POTSDAM INSTITUTE FOR CLIMATE IMPACT RESEARCH

Climate policy in the EU and Germany to fulfill their NDCs under the Paris Agreement

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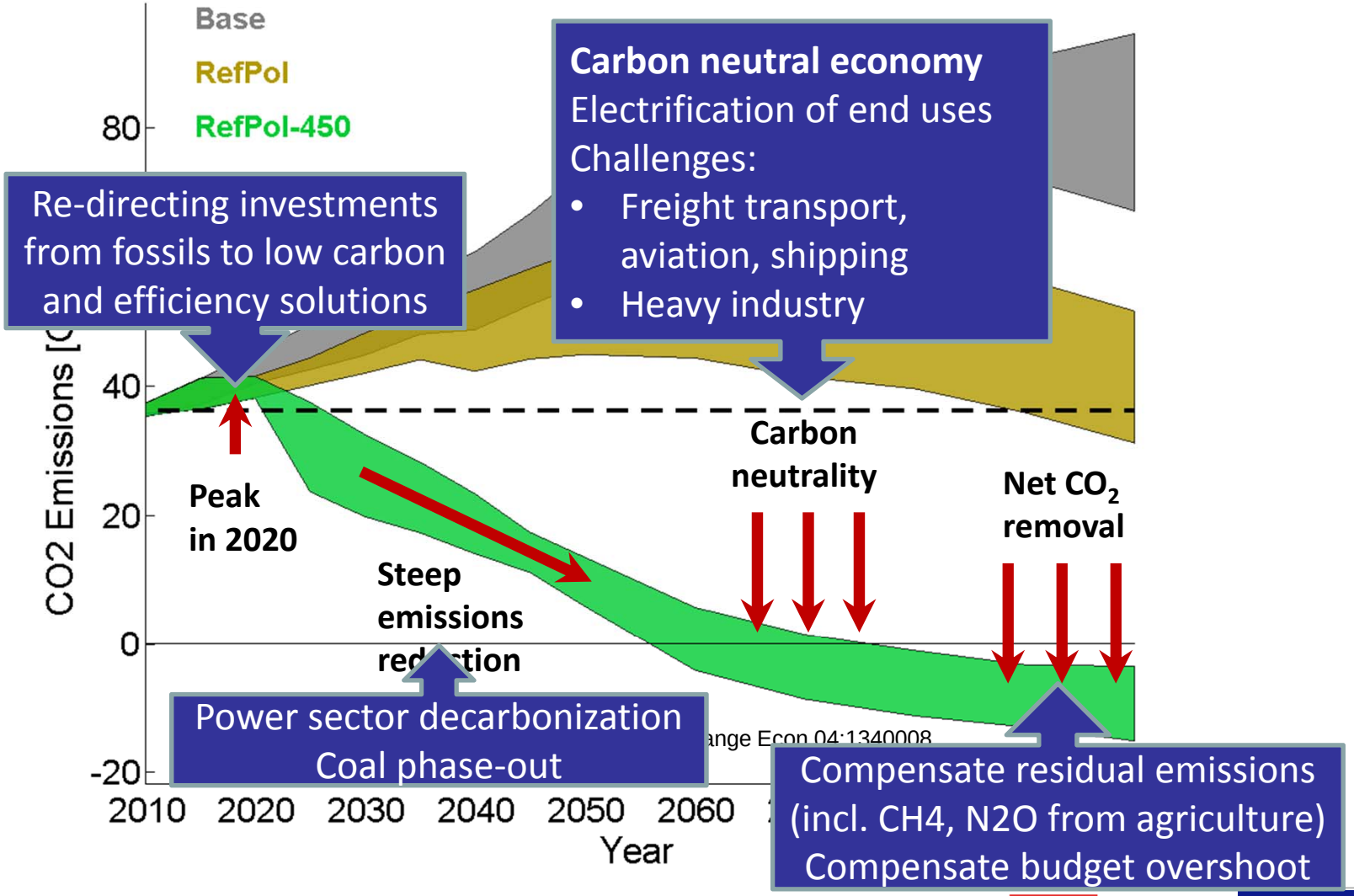
Leibniz Association

The Paris Agreement

brings together nationally determined action with global coordination to reach the long term ambition of

- holding global mean temperature well below 2°C
- pursuing efforts to limit temperature increase to 1.5°C

Global Mitigation Pathways staying well below 2°C



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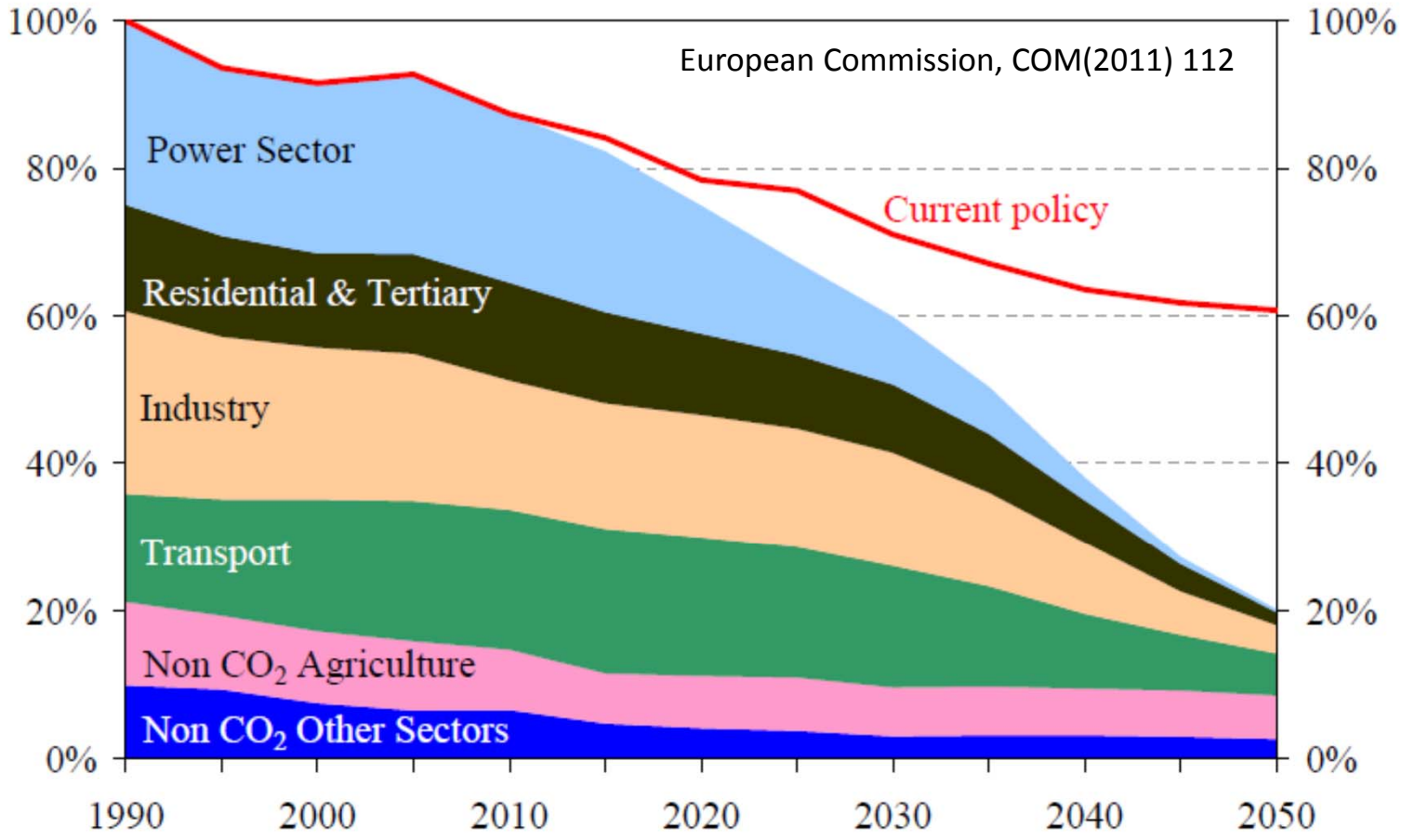
EU Regulatory Framework for Climate & Energy

- Long-term **aspirational climate goal**: GHG emission reduction of -80% to -95% until 2050 r.t. 1990

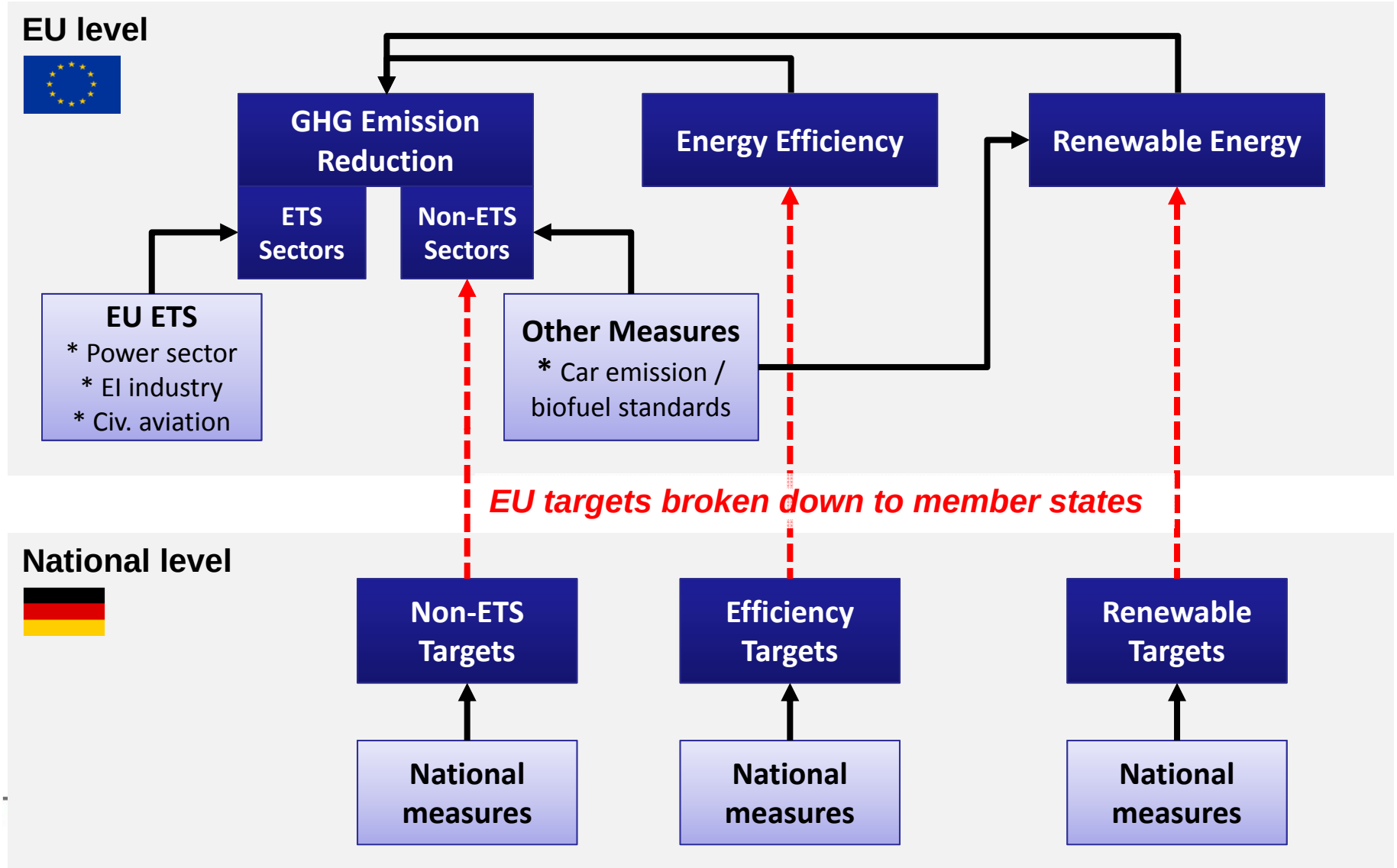
Figure 1: EU GHG emissions towards an 80% domestic reduction (100% =1990)



EU Regulatory Framework for Climate & Energy

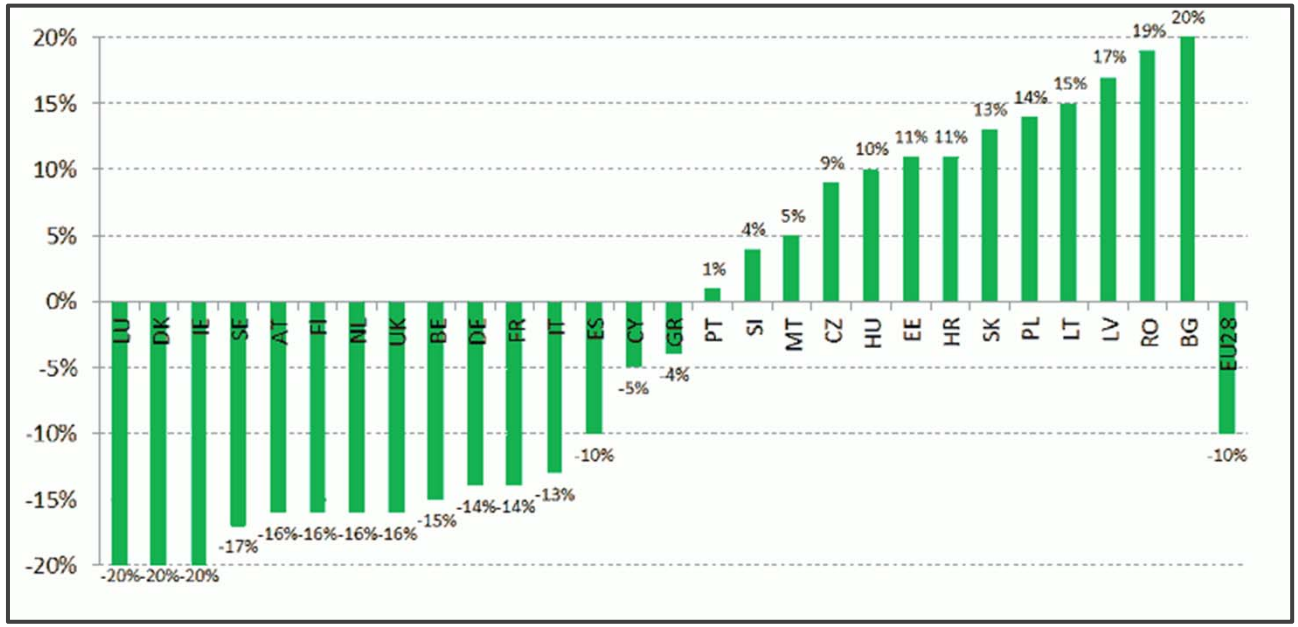
- Long-term **aspirational climate goal**: GHG emission reduction of -80% to -95% until 2050 r.t. 1990
- **Climate & energy package** (2008) in place, defines targets for **2020** and is **well on track**:
  - Climate: -20% GHG emission reduction r.t. 1990
  - Renewables: 20% in final energy consumption
  - Efficiency: 20% primary energy savings
- **2030 climate & energy framework** upcoming (2014 Council decision), **increases ambition** of 2020 package:
  - Climate: -40% GHG emission reduction r.t. 1990
  - Renewables: 27% in final energy consumption
  - Efficiency: 27% / 30% primary energy savings

EU Climate & Energy Policy Framework: A complex web of targets & instruments



Non-ETS sectors: Effort sharing decision (ESD)

- **Effort Sharing Decision** (ESD): EU target of -10% until 2020 (r.t. 2005) in non-ETS sectors (e.g. transport, buildings, waste etc.)
- **Differentiated targets** for member states according to **capabilities** (CBDR principle)



Source: http://ec.europa.eu/clima/policies/effort/index_en.htm

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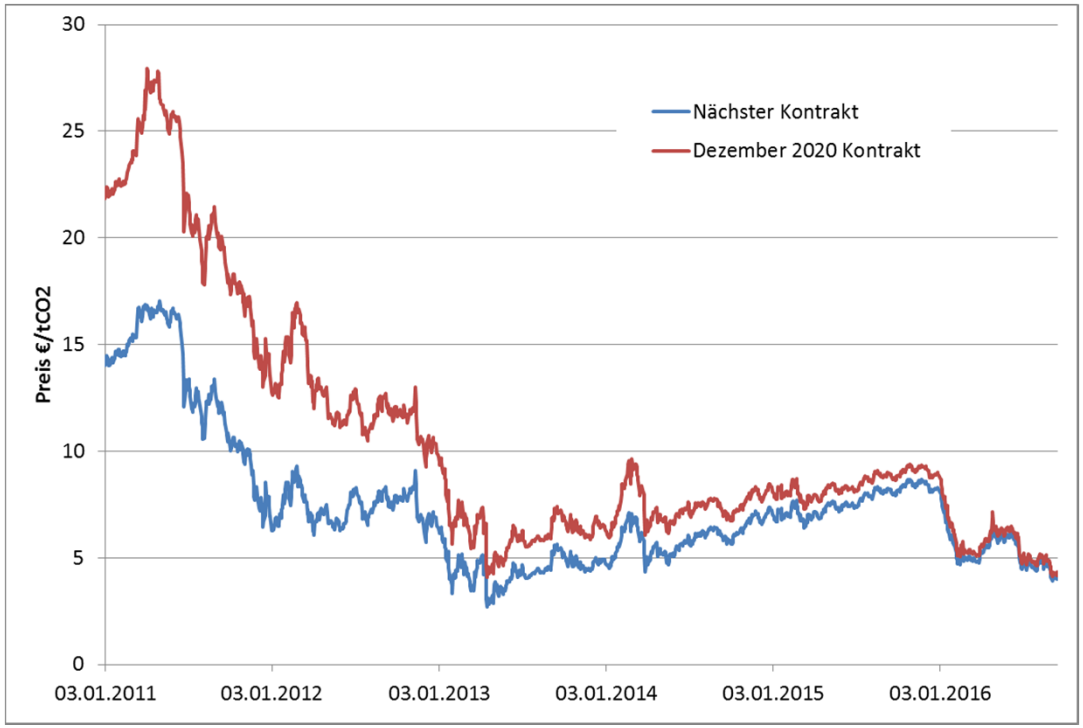
Instrument view: Prime example is EU ETS

- EU ETS has experienced **sharp decline in prices** since 2011



Source: ICE Futures Europe

- Prices are thought to be too low to induce **sufficient mitigation**

→ Why not just **"fix the price"**? Debate about minimum permit price or additional national carbon taxation

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THE ENERGIEWENDE IN GERMANY

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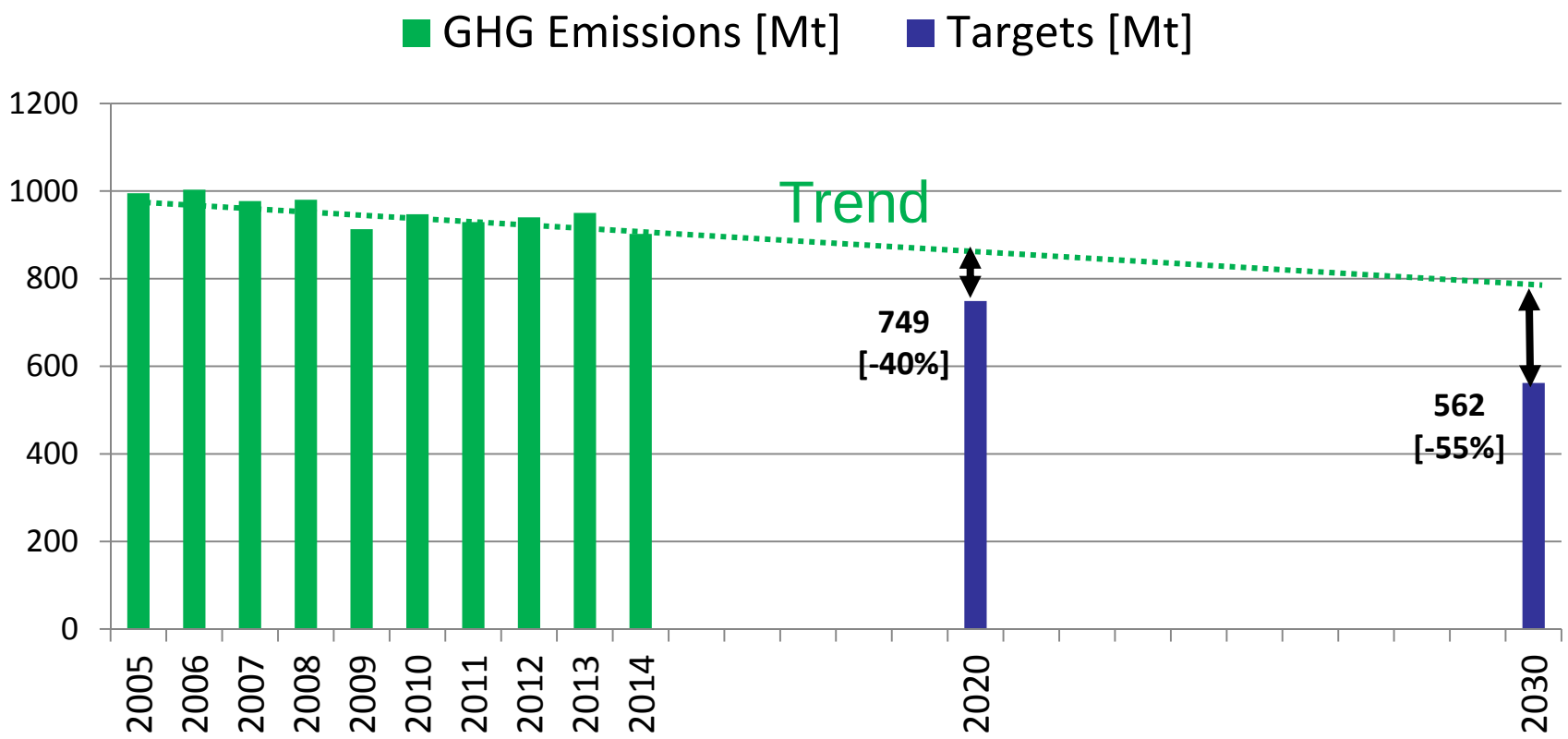
Germany: Not on track with climate targets



- According to Government projections (BMUB 2014) GHG emission reduction in 2020 only ~33% (target: -40% / 740 Mt)
- Even larger gap for 2030 target (-55% / 562 Mt)

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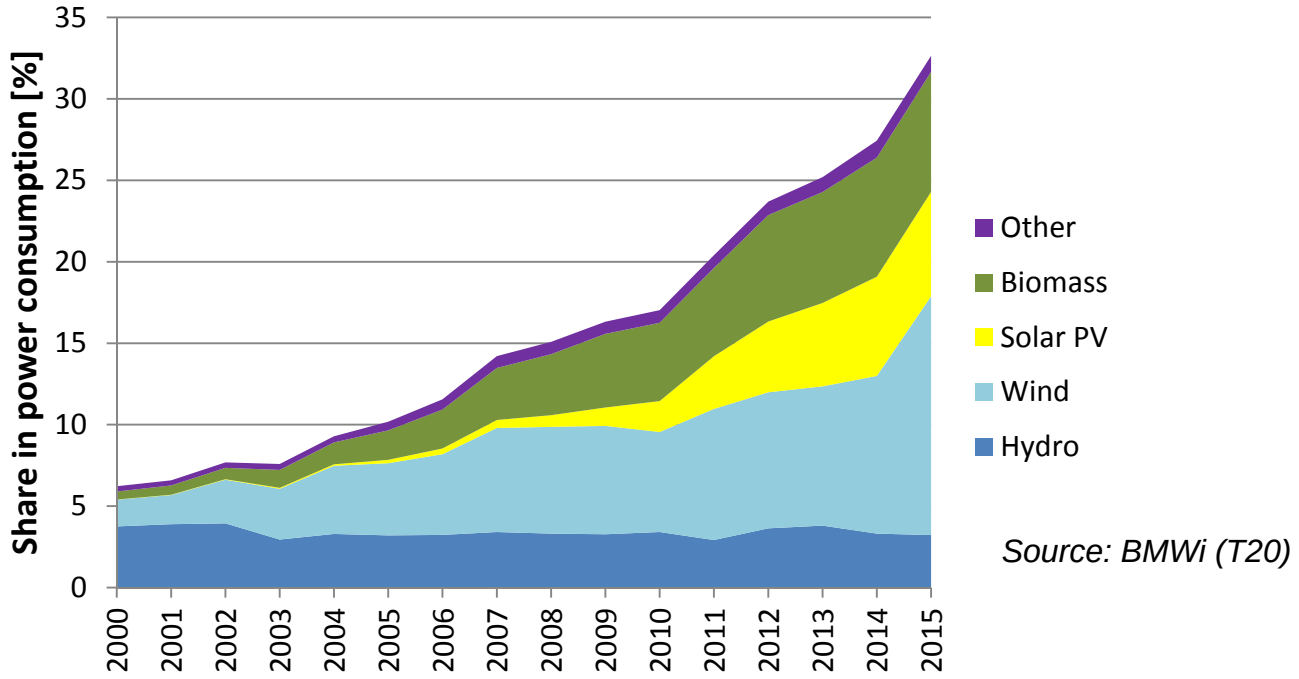
Power Sector: A very different picture

- Considerable increase of renewables in power consumption over last 15 years
- From 6% in 2000 up to 33% in 2015, 27 percentage points



→ Major driver: **RE feed-in tariff (EEG)** implemented in 2000

EEG: Main features & evolution

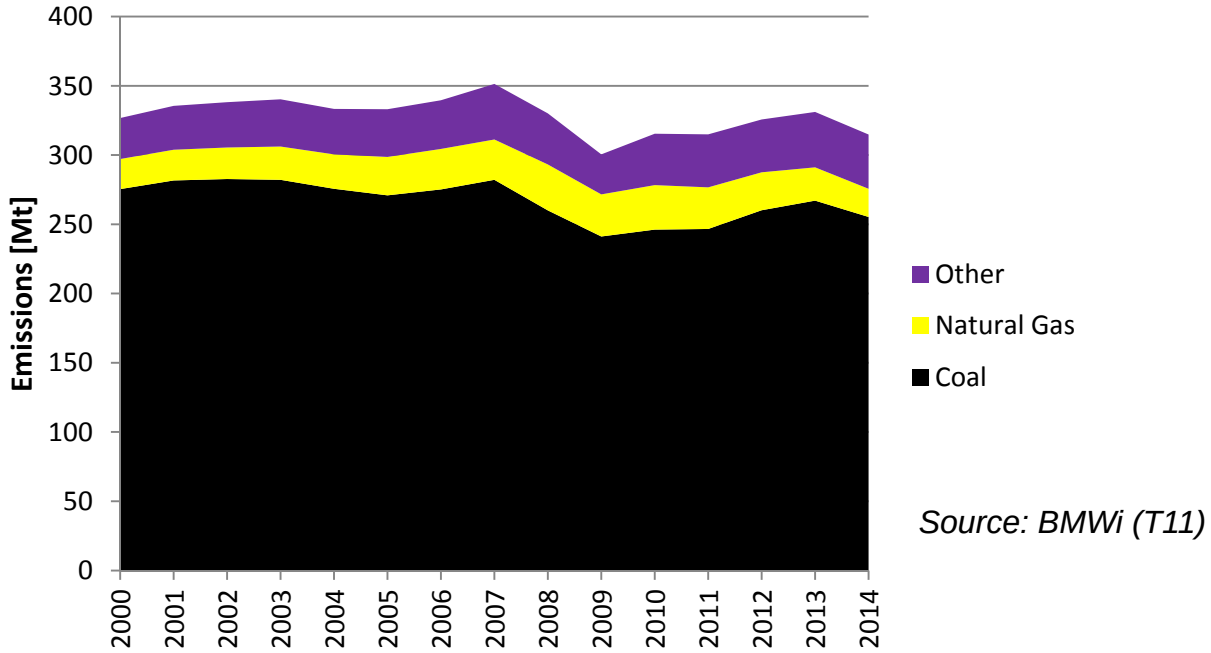
- **Main features** of EEG / feed-in tariff are:
  - Guaranteed payments over 20/30 years (tariff set by regulator)
  - Guaranteed up-take of all production (TSO obligation)
  - Guaranteed grid connection at no costs (TSO obligation)

→ By design basically **no risk** for RE producers to ensure
  - access to finance (**bankability**)
  - **participation** of smaller producers (home owners, cooperatives)

- But "***invest & forget***" created problems with **cost-effectiveness** due to **lack of market integration** (Pahle et al. 2016):
  - **Major reform in 2016**: Level of tariffs set in **competitive auction** (exceptions for smaller plants, *de-minis rule)*

But more RE not necessarily good for climate

- While RE share increased, emission remained at basically the same level because **no switch from coal to gas occurred**



Source: BMWi (T11)

- Main reasons: (a) **price effect** of RE and (b) **low ETS prices** reduce gas production

Conclusion

- Europe aims to be a leader in international climate policy
- It has committed to 20% GHG reduction until 2020 (2nd phase of Kyoto Protocol) and 30% GHG reduction until 2040 (INDC) relative to 1990
- Those targets have been coded into law. The current challenges are to strengthen carbon pricing in the ETS and to distribute the Non-ETS target between member states (burden sharing)
- The EU‘s long term ambition is to reduce GHG emissions by 80-95% in 2050. A 2050 roadmap for the 80% target exists, a mid-century strategy (MCS) under the Paris Agreement is discussed.
- Europe’s climate and energy policy is a complex web of EU-level and national policies (Multi-level governance challenge)
- Germany’s Energiewende has lead to a large increase of renewable power, but coal power has not been reduced significantly. Renewables mostly replaced nuclear power.
- Germany is not on track to meet its 2020 and 2030 GHG reduction targets. Will require phase-out of coal power.

THANK YOU

Energiewende targets

	2014	2020	2030	2040	2050
Greenhouse gas emissions					
Greenhouse gas emissions (compared with 1990)	-27 %	at least -40 %	at least -55 %	at least -70 %	at least -80 bis -95 %
Renewable energy					
Share of gross final energy consumption	13.5 %	18 %	30 %	45 %	60 %
Share of gross electricity consumption	27.4 %	at least 35 %	at least 50 % Renewable Energy Sources Act 2025: 40–45 %	at least 65 % Renewable Energy Sources Act 2025: 55–60 %	at least 80 %
Share of heat consumption	12.0 %	14 %			
Share in transport sector	5.6 %				
Efficiency and consumption					
Primary energy consumption (compared with 2008)	-8.7 %	-20 % →			-50 %
Final energy productivity (2008-2050)	1.6 %/year (2008–2014)	2,1 %/year (2008–2050)			
Gross electricity consumption (compared with 2008)	-4.6 %	-10 % →			-25 %
Primary energy consumption in buildings (compared with 2008)	-14.8 %	→			-80 %
Heat consumption in buildings (compared with 2008)	-12.4 %	-20 %			
Final energy consumption: transport (compared with 2005)	1.7 %	-10 % →			-40 %

Source: 4th Energiewende Monitoring Report (2015)

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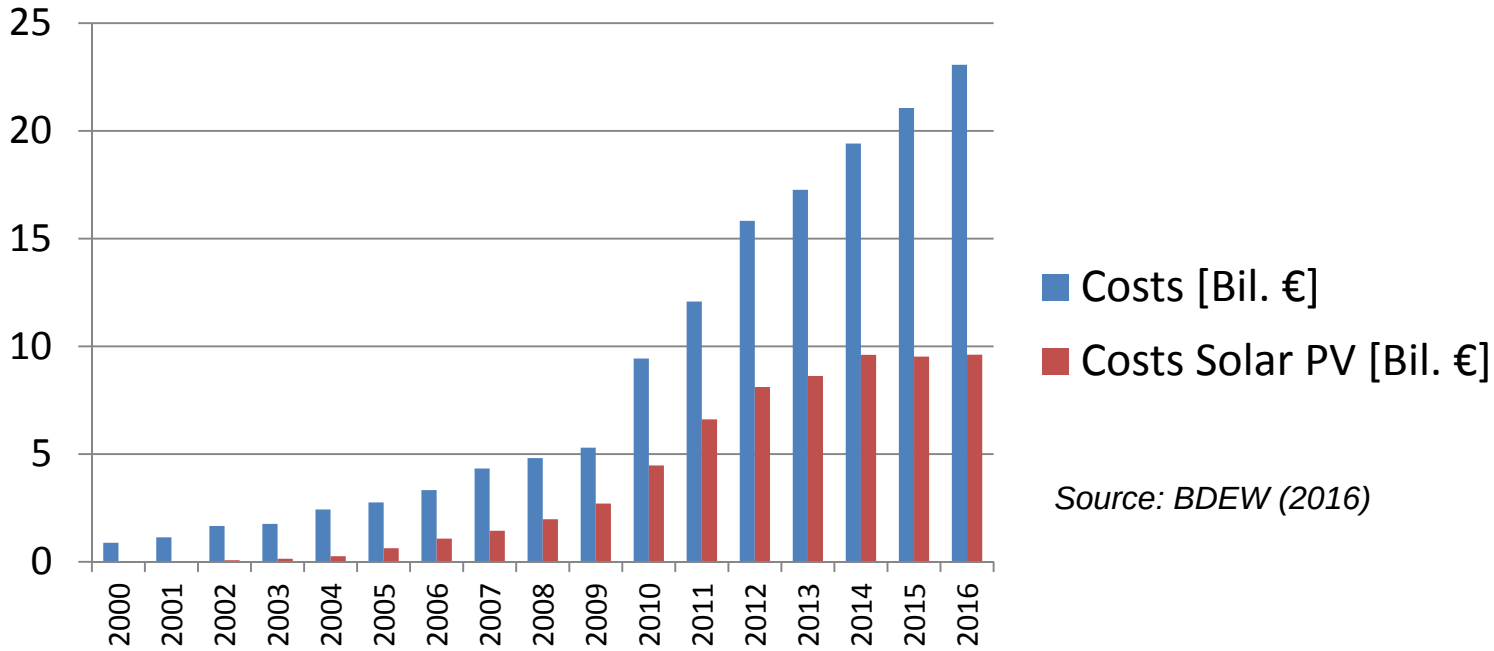
Costs of renewable support



Source: BDEW (2016)

- Annual costs of support has risen to more than 23 bil. € (>60 €/MWh)
- ~50% for solar pv (~20% of all RE power production) → surge in 2010-2012
- Expected decline after 2025 when old installations stop receiving subsidies

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