

Indonesian-German Energy Dialogue 2015

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# The German energy transition: political objectives and measures of implementation

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## Overview

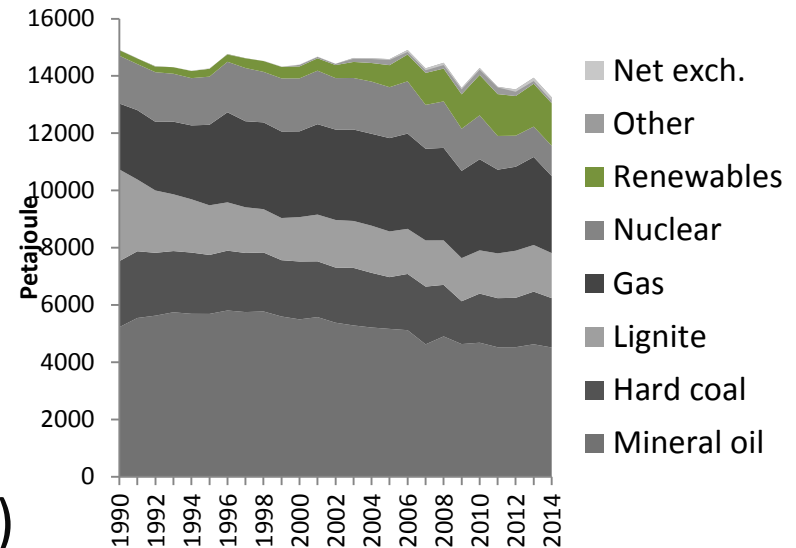
1. Background
2. Political objectives
3. Selected measures of implementation
4. Some lessons learned

- The German energy system:
  - Based on coal and mineral oil

- The energy transition (*Energiewende*)

- Set of targets, measures, and monitoring process
- Energy concept 2010: transition to renewables, nuclear as a bridge
- Fukushima accident March 2011: reversal of nuclear policy
- 7+1 blocks (8 GW) shut down immediately, remaining 8 blocks (11 GW) by end of 2022

- Implicit focus on the power sector



- Power demand stagnates
- Market liberalization: unbundling and competition
- Limited role of (direct) subsidies
- Access to electricity is not an issue
- Abundant thermal generation capacity
- Limited resources of dispatchable renewables
- Existing transmission infrastructure
  - Internal
  - European interconnection

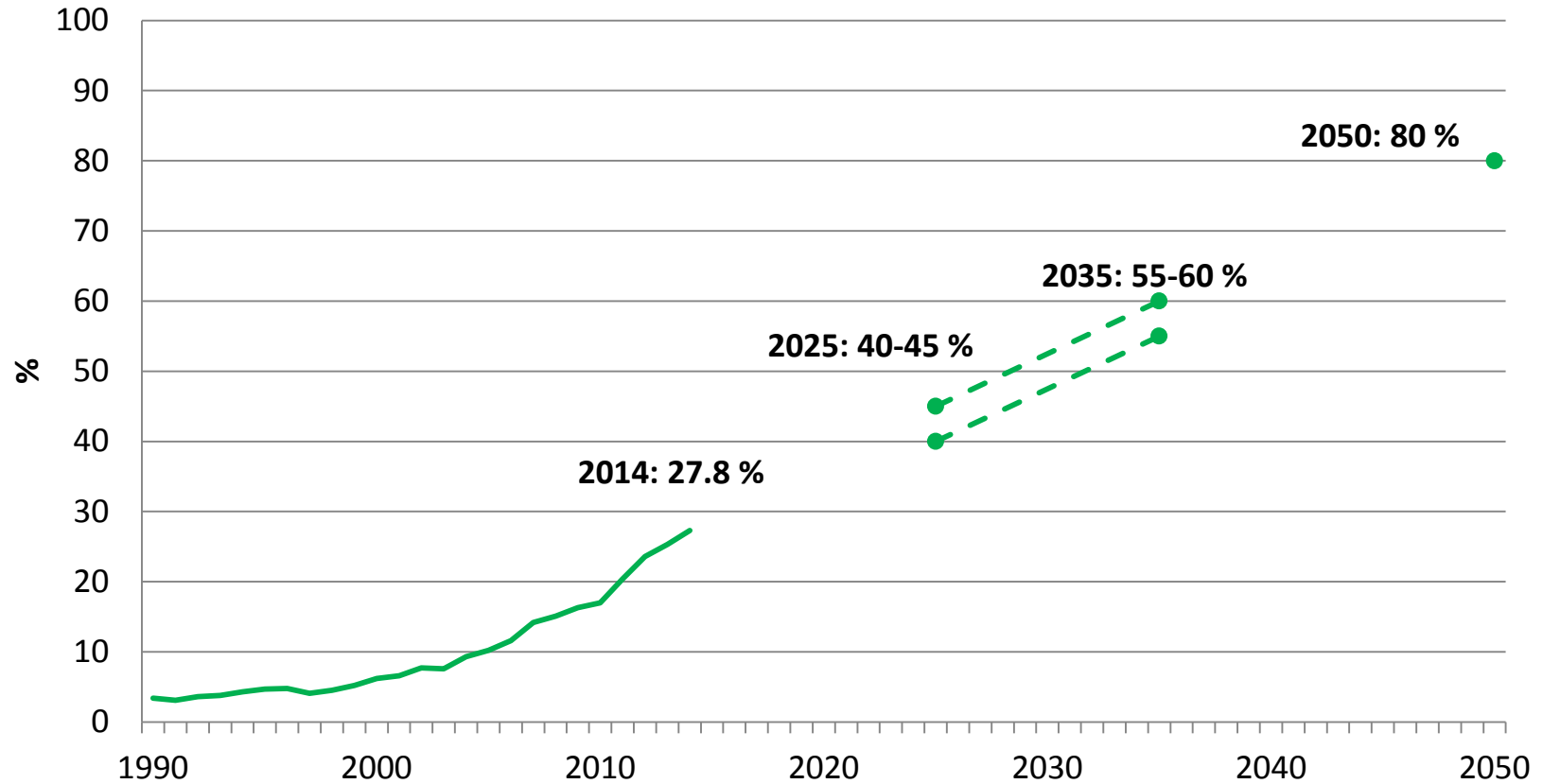
\* Minimum targets

BMW/BMU (2010), Schafhausen (2013), BMWi (2014)

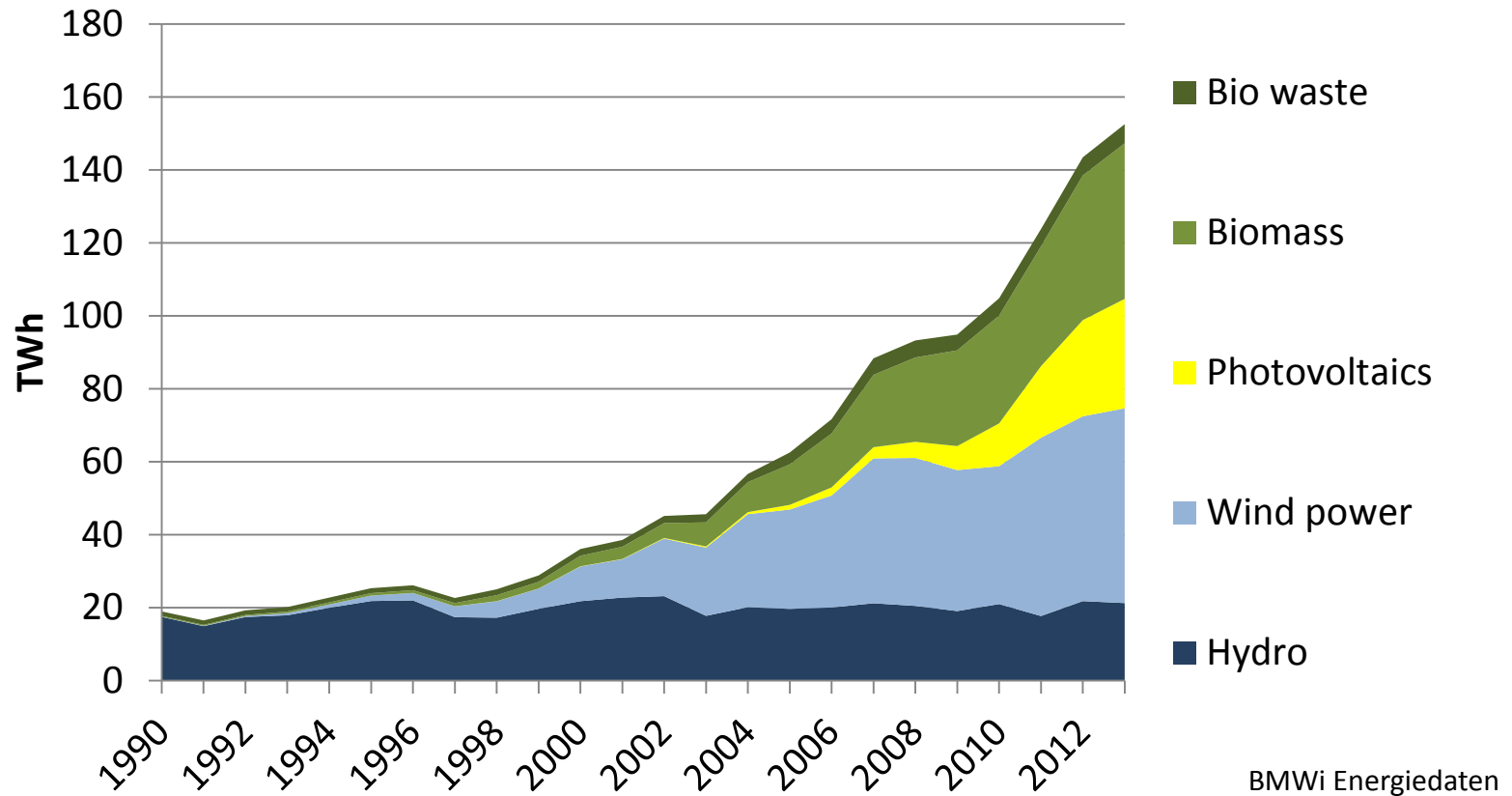
	Climate	Renewable Energy		Energy Efficiency				
	Greenhouse gas emissions (vs. 1990)	Share gross power consumpt.	Share gross final consumpt.	Primary energy (vs. 2008)	Gross power consumpt. (vs. 2008)	Final energy transport (vs. 2005)	Energy consumpt. of buildings (vs. 2008)	Final energy product. (2008-50)
<b>2020</b>	-40%	35%*	18%	-20%	-10%	-10%	-20% (Heat)	Refurbishment rate 2%  +2,1% per year
<b>2025</b>		40-45%						
<b>2030</b>	-55%	50%*	30%					
<b>2035</b>		55-60%						
<b>2040</b>	-70%	65%*	45%					
<b>2050</b>	-80-95%	80%*	60%	-50%	-25%	-40%	-80% (PEC)	

→ Ambitious and detailed, yet consistent? Prioritization?

### Share of renewables in gross power demand in Germany 1990 to 2014 and future targets



- Renewable Energy Sources Act (EEG)
- Entered into force in 2000, several reforms since then
- Until 2012: technology-differentiated feed-in tariffs
- Today: direct marketing and shift to auctions
- Differential costs financed by consumption-based levy
- “Special equalization scheme” to maintain competitiveness of energy intensive industries



→ Growth comes from wind power, biomass and PV



- Investments require incentives and reliable framework
  - Importance of credible short- and long-term targets
  - Importance of concrete measures to support targets
- Details of support schemes matter
  - Feed-in tariffs effective, at least for low RES shares
  - Costs and benefits of direct marketing and auctions?
- Incumbent generators unlikely to be agents of change
- Technological learning was faster than expected

Thank you for your attention.

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