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Competitive energy landscape in Europe

Brussels, June 10, 2013

Agenda

Europe's competitiveness depends on an affordable and reliable energy system

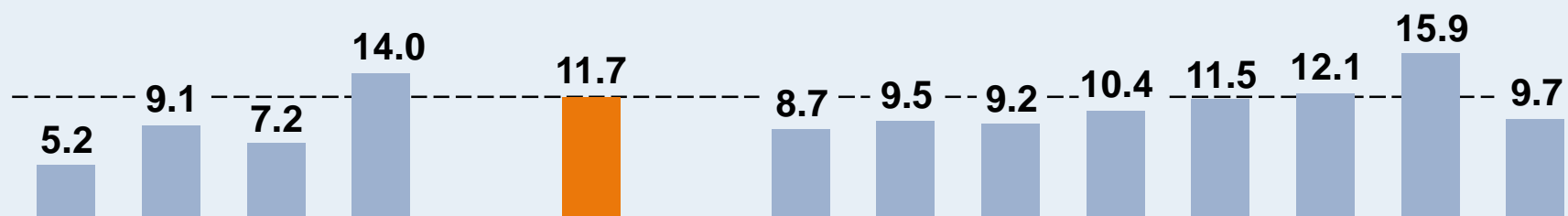
Lessons from Germany's energy transition

Our request: Utilize optimization potential in Europe

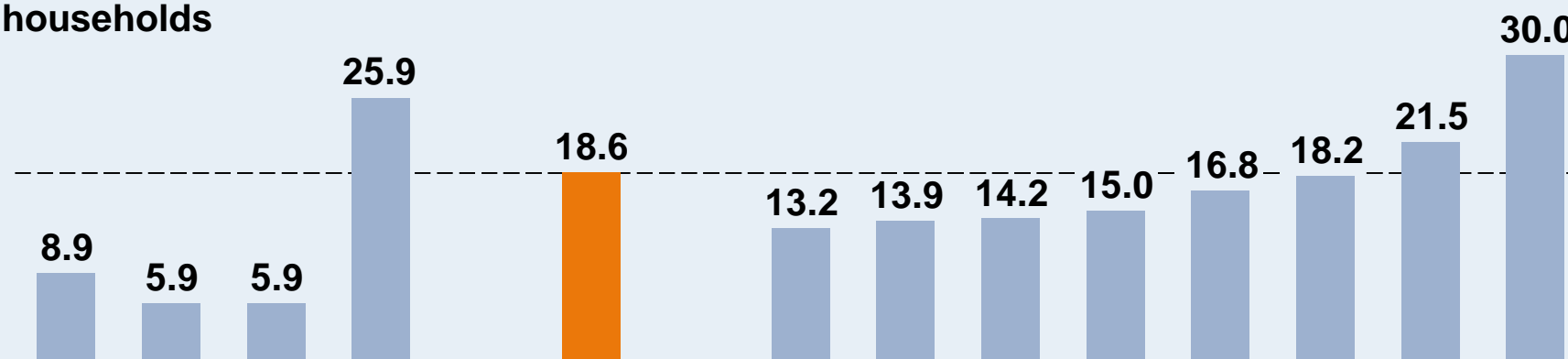
Europe needs competitive electricity pricing for economic growth

Comparison of electricity prices, €ct/kWh

Industry











Private households



Quelle: Eurostat; IEA.

Major differences among energy transitions in Europe

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- | | | |
|---|-----------------------|---|
|  | Sweden | • Nuclear new build, hydro power, wind |
|  | Denmark | • Wind on-/offshore, CHP |
|  | Germany | • Nuclear phase-out, PV, wind off-/onshore new build, grid expansion |
|  | United Kingdom | • Nuclear new build, wind offshore, CCS, CO ₂ floor price, shale gas |
|  | France | • Nuclear lifetime extension, wind offshore, moderate solar PV |
|  | Italy | • Solar PV, reduction of power imports |
|  | Spain | • Moderate renewables new build, support for domestic coal |
|  | Poland | • Clean Coal, diversification of energy mix: wind offshore, shale gas |
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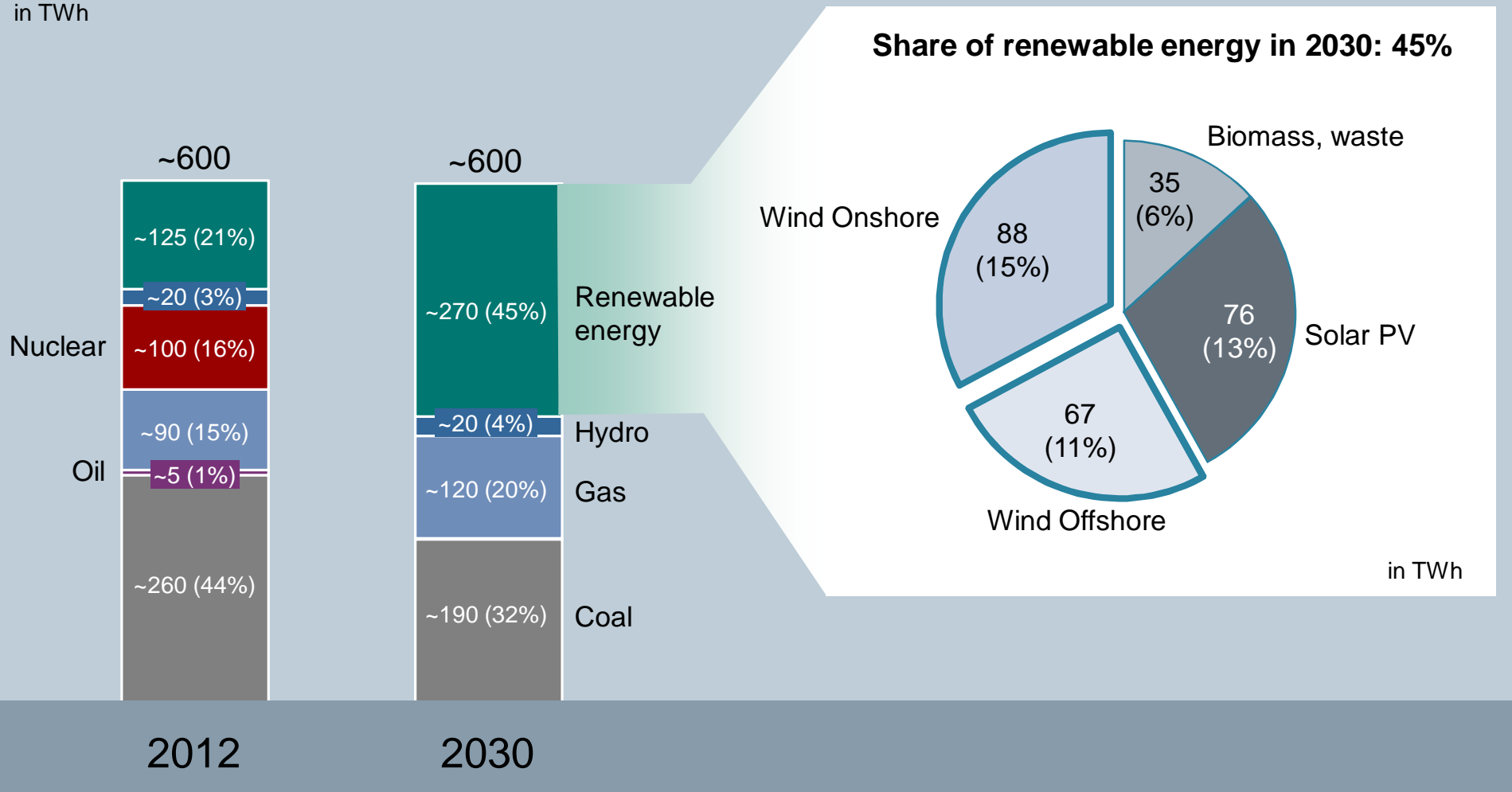
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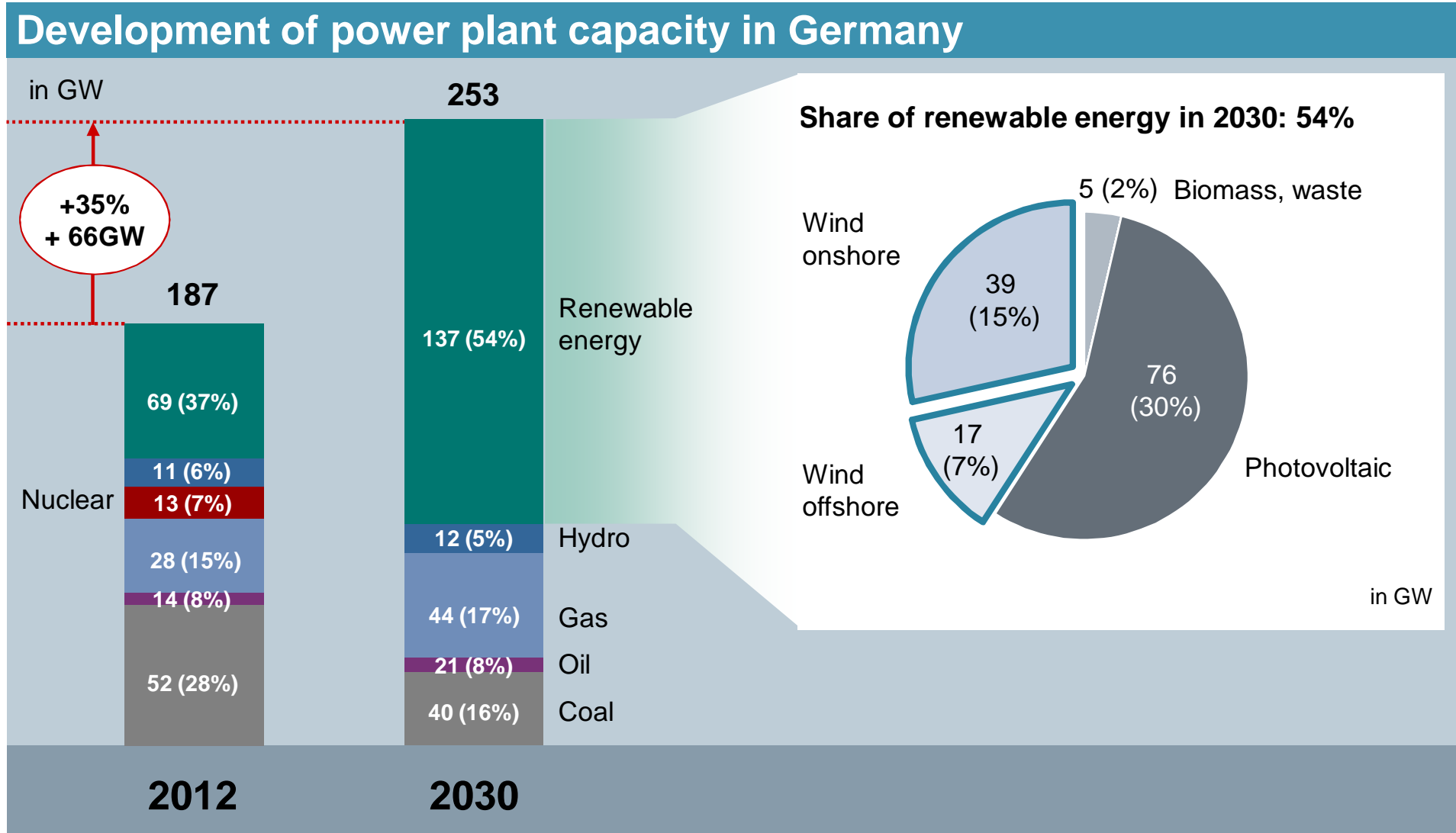
Renewable energy should cover 45 percent of Germany's power needs by 2030

Power generation in Germany

in TWh



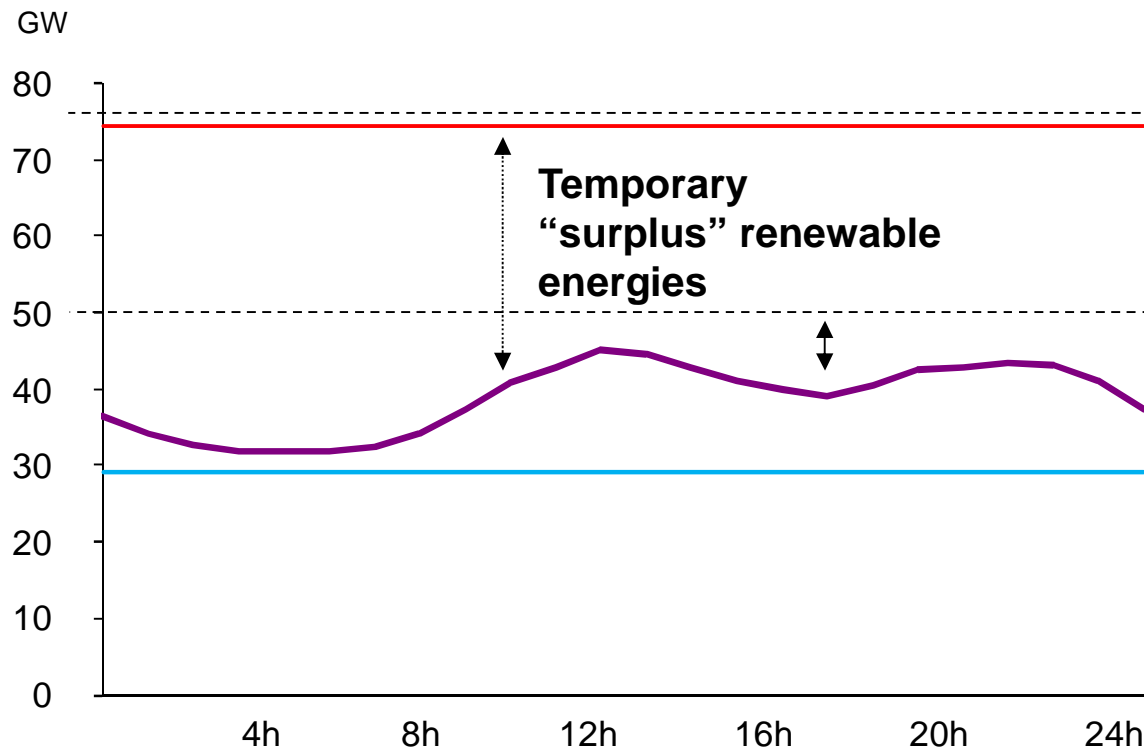
Driven by the “energy transition,” installed capacity will increase 35% to over 250 GW



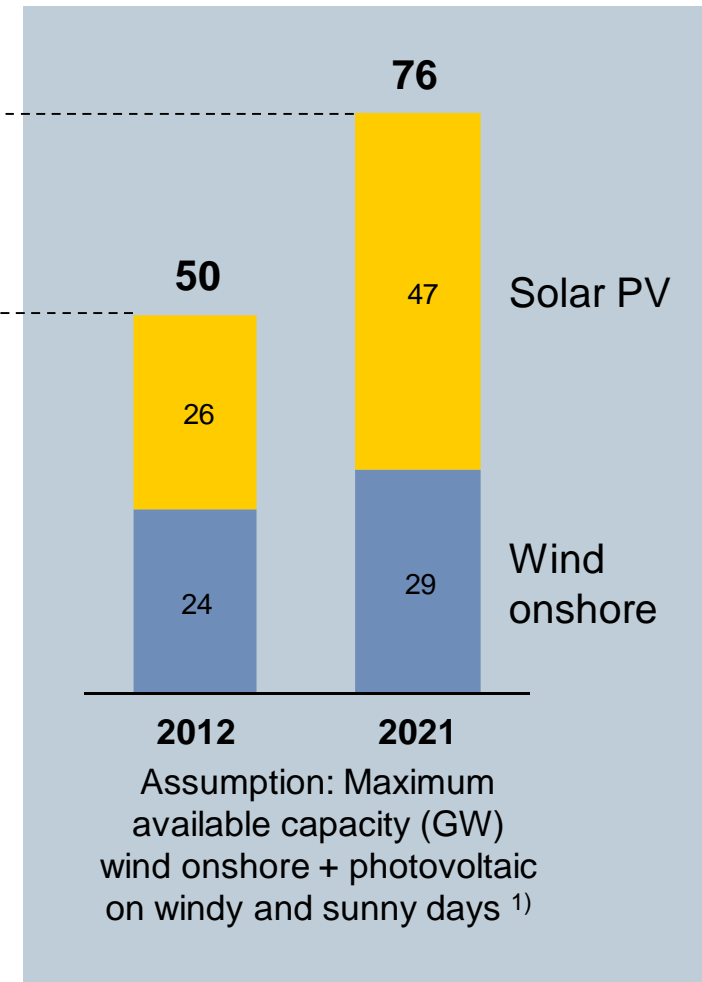
Without storage, there is always the challenge of simultaneity of generation and consumption

Germany, day with minimal peak load in summer 2012

(Sunday, August 26, 2012)



- Maximum load 2012
- Daily load pattern Germany, August 26, 2012
- Minimum load 2012



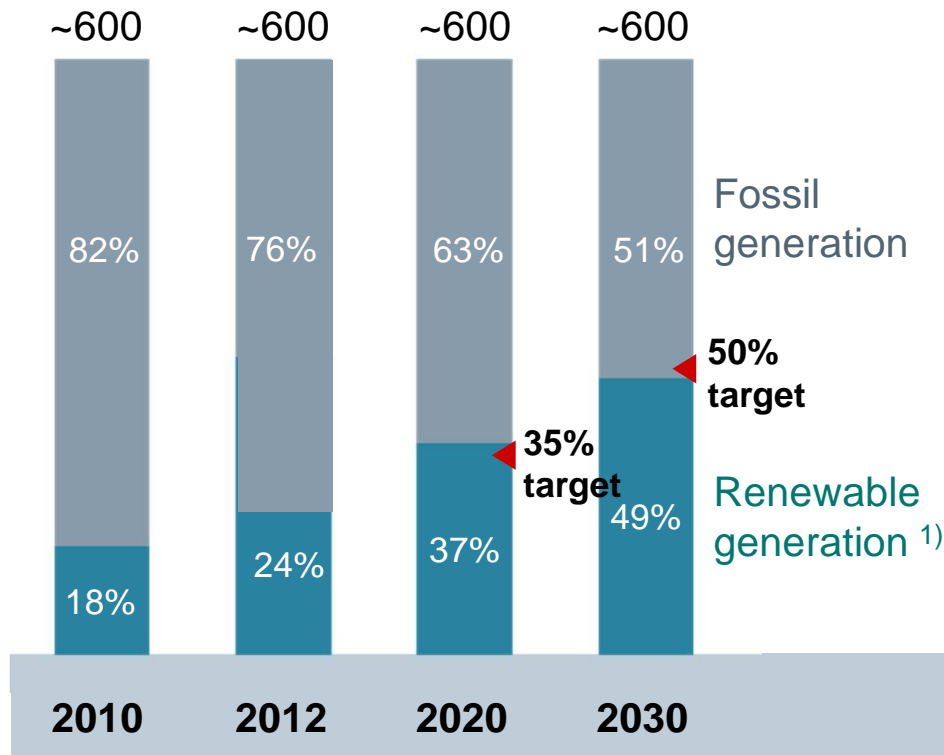
Assumption: Maximum available capacity (GW) wind onshore + photovoltaic on windy and sunny days ¹⁾

1) Assumption: Both wind onshore and solar PV have 80% of total installed capacity available

Despite increase in renewable energy, CO₂ target in Germany will not be reached

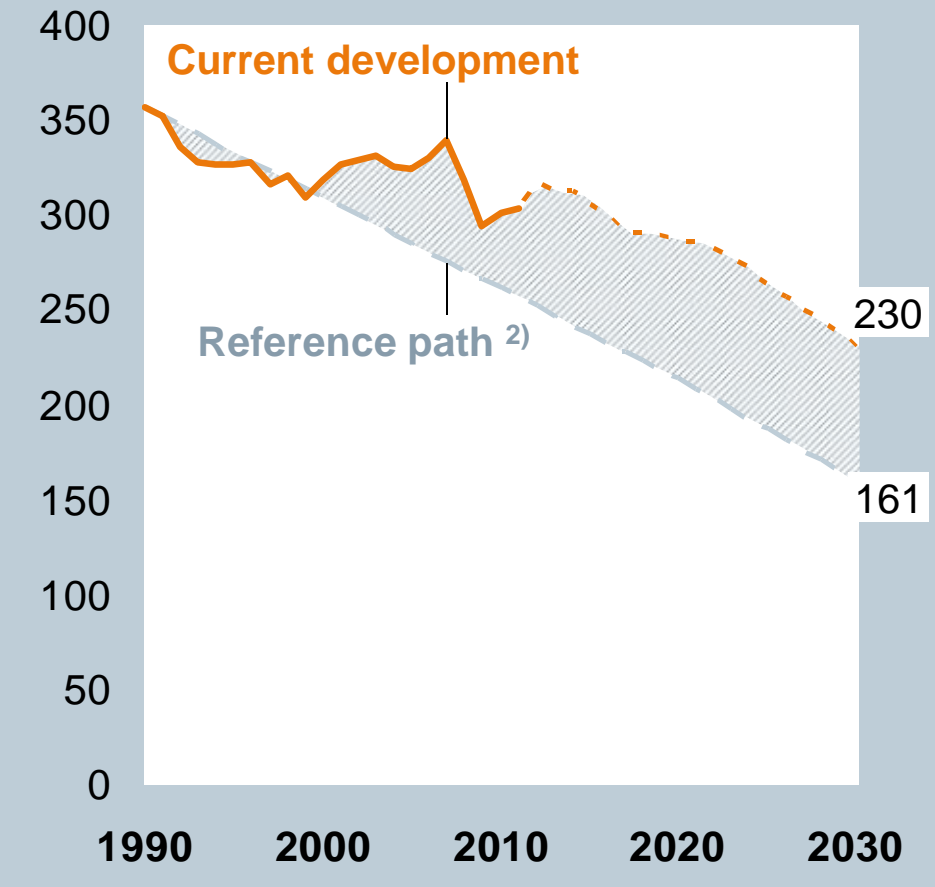
Share of renewable energy in gross power generation

TWh



Development of CO₂ emissions in power generation sector

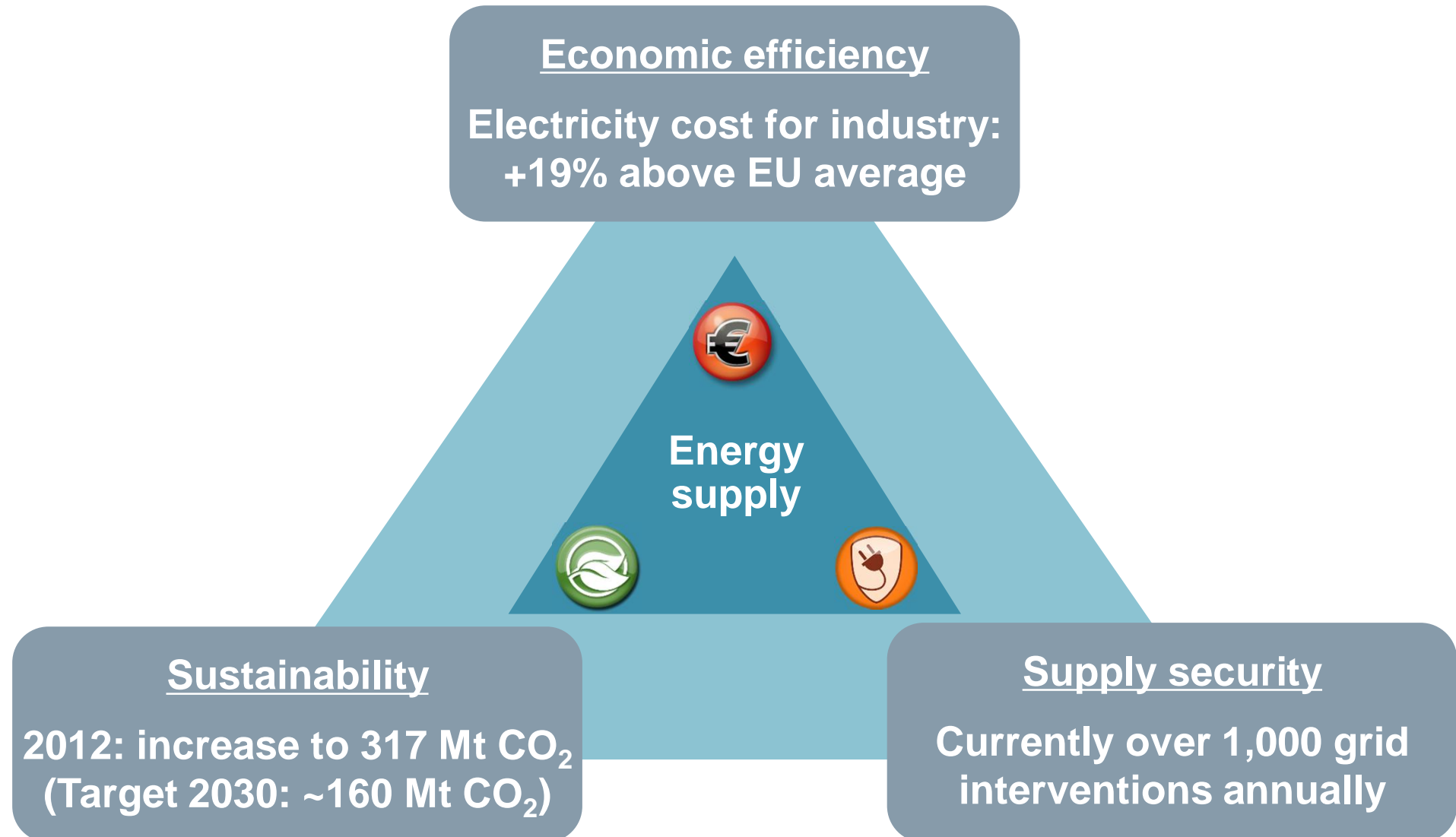
Mt CO₂



Source: Umweltbundesamt; Siemens

1) Including hydropower 2) Assumption: National targets are proportionally assigned to power sector

Current situation in Germany's energy market: The energy economic triad is threatened



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Three requirements for a sustainable European power market

1.

Support of technologies based on maturity and marketability

- Differentiated procedures based on maturity level (e.g. PV vs. Offshore Wind)
- Competitive environment for support of technologies (e.g. auctions)

2.

Best-solution Model – Technology and Regions

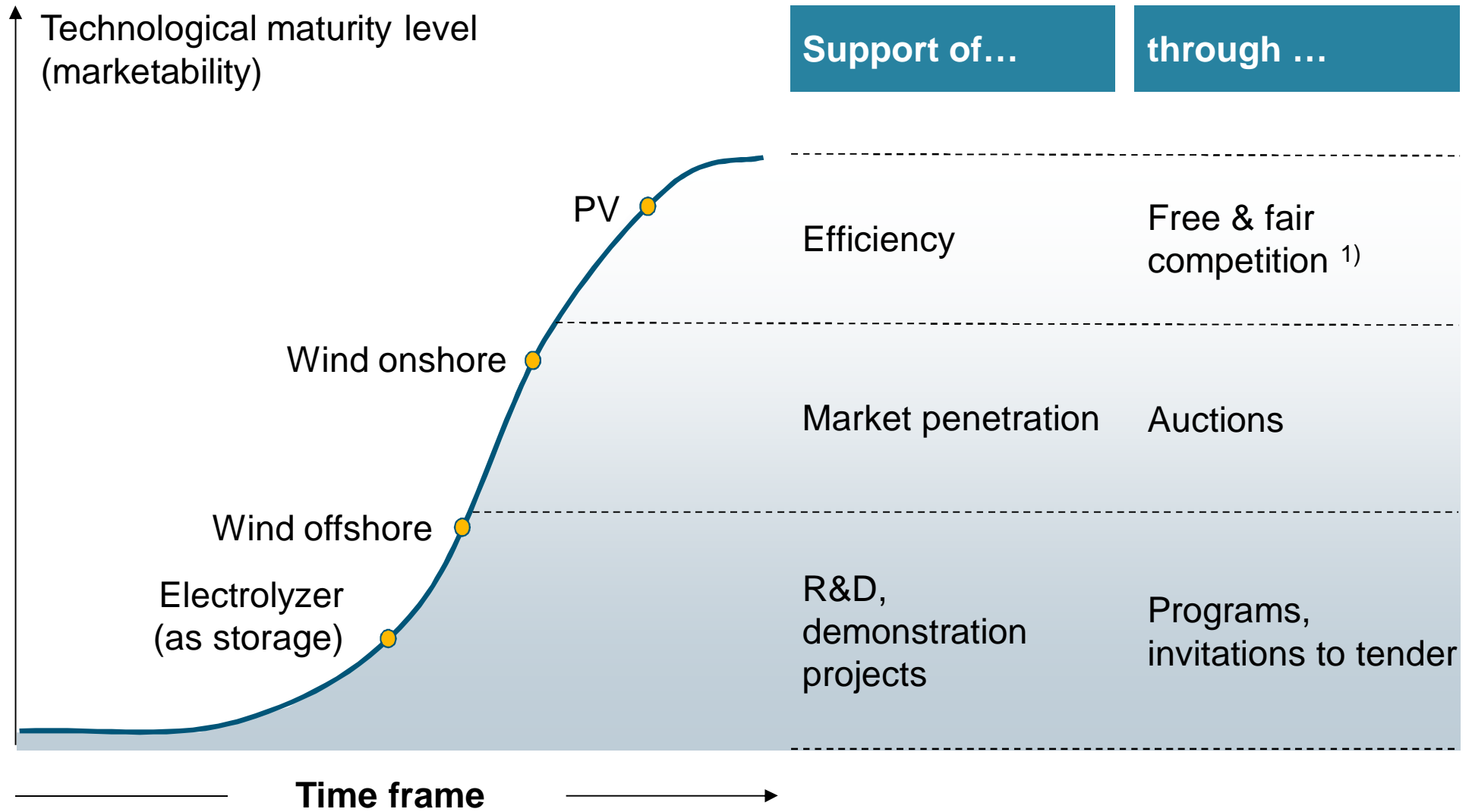
- Location-optimized use of renewable energies (wind and sun)
- Optimization of energy mix through a “coal-to-gas” shift

3.

Clear and reliable targets for CO₂ reduction

- Definition of long-term and binding CO₂ targets for the EU
- Measures for preventing price fluctuations (e.g. price corridor)
- Fleet benchmarking (as already implemented for the automotive sector)

Support is differentiated based on level of technological maturity and marketability



1) If necessary with financial corrections, such as internalization of external effects through CO₂ prices

A reform of EU Emission Trading System would be desirable

Preferred: Reform of EU ETS

- Definition of long-term, binding CO₂ targets for the EU (to 2030 or beyond)
- Possible simultaneous measures to prevent massive price fluctuations (e.g. through a minimum price or a price corridor)

Alternative: CO₂ limits in sector

- Europe-wide limits for the CO₂ intensity of electricity from generators or providers
- Reduce limits to, for example, 300 g CO₂/kWh in 2030
- Raising CO₂ price for emissions above the limits
- Corresponding to a fleet benchmark (already successfully used in the automotive sector)



Thank you!