



current trends and the role of markets in Germany's energy transition

**Joint meeting of the Minnesota Environmental Quality Board and
the Minnesota Public Utilities Commission, November 29, 2016**

Jens Acker, German Embassy



Embassy
of the Federal Republic of Germany
Washington



www.germany.info



1. targets and state of play
2. the role of markets in energy transition
3. current trends



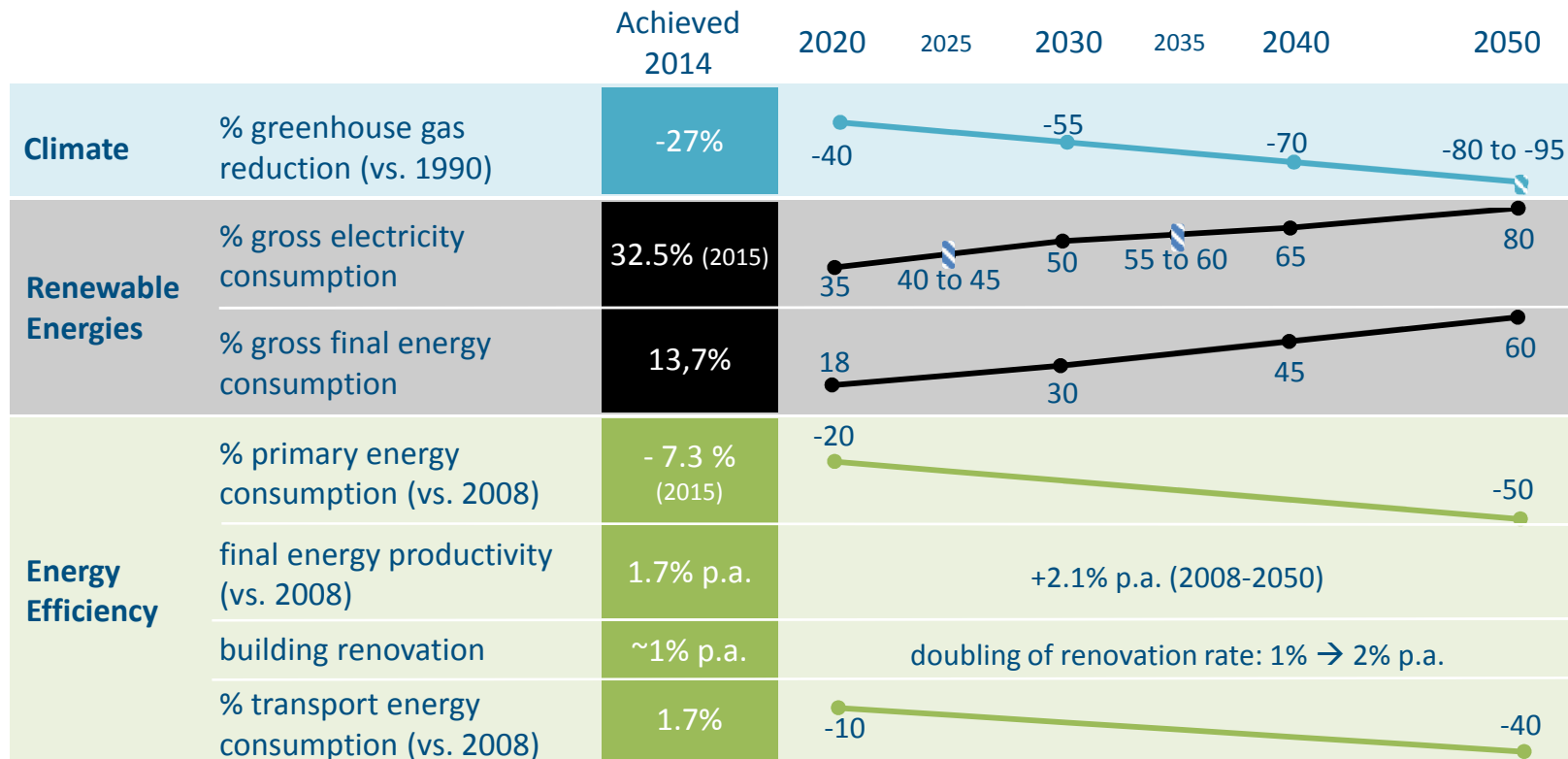
Embassy
of the Federal Republic of Germany
Washington



www.germany.info



1. targets and state of play



Source: Federal Government 2010, BMU/BMWi 2014, BMWi 2015, AGEE-Stat 2014, AGEEB 2015, Agora 2016



Embassy
of the Federal Republic of Germany
Washington



www.germany.info



2. the role of markets

- EU Emissions Trading System:
 - 2013 – 2020 => - 21 % vs 2005
 - 2021 – 2030 => - 43 % (proposed)
- liberalized power market
 - consumers choose their supplier
 - no monopolies!
 - new supplier: guaranteed access to the grid => regulator





2. the role of markets

- European Power Exchange in Paris and i.a. Leipzig is trading platform for GER, F, AUT and CH
- => market decides on dispatch!
- support for renewables must take into account market setting!



Embassy
of the Federal Republic of Germany
Washington



www.germany.info



3. latest trends in Germany

- Renewable Energy Sources Act (amendment 2017)
- Energy efficiency
- climate protection plan (long term deep decarbonisation strategy)



Embassy
of the Federal Republic of Germany
Washington



www.germany.info



renewables cost reduction

TABLE ES 1: GLOBAL WEIGHTED AVERAGE SOLAR AND WIND POWER INVESTMENT COSTS, CAPACITY FACTORS AND LCOEs, 2015 AND 2025

	Global weighted average data								
	Investment costs (2015 USD/kW)		Percent change	Capacity factor		Percent change ²	LCOE (2015 USD/kWh)		Percent change
	2015	2025		2015	2025		2015	2025	
Solar PV	1 810	790	-57%	18%	19%	8%	0.13	0.06	-59%
CSP (PTC: parabolic trough collector)	5 550	3 700	-33%	41%	45%	8.4%	0.15 -0.19	0.09 -0.12	-37%
CSP (ST: solar tower)	5 700	3 600	-37%	46%	49%	7.6%	0.15 -0.19	0.08 -0.11	-43%
Onshore wind	1 560	1 370	-12%	27%	30%	11%	0.07	0.05	-26%
Offshore wind	4 650	3 950	-15%	43%	45%	4%	0.18	0.12	-35%



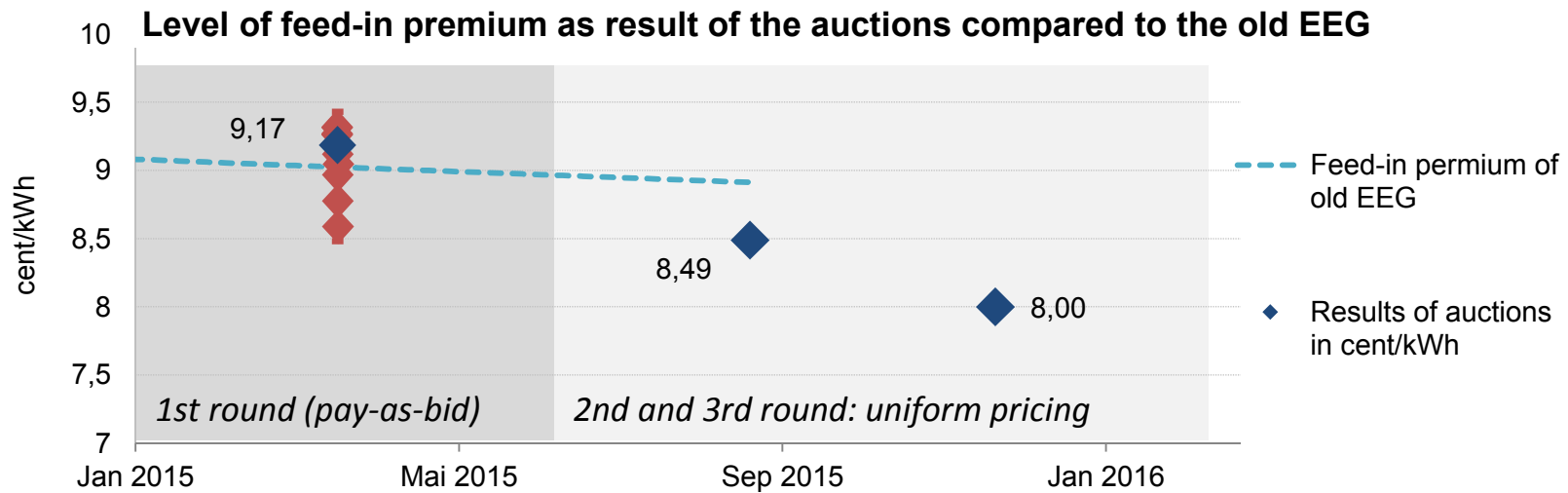
Embassy
of the Federal Republic of Germany
Washington



www.germany.info



auction pilots for ground-mounted PV



Source: Ecofys 2016 based on BNetzA



Renewable Energy Sources Act

- **auctions determine level of support**
- **auctions also define pace of transition**
 - **Wind onshore** **2,8 -2,9 GW/y**
 - **Wind offshore:** **500 – 840 MW/y**
 - **Photovoltaic:** **600 MW/y**
- **Link to grid expansion + provisions for stakeholder diversity**



Embassy
of the Federal Republic of Germany
Washington



www.germany.info



Renewable Energy Sources Act

Increase market integration through premium system

price signal reaches RES generators, who thus react to market needs, generators can create additional profit by adjustment to market prices



Embassy
of the Federal Republic of Germany
Washington



www.germany.info



Energy Efficiency: general approach

taxation – regulation – financial incentives – information & consultation



Buildings

- Energy saving legislation
- KfW programmes for construction



Products & appliances

- Energy Efficiency Labelling Ordinance
- National Top Runner Initiative



Industry and business

- Obligatory energy audits
- KfW credits and loans
- Energy consulting services



Transport

- Motor vehicle taxation
- Regulation of consumption



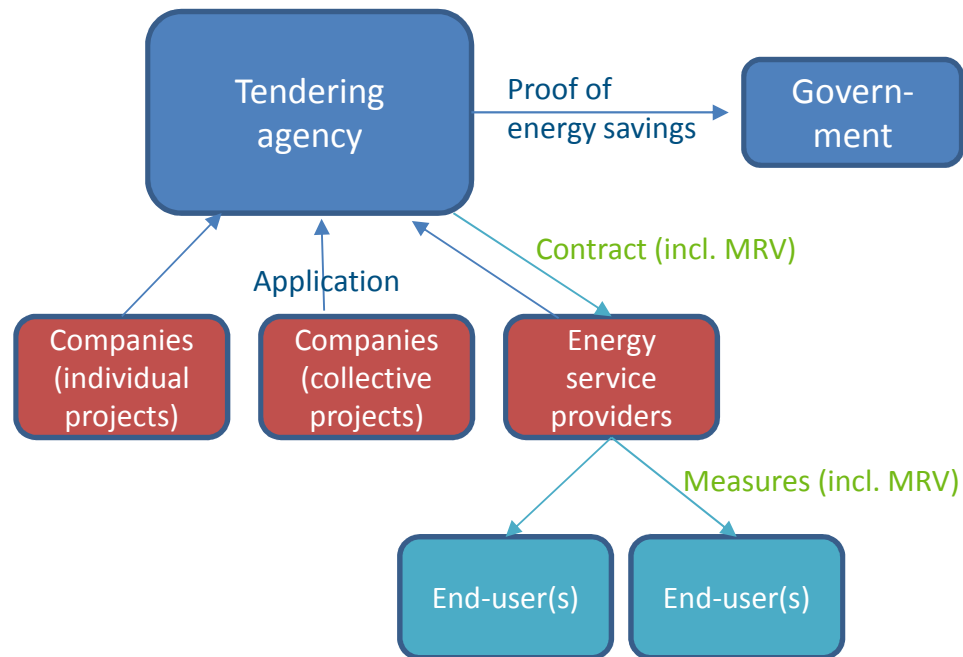
Embassy
of the Federal Republic of Germany
Washington



www.germany.info



Energy efficiency: tendering tool



- Funding quota max. 30% of investment costs and 0.10 €/kWh saved
- Min. amortisation rate of 3 years
- Open for individual and collective projects
- Between 26 and 51.5 PJ can be realised in energy savings until 2020



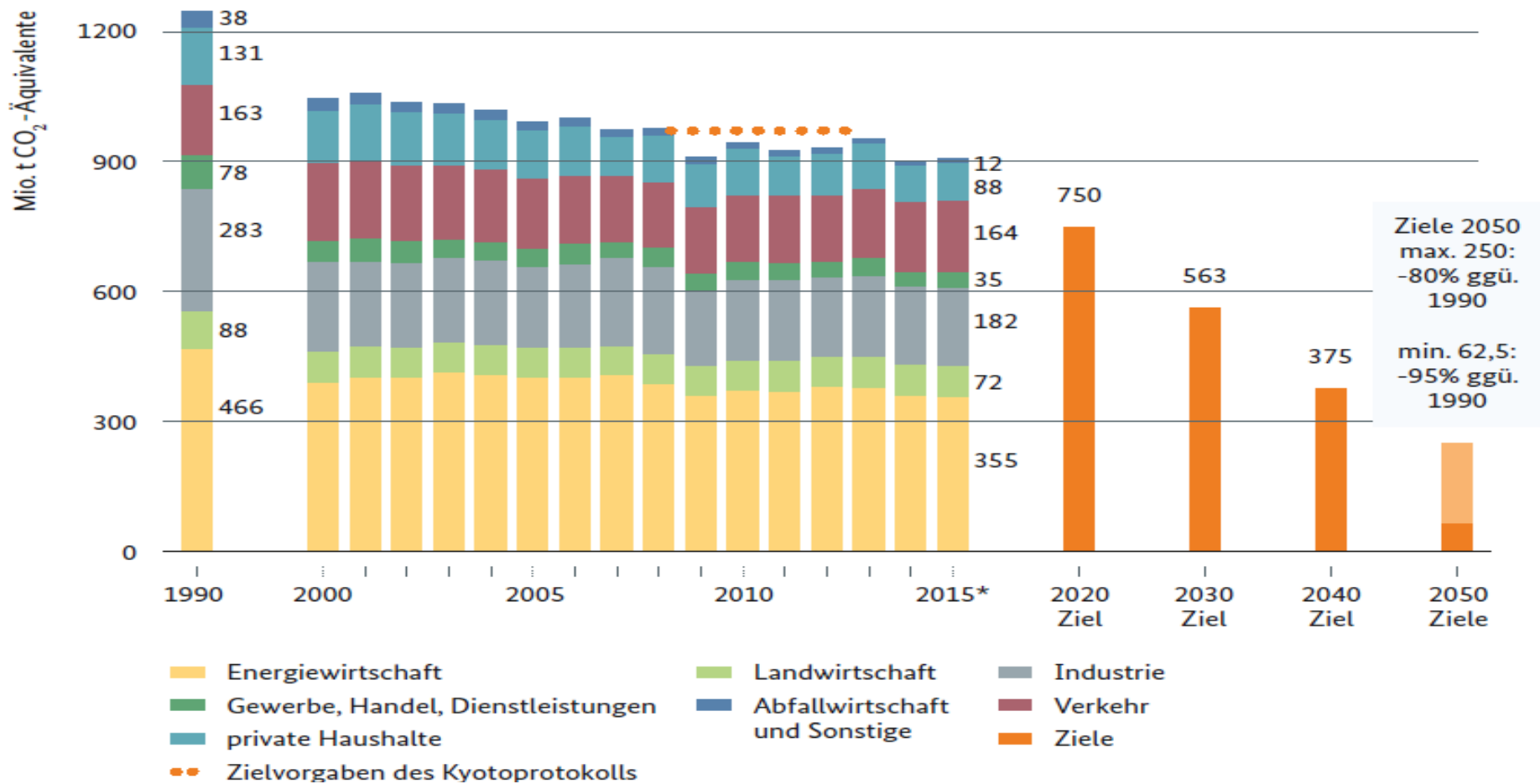
Embassy
of the Federal Republic of Germany
Washington



www.germany.info



climate protection plan 2016





new: sectoral targets for 2030

Emissions from areas of action set out in definition of the target:

Area of action	1990 (in million tonnes of CO ₂ equivalent)	2014 (in million tonnes of CO ₂ equivalent)	2030 (in million tonnes of CO ₂ equivalent)	2030 (reduction in % compared to 1990)
Energy sector	466	358	175 – 183	62 – 61 %
Buildings	209	119	70 – 72	67 – 66 %
Transport	163	160	95 – 98	42 – 40 %
Industry	283	181	140 – 143	51 – 49 %
Agriculture	88	72	58 – 61	34 – 31 %
Subtotal	1209	890	538 – 557	56 – 54 %
Other	39	12	5	87%
Total	1248	902	543 – 562	56 – 55 %



Embassy
of the Federal Republic of Germany
Washington



www.germany.info



Thank you!

Happy to answer your questions.

We invite you to visit our website and subscribe to our newsletters at www.germany.info.



Embassy
of the Federal Republic of Germany
Washington



www.germany.info