



Building a Paris Agreement Compatible (PAC) energy scenario

CAN Europe/EEB technical summary of key elements

June 2020



2.8 Mobilising wind energy

Key assumptions

- Electricity generated by wind turbines onshore and offshore is one of the cheapest renewable technologies. Further decreases in installation costs make it a driver for electrification. The PAC scenario largely takes over assumptions on onshore wind potentials and capacity factors from EWG/LUT.¹
- Offshore wind potentials and capacity factors are taken over from BVG Associates and the International Energy Agency (IEA), following the European Commission's estimation of up to 450,000 MW of capacity. The PAC scenario assumes that this potential will partly be mobilised.²

Evolution of energy supply

The quick upscaling of onshore wind electricity generation leads to a more than six-fold increase from 267 TWh to 1,829 TWh between 2015 and 2030. The share of onshore wind in electricity generation increases from 8% to 40%. Onshore wind then is the EU's most important electricity source, reaching 2,591 TWh in 2040 (41% of electricity generation).

Offshore wind electricity generation rises even faster from 35 TWh in 2015 to 497 TWh in 2030, equalling an increase from 1% to 11% of electricity generation. Every fifth kilowatt-hour of wind power comes from an offshore turbine in 2030. Offshore wind farms contribute 818 TWh in 2040 (13% of electricity generation).

Integration of members' and experts' feedback

In a number of countries short-term market forecasts indicate a slower uptake of onshore wind capacities than projected by the EWG/LUT model.³ Growth rates during the 2020s were reduced and further uptake delayed.

Sensitivities and limitations

Novel floating foundation technologies that are not yet introduced in the market allow installations in deeper waters (>70 m) and in areas with sea ice. Such technology innovations could further advance offshore wind shares.

Key results

- Due to a speedy multiplication of capacities both onshore and offshore, wind energy becomes the EU's most important source of primary energy supply in 2030 with 2,326 TWh, just before fossil gas and oil.
- If onshore wind capacities are scaled-up according to the PAC scenario trajectory, only a third of the 450,000 MW offshore wind capacity potential needs to be mobilised to make wind energy the most important source of primary energy supply in 2030. A higher offshore wind share is however possible.

¹ EWG/LUT.

² Wind Europe/BVG Associates: Our energy, our future. How offshore wind will help Europe go carbon-neutral, November 2019; European Commission: A Clean Planet for all. A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy. In-Depth Analysis. COM(2018)773, November 2018.

³ Wind Europe: Wind energy in Europe in 2018. Trends and statistics, February 2019; Euroobserver: Wind energy barometer 2020, March 2020.

