



Federal Ministry
for Economic Affairs
and Energy



Germany: On Track to a Successful Energiewende

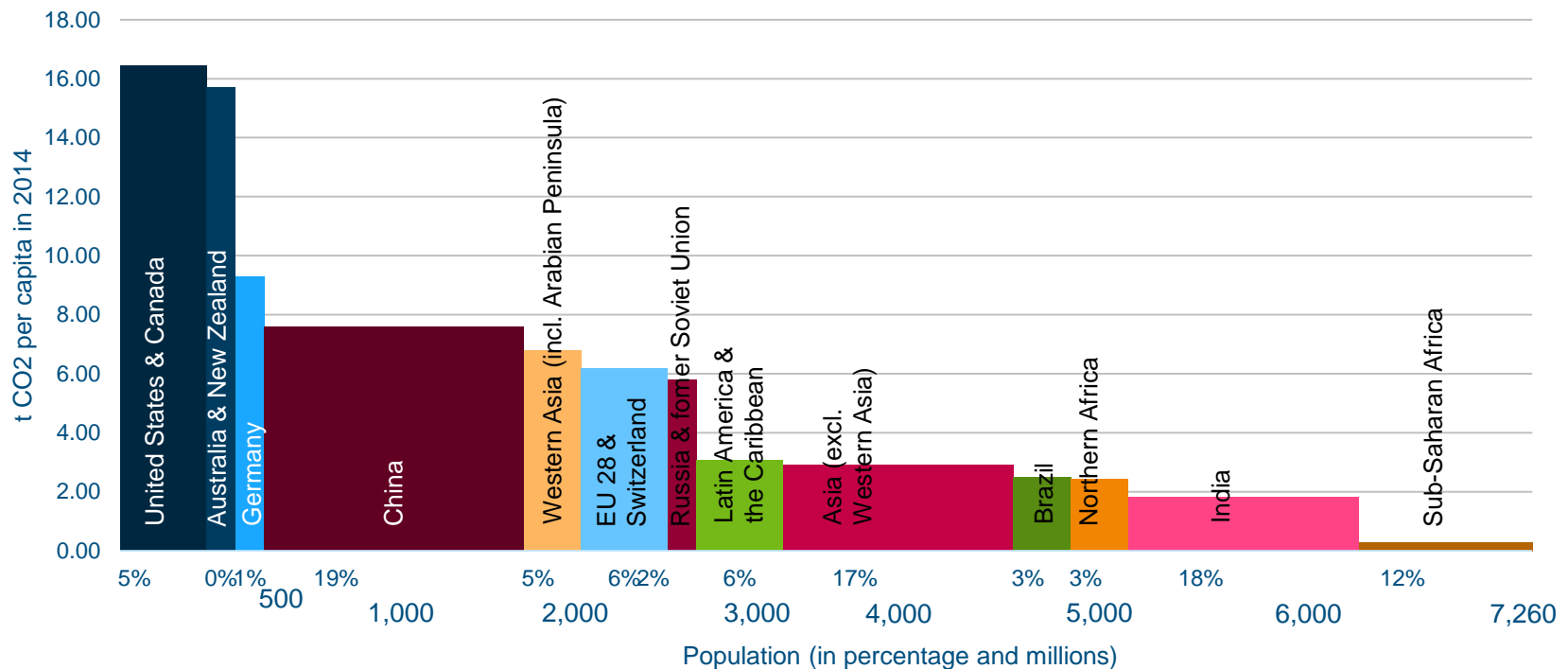
Martha Ekkert, Federal Ministry for Economic Affairs and Energy

Deputy Head of Division „International and External Energy Policy, Multilateral Cooperation in Energy, Energy Cooperation with Industrialized Countries“

9 March 2016



CO₂ emissions by country and population

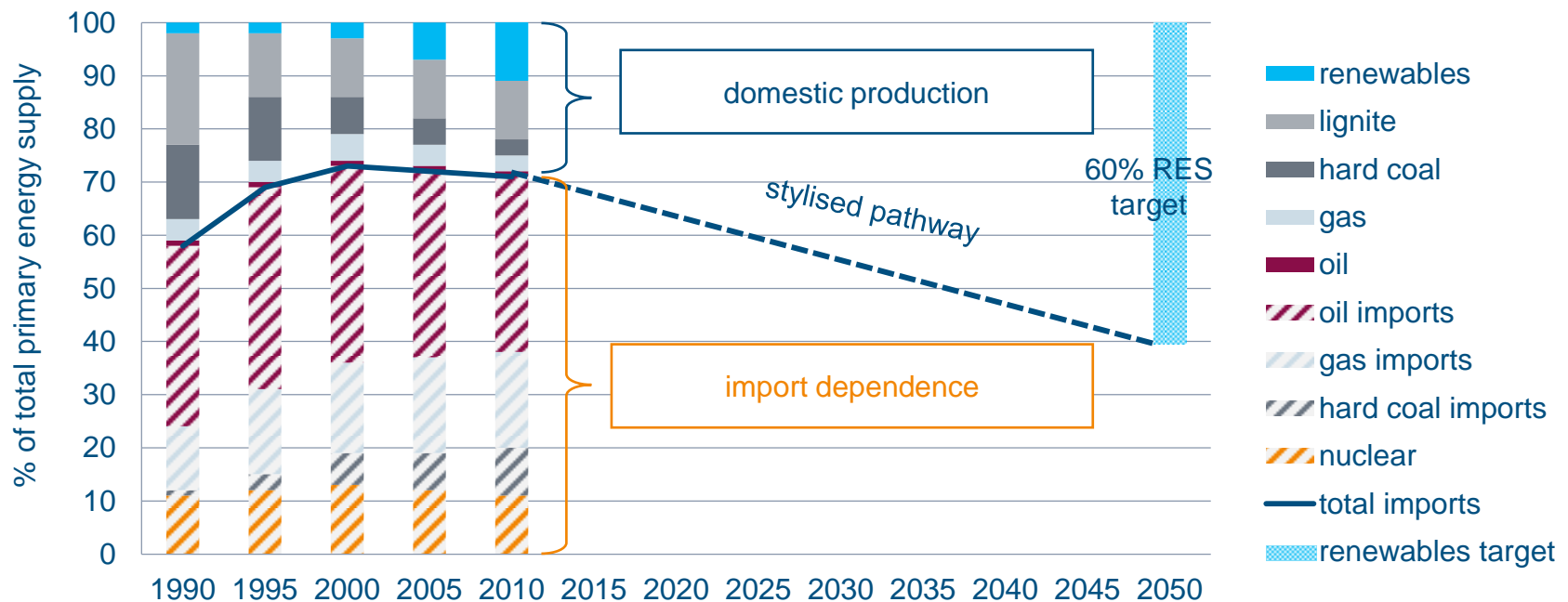


Source: Ecofys 2015 based on data from Edgar Joint Research Centre 2014 and UN Population Reference Bureau 2014

The per capita emissions of large western economies are still twice as high as those of China.



Energy imports and domestic production in Germany

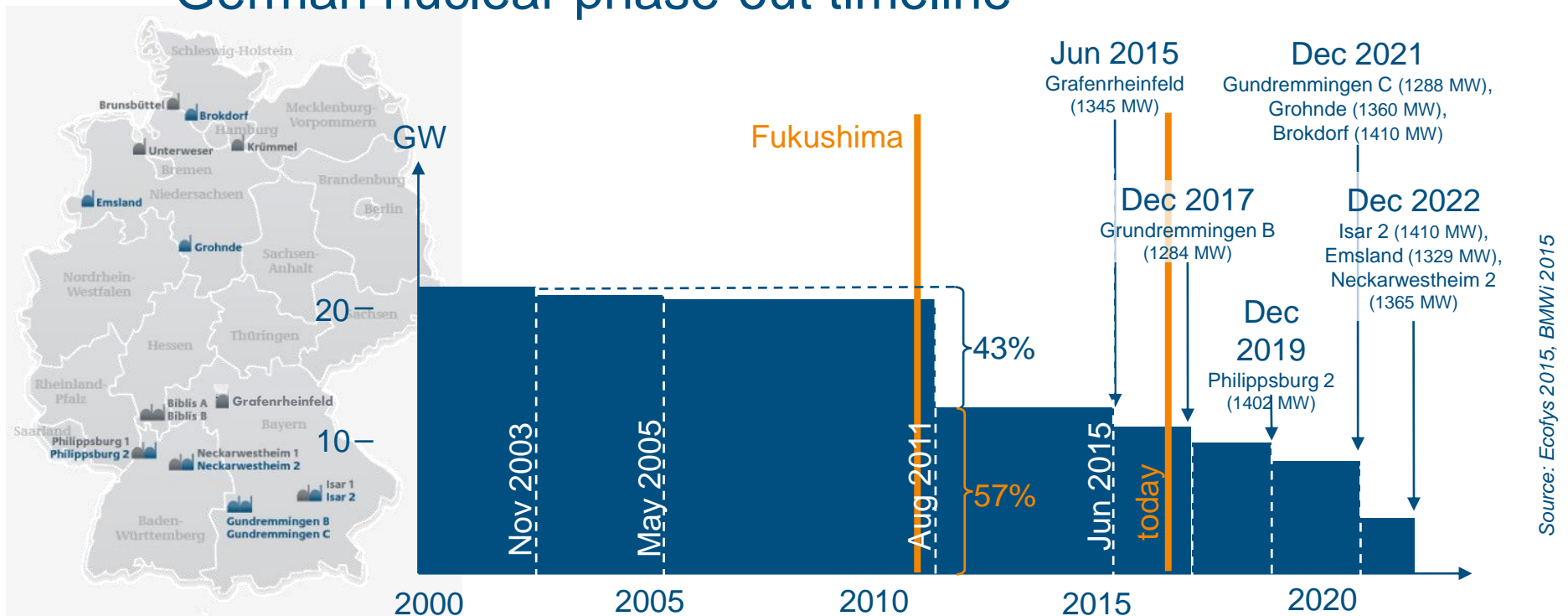


Source: AGEF 2012, AGEF 2014

The Energiewende hits many birds with one stone as renewables and efficiency reduce Germany's energy dependence.



German nuclear phase-out timeline



Nuclear phase-out will reduce Germany's total power capacity. The remaining 8 nuclear power plants will be phased out by 2022.



Five reasons for the Energiewende

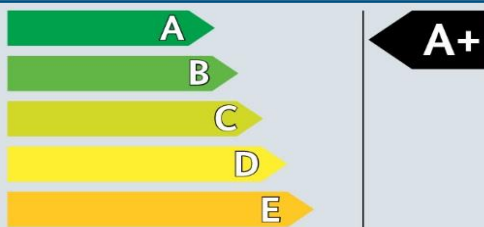
- Development of new technologies as new sources of growth and employment
- Energy policy can be both sustainable and economically successful
- Reduce dependency on energy imports
- Reduce carbon emissions and reach climate protection targets
- Phase-out nuclear power generation



The Energiewende is a long-term strategy based on public acceptance.



Key elements of the *Energiewende*




Energy Efficiency

Key legislation:
Energy Saving Ordinance
Heating Cost Ordinance

- Increasing energy productivity
- Cost-efficient savings

Supporting fields of action



Renewable Energy

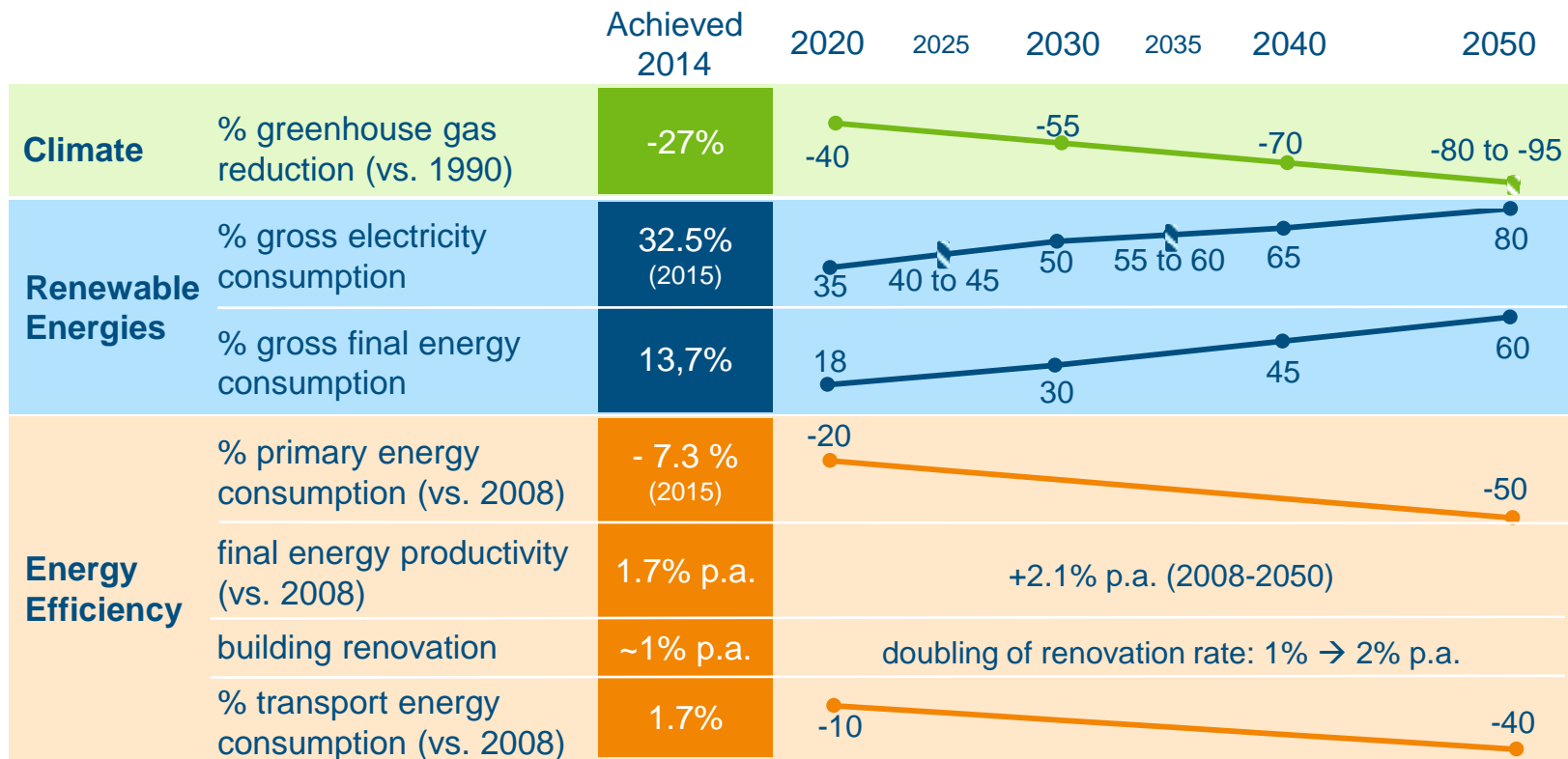
Key legislation:
Renewable Energy Sources Act
Renewable Energy Heat Act

- Steady growth
- Environmentally friendly energy supply

Energy efficiency and renewables secure a sustainable energy transition.



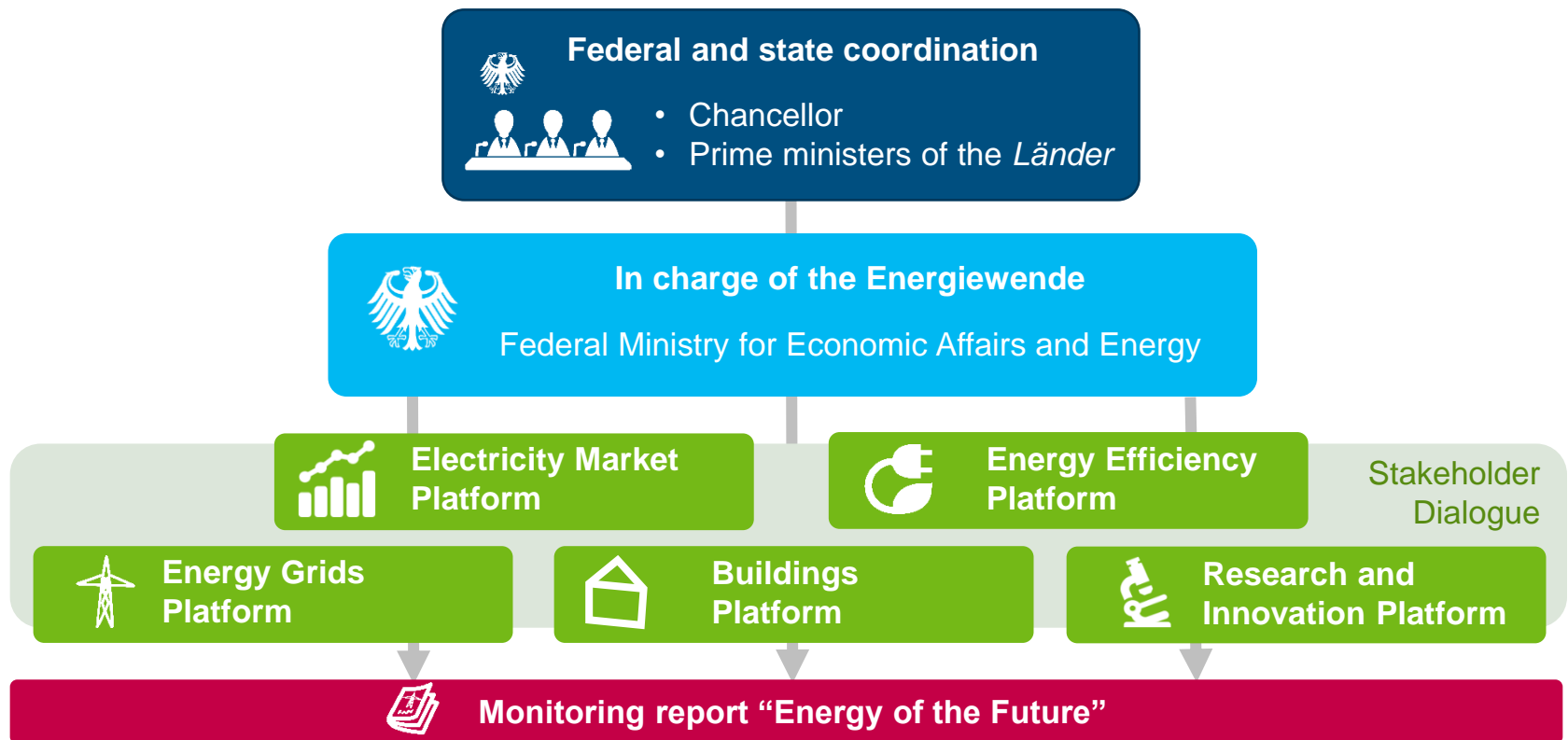
2050 *Energiewende* targets



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

The energy transition follows a transparent, long-term strategy with specific targets.

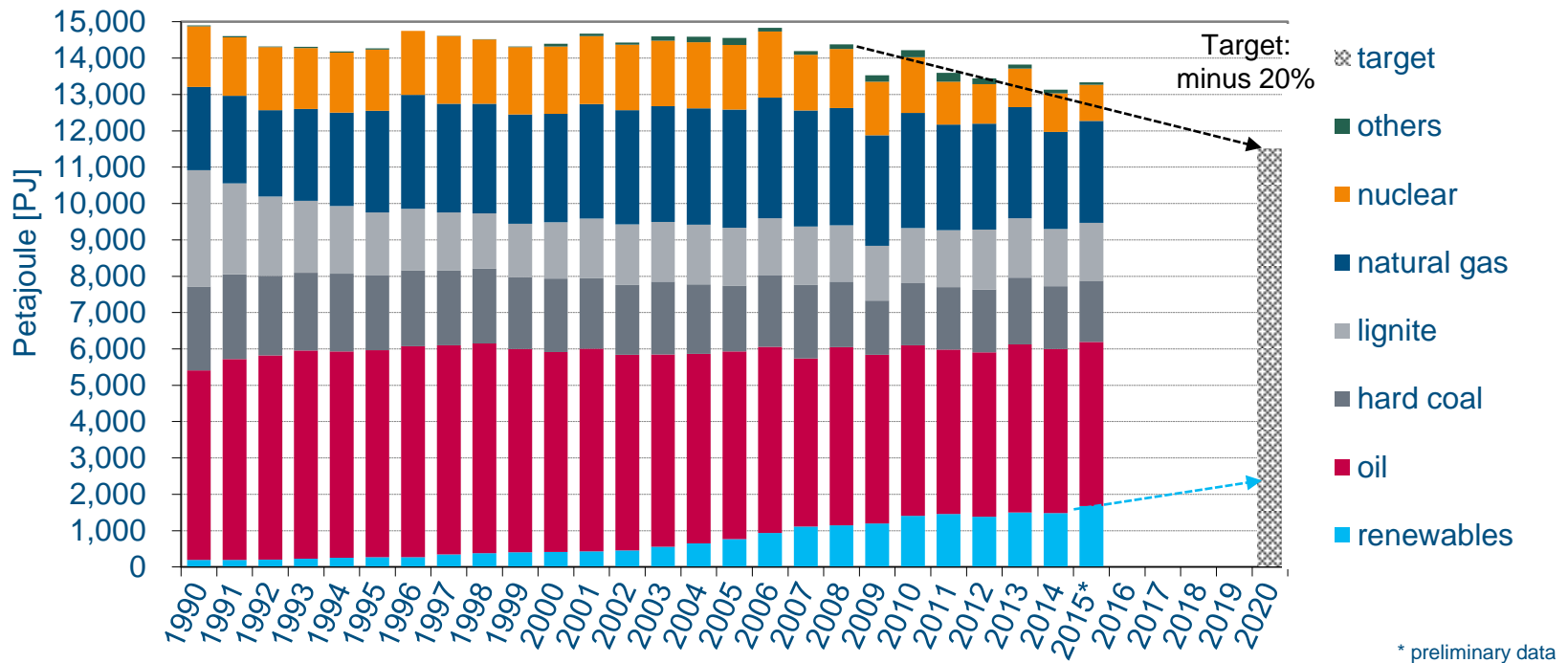
Political steering of the *Energiewende*



Source: BMWi 2014



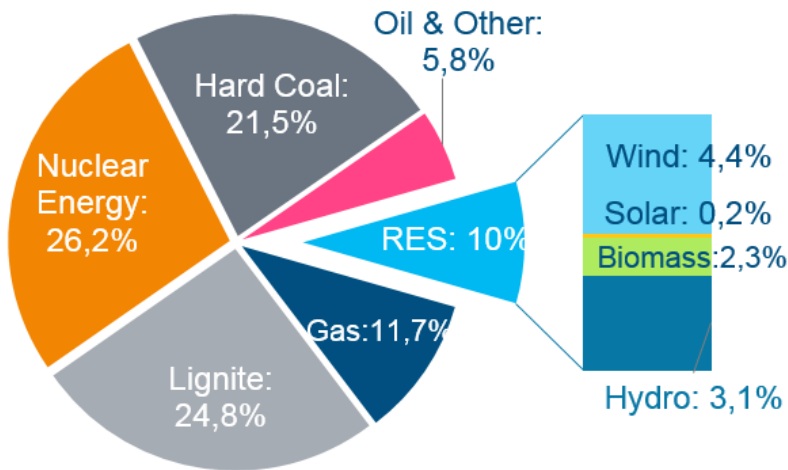
German primary energy consumption by energy source



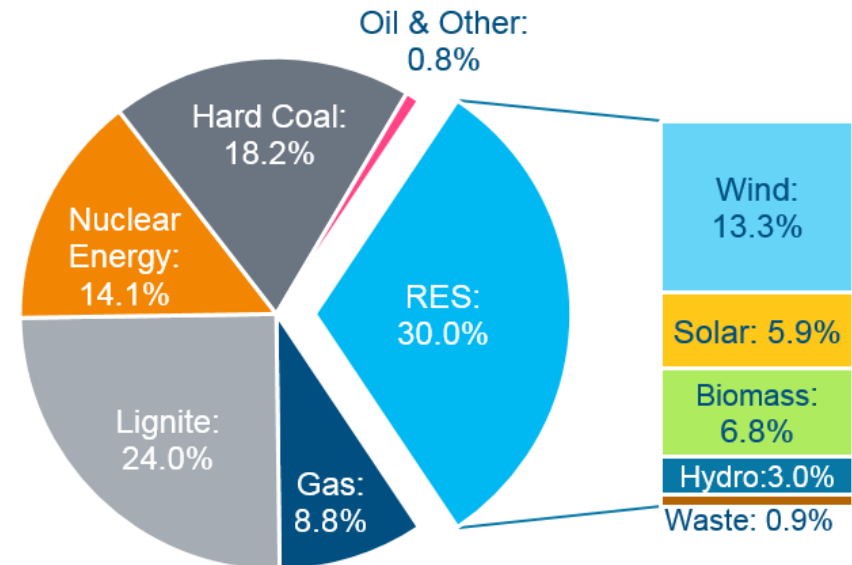
Energy efficiency and the switch to renewables are gaining momentum.

German gross electricity production

2005 total: 622,6 TWh
renewables share: 62,5 TWh



2015 Total: 647.1 TWh
renewables share: ~ 194 TWh



Renewables have overtaken each conventional source to become the largest electricity source in just ten years.

Source: Ecofys 2016, AGEF 2015, Agora Energiewende 2016



Cornerstones of the Renewable Energy Sources Act

- **Guaranteed grid access** for renewables; priority transmission and distribution
- **Support payments** for every kWh produced
 - Feed-in premium (and feed-in tariffs in some cases)
 - From 2017 on mostly based on auctions
- **Technology specific payments**, also with regard to further provisions (e.g. site and size)
- Renewables' support costs are offset through the **EEG levy**; the special equalization scheme reduces the burden for energy-intensive industries
- Grid operators ensure **grid stability** independently from the public budget
- **Expansion corridors** guide growth pathway
- Regular **monitoring** and evaluation; accompanying research



Source: ERGO-Kommunikation, Ecofys, BMWi 2016



Renewable Energy Sources Act Amendment 2014



More planning security

Binding target corridors for RES deployment
Introducing quantity control mechanisms



More efficiency

Focus on cost-efficient technologies



More market integration

Increase market integration through premium system
Tendering scheme for ground-mounted PV



More diversified distribution of costs

EEG levy on self-supply
Adjusted exemptions for the industry



More Europe

Open auctioning scheme for European neighbours

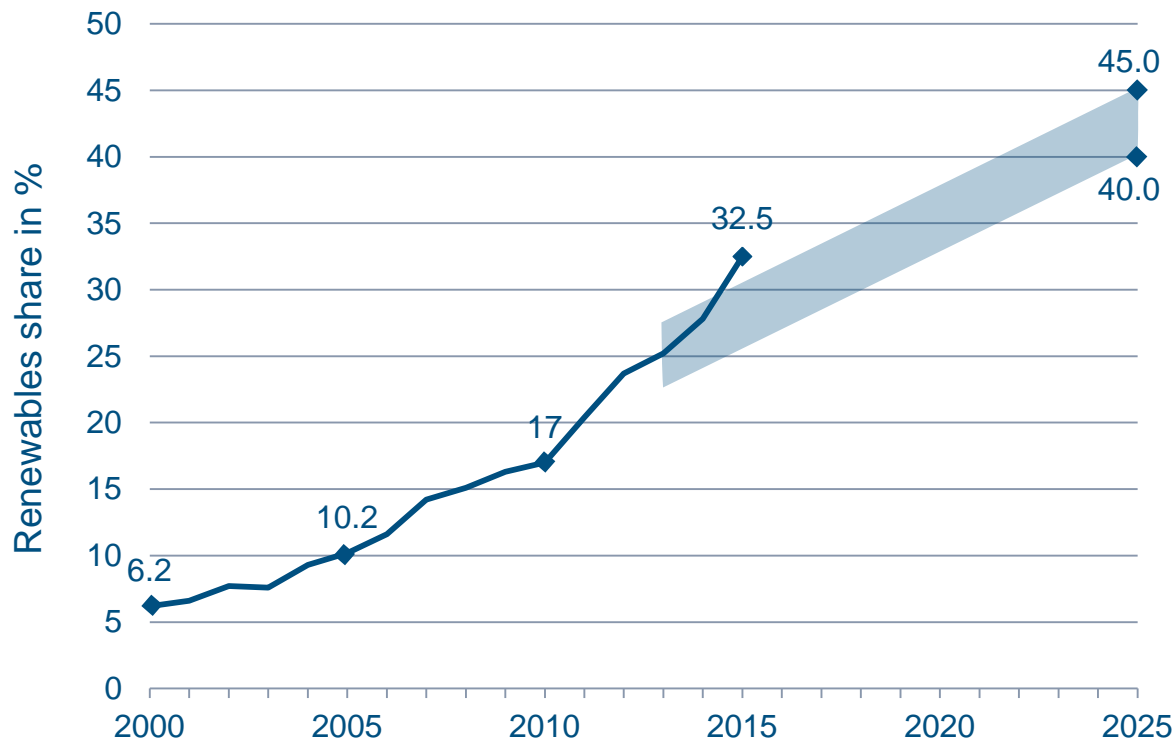
Affordability

Environmentally-
friendly energy supply

Security of supply



Renewables share in gross electricity consumption



Overall **target corridor**

- In 2025: between 40% and 45% RES-E
- In 2035: between 55% and 60% RES-E

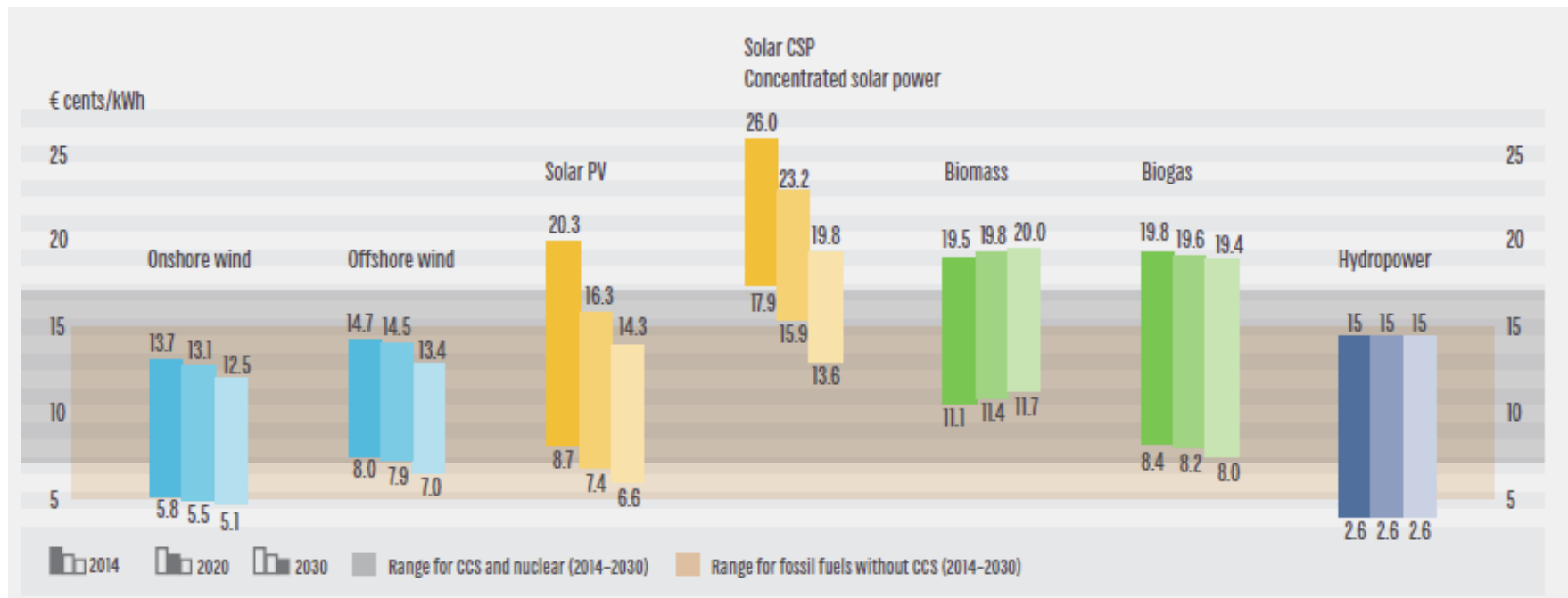
Capacity additions

- **Onshore wind and PV**
2 500 MW (2.5 GW) per year each
- **Bioenergy** 100 MW per year
- **Offshore wind** 6.5 GW by 2020, 15 GW by 2030

Focus on Wind and PV as most cost-effective solutions



RES levelised cost of electricity in Europe 2014, 2020, 2030



Source: Fraunhofer ISI/2014

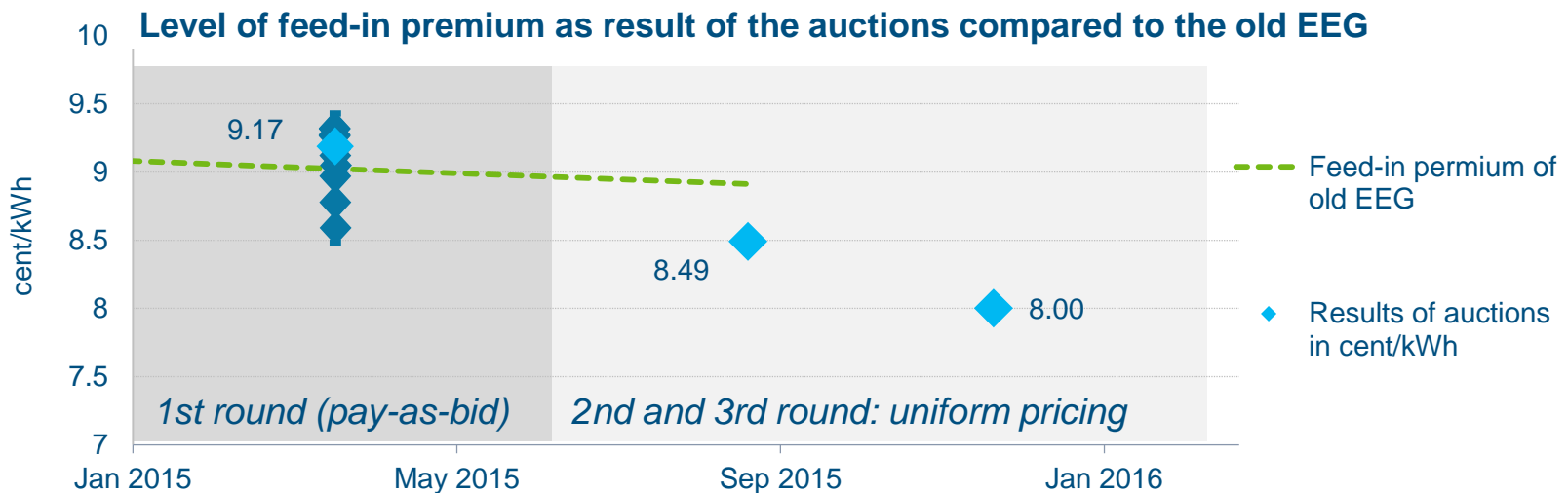
Renewables are increasingly competitive with conventional power plants.



Auctions to replace feed-in premium based support

Results of German renewables auctions pilots scheme for ground-mounted PV in April 2015:

- 500 MW were on offer in three separate rounds: 150 MW in 1st and 2nd round each, and 200 in 3rd round
- Competition was high and therefore prices declined significantly.
- A variety of different types of actors was successful.



Source: Ecofys 2016 based on BNetzA

The auction scheme led to a further decrease in PV support levels.

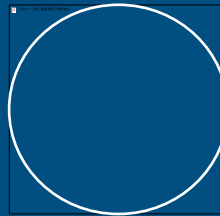


Key pillars of the NAPE



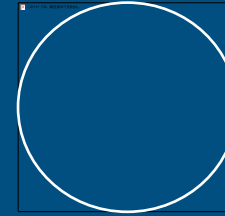
Stepping up energy efficiency in buildings

- Energy efficiency incentive programme
- Energy efficiency strategy for buildings



Energy efficiency as a **return and business model**

- Tender model
- Default guarantees for energy performance contracting



Individual responsibility for energy efficiency

- Energy efficiency networks
- Top-Runner strategy



Energy efficiency policy frameworks

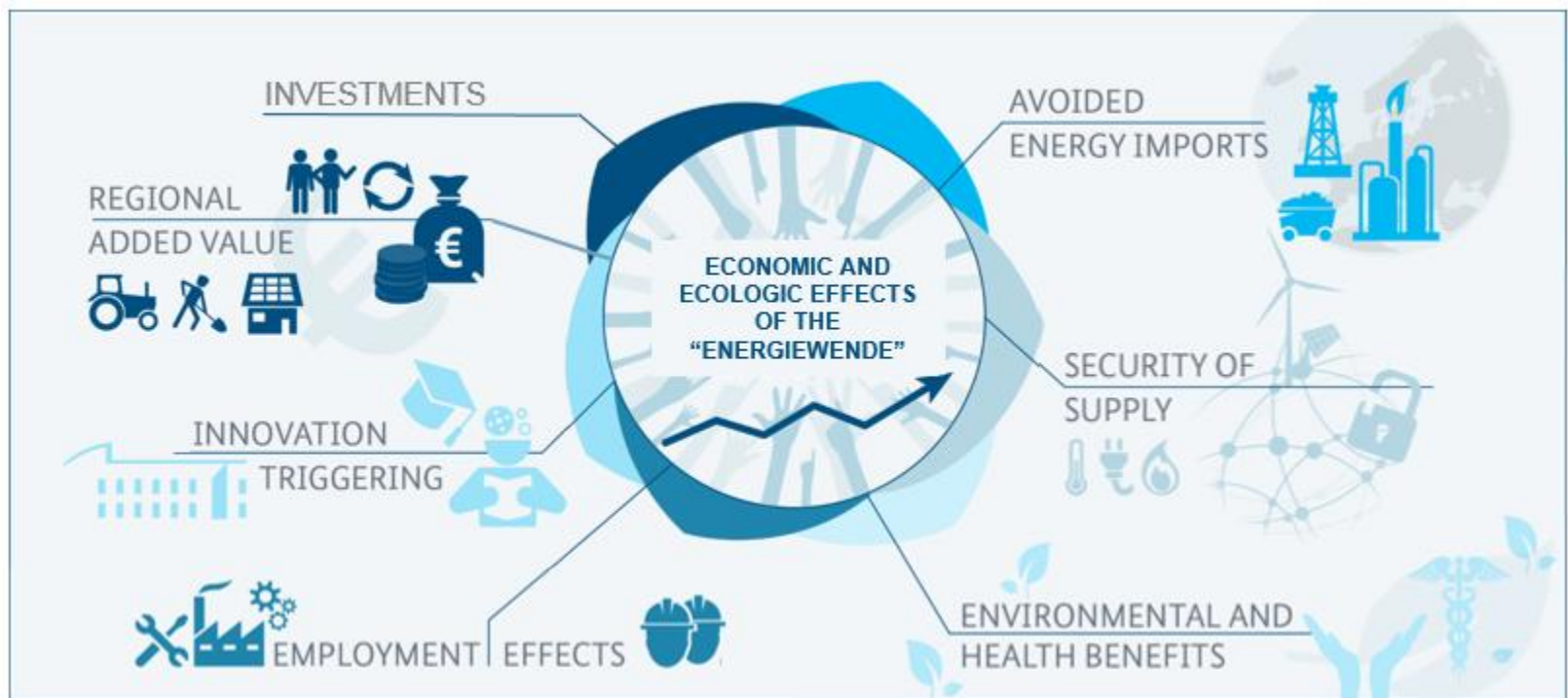


Source: Ecofys 2015

Germany's energy efficiency policy is embedded in the EU framework.



Benefits of fostering energy efficiency and renewables

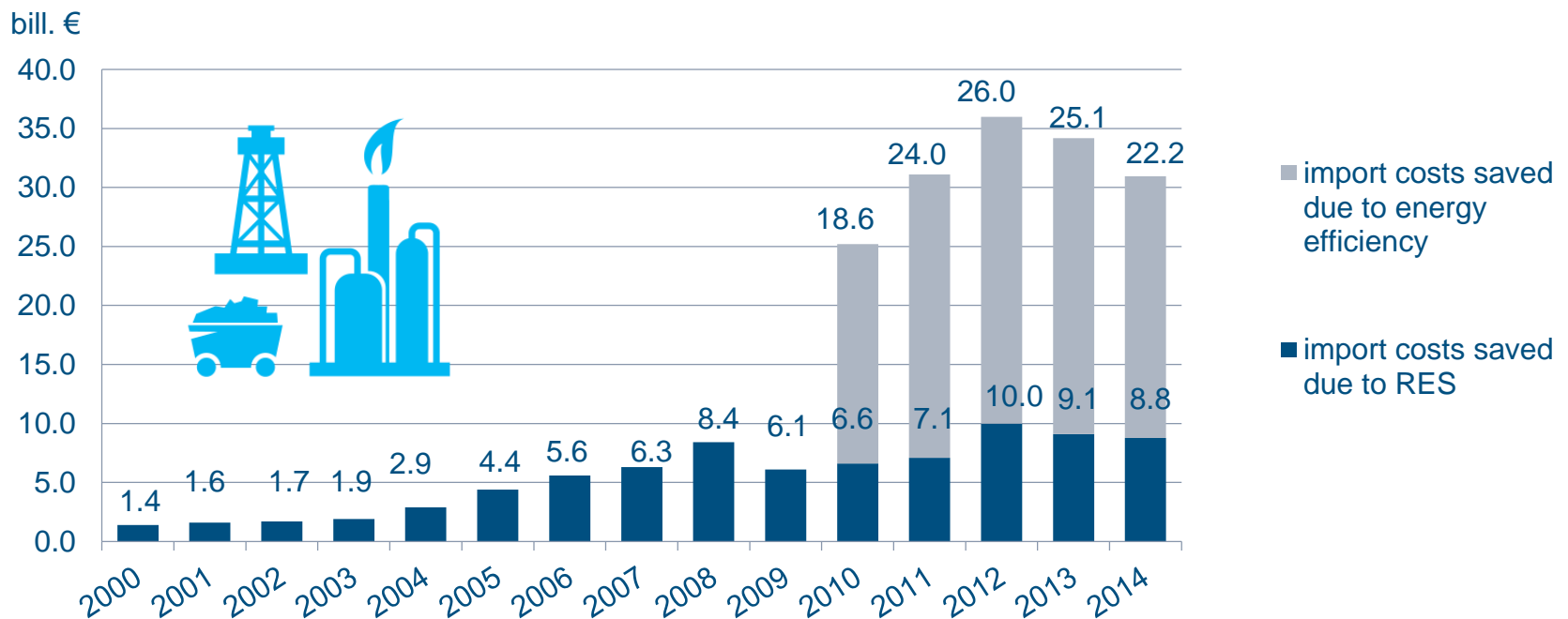


Source: ERGO 2014

The energy transition has positive effects on various levels of the economy.



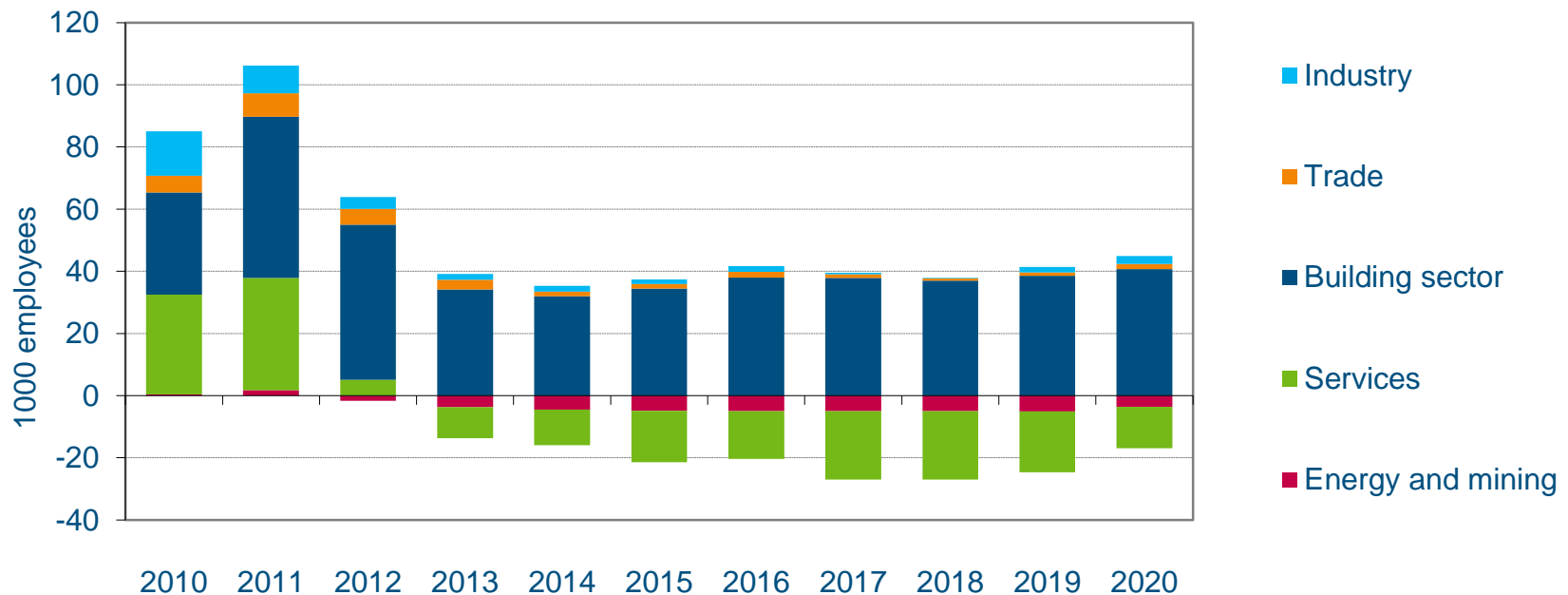
German energy import cost savings in 2014



In 2014, Germany could save about €13 billion compared to the previous year by reducing the import costs for fossil fuels.

Source: Ecofys based on BMWi 2015

Net job creation due to the energy transition

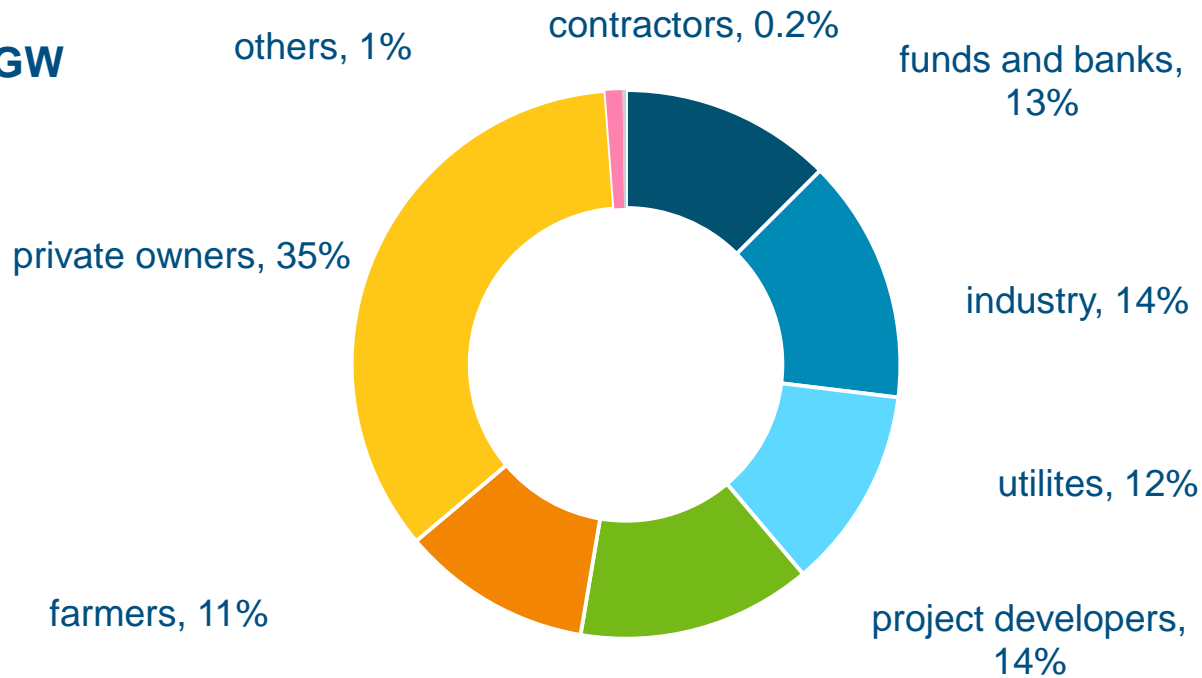


Source: GWS, EWI, Prognos 2014

Of all sectors, employment in the building sector benefits most from the energy transition.

Ownership structure of German RES facilities in 2012

Total ~ 73 GW

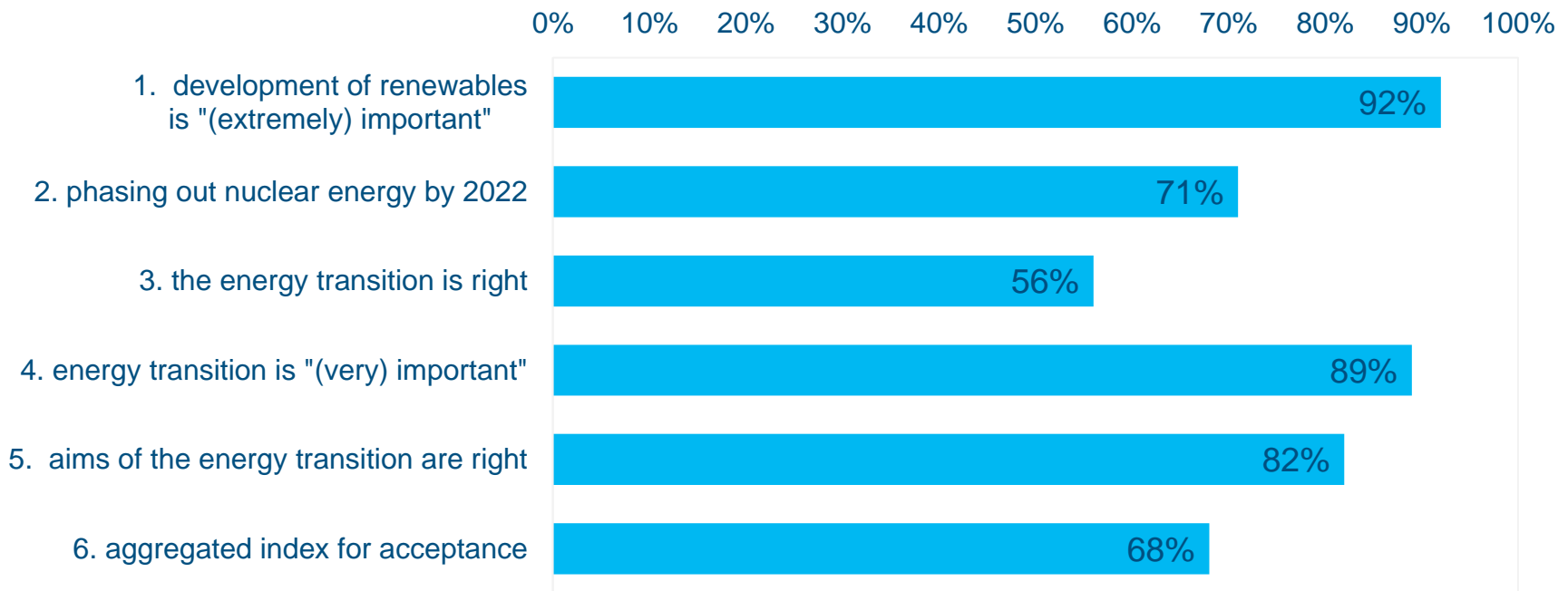


Source: trend:research 2013

Renewable installations create multiple opportunities for entrepreneurship – the ownership structure is versatile.



Public acceptance of the *Energiewende*



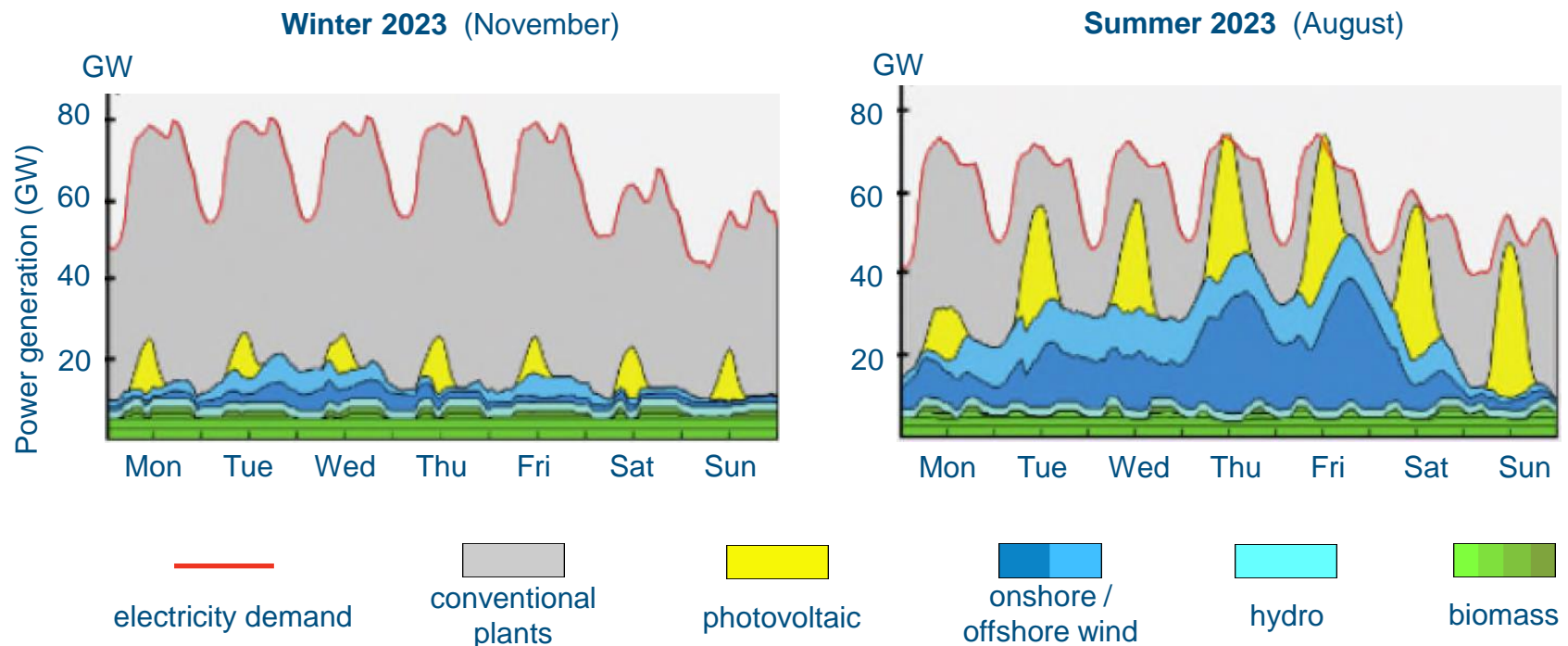
■ Percentage of people that agree or strongly agree with the given statement

The energy transition enjoys a high degree of public approval.

Sources: BMWi 2014, TNS Emnid 2014, Institut für Demoskopie 2014, BMUB 2014, BDEW 2014, Forsa 2013, BDI 2013



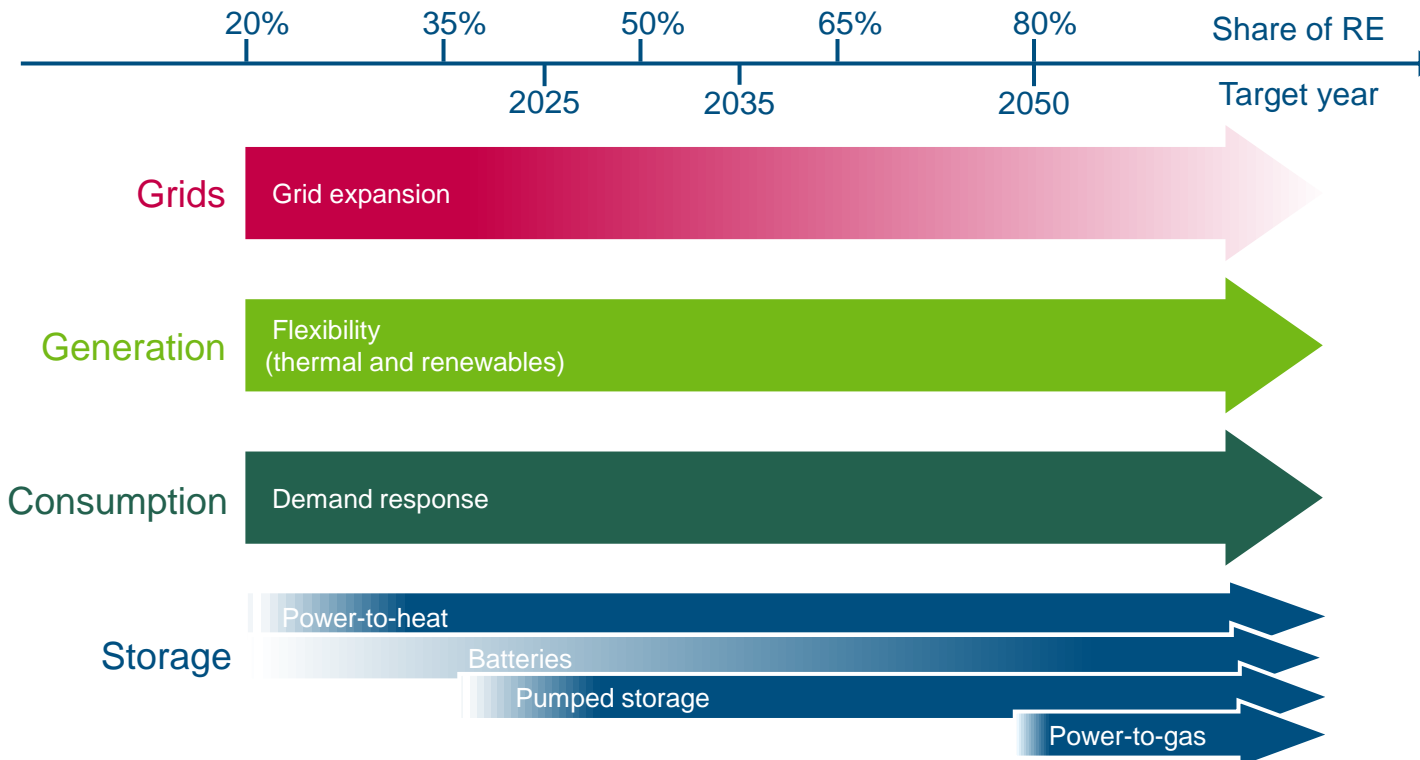
Future: German electricity system volatility in 2022



Renewables can cover the total demand by 2022 but conventional back-up capacity for the winter will still be needed.



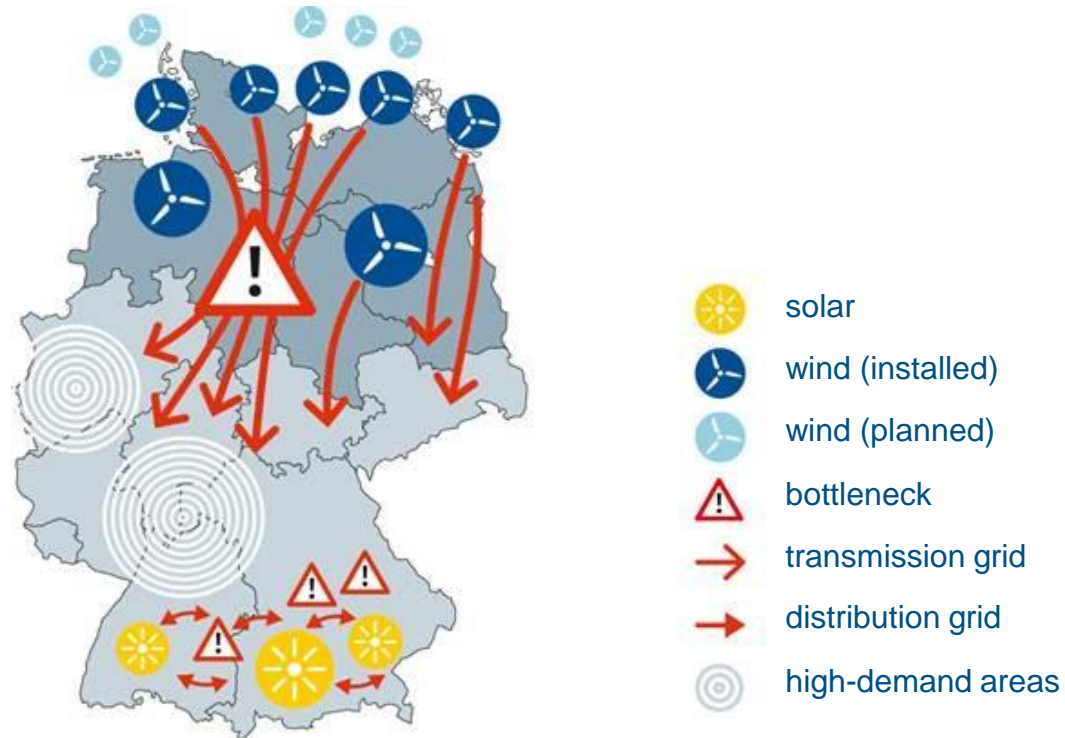
Four areas to increase flexibility



Technology neutral policies foster innovation: Different flexibility measures are suitable for different challenges to the grid.



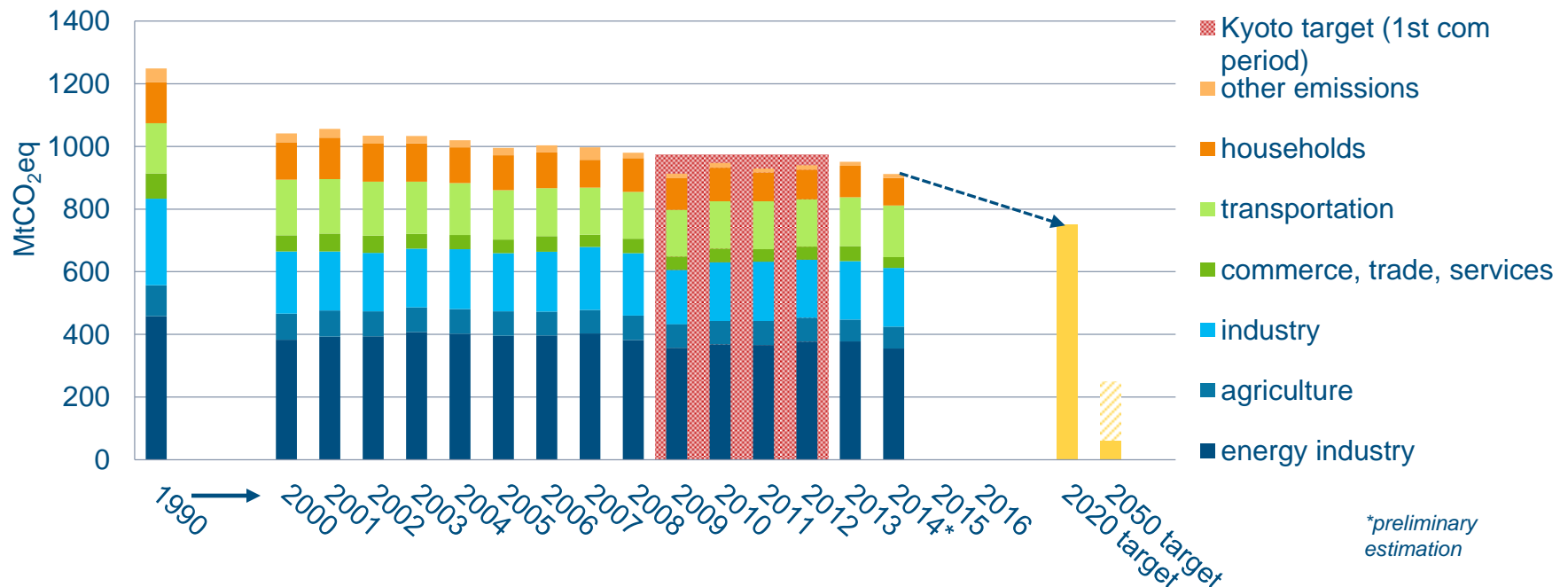
The challenge: connecting supply and demand



New power lines need to transport excess supply in northern Germany to southern Germany in order to prevent shortages.



Climate: German greenhouse gas emissions



Germany has made significant progress in reducing emissions, but will need further measures to achieve its 40% target by 2020.



Federal Ministry
for Economic Affairs
and Energy



Thank you for your attention

Contact details

Bundesministerium für Wirtschaft und Energie
Referat IIA1
Scharnhorststr. 34-37
10115 Berlin

Martha.Ekkert@bmwi.bund.de
www.bmwi.de





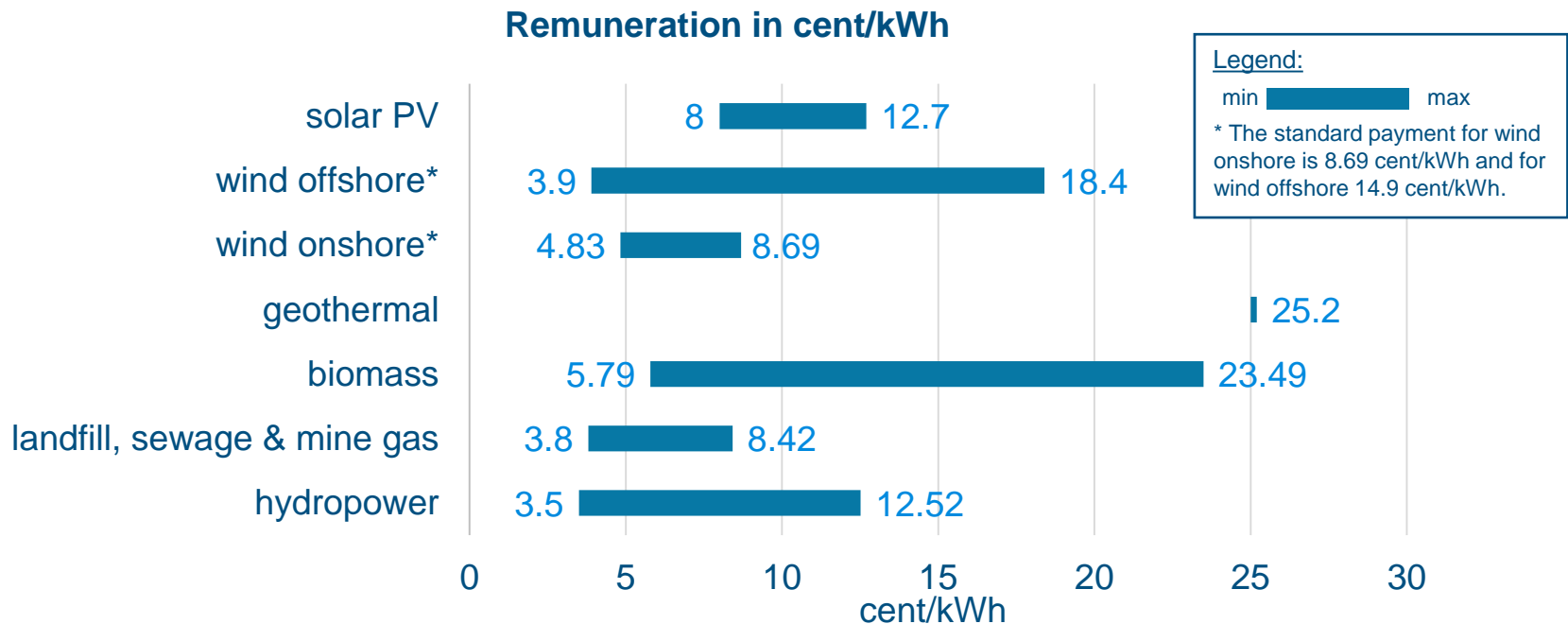
Federal Ministry
for Economic Affairs
and Energy



Additional Slides



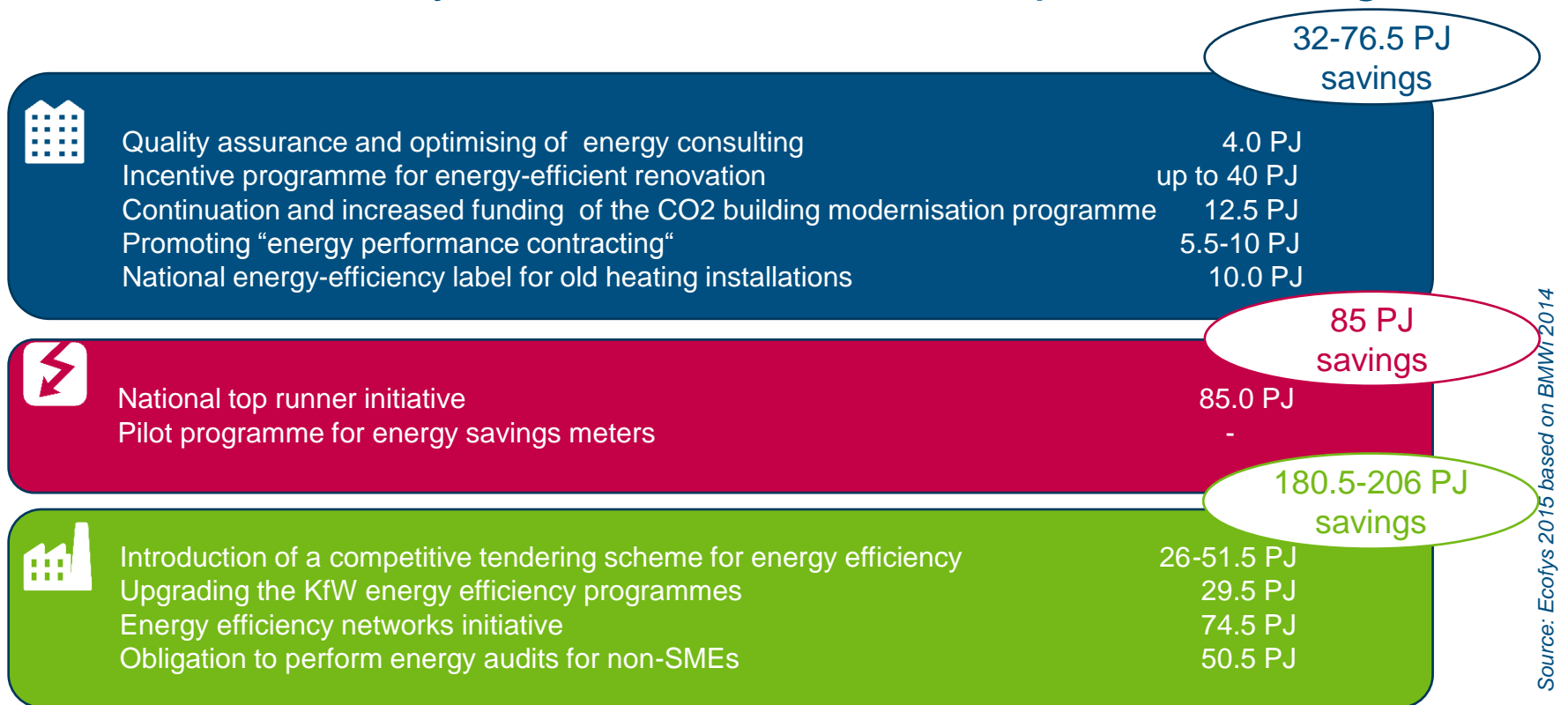
Technology specific support levels as of April 2016



Source: BNetzA 2016, BMWi 2015

Technology-specific payments reflect the varying cost of different types and sizes of renewables.

NAPE: Efficiency measures and their expected savings



Source: Ecofys 2015 based on BMWi 2014

A balance of information, support and regulation.