



Security of Supply and Decarbonizing Power Systems

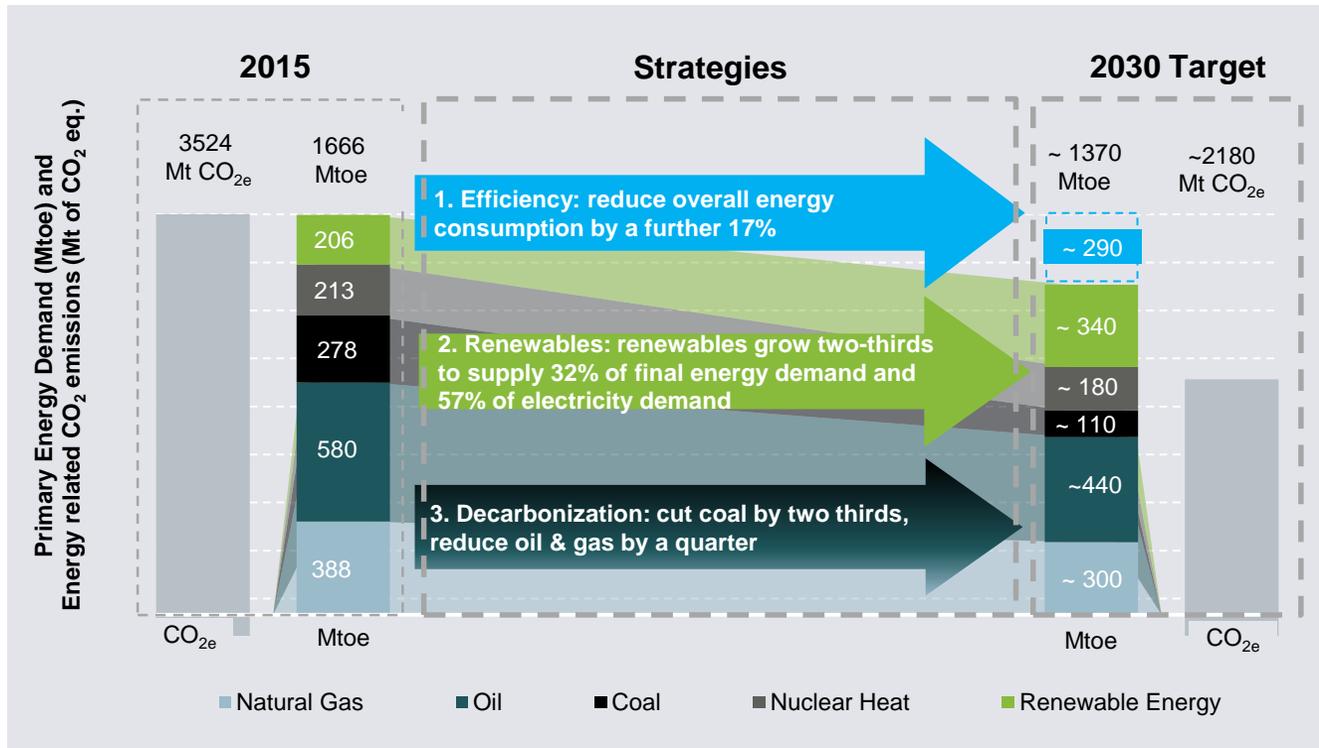
Matthias Buck

BRUSSELS, 14 NOVEMBER 2019



The EU has committed to an EU-wide energy transition from fossil fuels to clean energy sources

Strategies for a cost-efficient transformation of the energy sectors by 2030

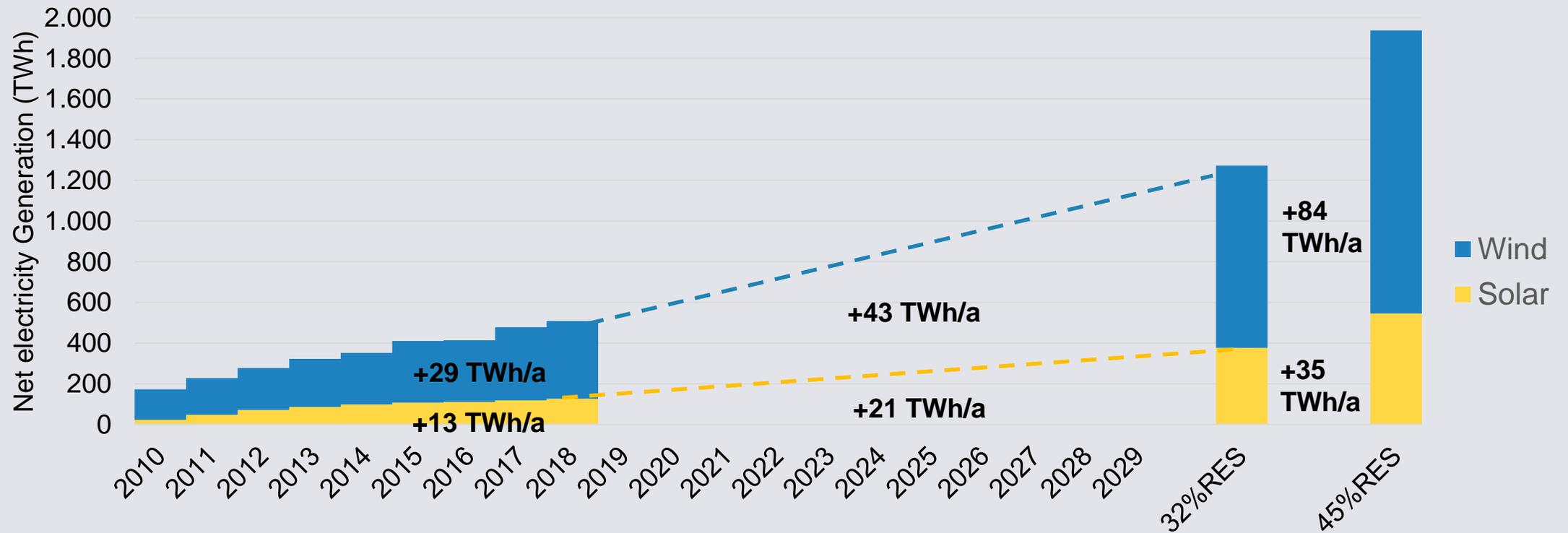


- The EU's 2020 climate and energy target framework include an EU-wide target to achieve a 20% share of renewable energy in gross final energy consumption by 2020.
- The EU's new 2030 climate and energy framework raises ambition to 32% by 2030.
- The EU Long Term Strategy for achieving climate neutrality by mid-century foresees a significant role for renewables by 2050 across all of its scenarios.
- The incoming European Commission is committed to greenhouse gas neutrality by 2050 and to increasing the EU's 2030 greenhouse gas reduction target to -50%, possibly -55%.

Own calculations based on COM modelling for the Clean Energy Package and EU Long Term Strategy, and taking into account the coal phase outs announced by member states.

Cost-efficiently meeting the current renewables target and accelerating towards 2030 both means significantly increasing the rate of wind and solar deployment compared to 2010-2018.

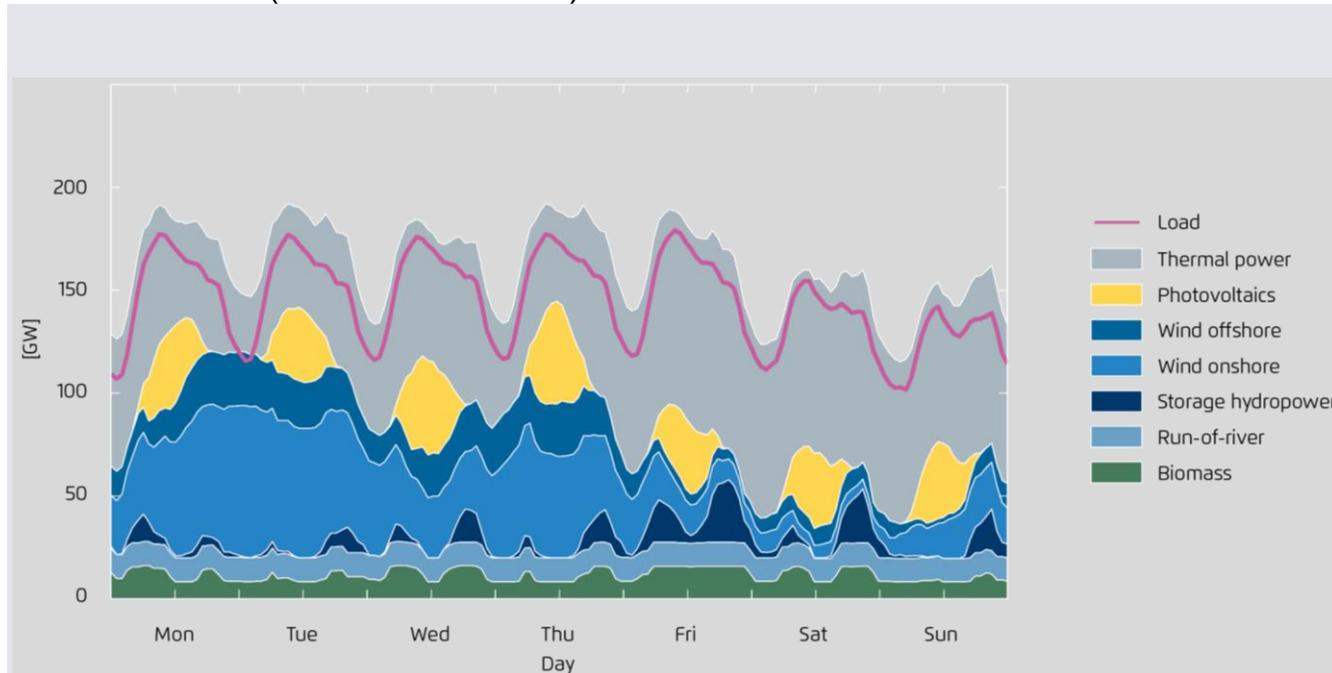
Net electricity generation from wind and solar (in TWh) from 2010-2018 and in select Commission scenarios



Agora Energiewende & Sandbag (2019); [European Commission \(2018\)](#); [European Commission \(2019\)](#)

With growing shares of wind and solar PV, power systems need to become more flexible on the supply and on the demand side

Electricity generation* and consumption* in the CWE region in a week in late summer 2030 (calendar week 32)



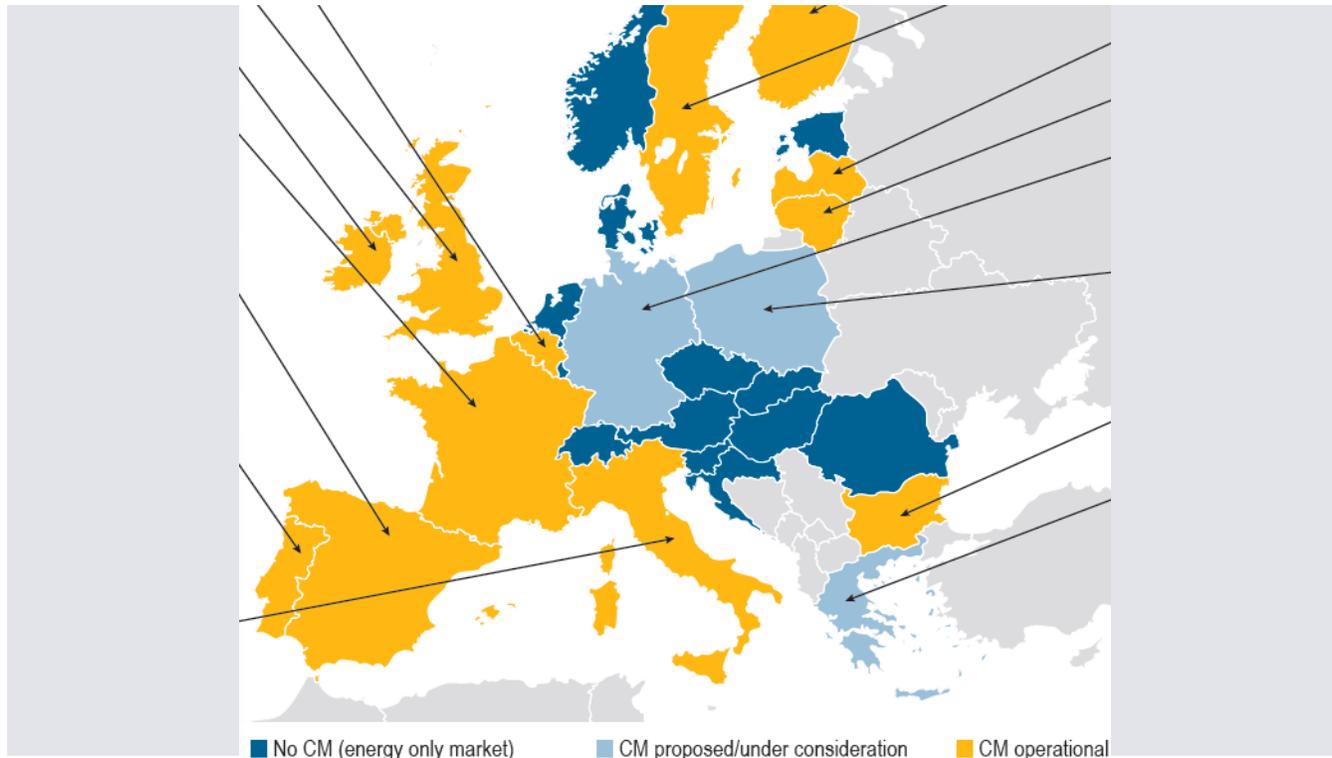
- Analysis for CWE region shows that in a 50% RES-e system, the need for baseload capacities halves. The need for peak capacities does not.
- If mix remains unchanged during transition all power plants have lower utilisation rates compared to more flexible capacity mix.
- 40% less investment required if capacity mix is transformed towards greater flexibility and all market participants are better off.
- System adequacy ensured at lower cost with a power mix characterized by technical flexibility
- Strengthening the market mechanism and enhancing power system flexibility is a major focus of the Clean Energy for all Europeans package.

Fraunhofer IWES (2015)

*Modelling based on 2011 weather and load data

Ensuring system adequacy is an important concern. However, system adequacy safeguards must be consistent with long-term decarbonisation targets and flexibility requirements

Capacity mechanisms in Europe – 2017



ACER (2018)

Provisions on capacity mechanisms in the new Electricity Market Regulation

- *European and national adequacy assessment to be comparable*
- *Capacity mechanism as a last resort, giving priority to energy market reforms*
- *Strategic reserve as first choice*
- *Capacity mechanisms to be temporary (10 yr approval)*
- *550 gCO₂/kWh emission performance standard (applicable for existing generation as of 2025)*
- *Direct cross-border participation (except strategic reserves)*

State Aid approval of national capacity mechanisms becomes a critical element in coal-to-clean transitions

Key issues in Commission State Aid decisions on capacity mechanisms:

- Is there really a need?
- Strong reliance on information and data provided by the notifying Member State
- Duration of approval decisions
- Duration of capacity contracts
- Concerns to reduce greenhouse gas emissions treated as secondary to market concerns. Little push to develop low-/zero-carbon options that could deliver the same reliability result.
- Limited transparency