



Federal Ministry
for Economic Affairs
and Energy



Introduction to Germany's Energy Transition

Energiewende

Visit of New York Delegation

19 June 2017, Berlin

Federal Ministry for Economic Affairs and Energy
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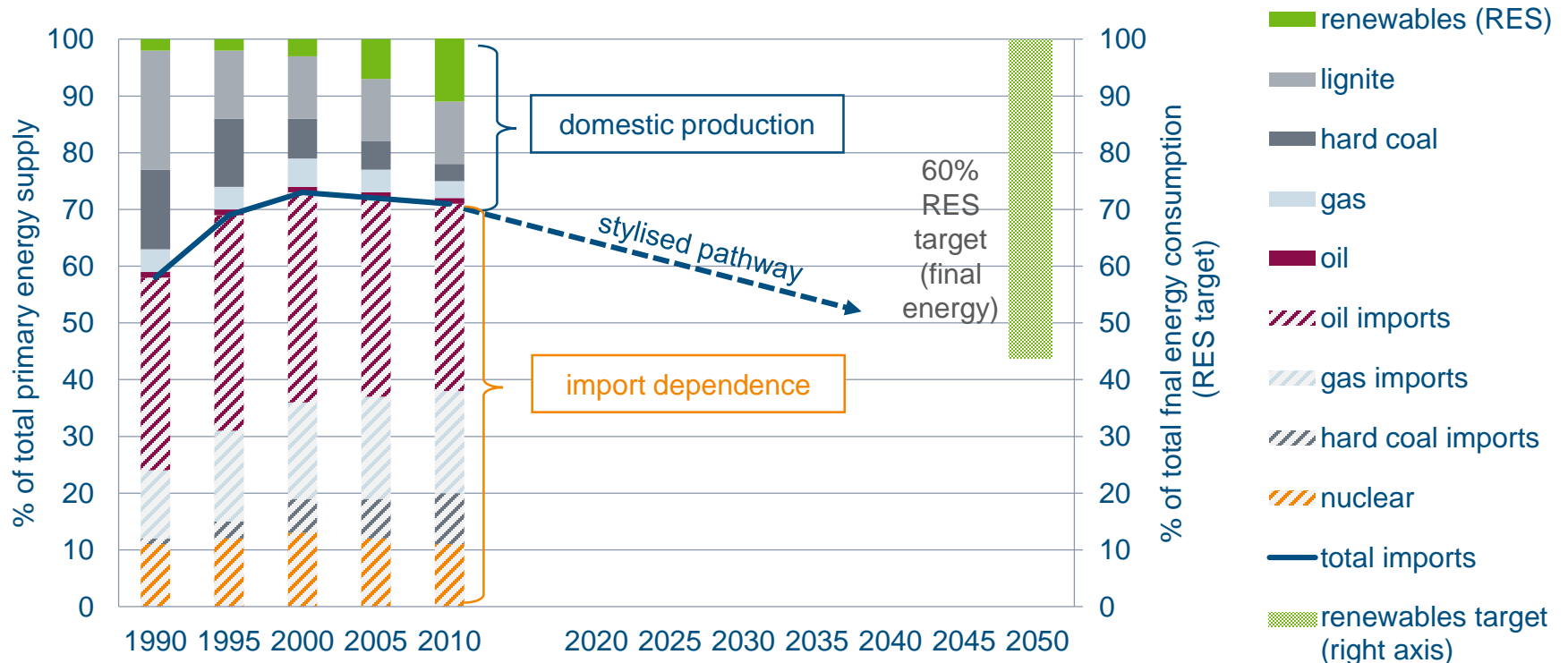
Five reasons for the Energiewende

- Reduce dependency on energy imports
- Innovation for growth and employment: new technologies, new business models, digitization
- Reduce carbon emissions and reach climate protection targets
- Energy transition can be both sustainable and economically successful
- Phase-out nuclear power generation



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

Renewables reduce energy import dependence



Source: AGEB 2012, AGEB 2014



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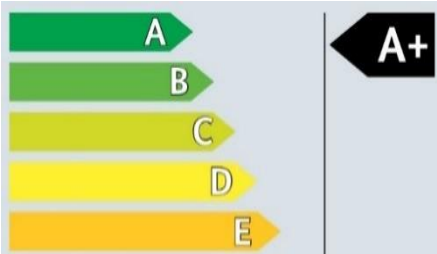


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Efficiency first, the direct use of renewables, and sector coupling form the energy transition triad

Efficiency first



Direct use of
renewables



Sector coupling

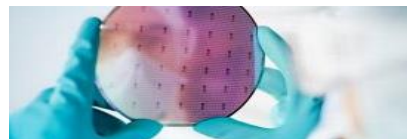


Supporting fields of action

Market and system
integration



Energy research and
development

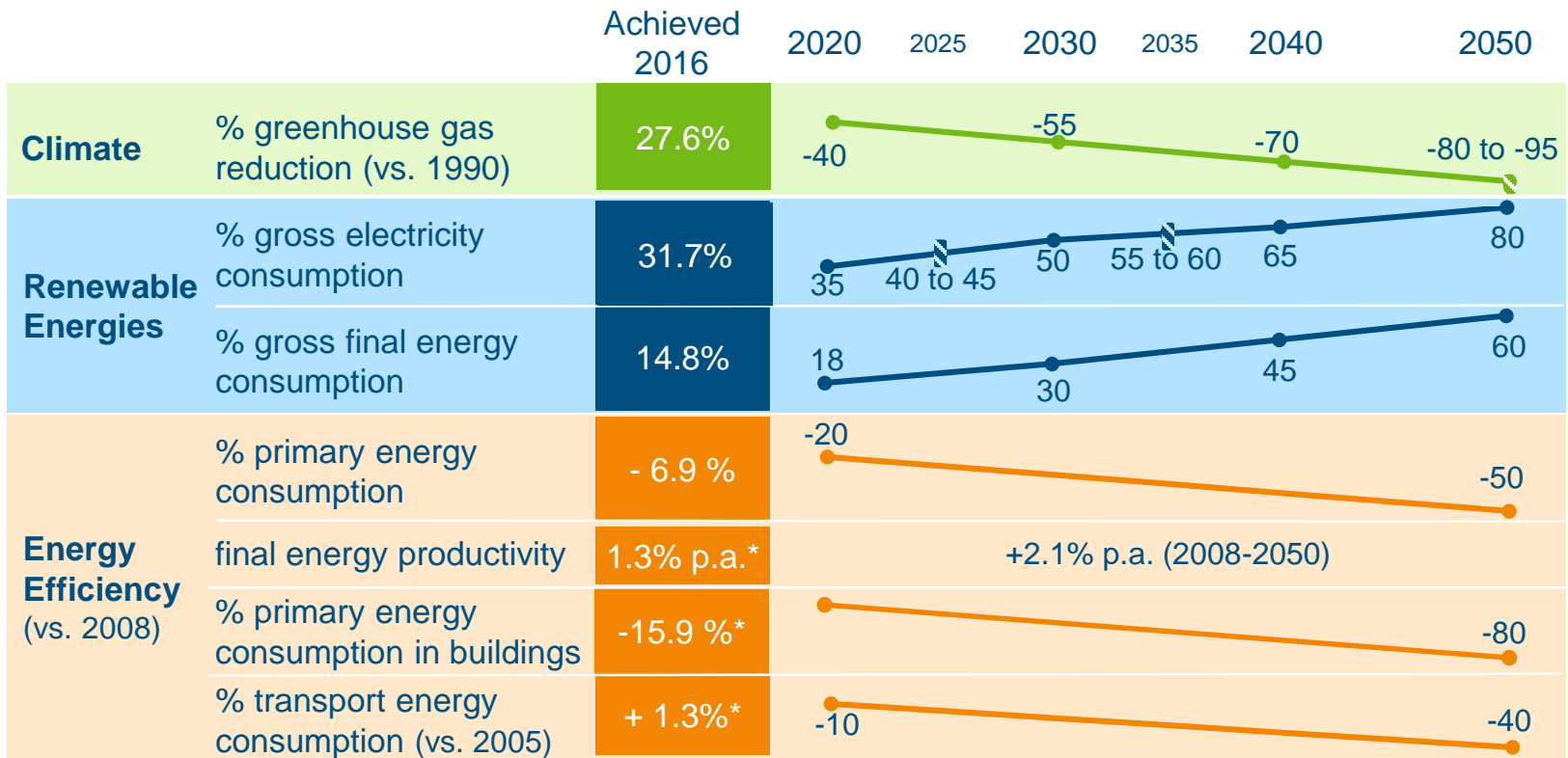


European energy
and climate policy





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

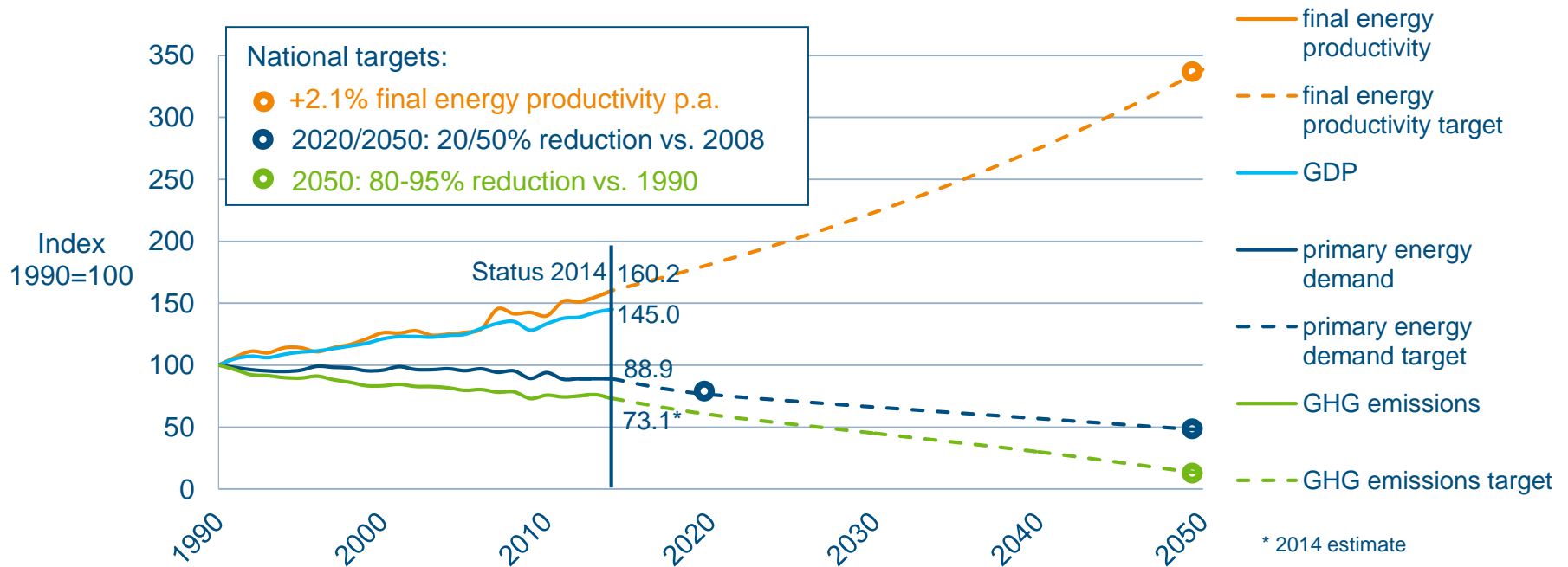


* = 2015 values

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



Efficiency targets and energy productivity in Germany



Source: Ecofys 2015

Efficiency measures allow clean growth by decoupling economic growth from energy consumption.



Key pillars of the NAPE



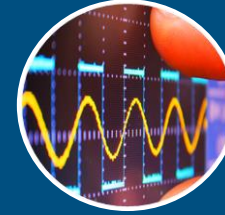
Stepping up energy efficiency in buildings

- Energy efficiency incentive programme
- Energy efficiency strategy for buildings



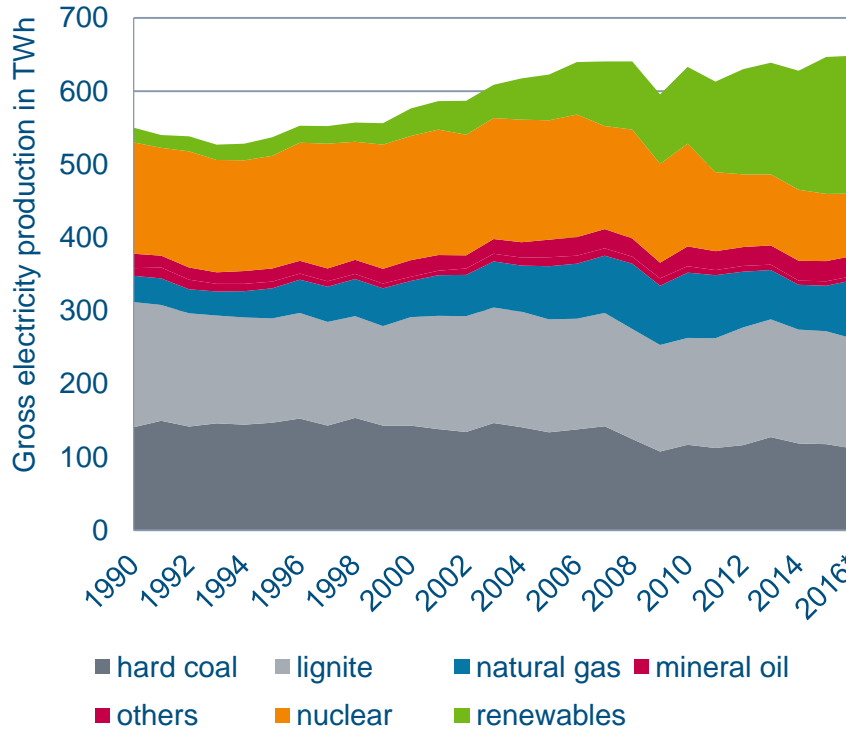
Energy efficiency as a return and business model

- Tender model
- Default guarantees for energy performance contracting

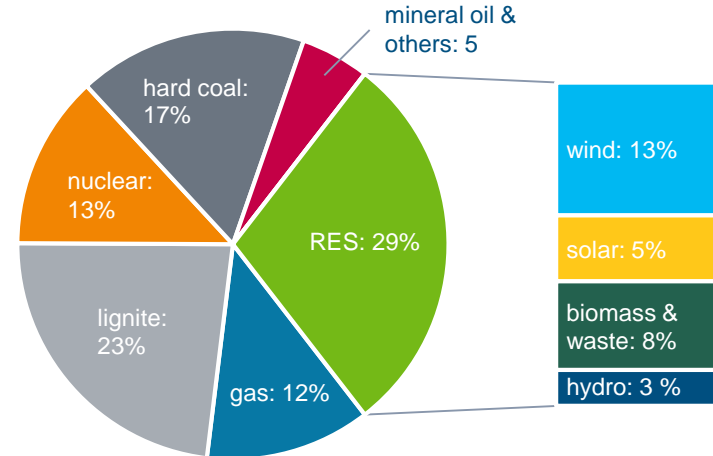


Individual responsibility for energy efficiency

- Energy efficiency networks
- Top-Runner strategy



Electricity mix in 2016 (648.4 TWh in total)

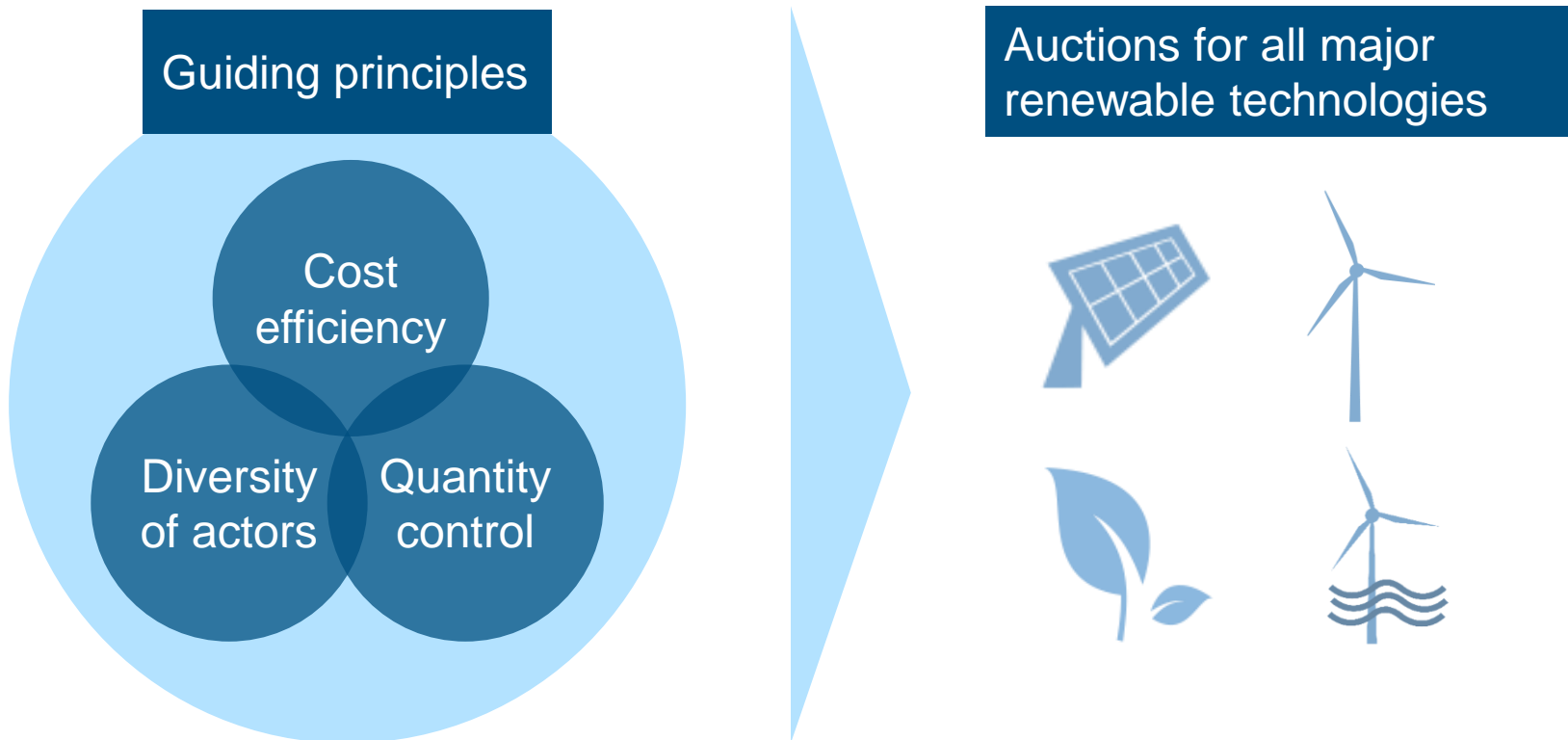


* preliminary data

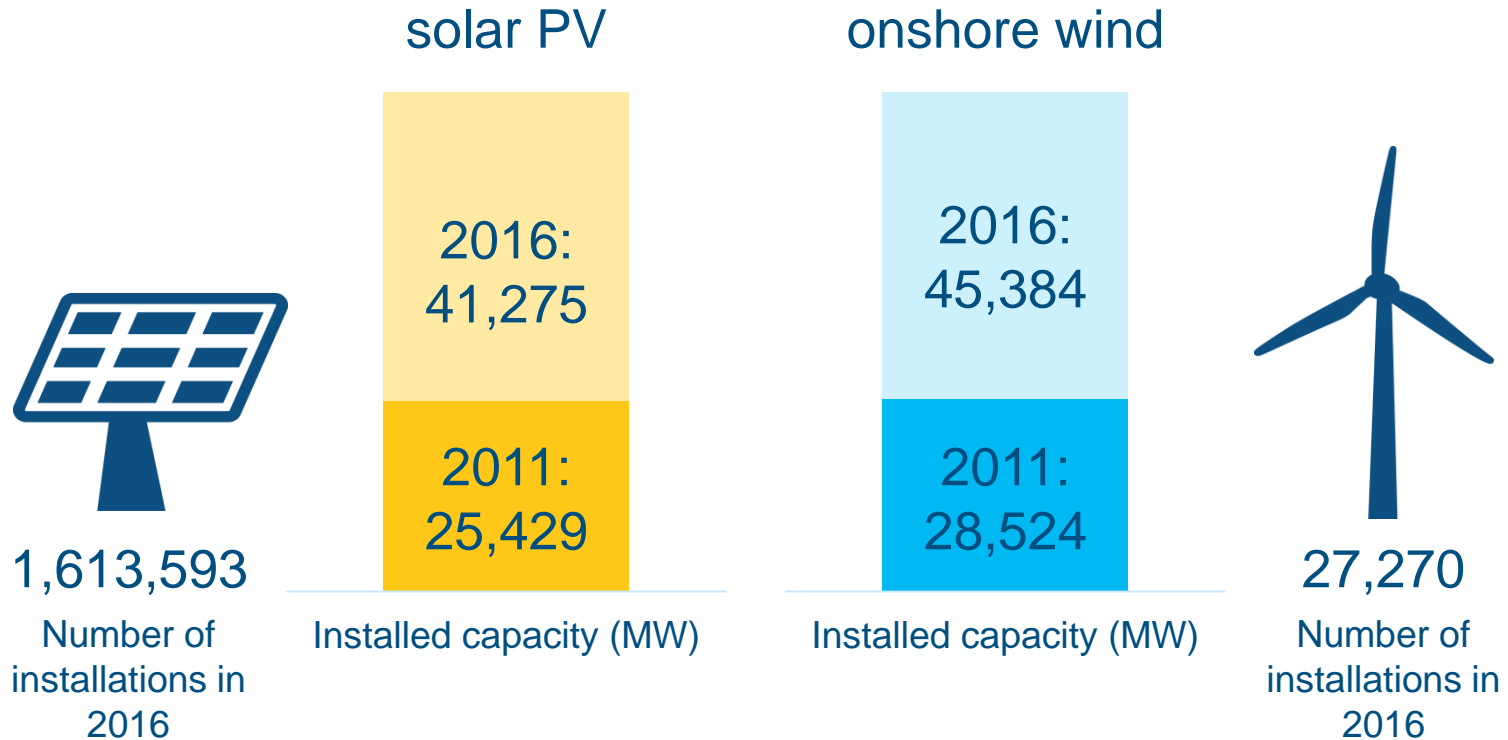
Renewables have become power source No. 1



The Renewable Energy Sources Act (EEG) 2017 introduced auctions for new installations



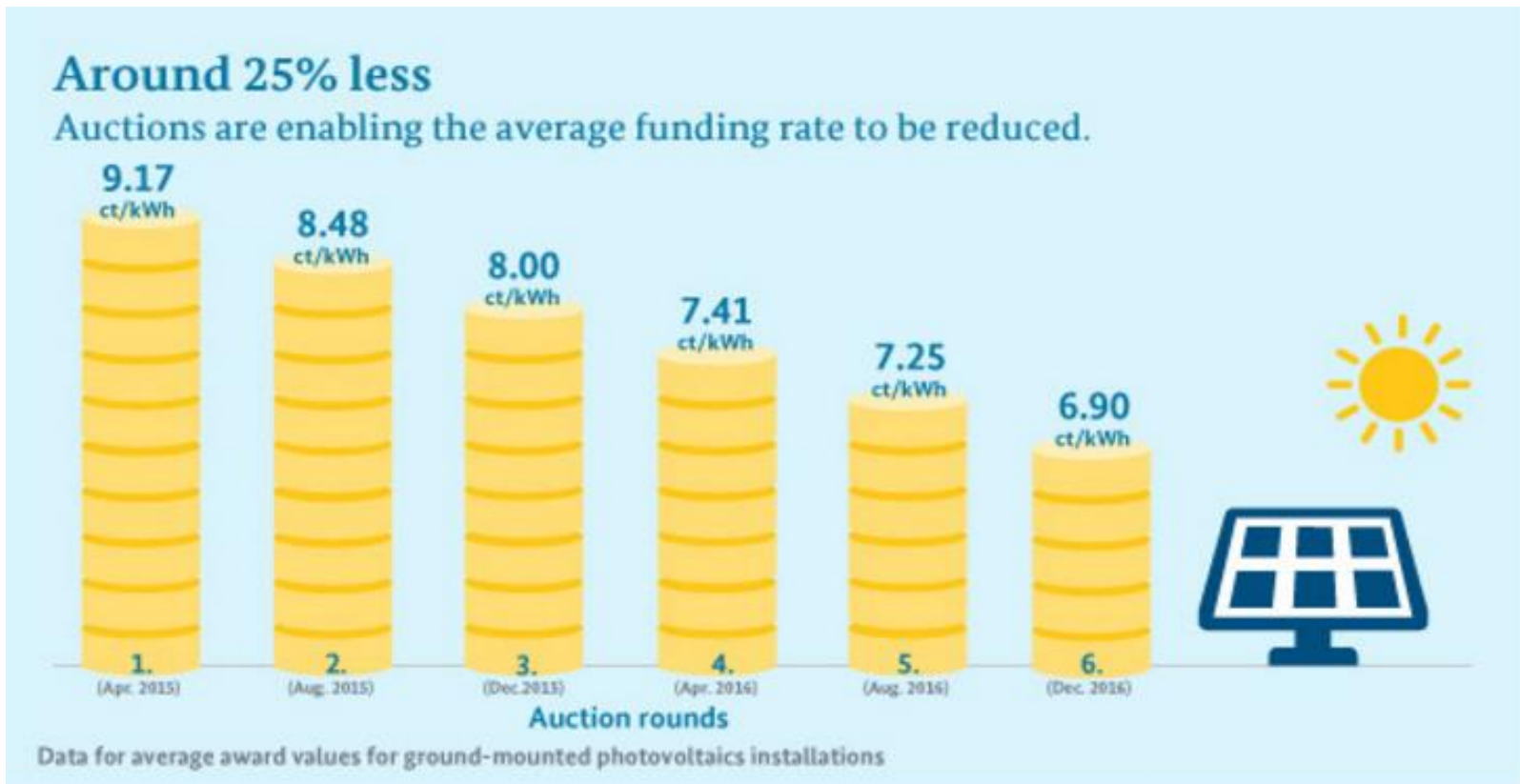
Source: Ecofys 2016 based on EEG 2017



Wind and solar capacities are steadily growing



There has been a significant reduction in support costs since the introduction of auctions in April 2015





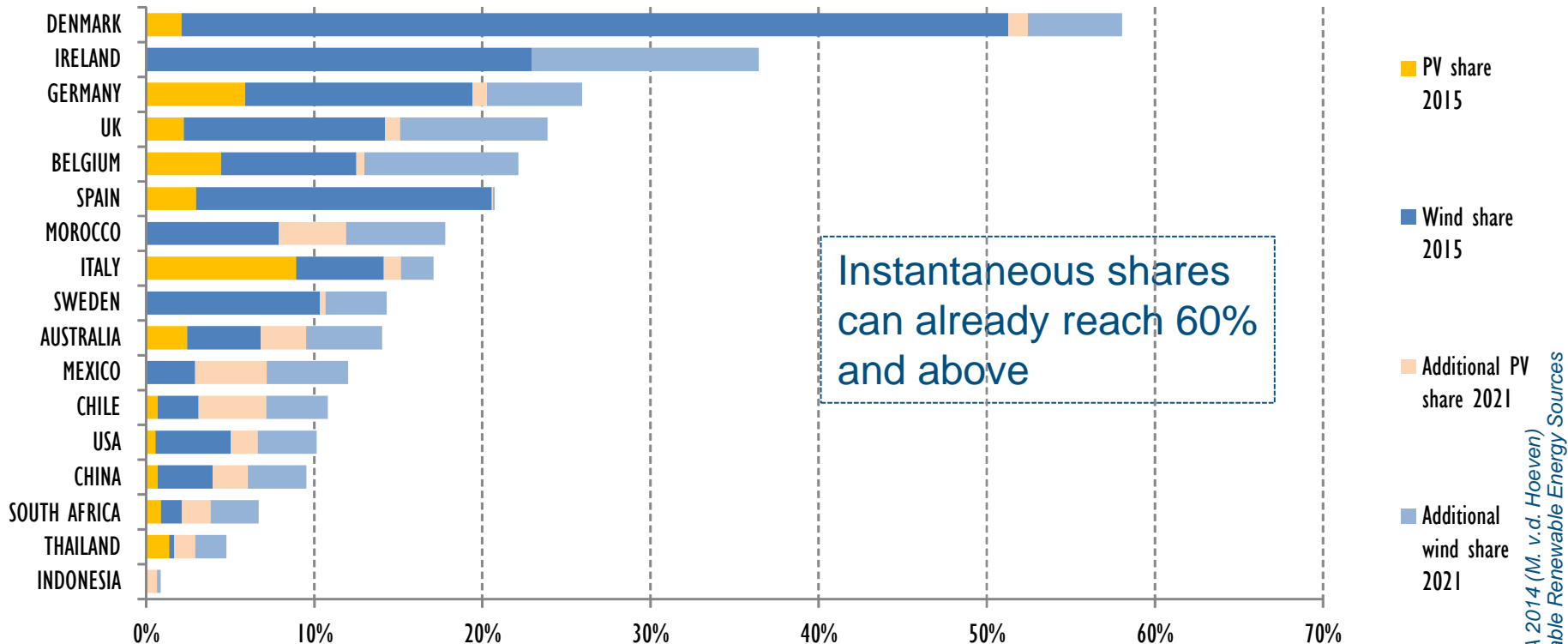
Challenge: adapt the power market to large shares of RE

Renewable features

- Weather-dependent production
- Fluctuating production
- Close to zero marginal costs



Share of variable renewables in the electricity mix

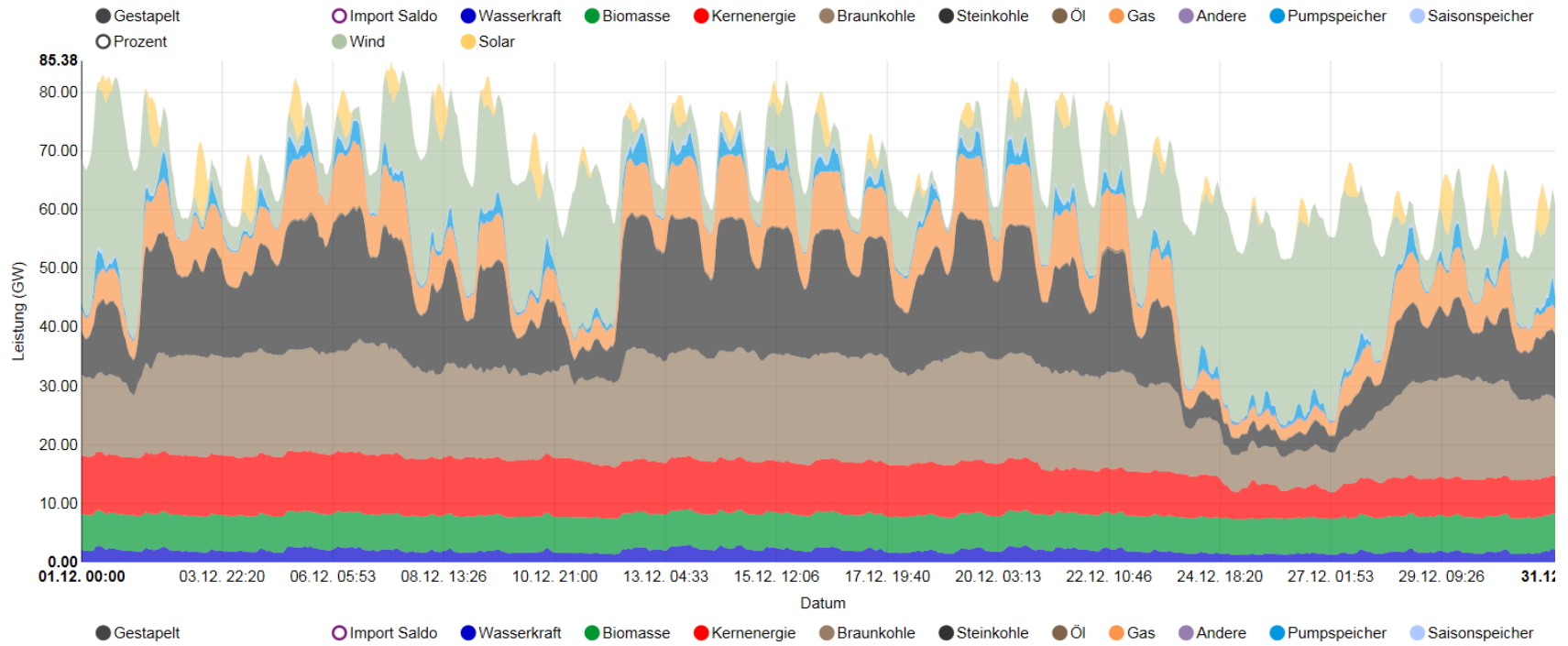


Variable renewables can cover more than half of the electricity demand in a flexible system.

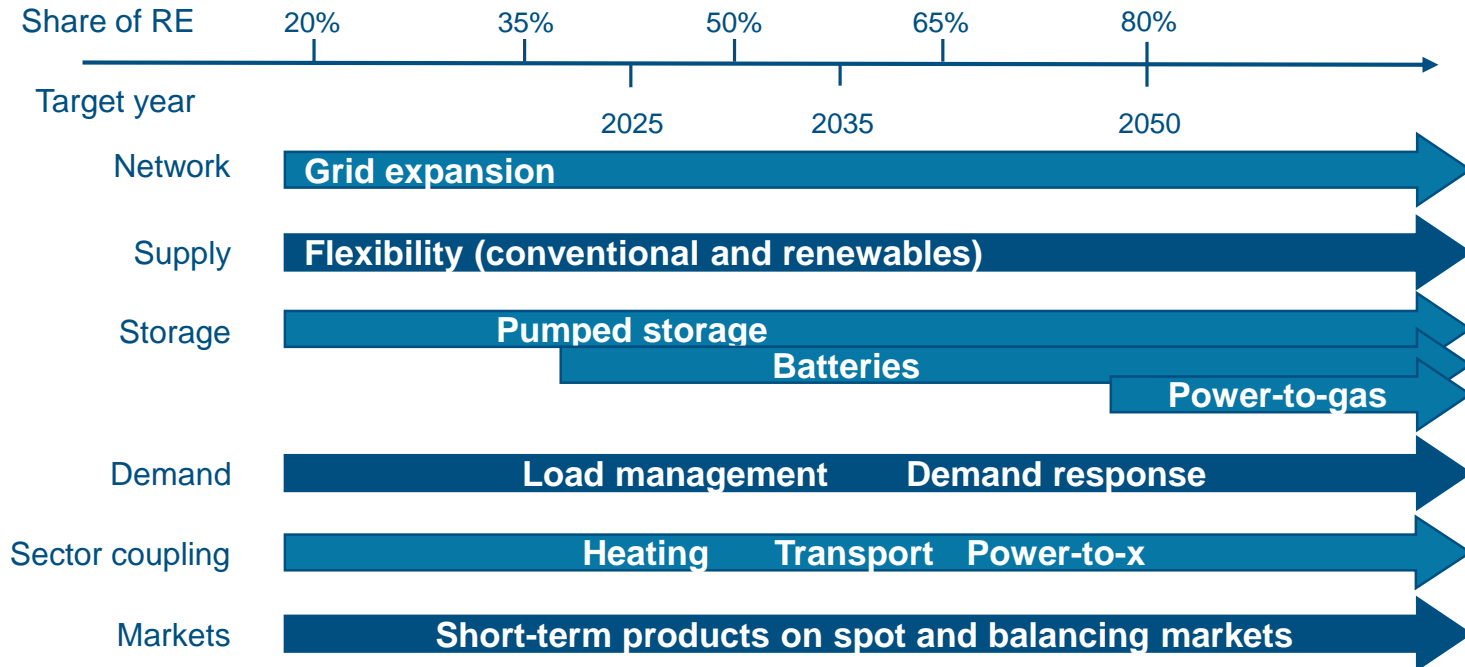


Flexible power market– no baseload economics in the future

Produktion in Deutschland im Dezember 2016



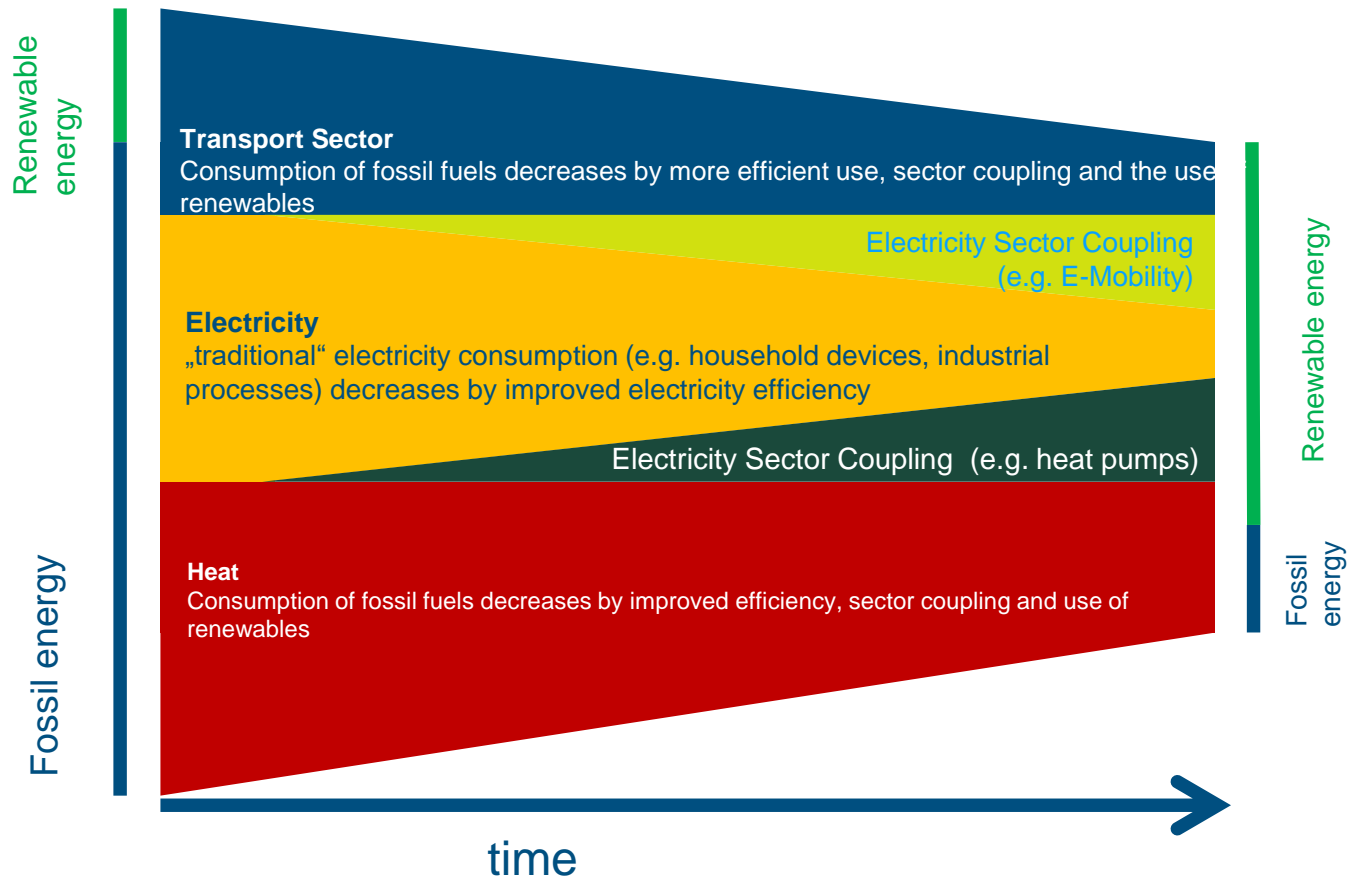
Options to increase flexibility in all areas



Flexibility options are key to making the market renewables-ready.



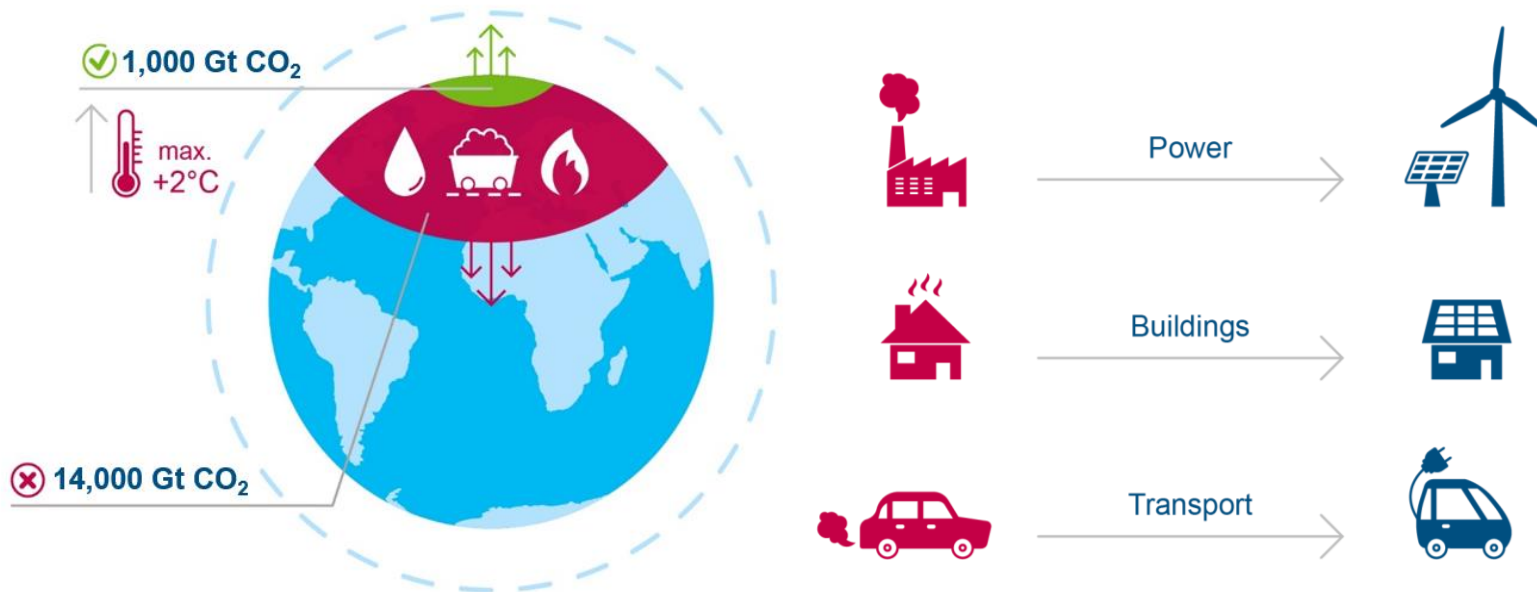
Sector Coupling / electrification of end-use sectors



Own graph, based on IWES et al. (2015)



In a world of abundant fossil resources, countries have strictly limited carbon budgets.

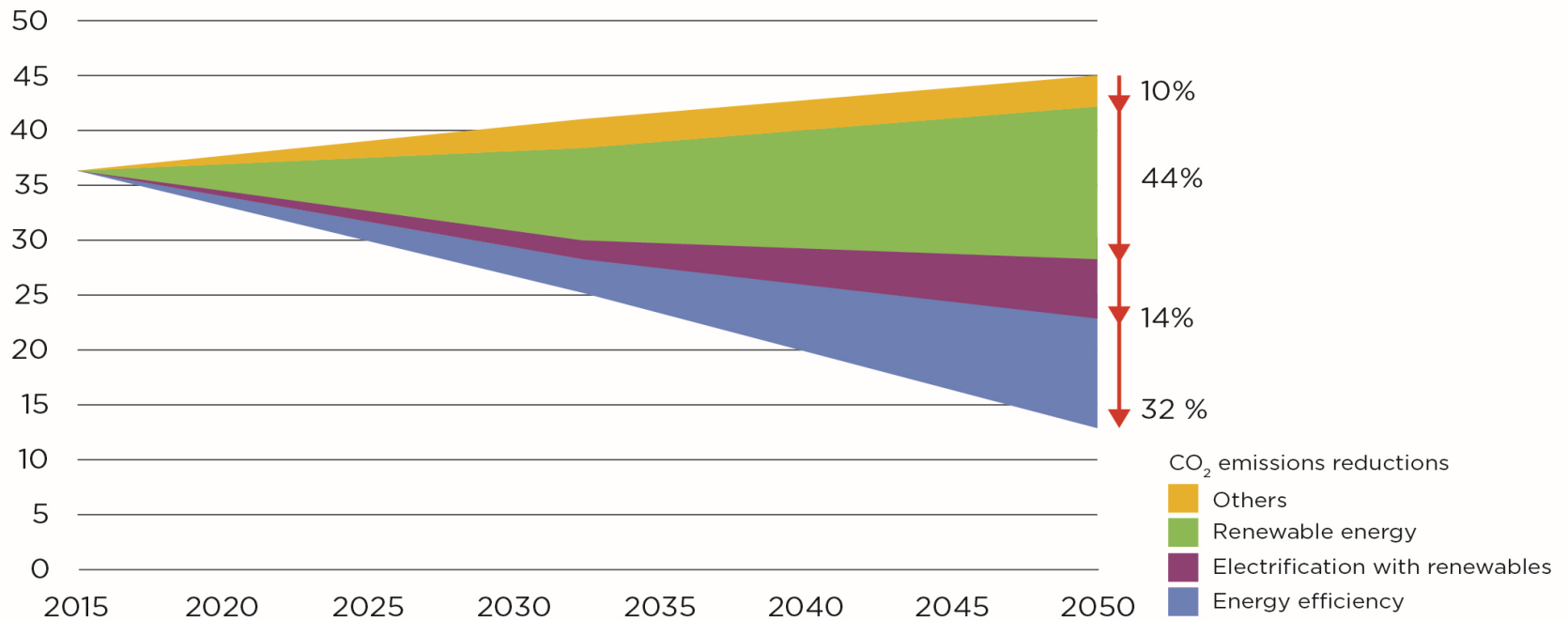


Source: Ecofys 2016



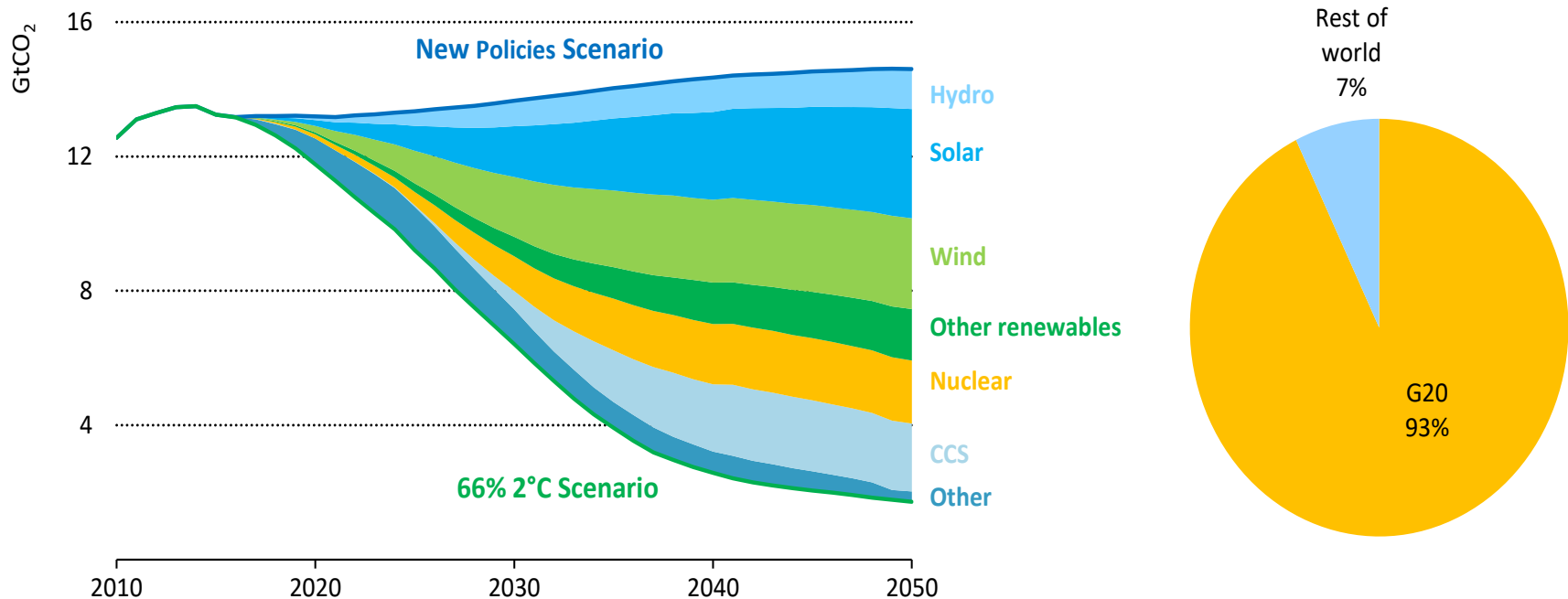
Total CO₂ emissions
from all sectors
(Gt CO₂/yr)

CO₂ emission reduction potential by technology



Renewables would account for half of total emission reductions in 2050, with another 45% coming from increased energy efficiency and electrification.

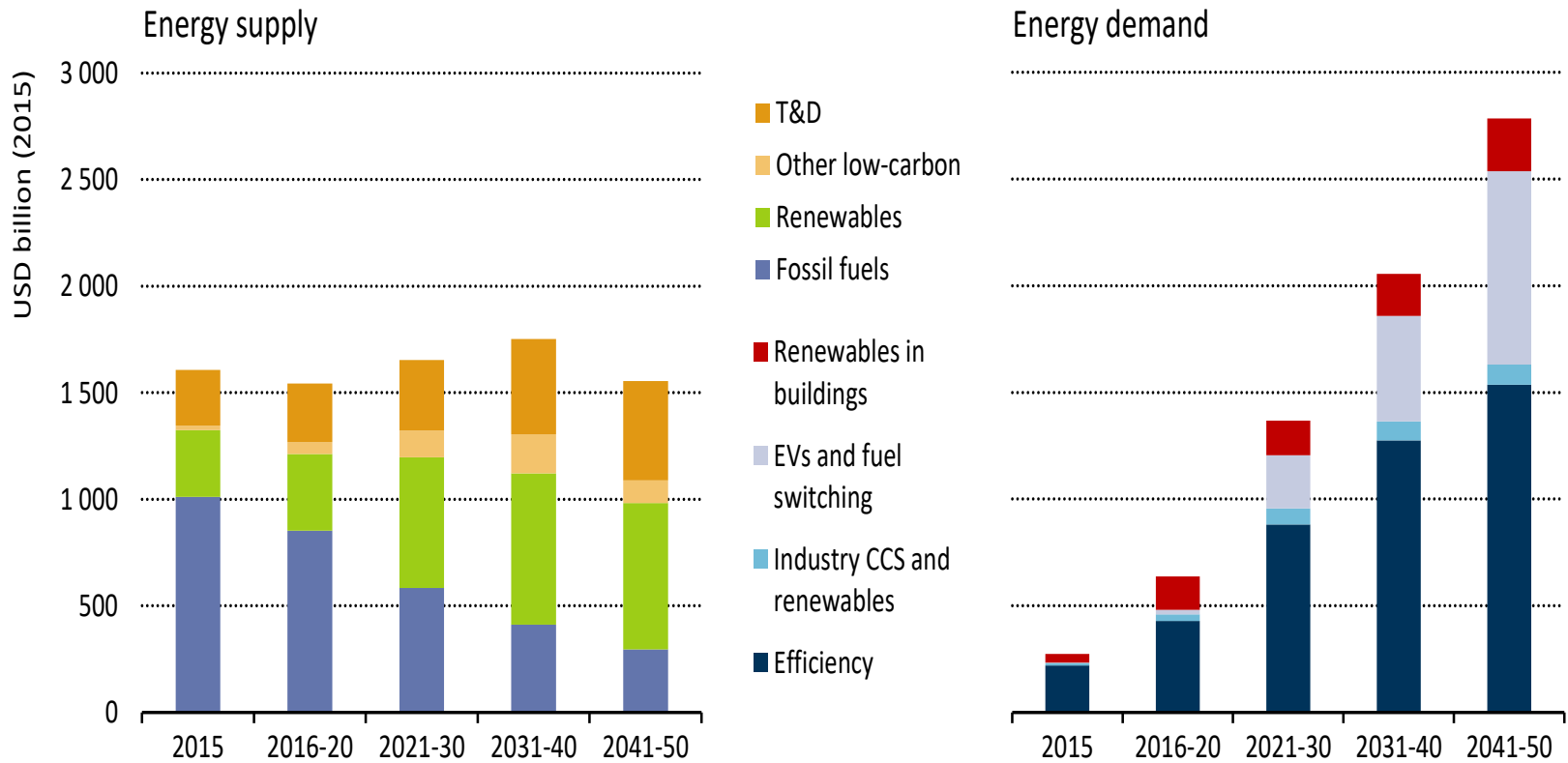
Global CO₂ savings in the power sector in the 66% 2 °C Scenario relative to the New Policies Scenario and the contribution of G20 group in 2050



By 2050, the power sector nears full decarbonisation, with renewables taking the lead in the 66% 2 °C Scenario.

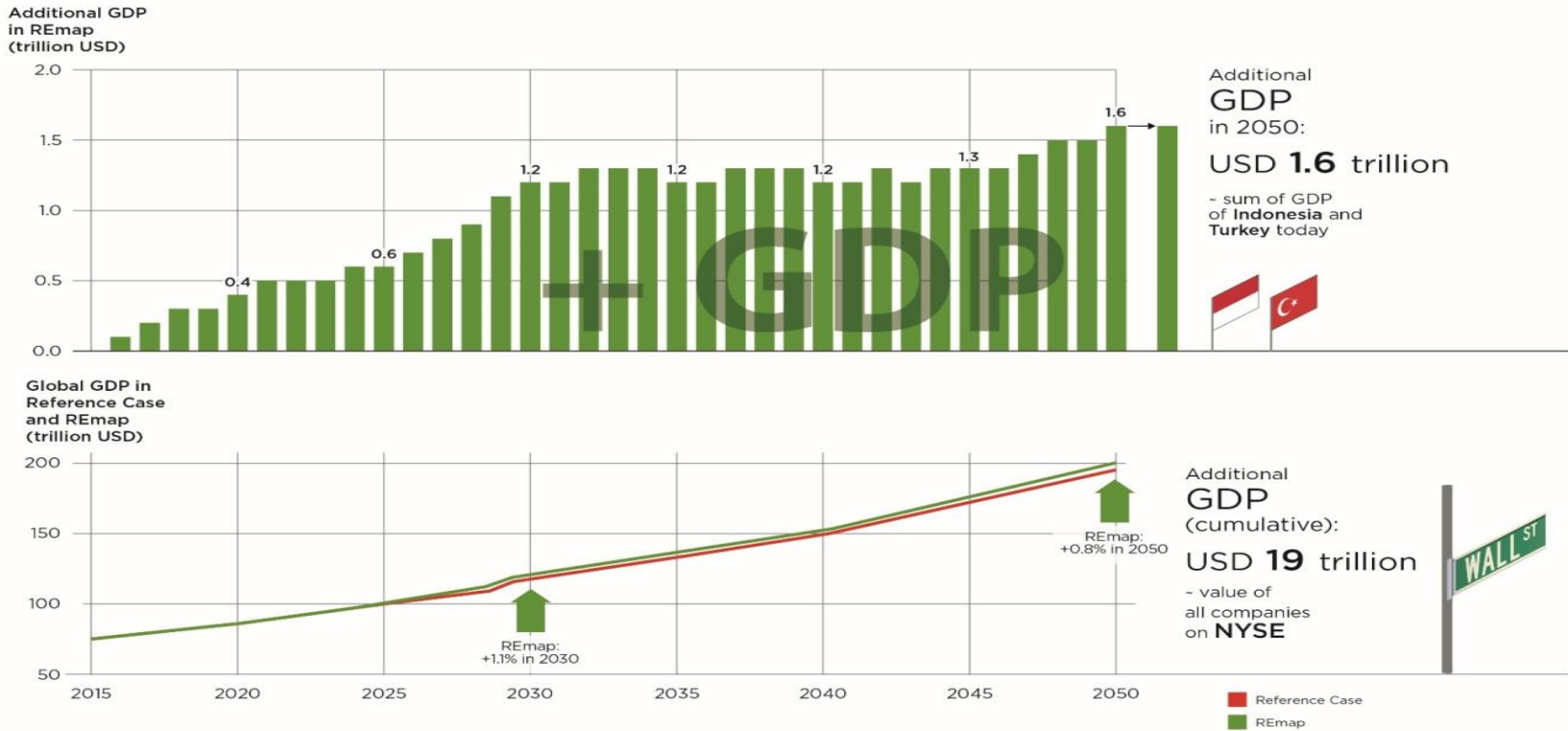


Average annual global supply- & demand-side investment in the 66% 2 °C Scenario





Global GDP impacts of the REmap energy transition: additional and absolute GDP values



Decarbonising the energy sector in line with REmap increases global GDP by around 0.8% by 2050 compared to the Reference Case.



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Thank you for your attention!

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