

Country report Germany

P. Weiland

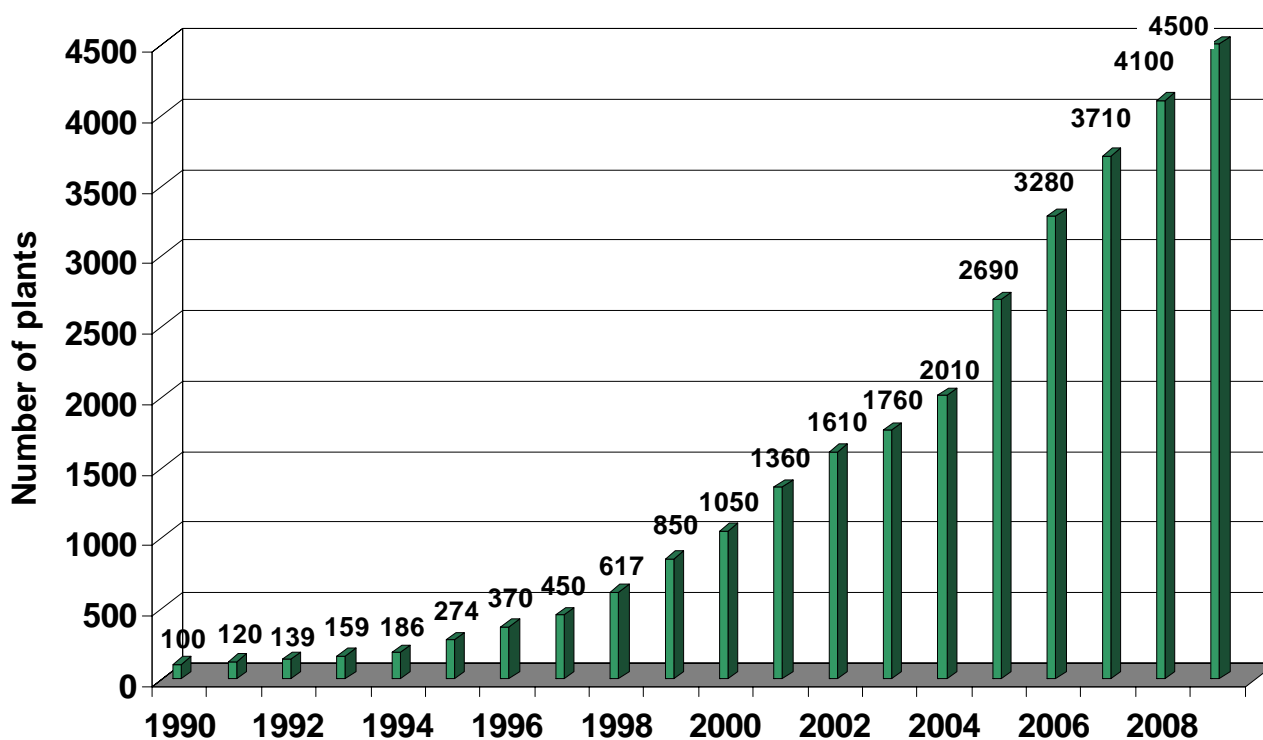
Johann Heinrich von Thünen-Institute (vTI)

Federal Research Institute for Rural Areas, Forestry and Fisheries



Content

- **Status of biogas production**
- **Trends in biogas production**
- **Status of biogas upgrading**
- **New concepts for biogas utilization**



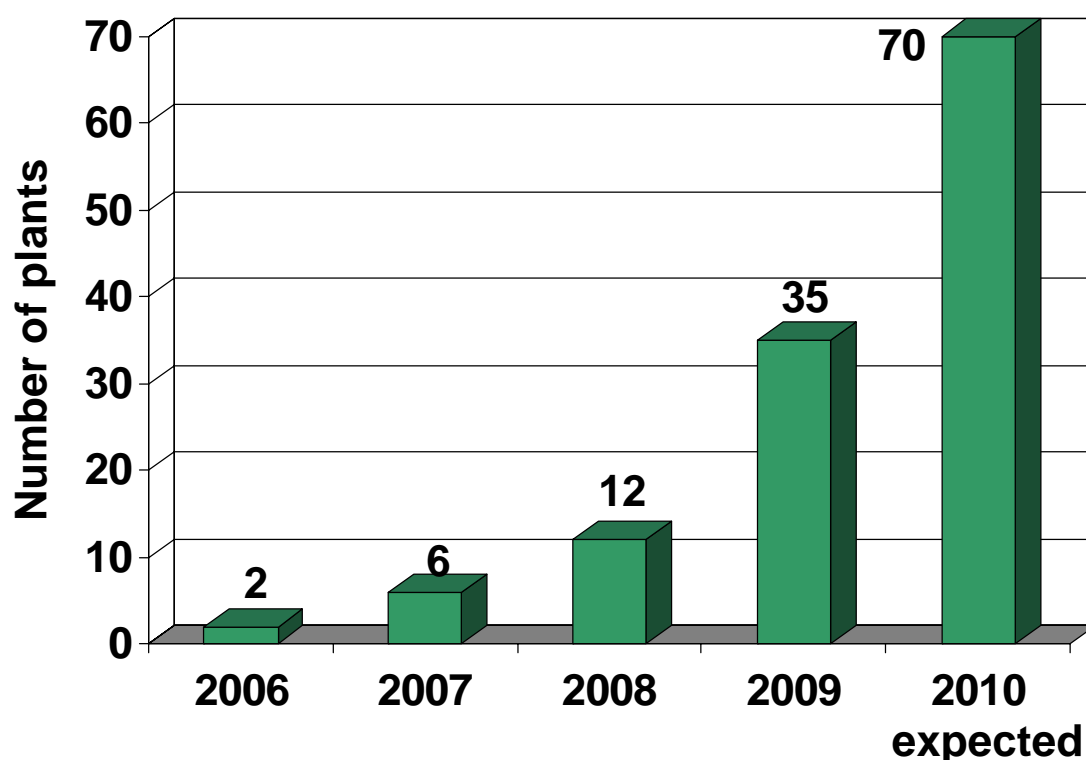
Source: BMU/FNR

Current status of biogas production

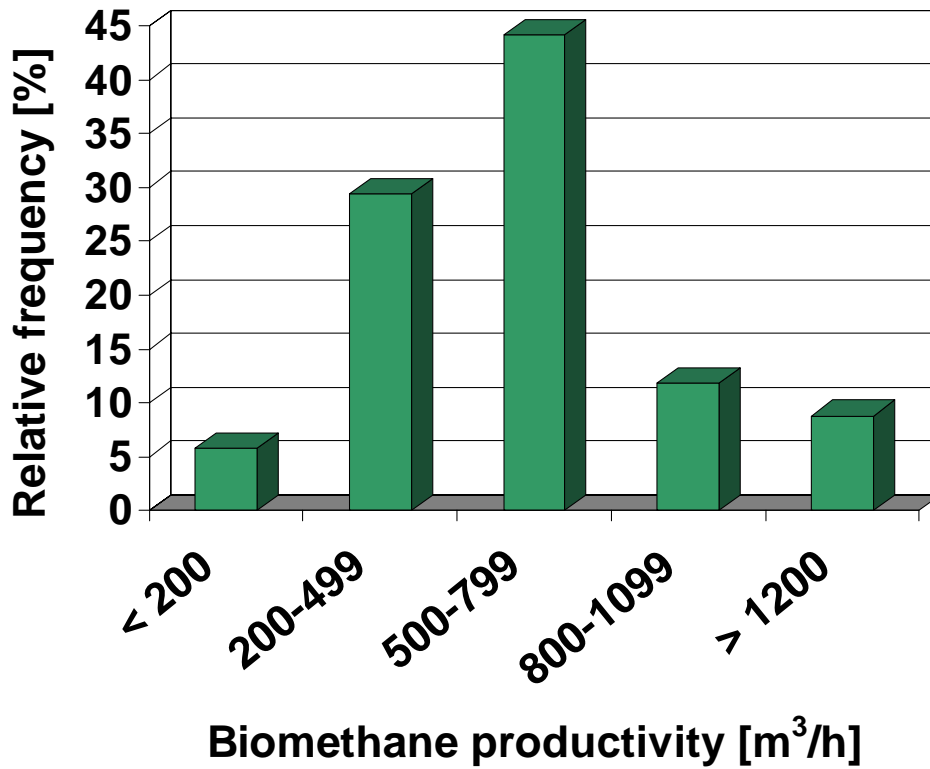
- Number of biogas plants: 4,500
- Installed electric capacity: 1,650 MW_{el}
- Total electricity production 2009: 10 bill. kWh
- Number of provided households: 3.8 mill.
- Share on electricity consumption: 1.6 %
- Avoided CO₂-emissions: 13.5 mill. tons
- Number of biogas upgrading plants: 35
- Investment volume in 2009: 660 mill. Euro
- Cultivation area for biogas crops: 530,000 ha
- Share of manure utilization: ~ 15 %
- Number of workplaces: 11.000

- Most of the plants erected in 2009 have an installed electric capacity ≤ 250 kW.
- Erecting of satellite CHP's result in a higher degree of heat utilization.
- The majority of biogas plants use a daily substrate blend with more than 30 % manure in order to receive the manure bonus of 4 cent per kWh.
- Biomass from grassland and sugar beets find increased application as substrate feedstocks.
- Conditioning of digestate finds increased application in areas with high animal population.

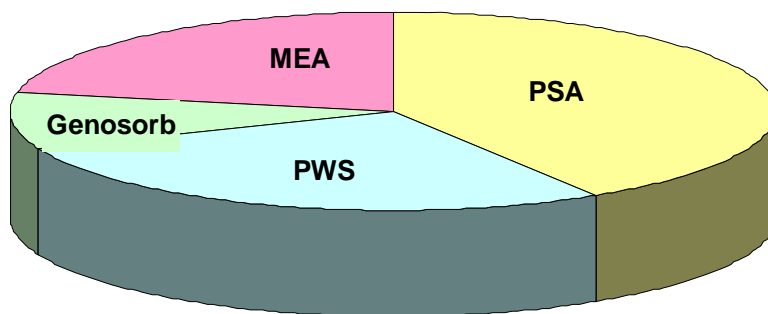
Number of biogas injection plants in Germany



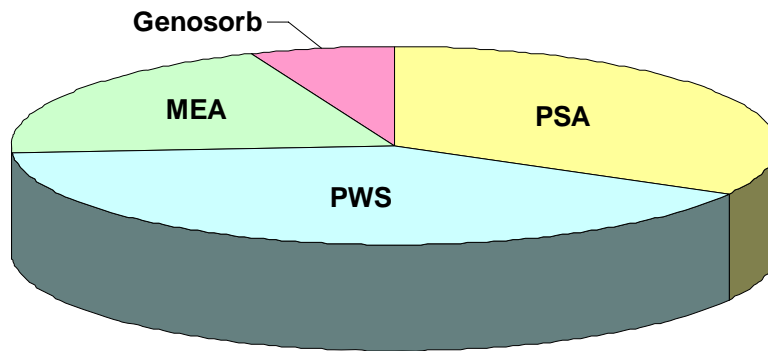
Biomethane feed-in capacity of 34 upgrading plants



Application of upgrade technologies (1/2010)



| | PSA | PWS | MEA | Genosorb |
|-------------------------|-----|-----|-----|----------|
| Number of plants | 13 | 9 | 7 | 3 |
| Percent [%] | 41 | 28 | 22 | 9 |



| | PWS | PSA | MEA | Genosorb |
|------------------------------------|-------|-------|-------|----------|
| Capacity [Nm³/h] | 8,608 | 7.075 | 4.175 | 1,305 |
| Percent [%] | 41 | 33 | 20 | 6 |

Trends in biomethane production

- Most of the biomethane plants are operated by energy supply companies.
- Transport and sales of biomethane from its production site to the end consumer is usually coordinated by a biogas trading company.
- Repowering of biogas plants is often used for gas upgrading and gas injection. Around 20 % of the injection plants are repowered biogas plants.
- A new process is developed which allows the return injection from a local grid to a host grid of higher pressure.

- Around 500 new biogas plants will be built in 2010.
- The installed electric capacity will grow by 200 to 250 MW.
- Specific biogas grids will be installed in some cities with CHP's at different locations (Example: City Lünen, 9 mill Nm³/a biogas, 10 CHP).
- The number of bioenergy villages increases due to the financial support given by the Federal Ministry of Agriculture and some State Ministries.
- Around 35 biogas upgrading plants will be constructed in 2010.
- The conditioning of digestate (drying) increases and the products are market as organic fertilizer.

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Many thanks for your attention!

