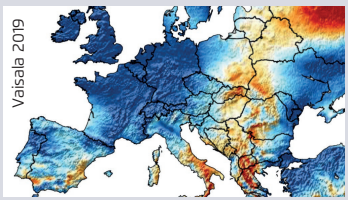
Wind

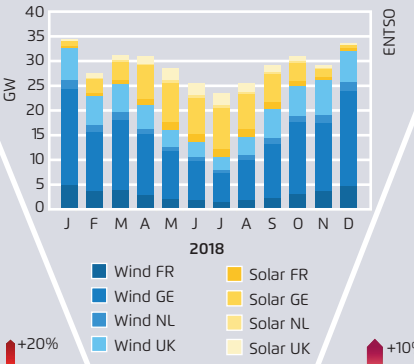
Wind generation during the heat-wave was low because the high pressure weather in July and August acted as a wall, stopping the wind from blowing in from the Atlantic to north-western Europe.



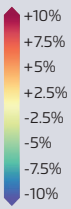
July 2018 wind speeds, anomalies to July averages for long-term average

Wind & solar

Monthly wind and solar in 2018 in France, Germany, the Netherlands and the UK



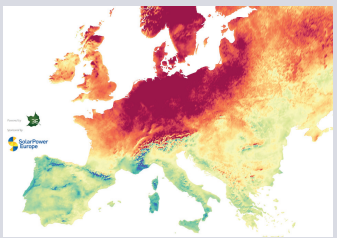
Solar replaced wind during the heatwave



Solar

The high pressure led to minimal cloud cover across NW Europe.

This meant solar was the only generation over-performing during the heatwave.



Jan–Dec 2018 solar radiation, anomalies to averages for the period 2004–2018

Nuclear

Water-cooled plants had to be shut down temporarily to protect rivers.

There were 4 complete shut-downs in France (Saint-Alban-1 1335MW, Bugey-2 & -3, 910MW, Fessenheim-2 920MW), one in Sweden (Ringhals, 900MW), plus numerous plants trimmed their output across Europe.

Demand

The heatwave led to high demand for air conditioning. Poland reached its highest ever demand in summer on June 4th of 23.2GW.

The Potsdam Institute predicted that peak demand in many European countries will shift from winter to summer, as air conditioning rises, due to higher penetration and due to climate change.

Effects of the 2018 heatwave

Hard coal

From August to November 2018, 12 plants in Germany along the Rhine alone reported supply shortage problems, because the Rhine levels was too low to import coal by barge.

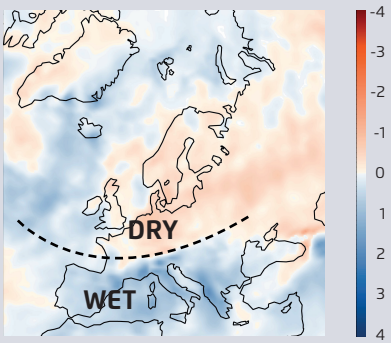
There were also problems with cooling water: Karlsruhe-7 (Germany, 505 MW) had to shut down because they were prohibited to empty their warm cooling water in the Rhine.

Hydro

Low hydro generation in northern Europe, due to below-average rainfall throughout the year:

- → Austria: lowest in eight years
- → Sweden: lowest in six years
- → Germany: lowest this century

Jan–Dec 2018 precipitation (mm/day), anomalies to averages for the period 1981–2010



ECMWF Copernicus Climate Change Service 2018