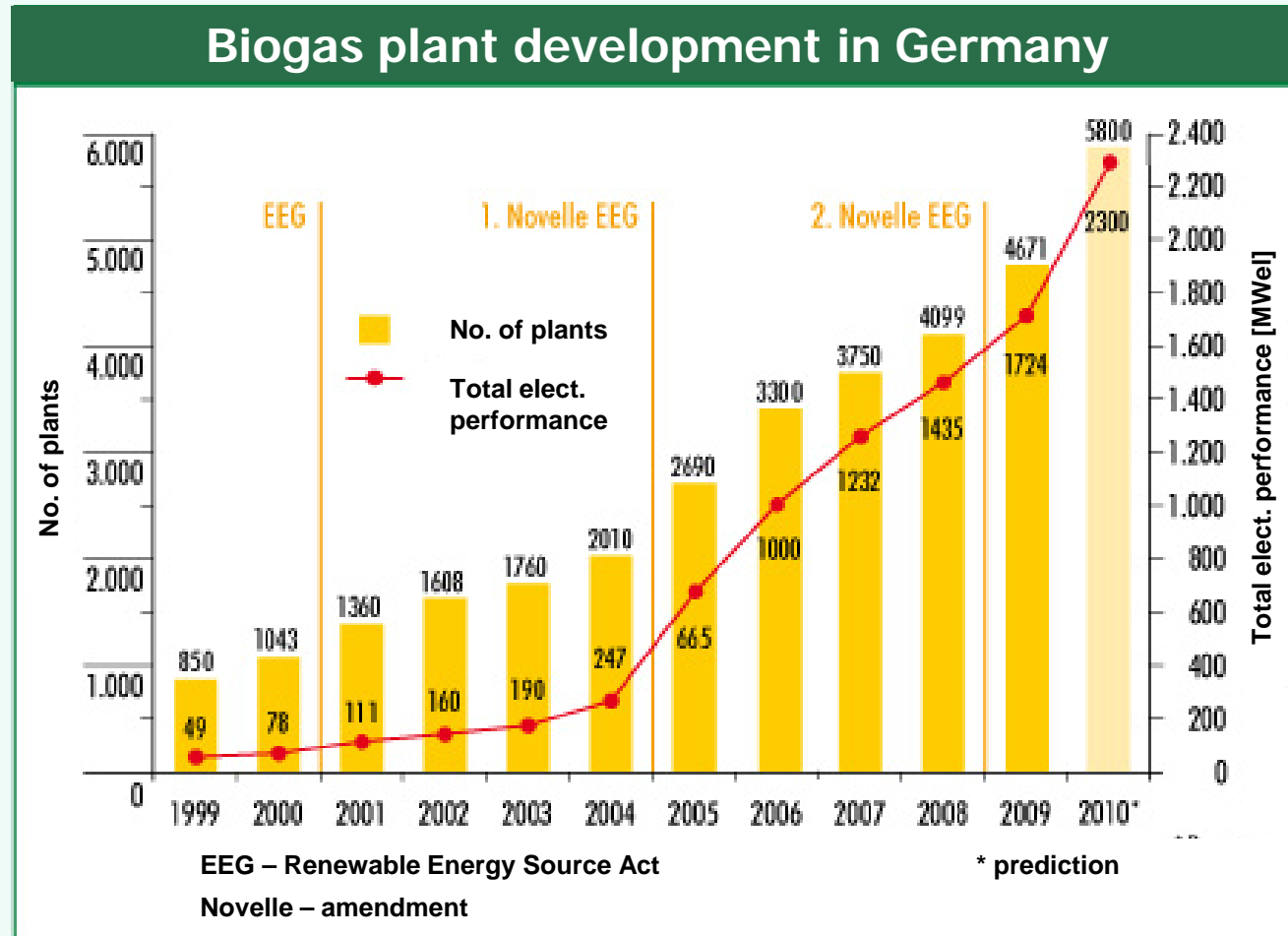
- ▶ **Biofuel Quota Act**
- ▶ Quota for biofuels and partial tax exemption for pure biofuels
- ▶ Biomethane used as transport fuel has to fulfill the sustainability criteria of the Sustainability Biofuel Ordinance

	<i>Biofuel quotas</i>		
Year	Total quota (%)	Biodiesel (%)	Bioethanol (%)
2009	5.25	4.4	2.8
2010	6.25		
2011			
2012			
2013			
2014	6.25	4.4	2.8
2015	3 % GHG reduction through biofuels		
2017	4,5 % GHG reduction through biofuels		
2020	7% GHG reduction through biofuels		

- ▶ **Sustainability Ordinance**
- ▶ The Sustainability Ordinance will ensure that when producing biomass for biofuels, minimum requirements for sustainable management of agricultural land and for the conservation of natural habitats are complied with. Furthermore, the entire production, processing and supply chain must show a certain potential for reducing greenhouse gases.

- ▶ **Gas Grid Access Ordinance**
- ▶ The Gas Grid Access ordinance (GasNZV), Gas Grid Payment Ordinance (GASNeV) and Incentives Ordinance (AregV) have been amended accordingly to improve the opportunities to feed bio-methane into the natural gas grid. The aim of the legislation is to contribute to the target of covering 6 % of Germany's demand for natural gas with bio-methane in 2020 and 10 % in 2030.

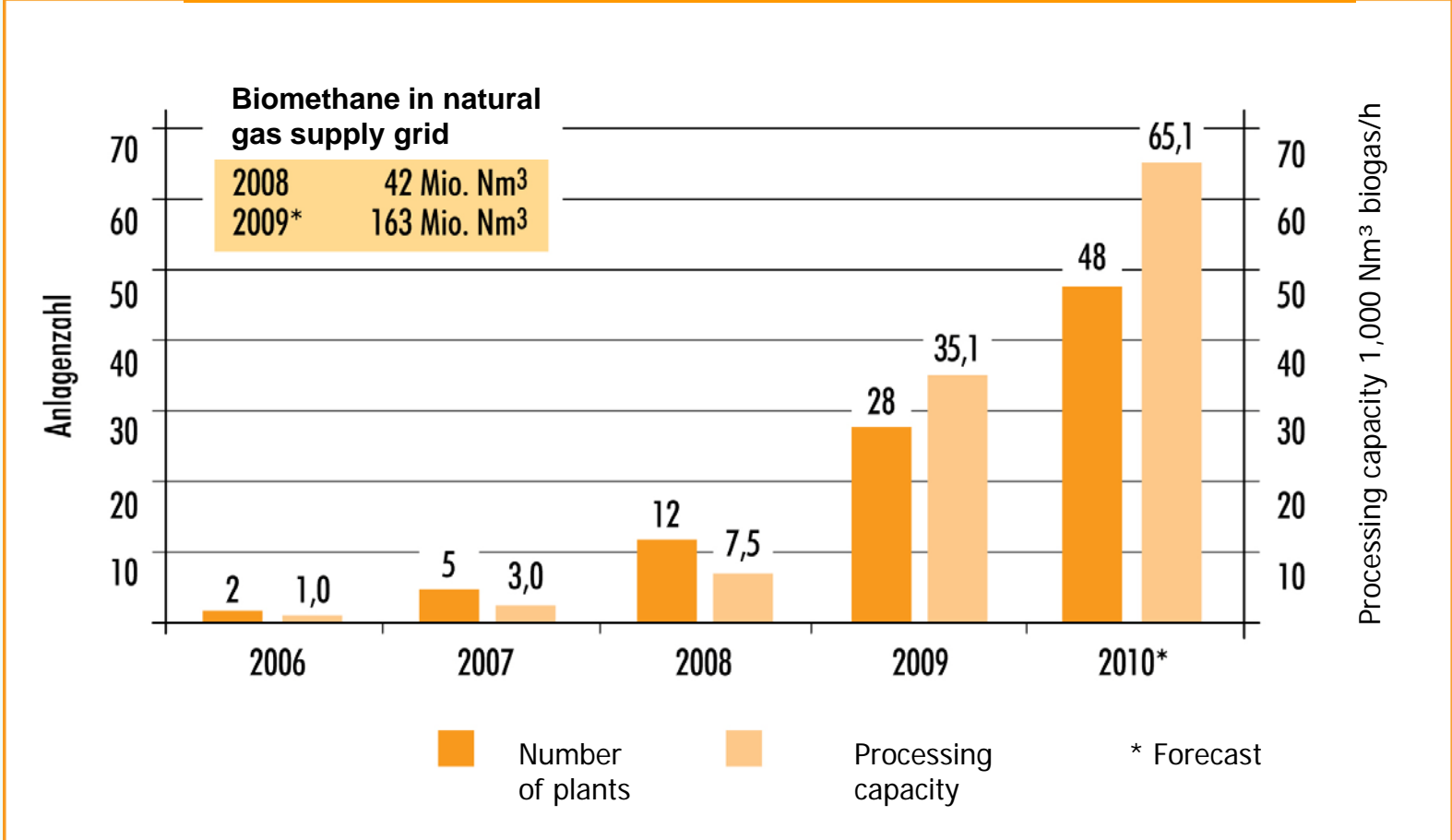
Biogas Plant development in Germany



Sources: FNR after DBFZ 2010, FvB 2010

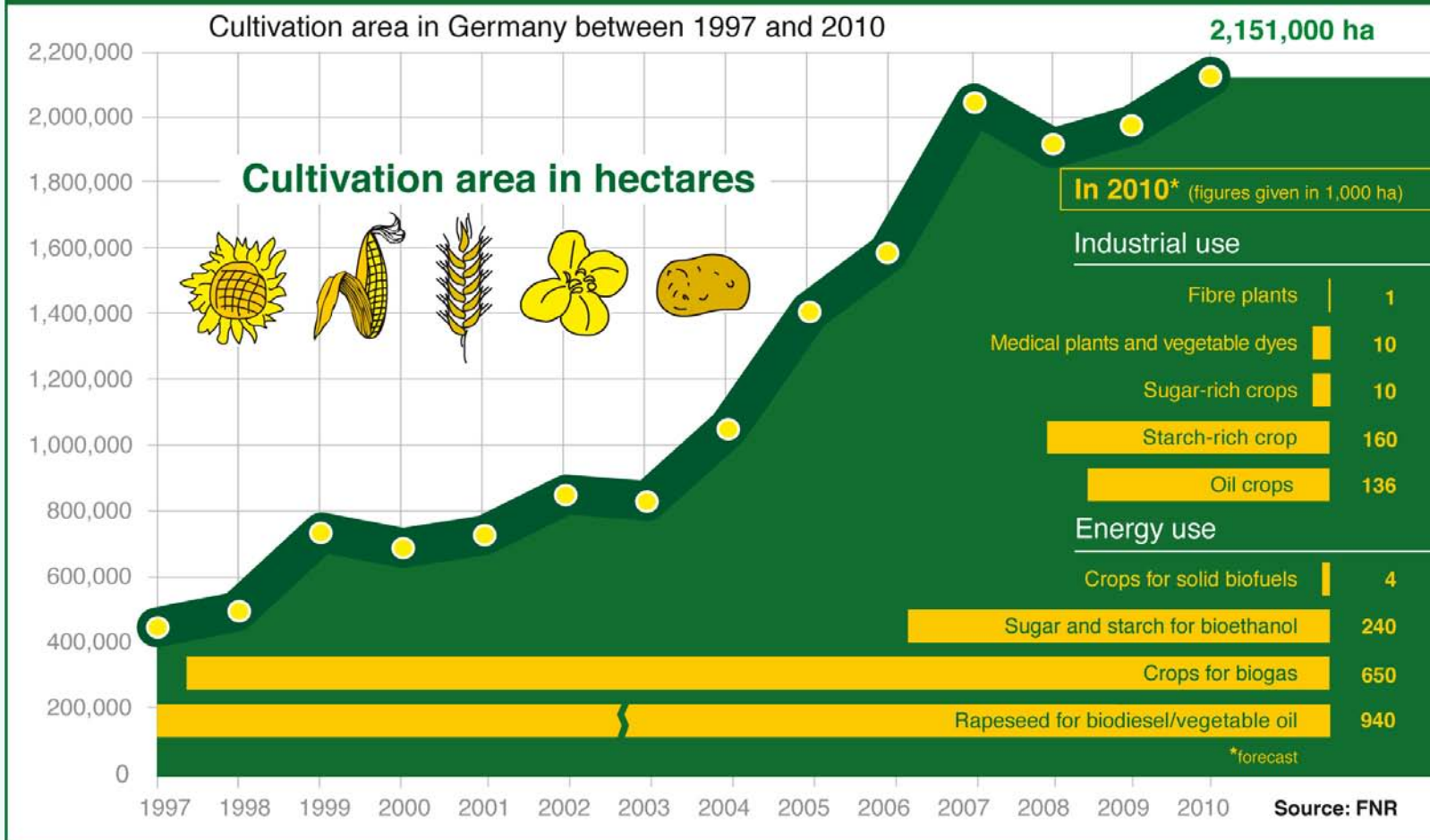
Biogas upgrading plants

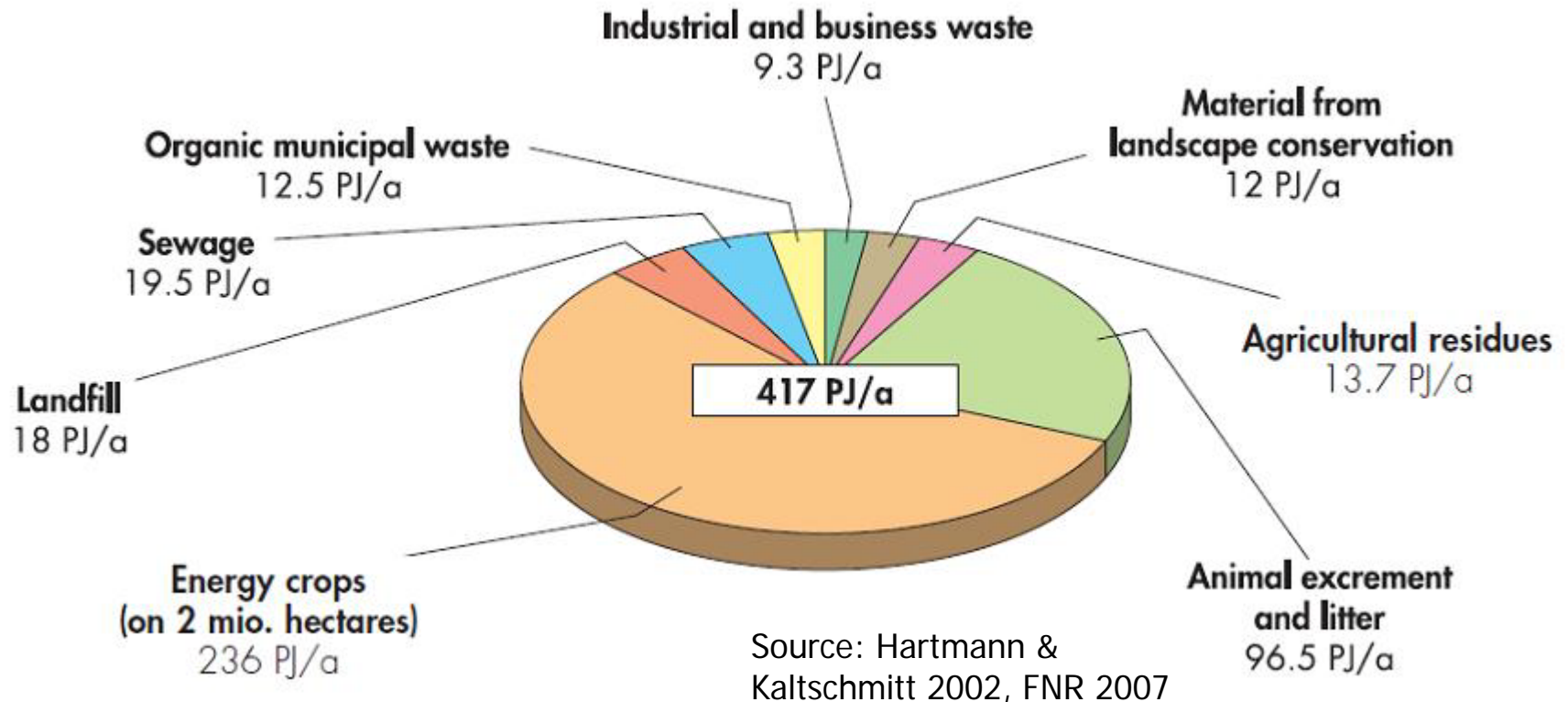
Biogas plants for biomethane production in Germany



Sources: German Biogas Association, Federal Network Agency

Cultivation of renewable resources in Germany





Biogas has an energetic potential of 417 PJ/a;
this consists of 50 % energy crops/ 25 % animal excrements/ 25 % waste
-> this equals about 8 % of the total electricity consumption in Germany
-> and its presently exploited by about 25 %



Gerstemangel

Biogas macht Bier teurer

Ursprünglich sollte Strom vom Acker das Klima schützen - doch jetzt zeigen sich gravierende Nebenwirkungen der Ökoförderung. Denn Mais verdrängt andere Ackerflächen. von [Nikolai Fichtner](#) Berlin

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en sie Ökostrom
sie hier ökologisch
"100 Prozent
nstoffen". Doch eine
ers derzeit zu schaffen.
gasanlagen. "Man spürt
."Gerste und
n mit dem Mais." Immer
pachtet - oft gleich für 15
ionale Ware zu



Maispflanze: Erste Wahl für die Biogasbranche

Wenn der Strom aus Mais so gut bezahlt wird, müssen jetzt zahlreiche Brauereien die Bierpreise erhöhen. Auch Lebensmittelproduzenten klagen über knappe Kartoffeln und teures Getreide. Es sind Nebenwirkungen einer Ökosubvention, die zwar gut gemeint ist, aber momentan nicht einmal dem Klima hilft.

- ▶ Increasing demand for corn as a raw material for biomass plants lead to an excessive cultivation of corn in some regions, resulting in a strong price increase in rents for farmland
- ▶ Negative effect of monoculture for biodiversity and landscape
- ▶ Lack of acceptance: NIMBY (Traffic, smell, danger of explosion, rising food prices...)

- ▶ Biogas is an important energy source and can be supplied in considerable amounts by the German agriculture.
- ▶ Biogas can contribute an energetic potential of 417 PJ (including sewage and landfill gas), that corresponds to
 - 2.9 % of the current total primary energy consumption and
 - 8.6 % of the current consumption of electricity
- ▶ Plant location and substrate-optimised conceptual design is essential for a successful operation
- ▶ Trend:
 - construction of decentralised AD with lower performances
 - large biogas plants with upgrading units
target: substitute 6% natural gas imports
by 2020 and 10% by 2030
- ▶ In comparison to the previous decades the political and economical frame for biogas is favourable

- ▶ The use of biogas reduces dependence on energy imports
- ▶ Utilization of biogas saves fossil resources and reduces the emission of greenhouse gases relevant to climate change
- ▶ Biogas production and utilization creates value and strengthens rural areas
- ▶ Related activities in research and development will enhance the know-how and technology progress in Germany
- ▶ Sustainability and efficiency are the key elements for crop growing, biogas production and use

Thank you for your attention!



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