



Federal Ministry
for Economic Affairs
and Energy



MITTELSTAND
GLOBAL
EXPORTINITIATIVE ENERGIE

Biogas – legal framework and market development in Germany

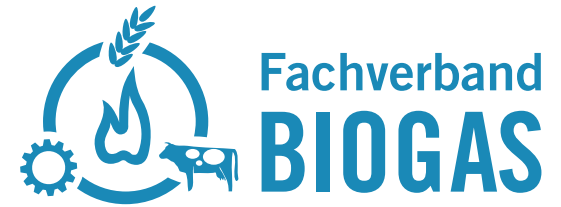
Sebastian Stolpp

20 November 2017

Bangkok, Thailand



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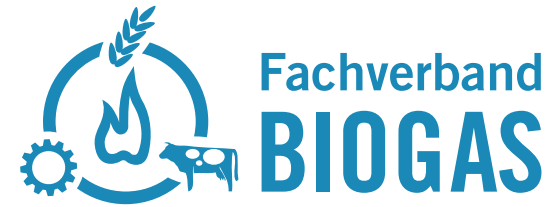


- **The German Biogas Association - Fachverband Biogas e.V.**
- The biogas market in Germany
- Legal framework

Structure of the German Biogas Association



Objectives of the German Biogas Association



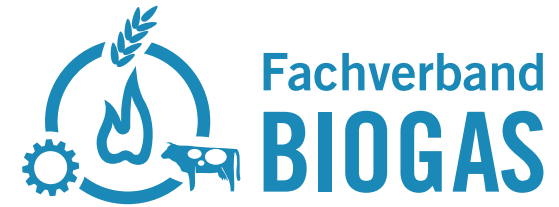
Main objective: promotion of the biogas technology

- Promotion of a sustainable energy supply
- Definition of legal frameworks for reliable and long-term investments
- Creation of adequate technical rules and standards for biogás
- Promotion of R&D
- Exchange of information
- Members services

Political advocacy for the biogas industry at national and international level in the fields of:

- Renewable Energy Act (EEG)
- Energy management
- Regulatory approval
- Environmental laws
- Laws on agricultural issues
- Tax law...

International Agenda of the German Biogas Association



- International Affairs Department: 7 staff members
- Supporting members with information about the international biogas markets
- Biogas Convention and Trade Fair
- Supporting Biogas Associations, Biogas Know-How and Trainings worldwide
- Cooperation with international organizations – promoting Biogas in developing and emerging countries

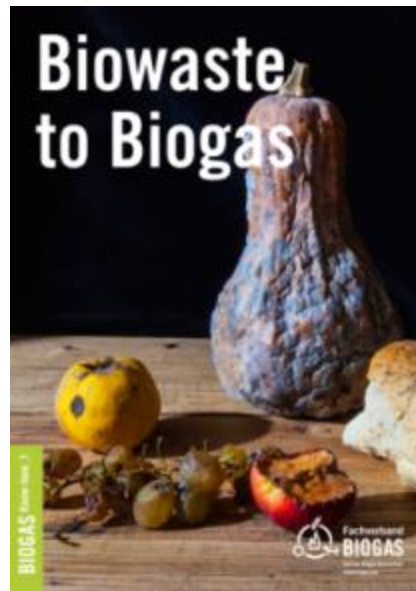


Publications

www.biogas.org



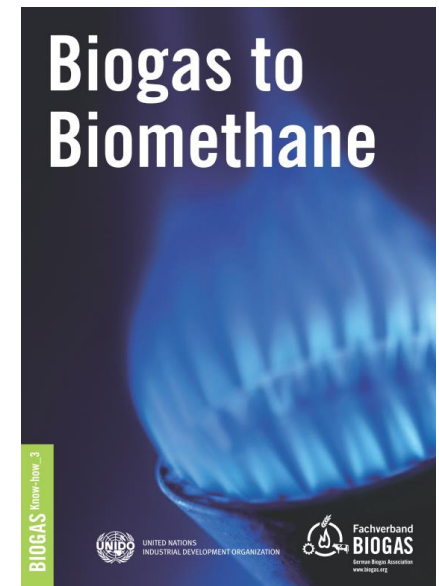
www.biowaste-to-biogas.com



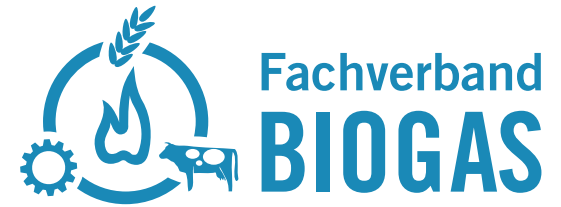
www.biogas-safety.com



www.biogas-to-biomethane.com



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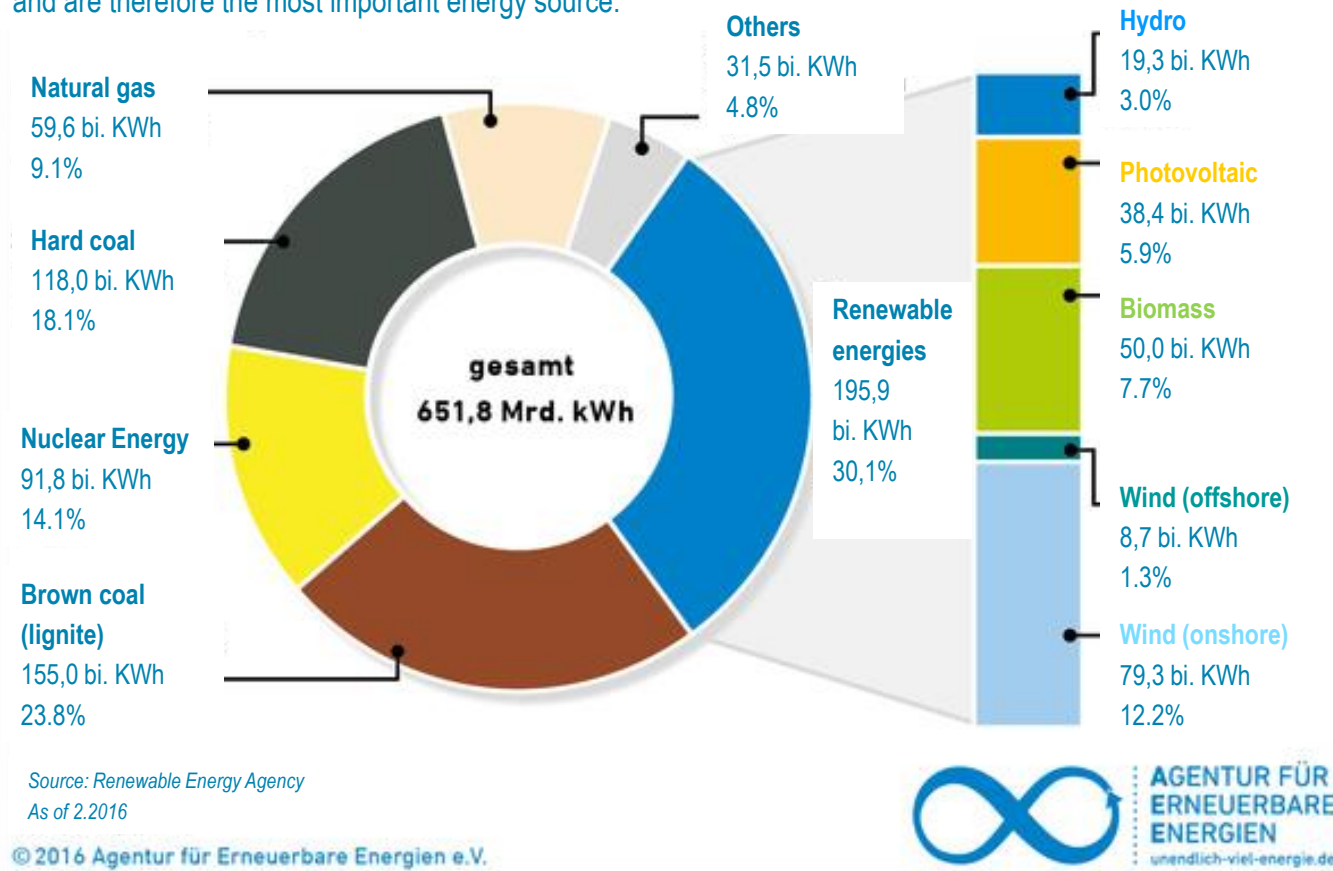


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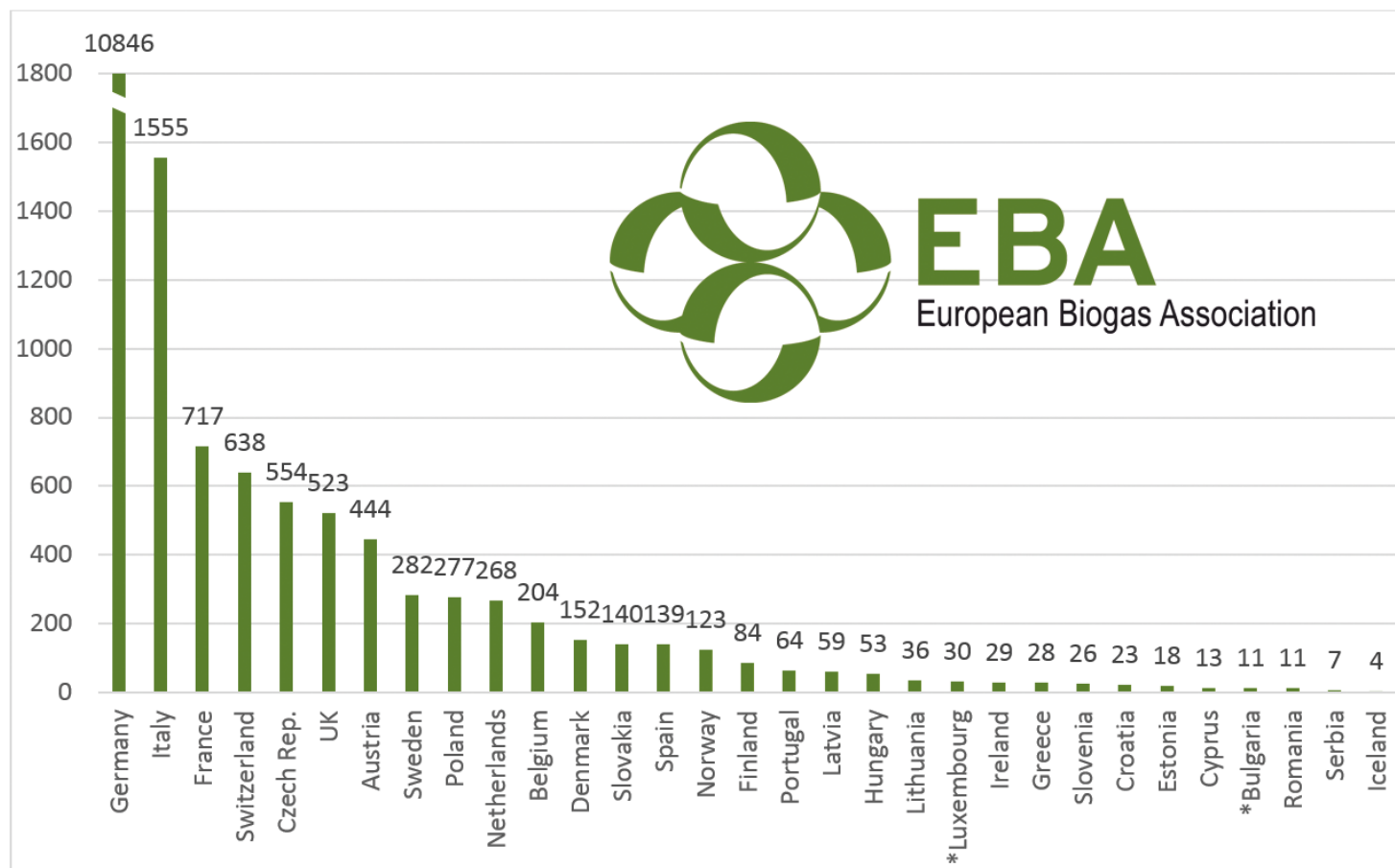
Structure of electricity production in Germany

The electricity mix in Germany in 2015

With almost 196 Billions KWh renewable energies supplied 30,1% of the German gross electricity production and are therefore the most important energy source.

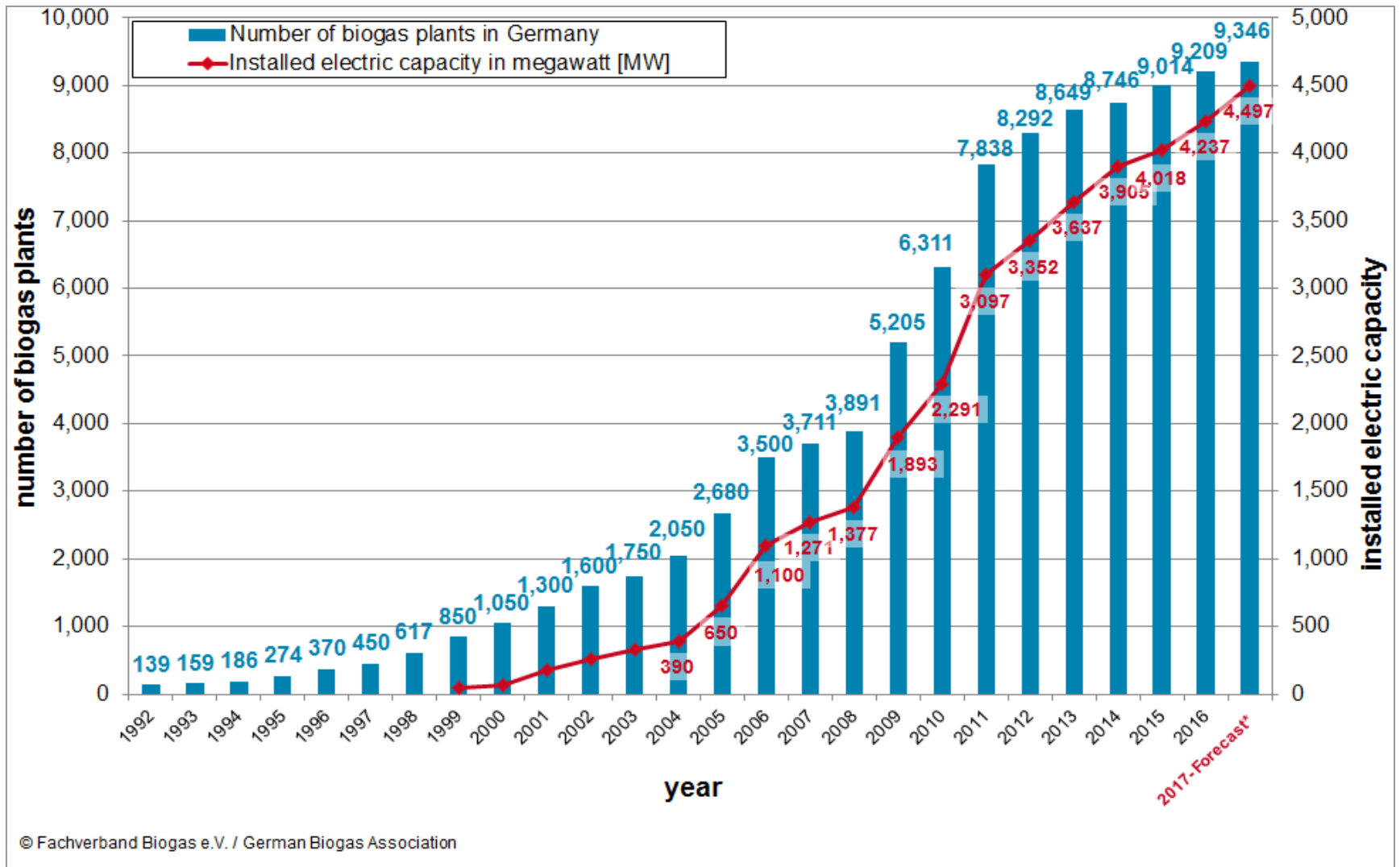


Biogas plants in Europe



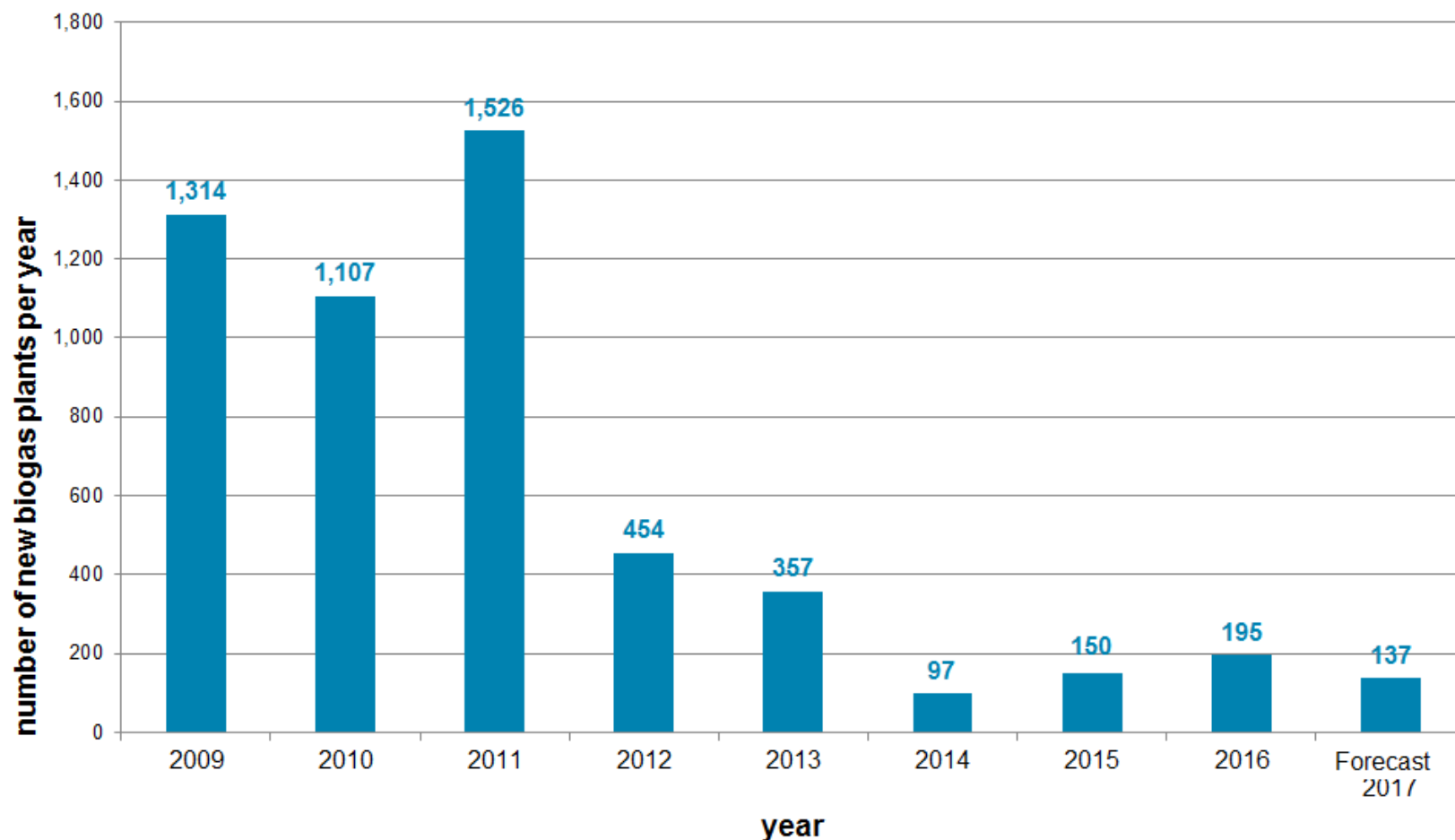
17,358 biogas plants in Europe (31/12/2015)
Total installed capacity of 8,728

Development of German biogas sector

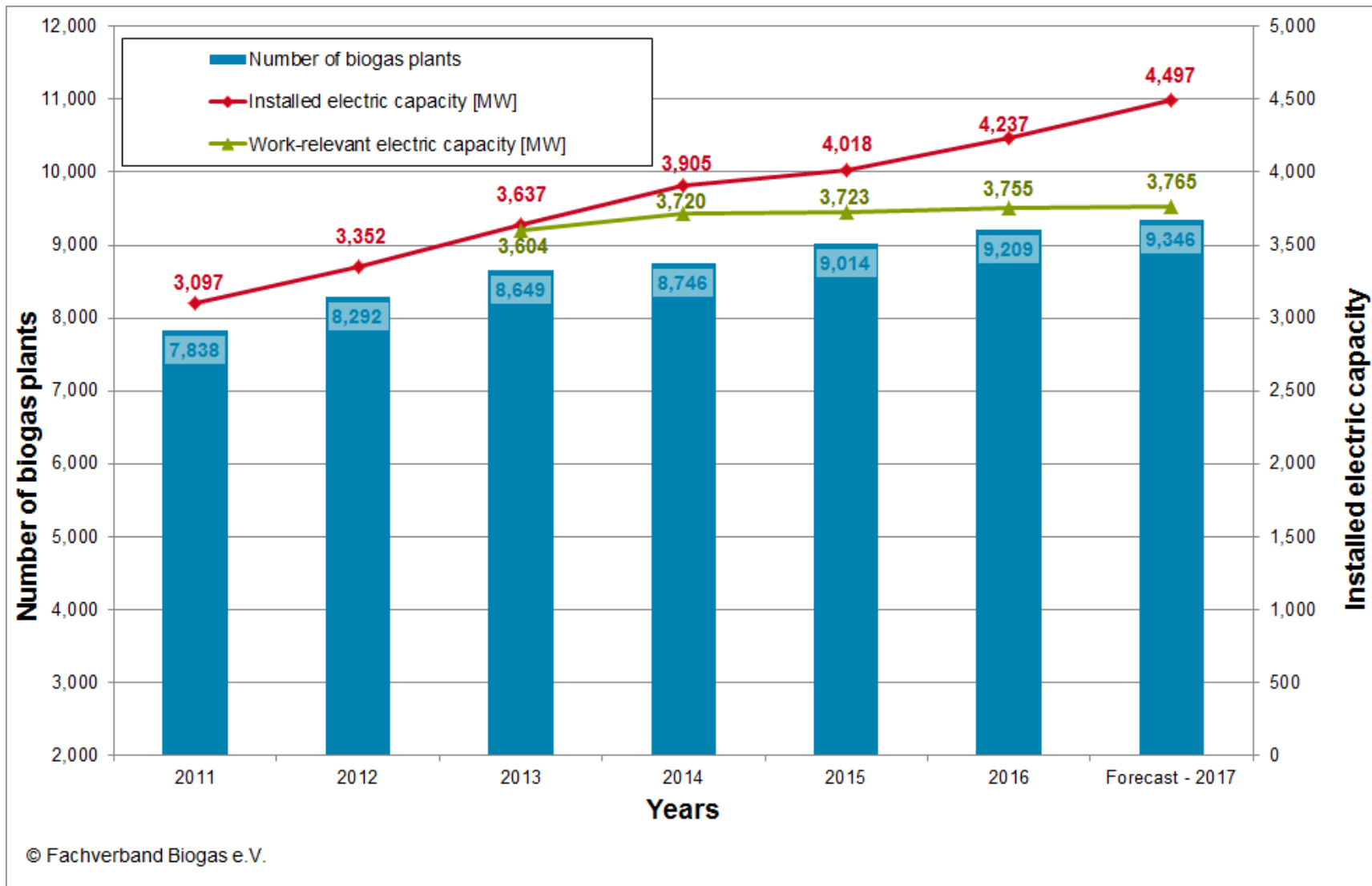


Development of German biogas sector

Number of new biogas plants per year from 2009-2017



Installed capacity



Biogas Sector Statistics in Germany at a Glance



	2016*	Forecast 2017**
Number of biogas plants (biogas plants with biomethane injection)	9,209 (193)	9,346 (197)
Installed electric capacity in MW	4,237	4,497
Gross electricity production in TWh per year	32.8	33.0
Households supplied with biogas-based electricity in millions	9.4	9.4
CO ₂ reduction by biogas in million tonnes	19.8	19.9
Turnover in Germany in Euro	9.4 Billion	9.4 Billion
Jobs in the biogas sector	46,000	46,000

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* Own extrapolation based on country data / plant register BNetzA

** Based on an expert survey / plant register BNetzA

Possible feedstock



Energy crops

Grass, maize, corn, potatoes, fodder beet, mustard, silage...



Industrial and commercial wastes

Organic residues from food, beverage or feed production, including catering waste and expired food



Biowaste from households

Organic fraction of household waste (ideally separately collected biowaste), garden and park waste



Vegetable by-products

Harvest residues, straw, brewers grains, molasses, husks, beet leaf



Animal by-products

Liquid and solid manure, slaughterhouse waste like blood, feathers, whey, fat separator contents and flotation tailings

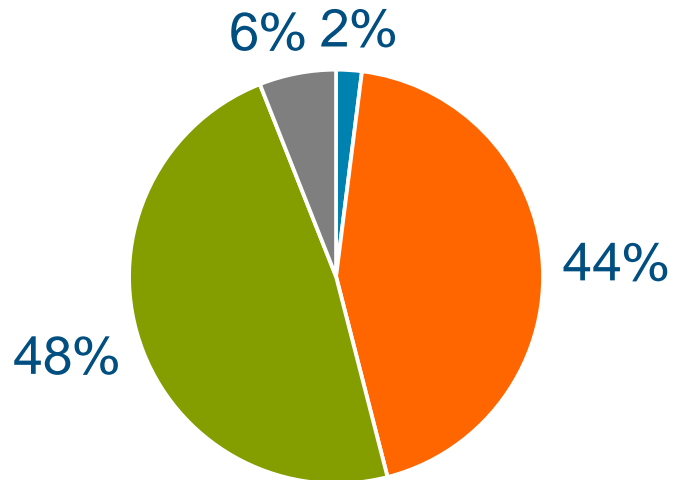


Biogas plant



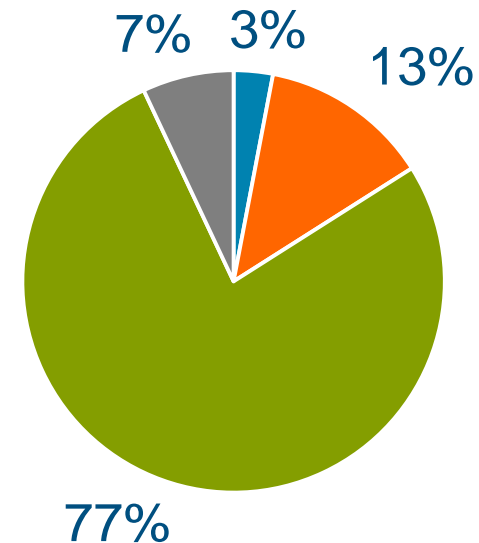
Feedstock in German biogas plants

Percentage by weight



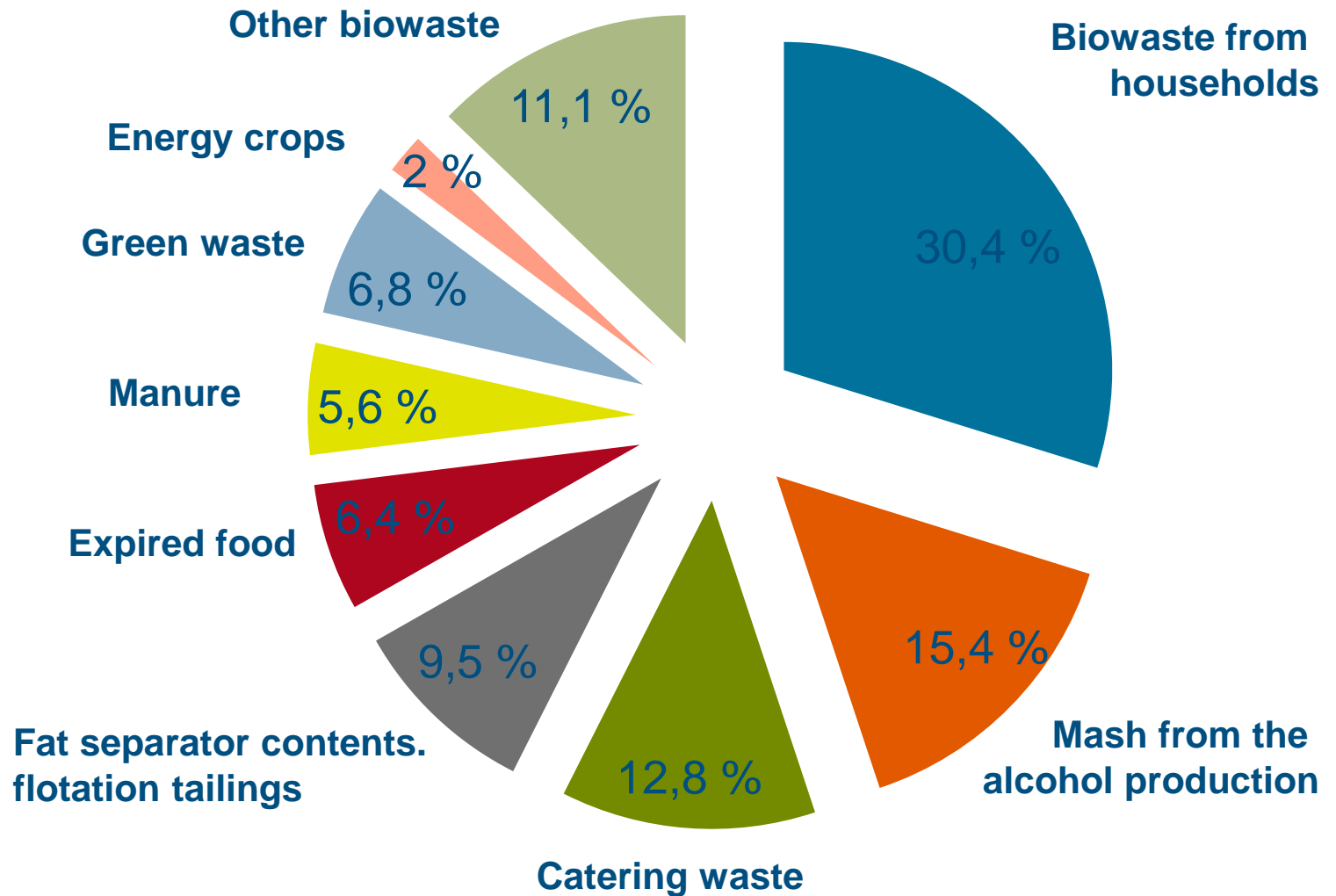
- Biowaste
- Liquid and solid manure
- Energy crops
- Industrial and agricultural wastes

Percentage by energy output

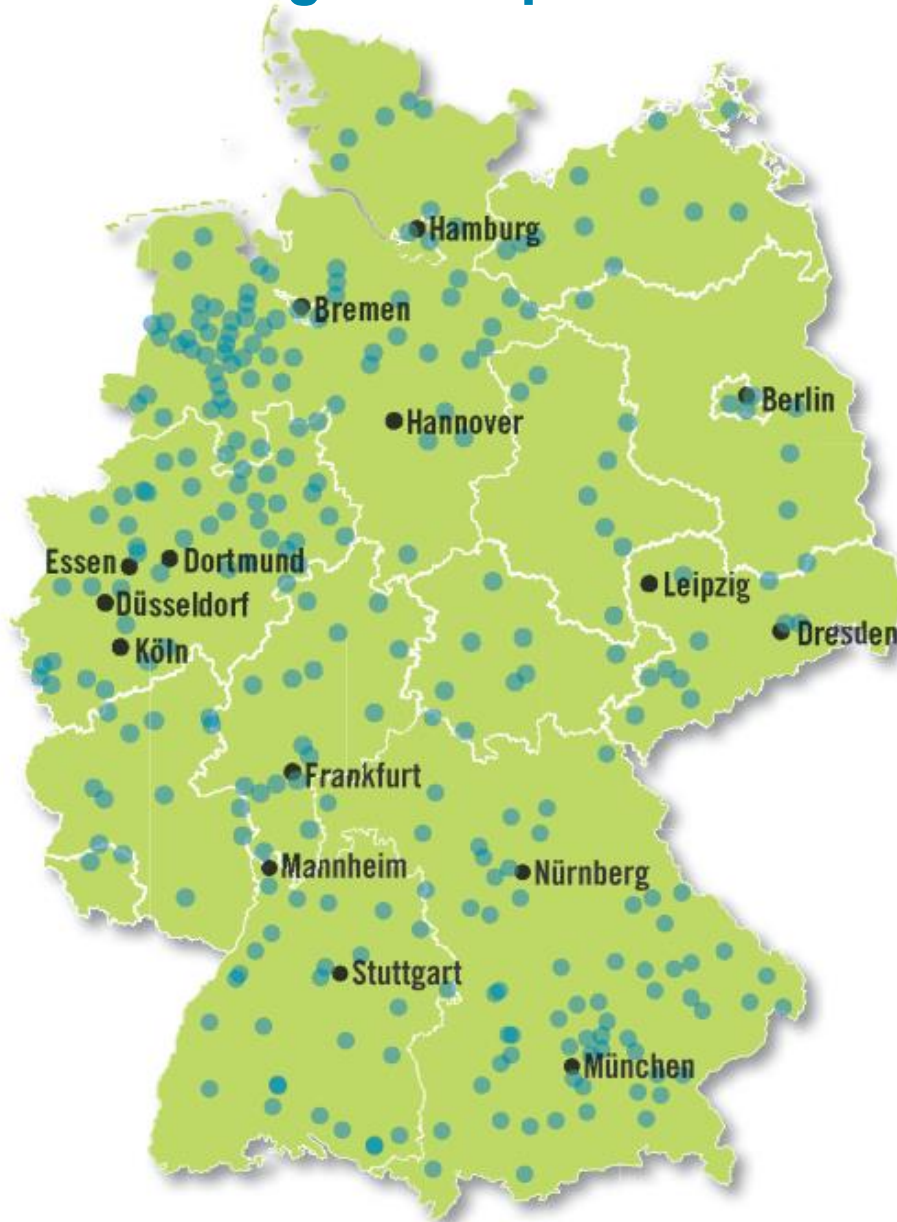


Source: Motoringbericht DBFZ, June 2014

Distribution of waste input in Germany

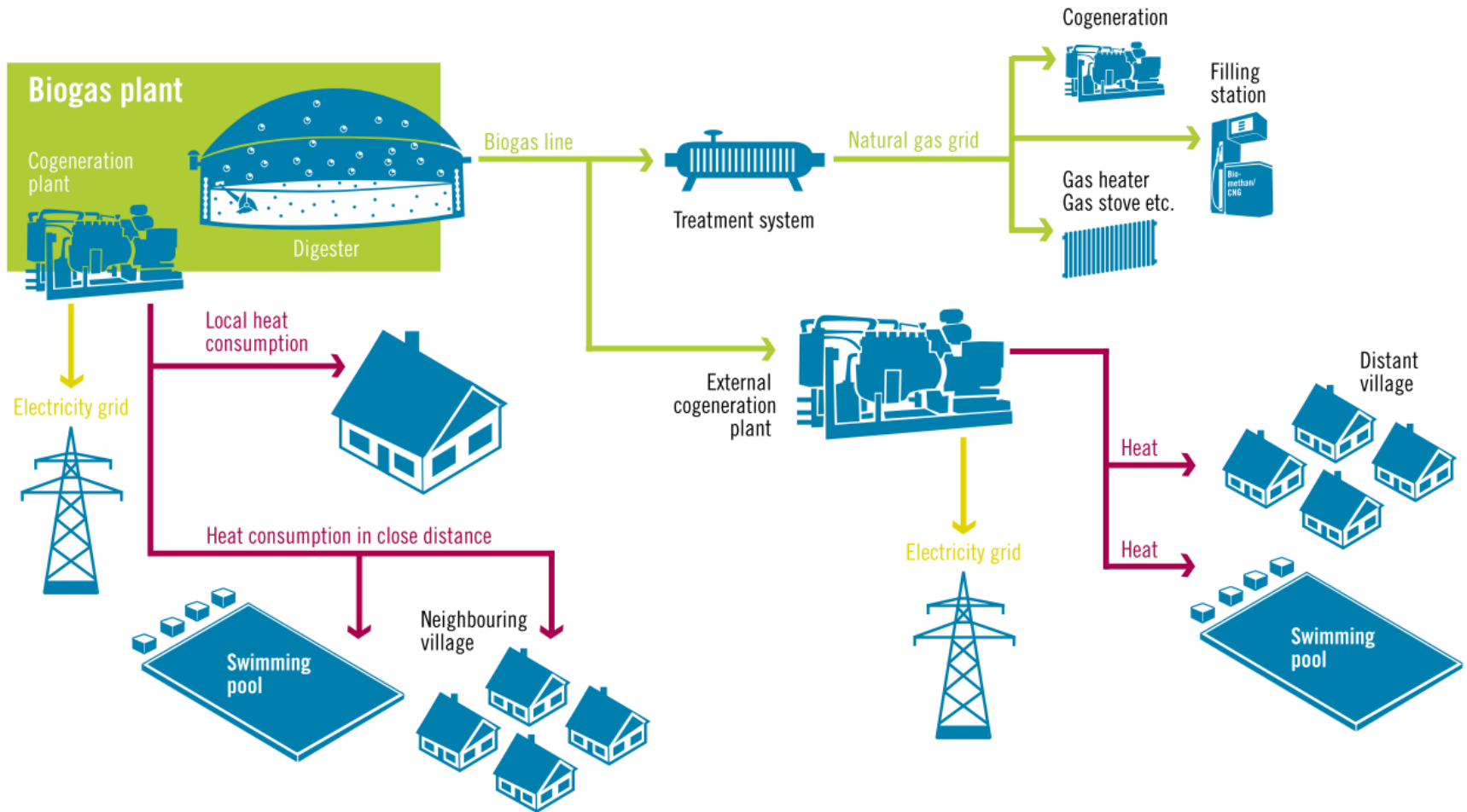


Waste digestion plants in Germany



- **~350 Biowaste biogas plants**
 - 100 plants processing biowaste from households
 - 250 plants processing commercial wastes
- 8.9 Mio. tons/a approved capacity
- 266 MW installed electrical capacity
- **Additionally ~400 small scale plants operated by manure are in operation**

Biogas: fields of application



Source: Biowaste to Bioenergy, FvB, 2016

Advantages of biogas

• Production of energy

- Electricity
- Heat
- Vehicle fuel

Storable and flexible
energy source

Creation of
employment

Business creation

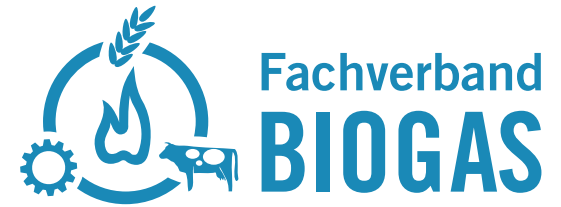
- Planning
- Operation
- Maintenance

Fertilizer production

Climate and environment protection

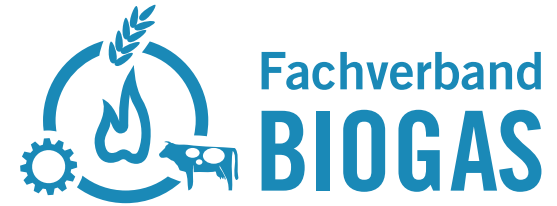
- Avoidance of methane emissions
- Substitution of fossil energy
- Substitution of mineral fertilizer
- Nutrient recycling
- Odor reduction

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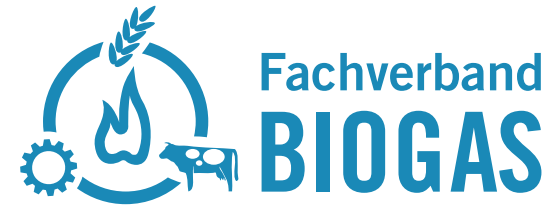
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Reasons for the *energy transition* in Germany



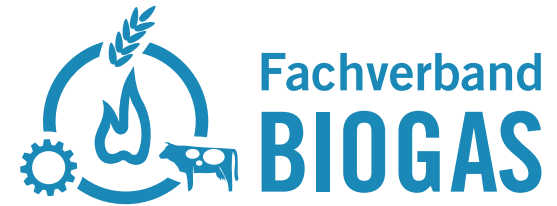
- Climate and environmental protection
- Sustainable development of energy production
- Reduction of costs for German national economy by incorporating long- term external effects
- Conservation of fossil resources
- Independency from imports of fossil fuels
- In the long term costs for fossil fuels will rise and “fuel costs“ for RE are for free or will probably decrease
- Technology development
- Creation of employment, especially in rural areas
- Development of new markets and sales

Reasons to support biogas in Germany



- Biogas reduces greenhouse gas emissions
 - Avoidance of methane emissions by open-air manure storage
 - Substitution of fossil fuels
 - Substitution of mineral fertilizer
- Biodiversity can be enhanced through crop rotation
- Local employment: 46,000 jobs in Germany
- Business creation: EUR 9 billion turnover
- Technology development: Germany is biogas market leader
- Biogas produces a fertilizer of high value
- During the biogas process the material is sanitized
 - Seeds deactivated
 - Potential pathogen microorganisms reduced
- Due to the biogas process odor (smell) is reduced

German Renewable Energy Act (EEG)

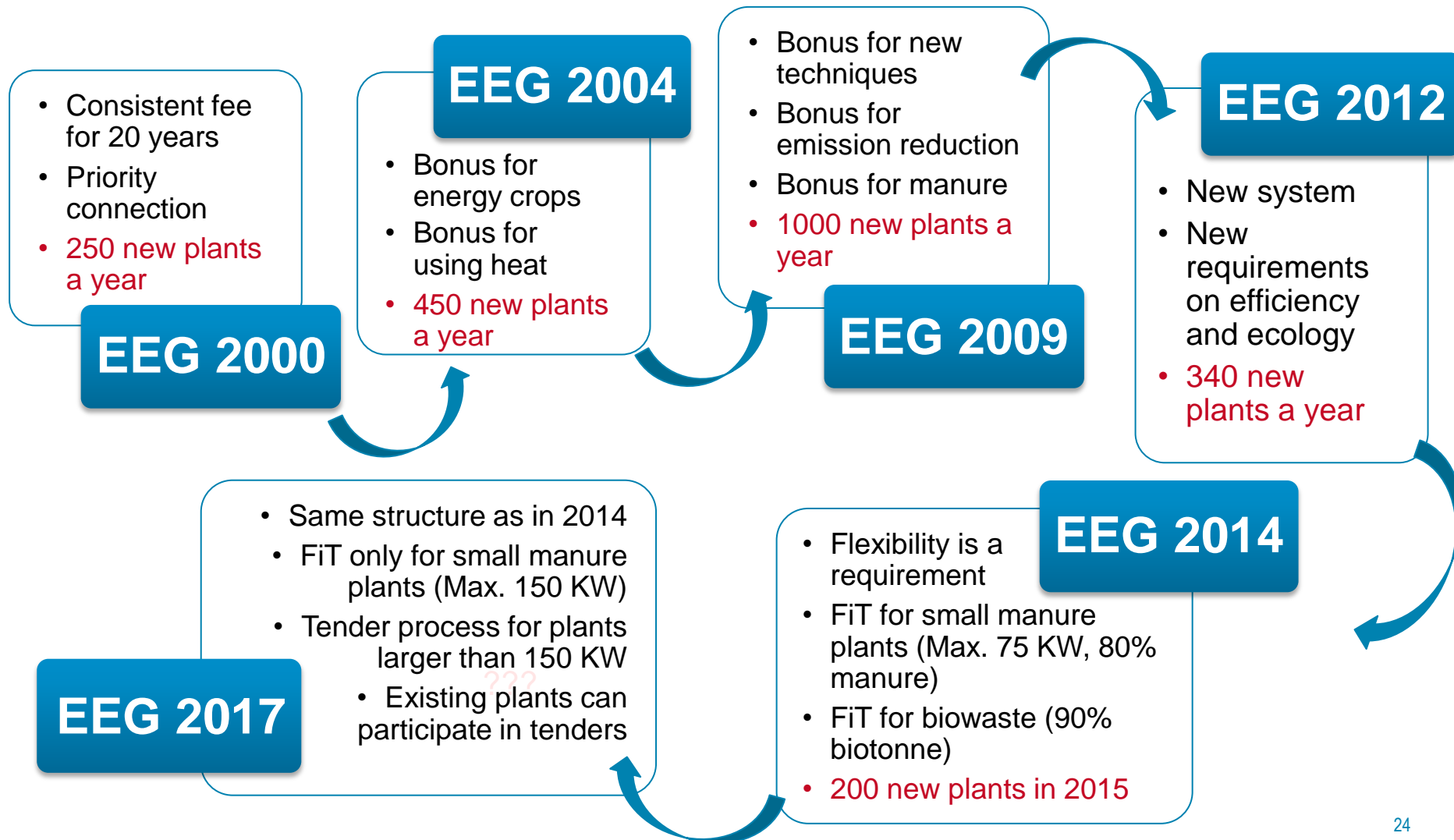


- Priority of connection, purchase and transmission for electricity from renewable energy sources
- A consistent fee for this electricity paid by the grid operators for a 20-year period

The core elements of the EEG guarantee :

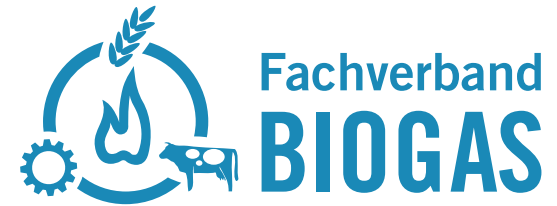
- Mid and long term planning and investment security
- Calculable costs for consumers
- Specific fees for different technologies
- Low bureaucratic effort
- Participation for local and regional players

Development of the Renewable Energy Act EEG (2000-2017)



- Tender volume:
 - 2017-2019 = 150 MW installed capacity/year
 - 2020-2022 = 200 MW installed capacity/year
 - Yearly tenders (start: 1st Sept. 2017)
- Participation in the tenders:
 - All existing plants and new plants > 150 kW inst. Capacity
 - New plants < 150 kW inst. capacity receive fixed FiT → small manure plants not included in tender system
 - Max. bidding offer for new plants: 14.88 ct/kWh
 - Max. bidding offer for existing plants : 16.9 ct/kWh
- Degression on FiTs (0.5%/semester) und max. offers (1% /year)

Support for new plants in the EEG 2017



- Special Feed-in-Tariffs (FiTs) for (no participation in the tender process):
 - Small manure plants: < 75 kW inst. capacity: 23.14 ct/kWh
 - Biowaste treatment plants: < 150 kW inst. capacity : 14.88 ct/kWh
 - Biomass: < 150 kW inst. capacity: 13.23 ct/kWh
- > 150 kW inst. capacity: participation in tender process
 - Max. bidding offer: 14.88 ct/kWh
 - Proof of approval
- > 100 kW obligatory direct marketing and flexibility: double installed capacity.
- > 100 kW: flexibility premium: 40 €/kW of inst. capacity per year

Thank you for your attention!

Biogas worldwide
Workshop Biogas Basics
Best Practice
Excursions
Evening Event



Fachverband
BIOGAS



BIOGAS Convention
& Trade Fair

12 – 14 December 2017, Nuremberg, Germany

www.biogas-convention.com

Biogas 4.0
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Between energy and
climate policy

