# Biomethane Roadmap in Germany

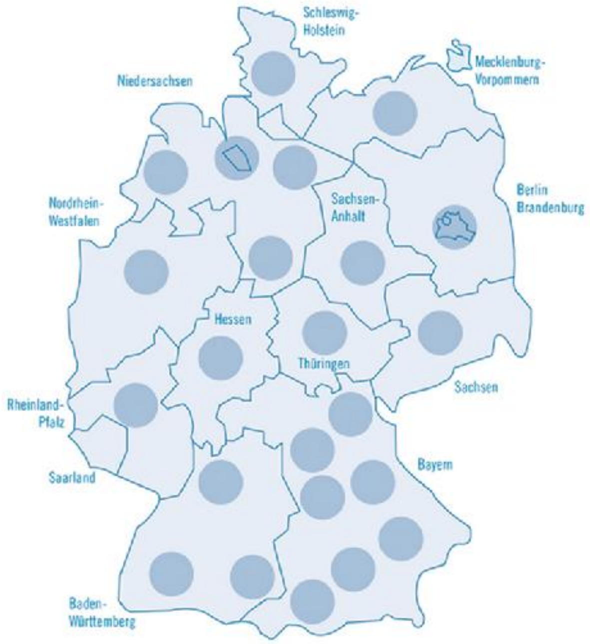
Frank Hofmann
German Biogas Association



This project has received funding from the European Union's Horizon 2020 research and innovation programme.

# The German Biogas Association

4,900 members throughout Germany




- Operators of biogas plants
- Technology manufacturers
- Research institutions
- Public authorities
- Feedstock providers
- Interested individuals

Main objective: promotion of the biogas sector

- Definition of legal framework and technical standards
- Exchange of information
- Political advocacy on federal, state and EU level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# Present situation biogas

- Currently above 9,000 biogas plants in operation with a installed capacity of above 4,000 MWel
- About 150 new biogas plants in 2015 as well as in 2016: mainly small manure based plants (max. 75 kWel and more than 80% manure in the input)
- 42,000 Jobs in 2016
- $CO_2$ reduction
  - 15 Mt (providing electricity), 4 Mt (substitution fossil heat)
  - about 10 Mt (manure treatment)


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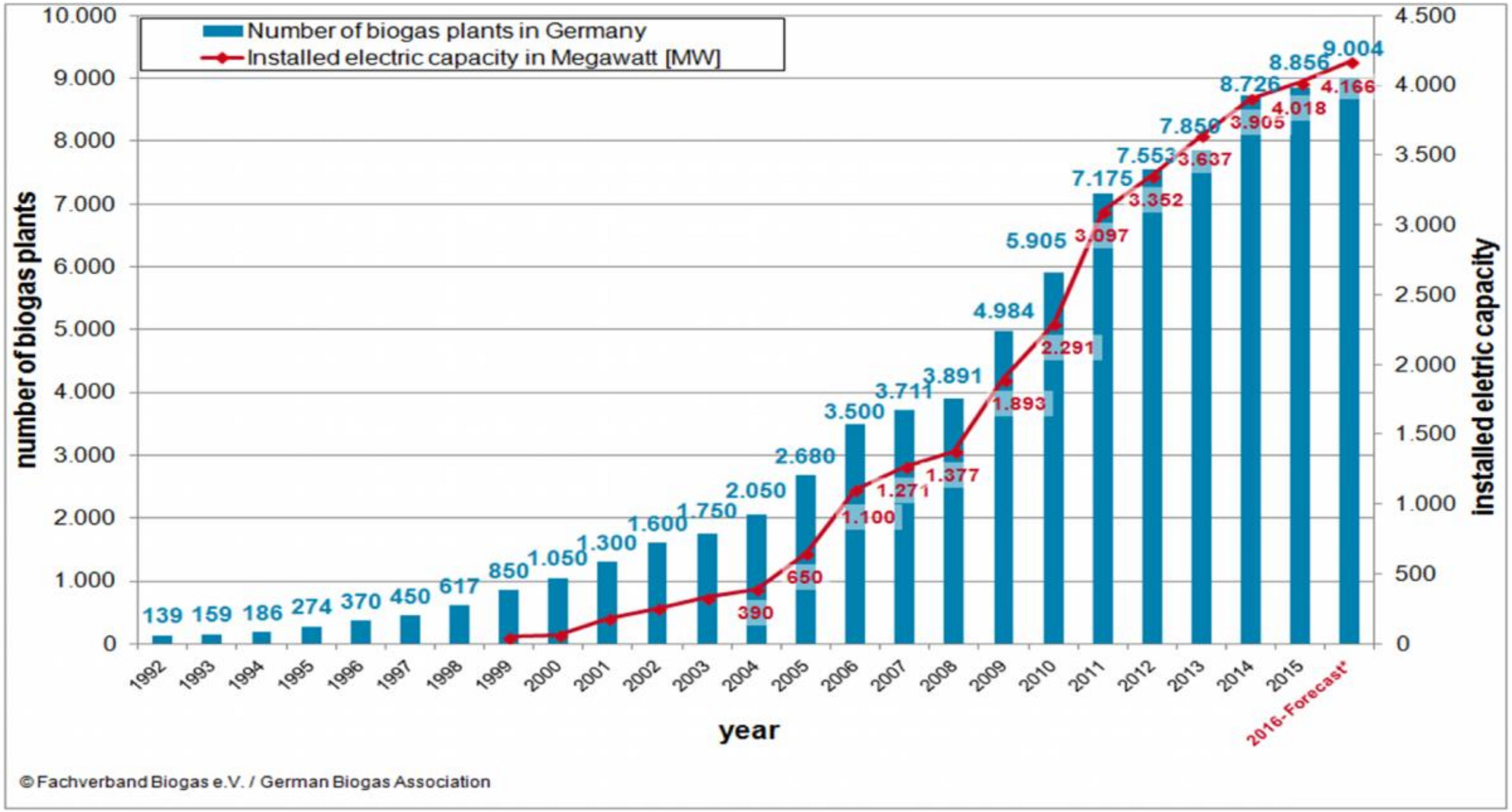
# Biogas plants in Germany







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# Present situation biomethane

- After a booming biomethane market until 2013 the market growth for biomethane has slowed down
- 197 biomethane plants in operation
  - In 2016, 10 new biomethane plants
  - In 2017 (until June) 4 new biomethane plants
- 2016: 201,865 $m^3/h$ raw biogas treated
- Capacity 2016 created plants: Range from 200 $Nm^3/h$ – 1.400 $Nm^3/h$
- 2016: 9 new created plants based on Energy crops, 1 biological methanisation


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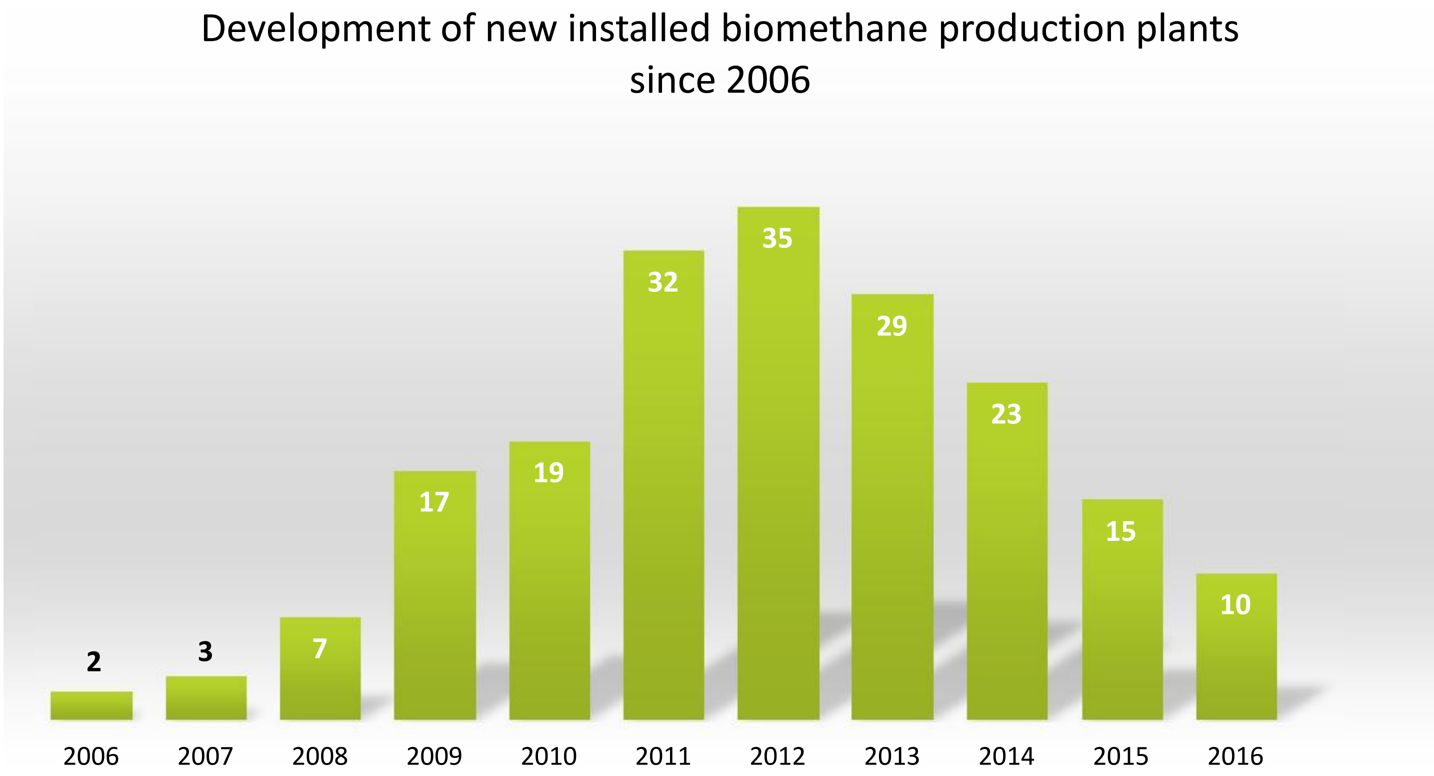
BIOSURF
Fuelling Biomethane

# Development biomethane plants



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# Figures on Biomethane

- 940 $Mm^3$ biomethane, 9.4 $TWh_{hi}$ injected, Biomethane is used for
  - 8 TWh = 85.1% CHP
  - 0.4 $TWh_{hi}$ = 4.3% vehicle fuel
  - 0.3 $TWh_{hi}$ = 3.2% thermal use (heat for about 2.6 Million households)
  - 0.7 $TWh_{hi}$ = 7.4% other uses (raw material, export, …)
- About 120 biogas filling stations in operation; additional about 170 filling stations offer a blend of biomethane and natural gas




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# Barriers

| CHP sector | Heat market | Fuel sector | International Trade |
| --- | --- | --- | --- |
| • No sufficient compensation from the Renewable Energy Sources Act | • Heating applications are hardly supported (obligation to use in CHP due to higher CO2-reduction), except in the state of Baden-Württemberg | • Stagnating CNG vehicles sales<br>• New $CO_2$-Quota bears many risks and uncertainties<br>• Confusing price signs at fueling stations<br>• Cautious industry | • Prohibitive national legislations<br>• ***Lack of EU-wide mass balance system*** |


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# Drivers

- Growing interest in German in biomethane upgrading technology (not only in the European market, but also in countries like Brazil and India)

- Tax exception on biomethane

- Biomethane in transportation sector as new opportunity


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# Perspectives of development

- There is still a significant potential for development (e.g. organic household waste, manure…)
- The future role of biogas/biomethane in the electricity sector will be to provide flexibility to the system (balance fluctuation from wind and solar energy)
- The transportation sector has huge potential for biomethane. More renewables in transport sector are needed and electrification is limited. Political support needed!
- Bio LNG? Chances and possible development
- Independency of foreign gaseous sources might become a more important issue for the EU


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# What‘s in the next future?

- The next reform of the Renewable Energy Sources Act is ongoing in 2017. Auctions are introduced for all renewables.
- In the first auction resulted in accepting only very few new biogas plants.
- (Fossil) CHP-legislation is been revised, possibly with a new momentum regarding $CO_2$-saving and therefore chances for biomethane
- ***International barriers need to be addressed in order to provide market uptake***


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# Thank you for your attention!

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