

Für Mensch & Umwelt

Umwelt 
Bundesamt

Development of the framework for biogas plants within the Renewable Energy Sources Act from 2000 until 2015

Carla Vollmer

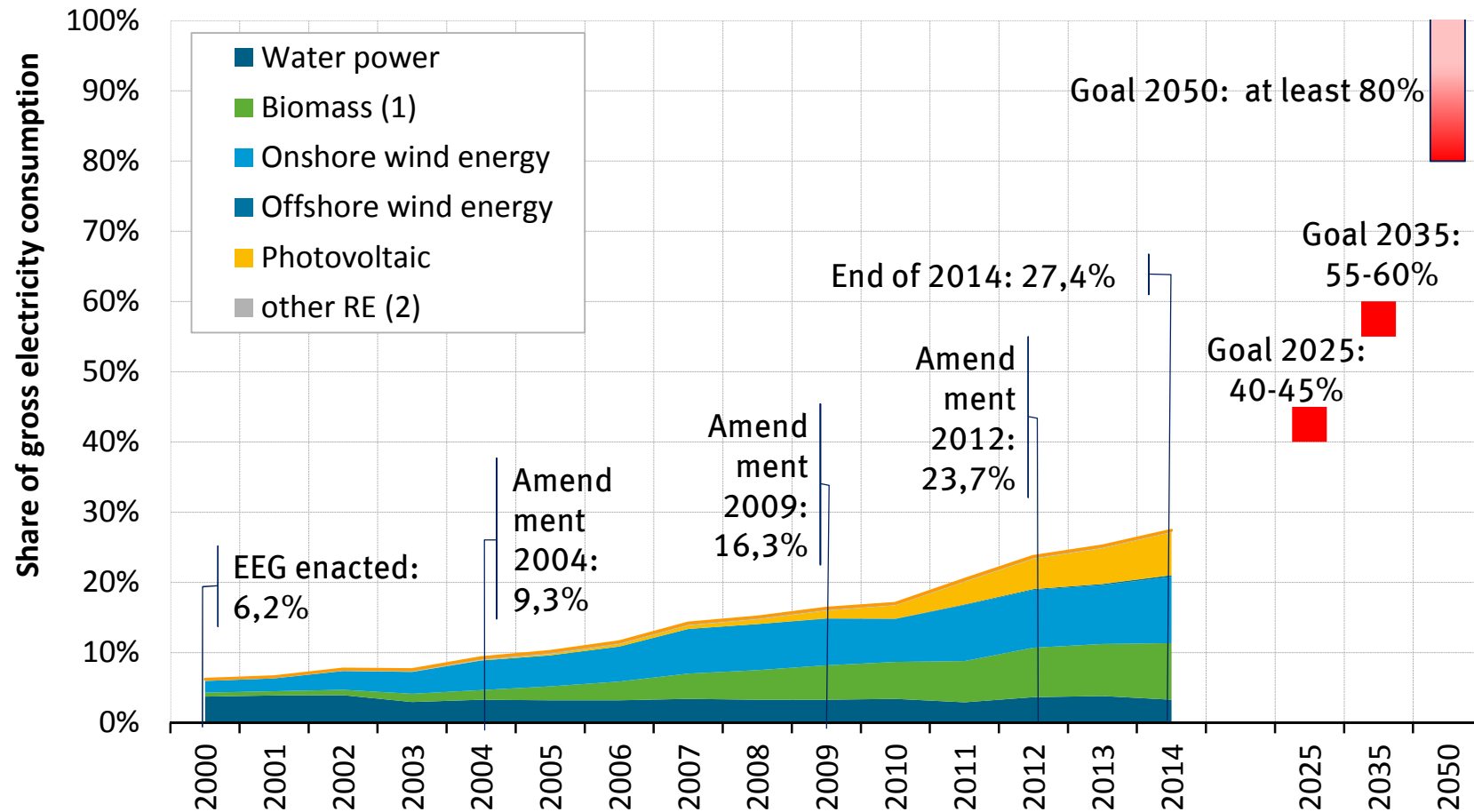
Head of Section Renewable Energy I 2.3

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Content

- 1. DEVELOPMENT OF THE RENEWABLE ENERGY SOURCES ACT (EEG)**
- 2. FINANCIAL SUPPORT SCHEME OF THE EEG**
- 3. OVERVIEW ABOUT THE EEG-COMPENSATION SYSTEM FOR BIOENERGY**
- 4. DEVELOPMENT OF ELECTRICITY GENERATION OF BIOGAS PLANTS IN GERMANY**
- 5. THE DEVELOPMENT OF DIRECT SELLING OF BIOGAS PLANTS**
- 6. EFFICIENCY OF BIOENERGY IN TERMS OF LAND USE COMPARED TO SOLAR AND WIND ENERGY**
- 7. CONCLUSIONS**

1. Development of the Renewable Energy Sources Act (EEG)

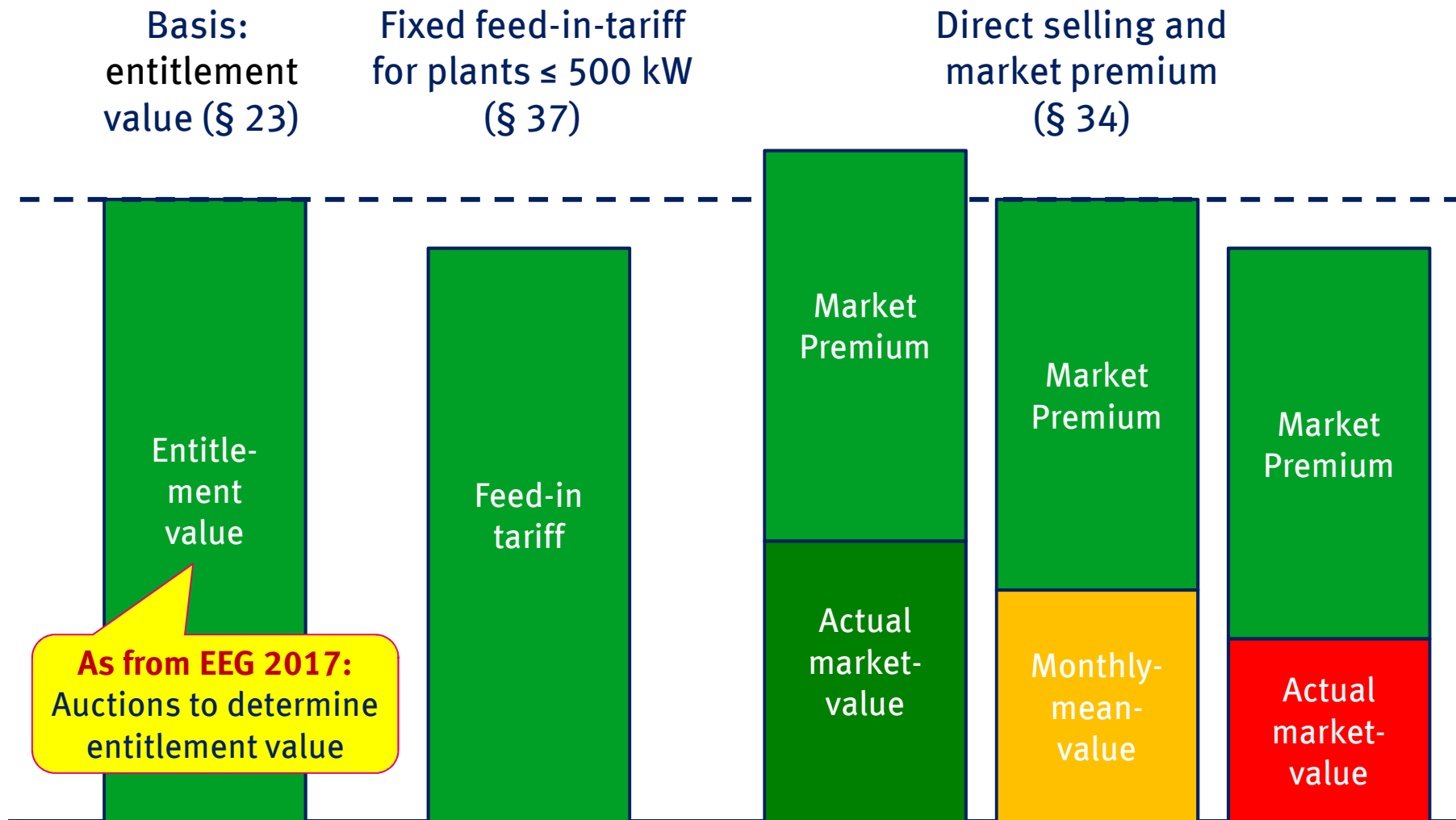


(1) Biomass includes solid and liquid fuels, biogas, and the biological share of waste.

(2) Other energy sources include geothermal energy, landfill gas and sewage gas.

Source: Bundesministerium für Wirtschaft und Energie (Hrsg.): Zeitreihen zur Entwicklung der erneuerbaren Energien in Deutschland unter Verwendung von Daten der Arbeitsgruppe Erneuerbare Energien Statistik (AGEE-Stat), Stand 09/2014

2. Financial support scheme of the EEG



3. Overview about the EEG-compensation system for bioenergy (1)

Rated power (kWh _{el})		Feed in tariffs (Cent/kWh)				
		EEG 2000	EEG 2004	EEG 2009	EEG 2012	EEG 2014
≤ 75 kW		10,23	11,5	11,67	14,3	13,66
≤ 150 kW						
≤ 500 kW			9,9	9,18	12,3	11,78
≤ 750 kW		9,21	8,9	8,25	11	10,55
≤ 5 MW						
≤ 20 MW		8,70	8,4	7,79	6	5,85
Bio-waste fermenta- tion plant	≤ 500 kW:				16	15,26
	≤ 20 MW:				14	13,38
Liquid manure plant (≤ 75 kW)					25	23,75

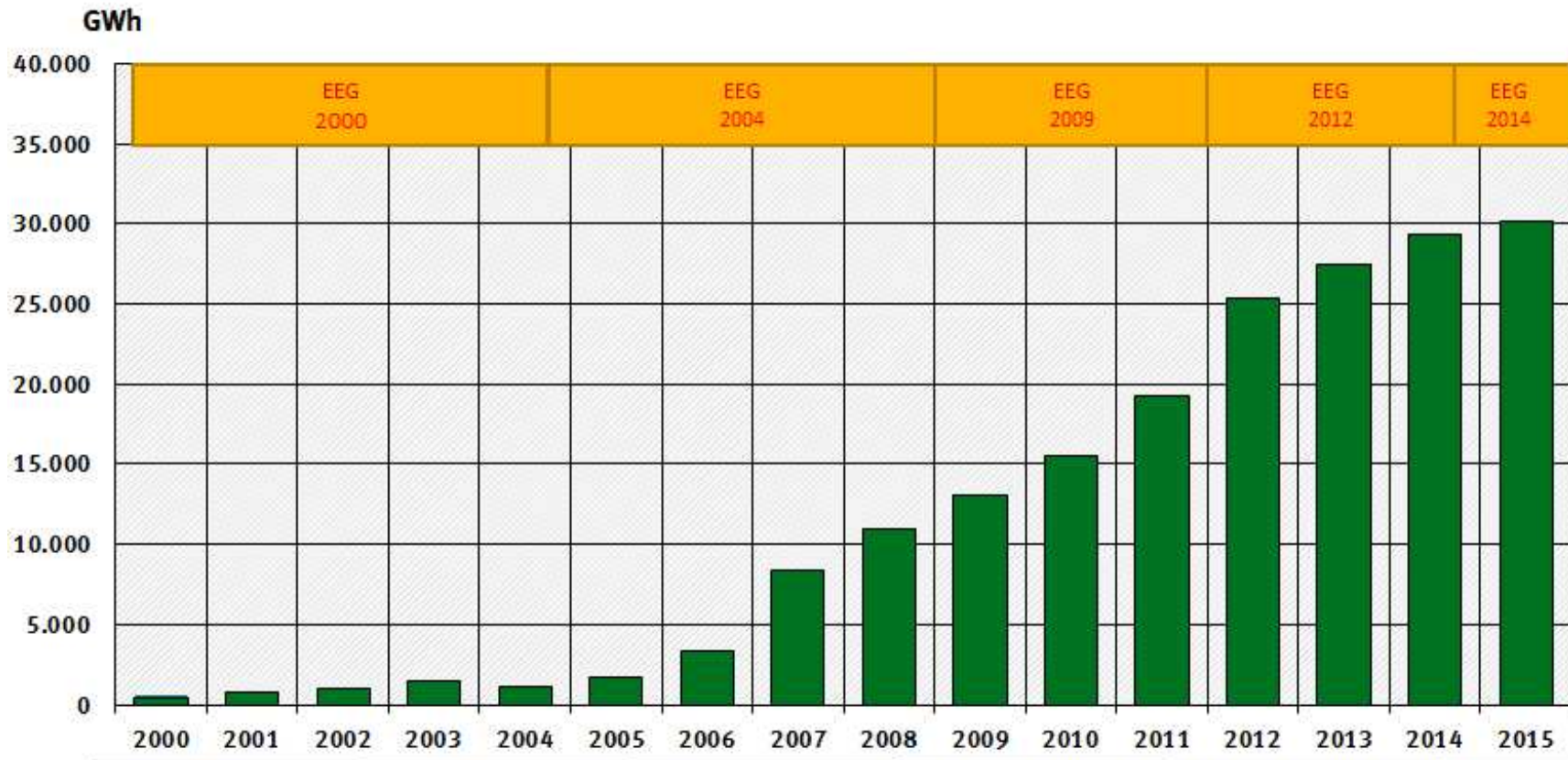
3. Overview about the EEG-compensation system for bioenergy (2)

Additional bonus (Cent/kWh)		EEG 2000	EEG 2004	EEG 2009	EEG 2012	EEG 2014
Bonus for renewable raw material			4 – 6	4-6		
Category for raw material I :					4-6	
Category for raw material II:					6-8	
Bonus for liquid manure				1 -4		
Bonus for materials of landscape management				2		
Bonus for combined heat and power			2	3		
Bonus for innovative technologies			2	2		
Critical value for Formaldehyde				1		
Bonus for treatment of gas	≤ 700 Nm ³ /h				3	
	≤ 1.000 Nm ³ /h				2	
	≤ 1.400 Nm ³ /h				1	

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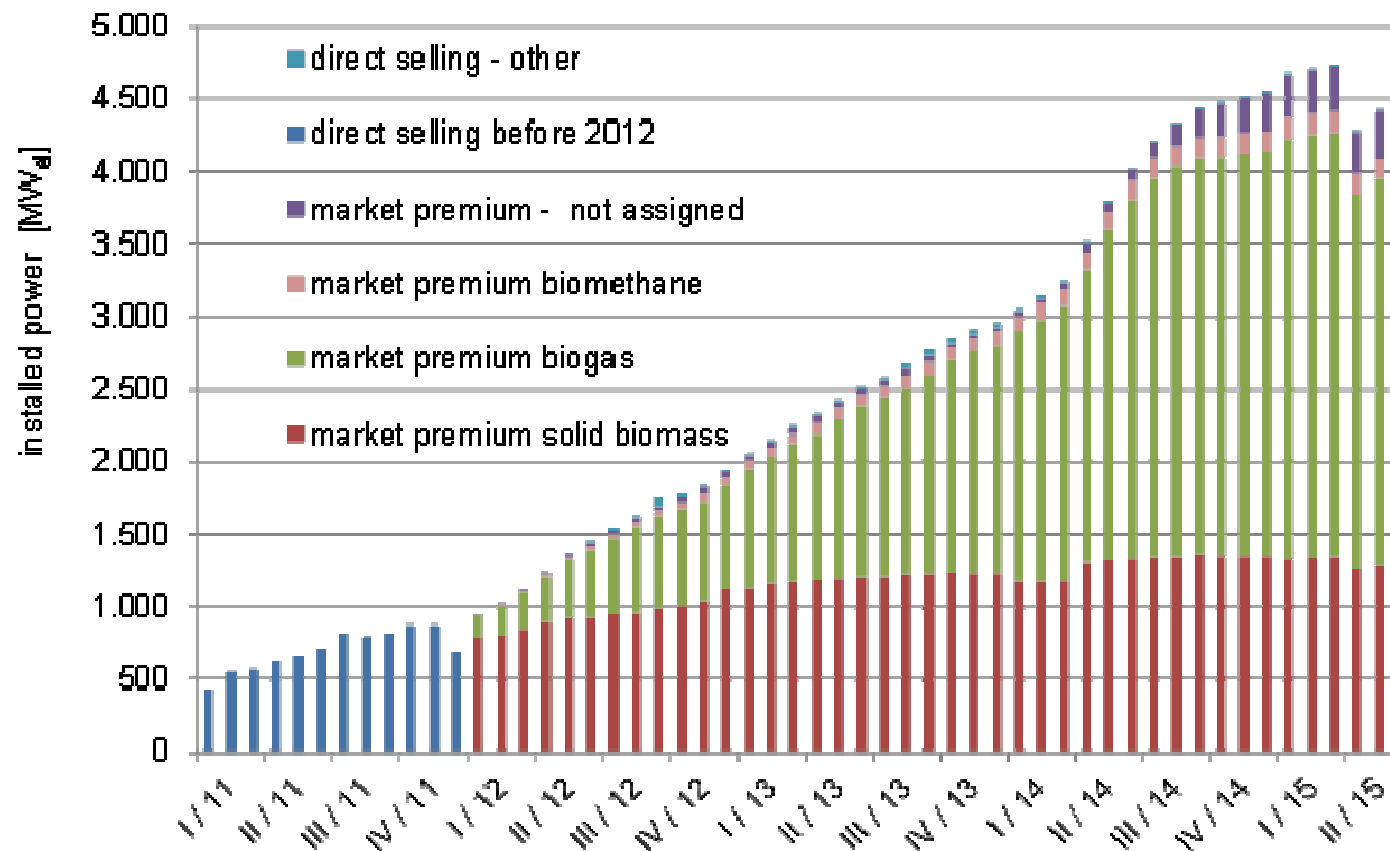
4. Development of electricity generation of biogas plants in Germany

Development of electricity generation of biogas plants in Germany



source: AGEE-Stat, ZSW, Destatis, DBFZ, UBA

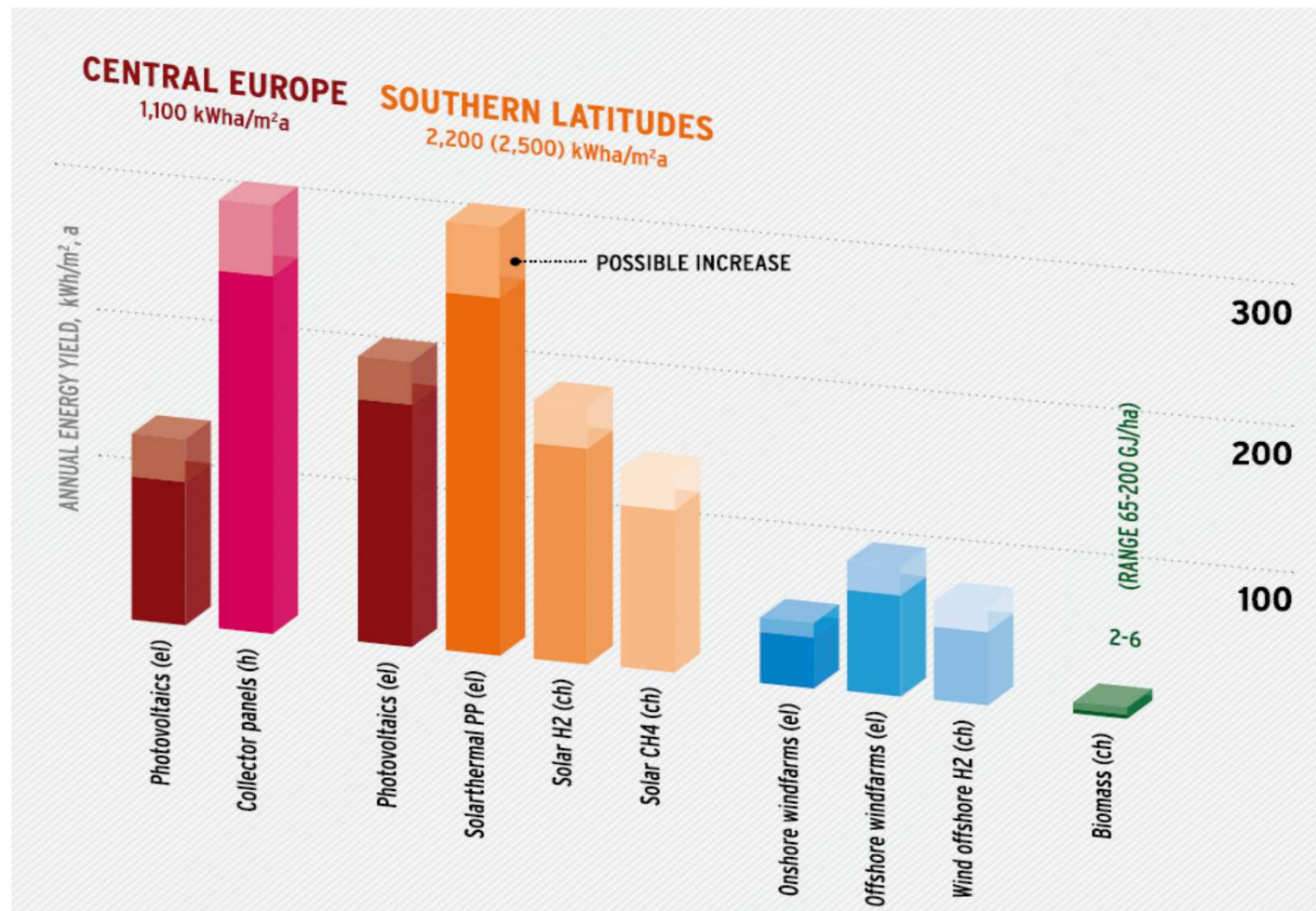
5. The development of direct selling of biogas plants



Source: SCHEFTELOWITZ, M. et al.: Stromerzeugung aus Biomasse (Vorhaben IIa) Zwischenbericht Mai 2015, Deutsches Biomasseforschungszentrum gemeinnützige GmbH (2015)

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6. In terms of land use bioenergy is the most inefficient form of Renewable Energy Sources (RES) compared to solar and wind energy



Source: BMUB, Leitstudie 2012

7. Conclusions

1. Biogas is an expensive energy -> based on financial support now and in future.
2. Which role could biogas play in the future energy system? This has to be defined under the following conditions:
 - The potential of bioenergy is limited.
 - The energy efficiency of bioenergy per square meter is small in relation to wind and solar energy.
 - To reduce their environmental impact technical innovations and a framework of comprehensive sustainable indicators are necessary
3. Foresight: EEG 2016 – Under which conditions are auctions a solution for biogas plants?

**Thank you very much für
your attention!**

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Back-Up I: Market development bioenergy until the end of 2015

2015 put into operation	111 plants; 13,6 MW (BNetz)
2015 deconstruction	14 plants; 6,5 MW (BNetzA)
2015 additional capacity flexibility	355 plants; 85,7 MW (BNetzA)
Newly installed capacity 2014 (including EEG 2012)	350 MW (DBFZ)
Installed capacity and power generation	circa 6.500 MW
2015 overall (only EEG-Biomass):	circa 38 TWh (DBFZ)

Back-Up II: Bioenergy EEG compensation in 2016

Degression rate from 2016 on: quarterly 0,5%; will raise to 1,27%, if the construction of new plants is above 100 MW in the last 12 month

- EEG-Compensation for plant since 01.01.2016:

Biomass plant (ct/kWh)	Up to 150 kW 13,59	Up to 500 kW 11,72	Up to 5 MW 10,50	Up to 20 MW 5,82
Liquid manure plant (ct/kWh)	Up to 75 kW 23,61			
Bio-waste fermentation plant (ct/kWh)		Up to 500 kW 15,18		Up to 20 MW 13,31