German Energiewende and European Energy Future

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Outline of presentation

I. Facts and Figures

II. Energiewende in Germany

III. European Energy Future

I. Global and European energy trends and challenges

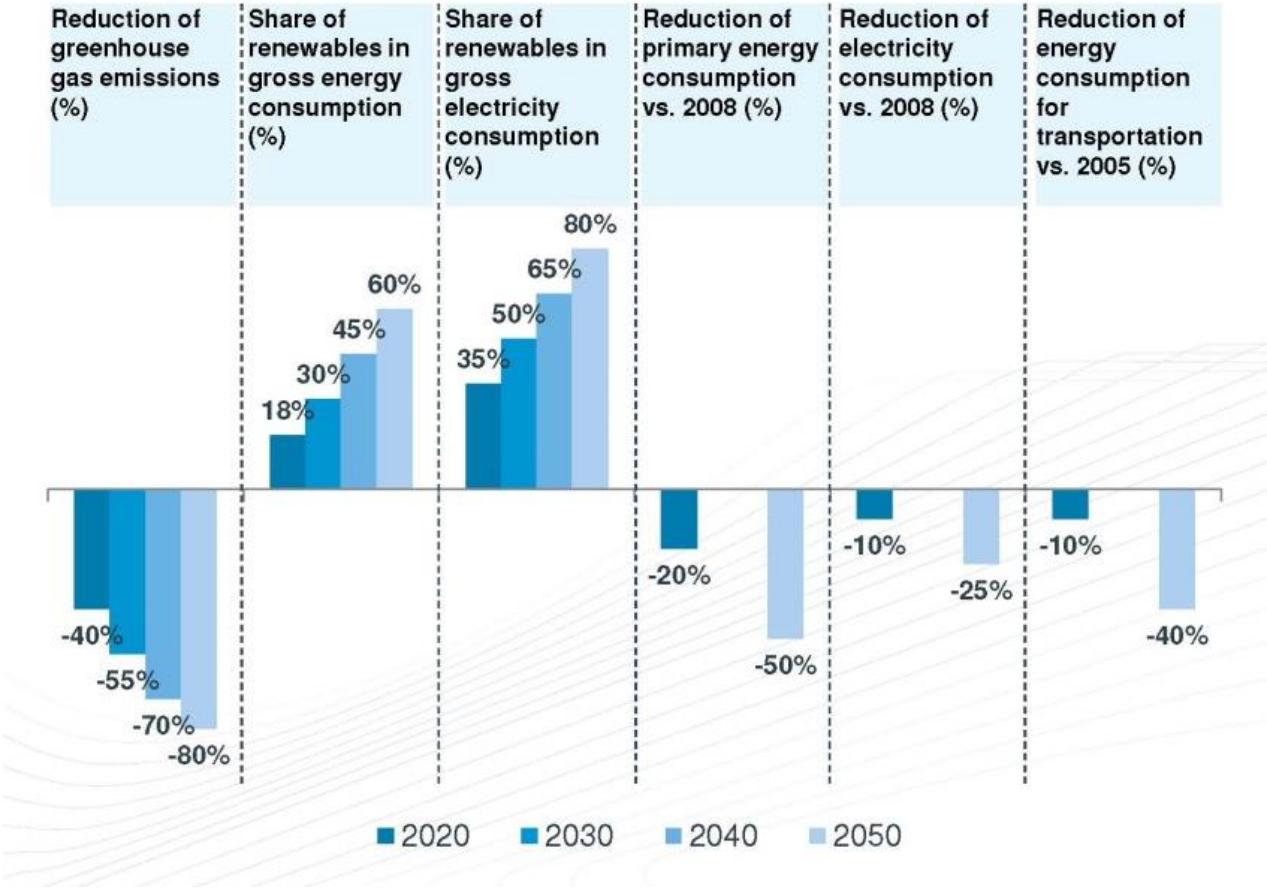
1. Global
- Global energy demand
- Globally increasing renewable capacities

2. Europe
- European energy demand
- European energy production structure

I. Facts and Figures

The German government has set different targets to shift the whole energy system to amore sustainable one.

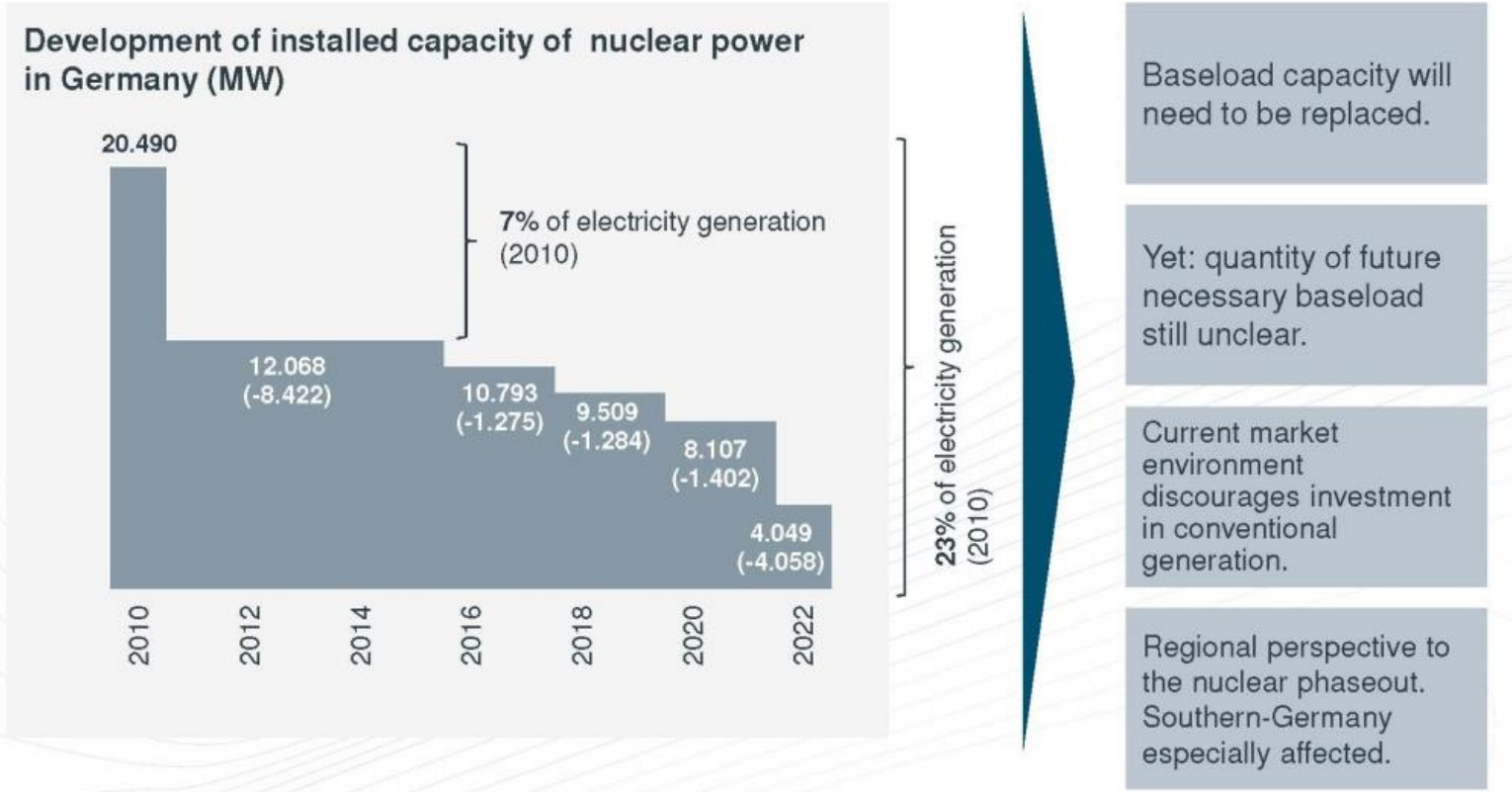
Selected Energiewende targets



No nuclear plant is going to generate electricity in Germany from 2022 onwards.

Time of scheduled nuclear phase-out in Germany

Development of installed capacity of nuclear power in Germany (MW)

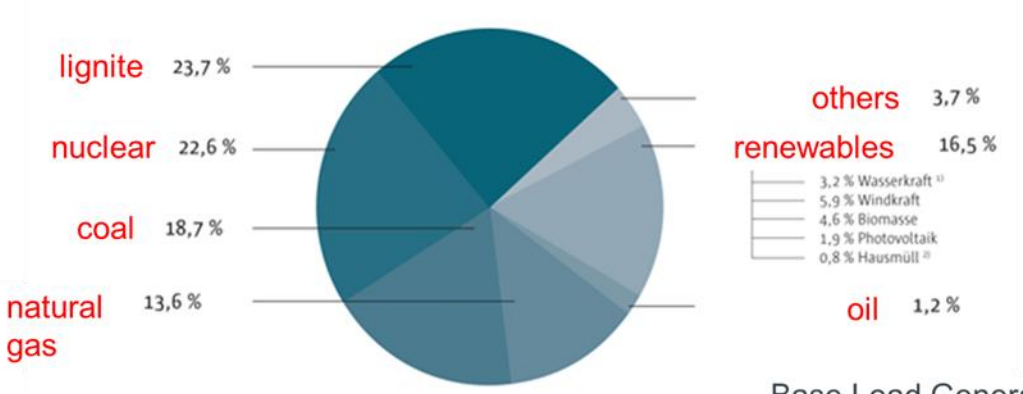


Source: BDEW

Electricity generation in Germany has been highly dependent on fossil fuels and nuclear.

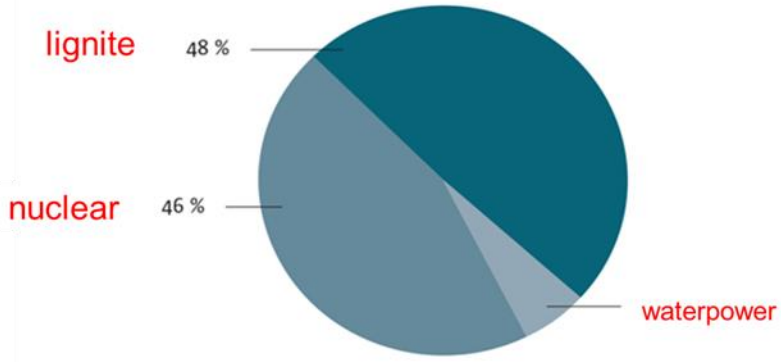
Gross electricity generation and base load in Germany 2010

Gross Electricity Generation Germany 2010



Base Load Generation Germany 2010

- Gesamte Stromerzeugung 2010: 621,0 Milliarden kWh (brutto)
- davon ca. 49 % Grundlast

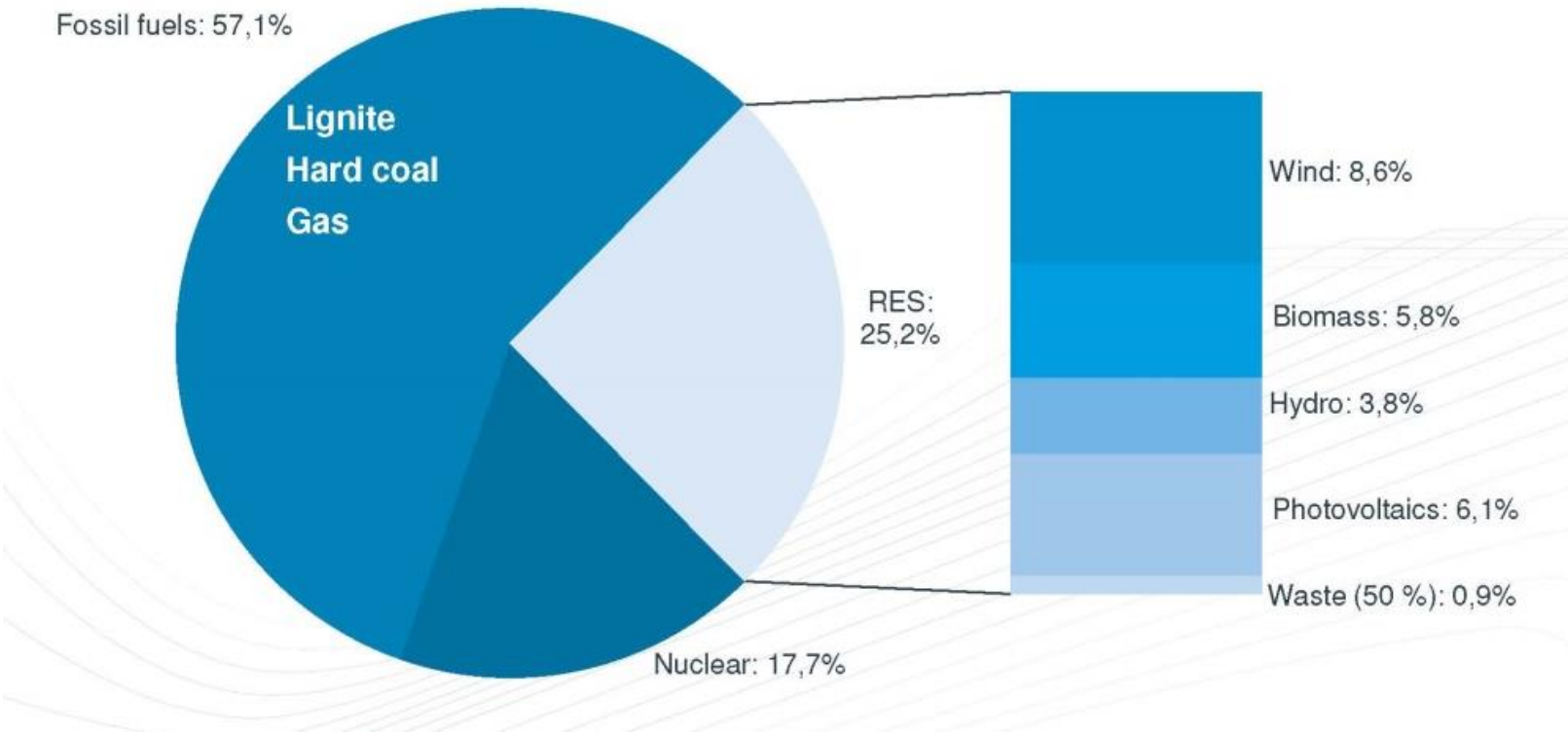


Source: BDEW

During the last years the shares of renewables has increased.

Gross electricity generation 2012

Gross electricity production Q1-Q3 in Germany: **408,1 bn. kWh**

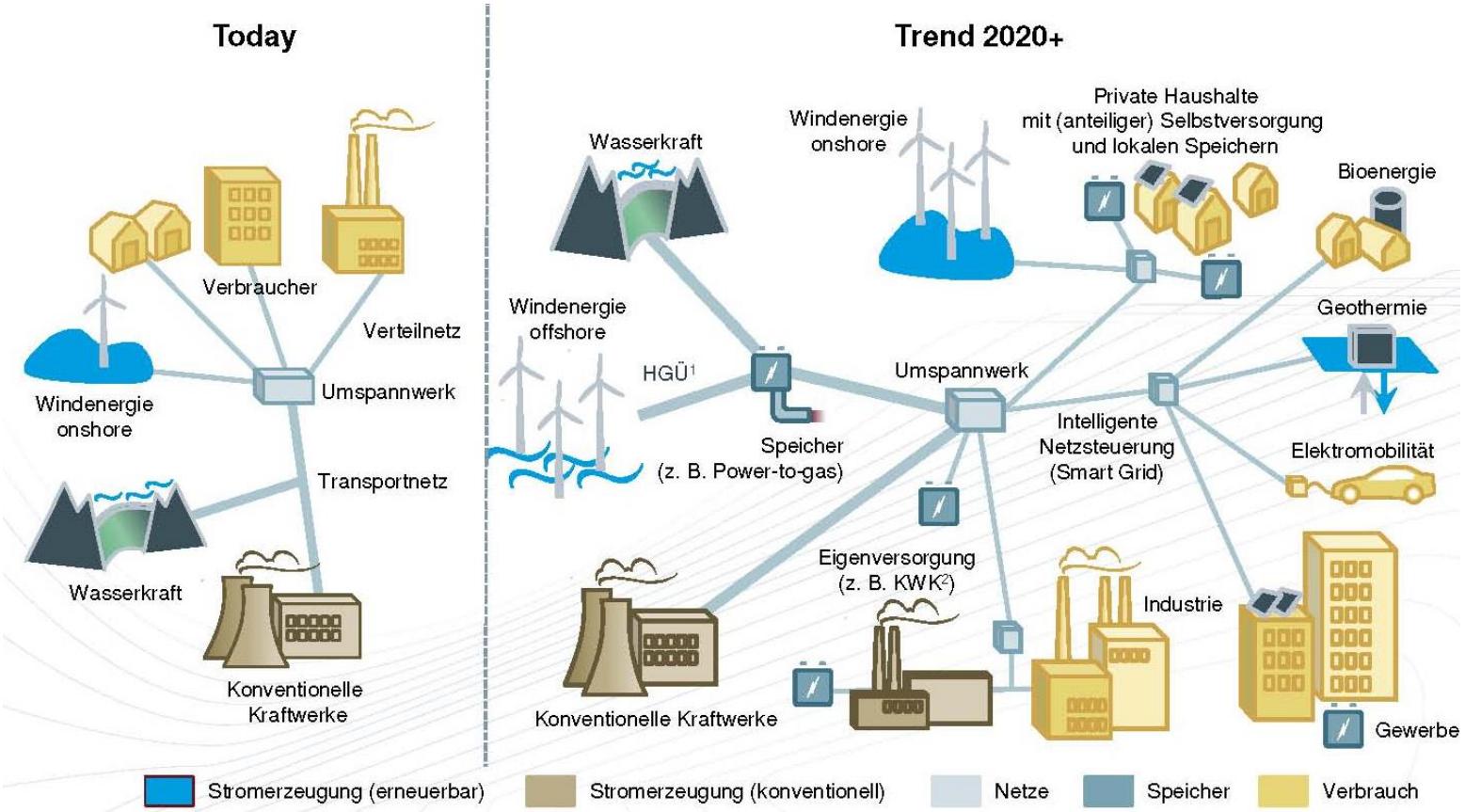


Source: BDEW

II. Energiewende in Germany

Energiewende is fostering various technologies and changing the German energy landscape.

Change of energy landscape in Germany (schematic)

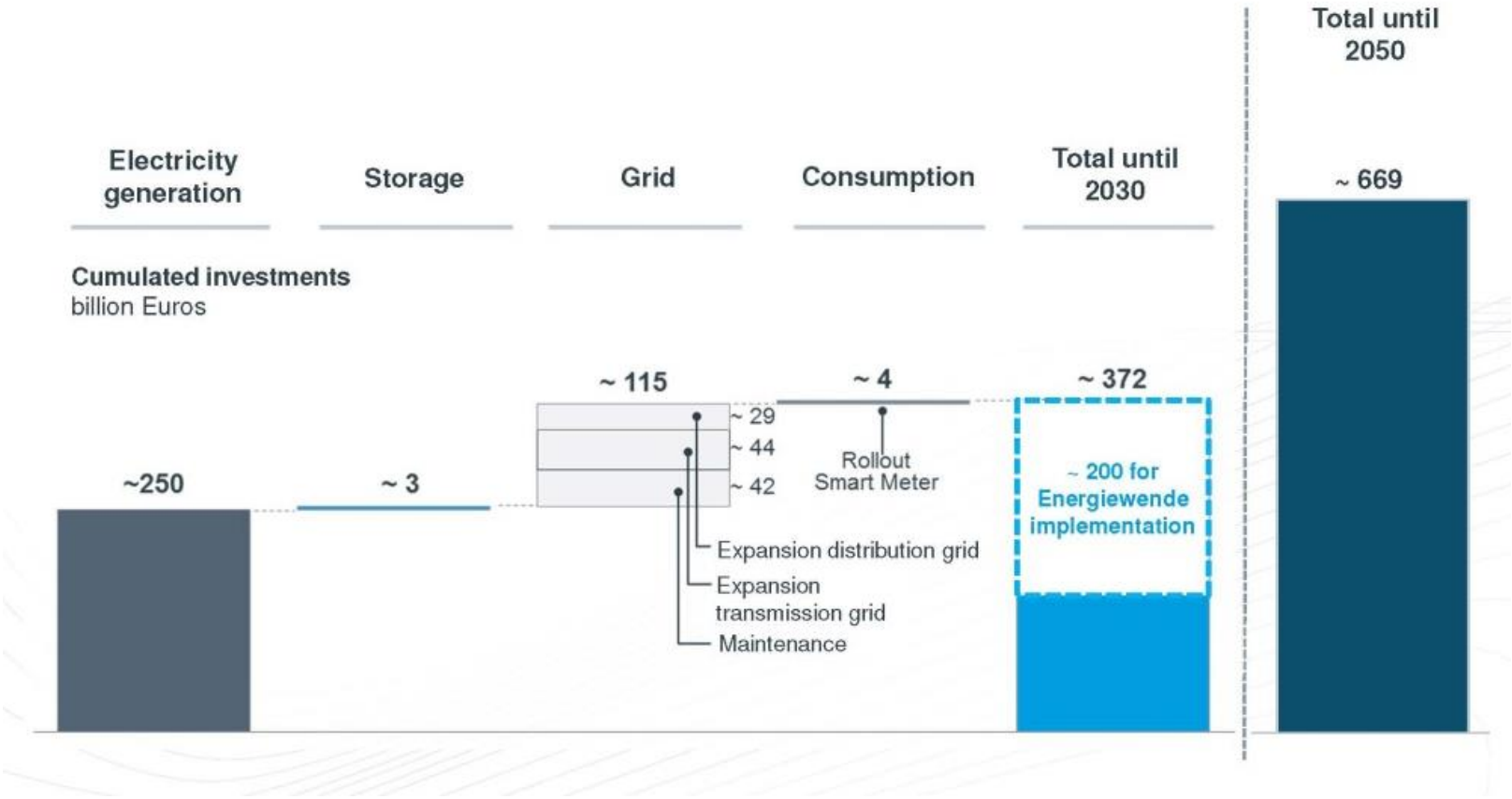


1. HGÜ = Hochspannungsgleichstromübertragung 2. KWK = Kraft-Wärme-Kopplung
Source: BCG

Source: BCG

Implementing the Energiewende requires investments of € 200 b into the German electricity sector until 2030.

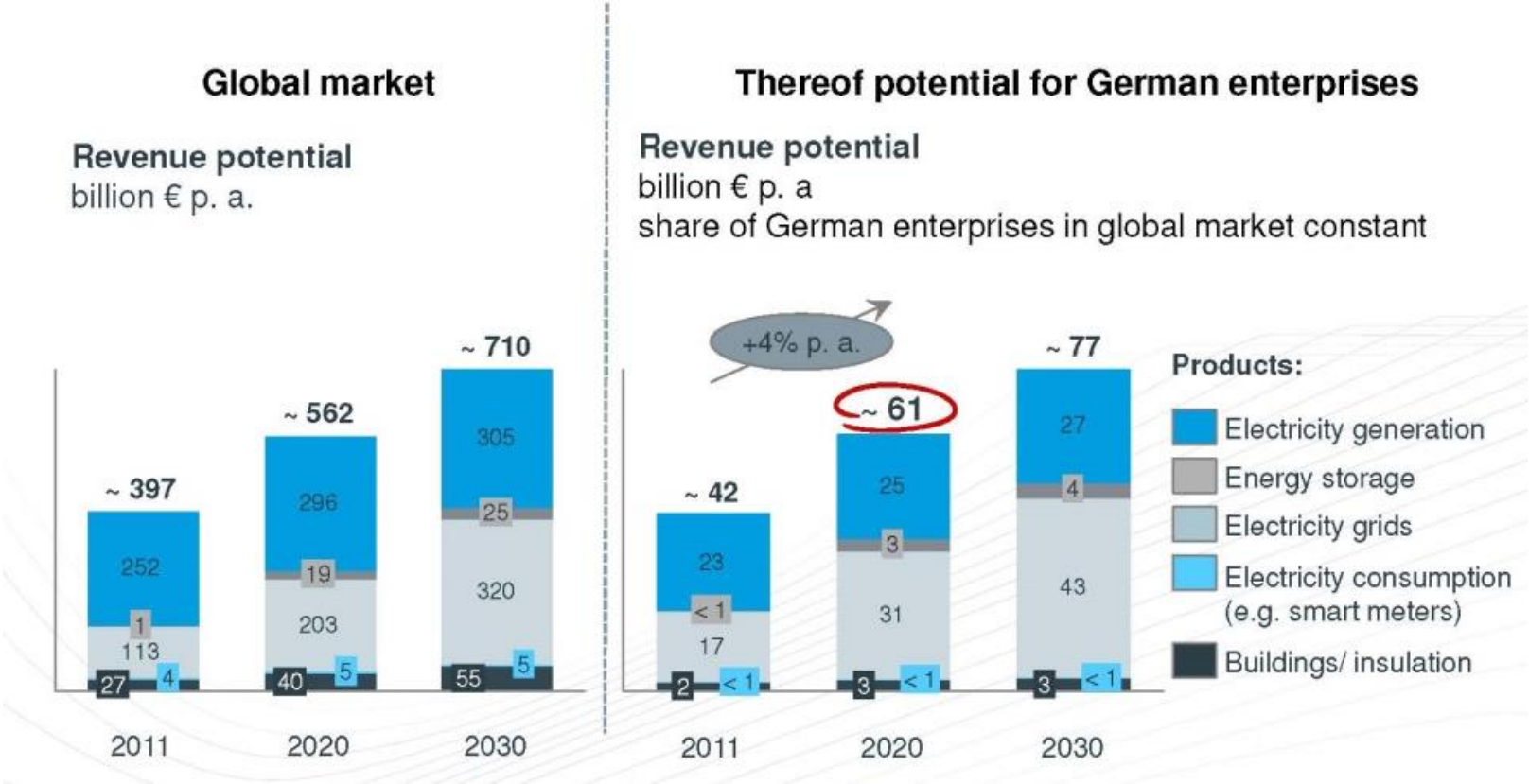
Forecast of cumulated necessary investments into German electricity system (target scenario)



Source: BCG

The Energiewende means worldwide revenue potentials with end products of more than € 60 b p.a. for Germany enterprises in 2020.

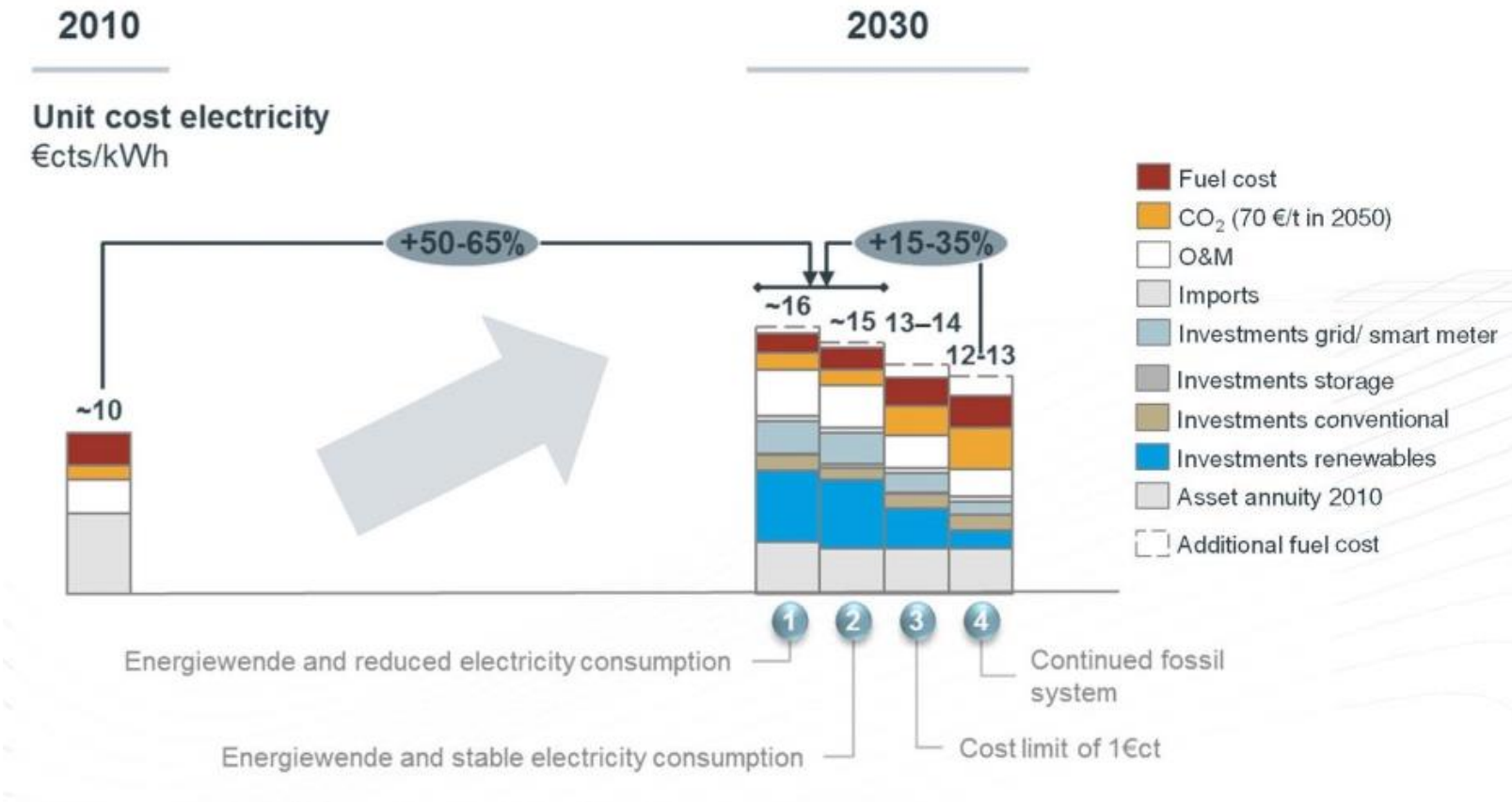
Forecast of revenue potentials with respect to different technologies



Source: BCG

On the other hand unit cost of electricity will rise by 15% - 35% compared to continuing the current system until 2030.

Forecast of unit cost development of electricity



Source: BCG

What does the EEG reallocation charge cost?

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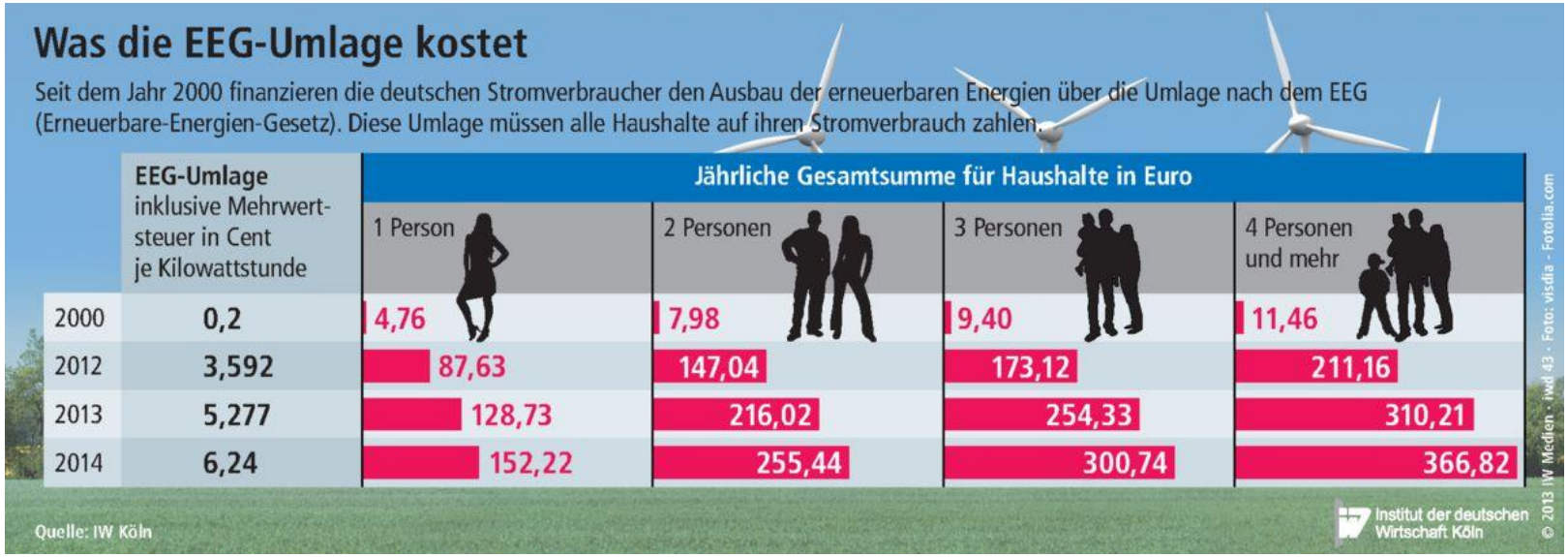

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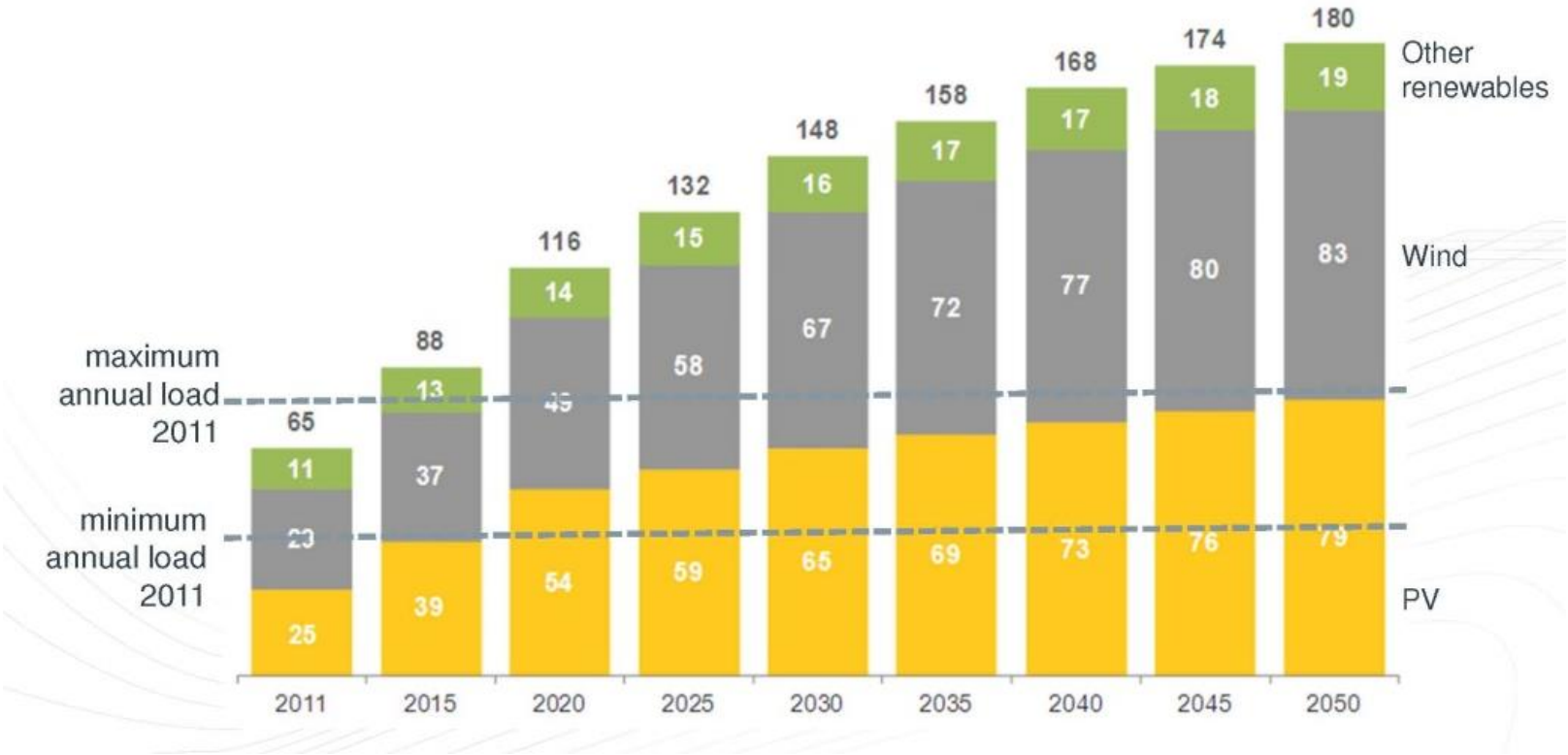
The expansion of renewable energies will be largely based on volatile energy sources.

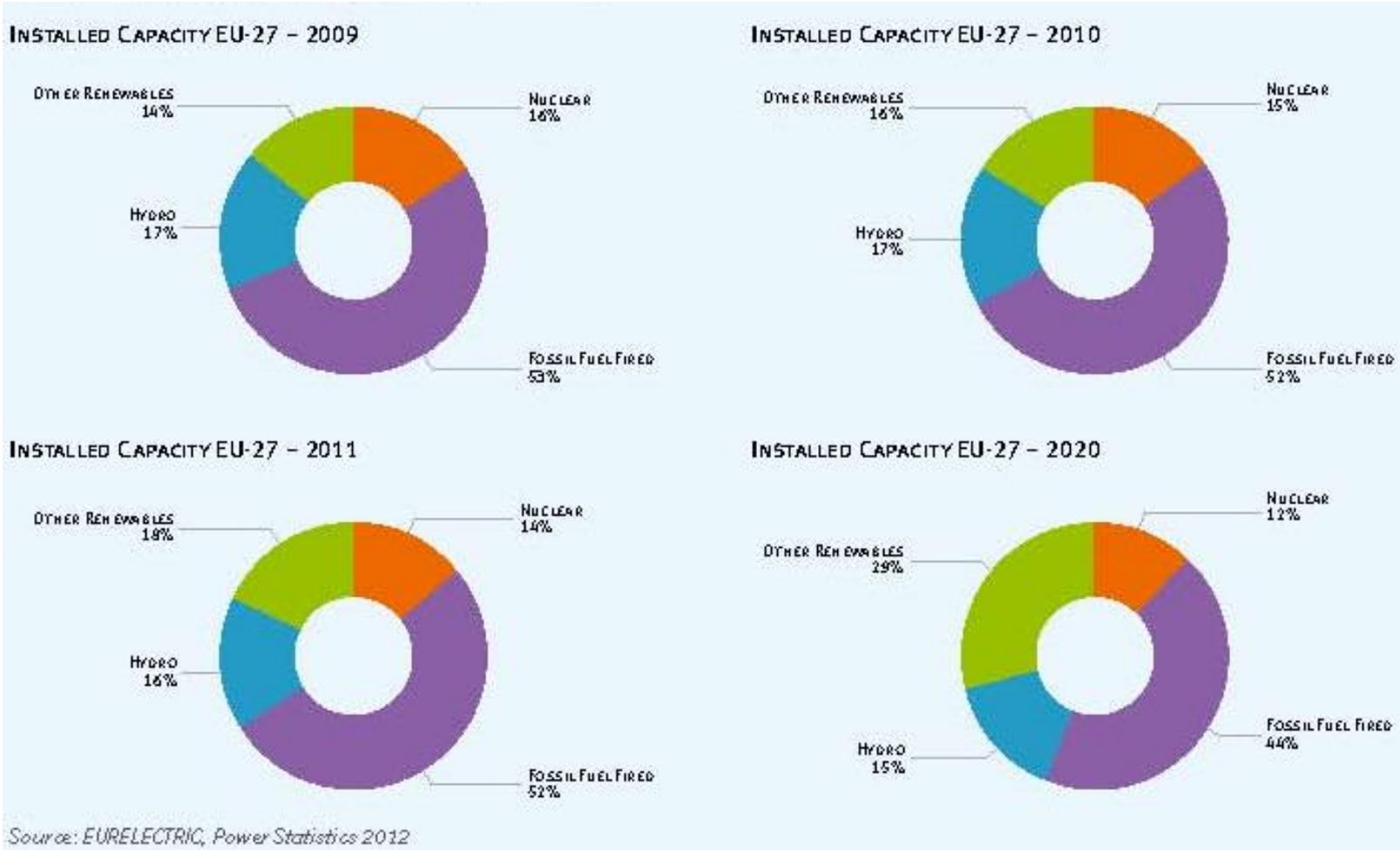
Forecast of installed capacity of renewable energy

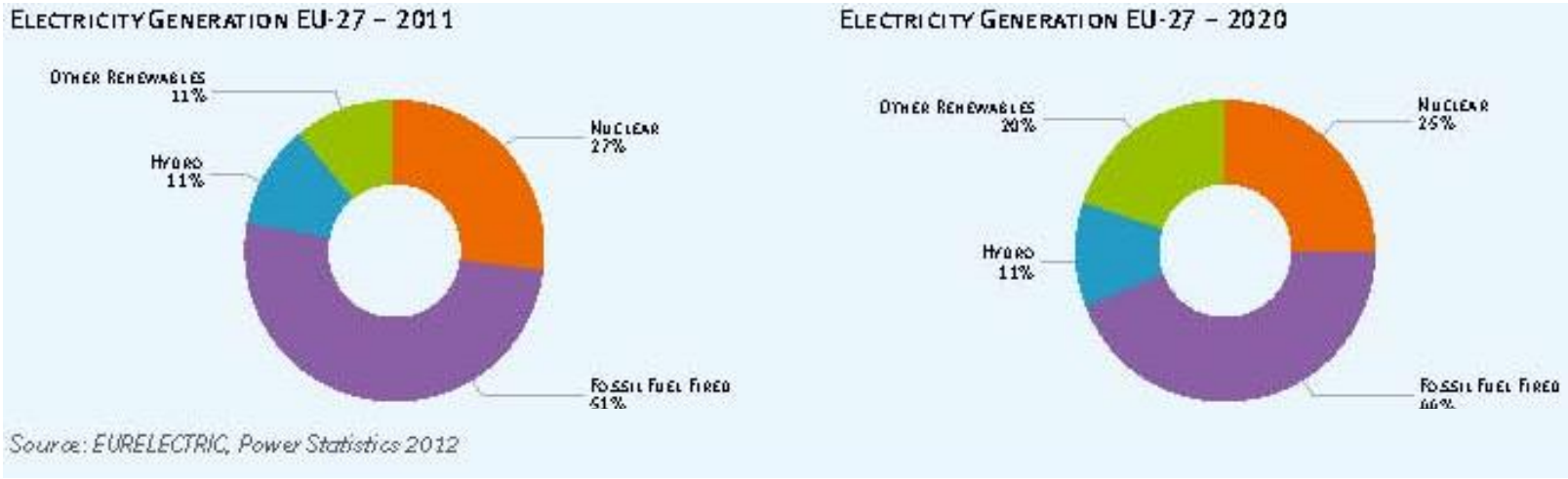


Source: Prognos

III. European Energy Future

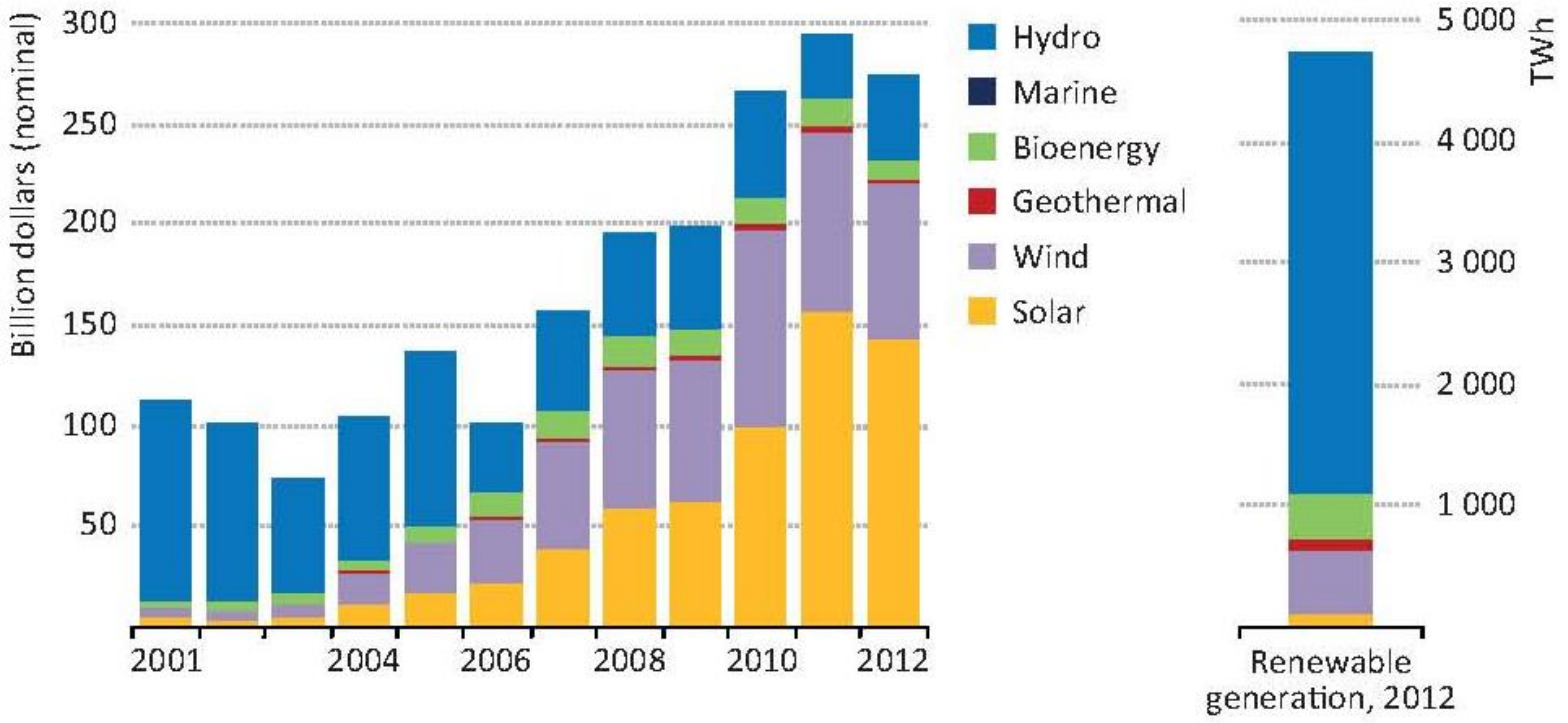
Evolution of installed capacity in the EU-27





Source: EURELECTRIC, Power Statistics 2012

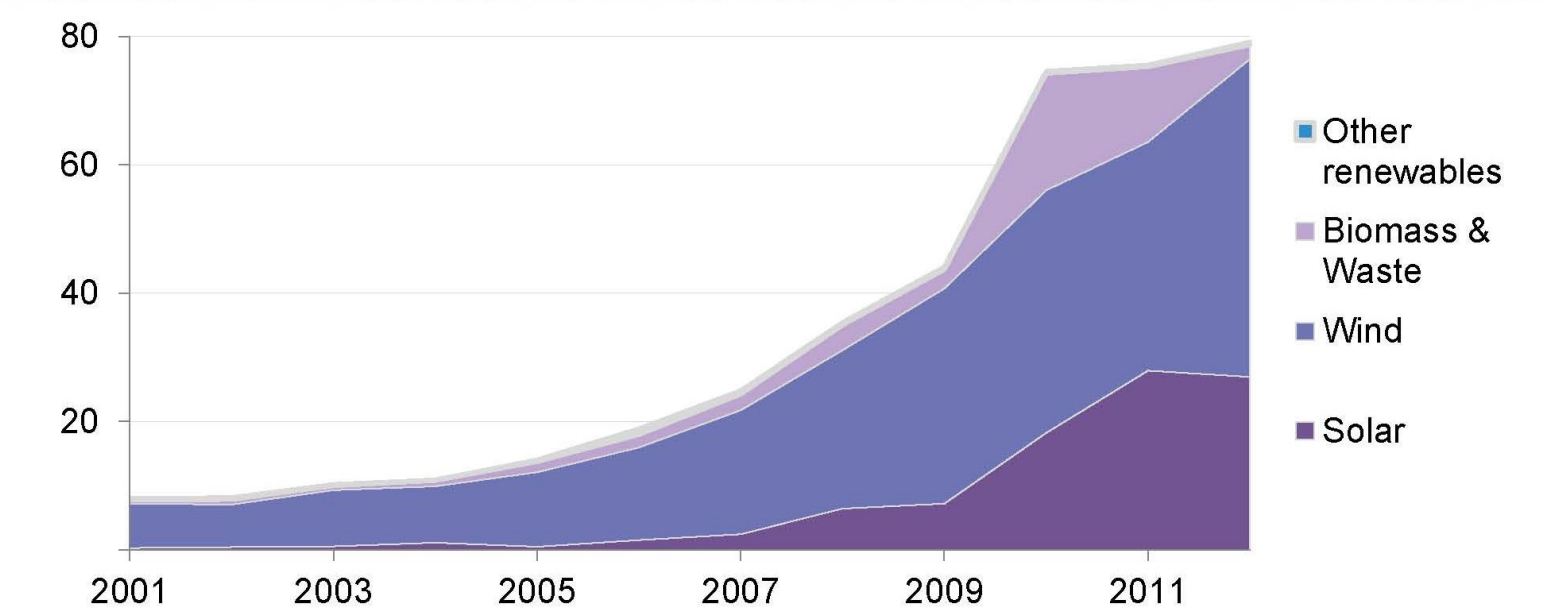
World renewables-based power sector investment by type and total generation



Note: TWh = terawatt-hours.

Sources: BNEF (2013); Frankfurt School UNEP Collaborating Centre and Bloomberg New Energy Financ (2012); and IEA data and analysis.

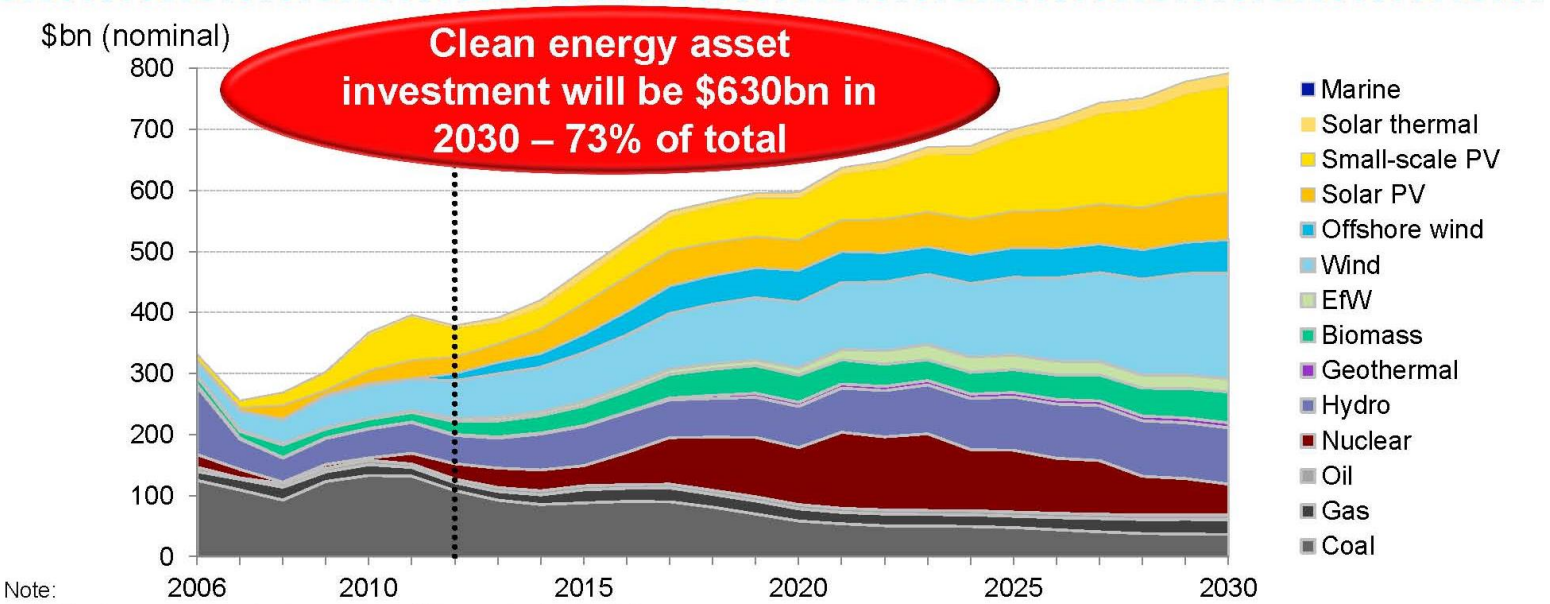
Global renewable capacity additions (GW)



Note: "Other renewables" includes marine and geothermal power only.

Source: Bloomberg New Energy Finance

Power generation capacity asset finance



Note:
1. All $bn figures are nominal assuming a 2% annual rate of inflation
2. EfW is energy from waste Small-scale PV includes commercial and residential scale rooftop PV.

Source: Bloomberg New Energy Finance

Thank you for your attention.

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