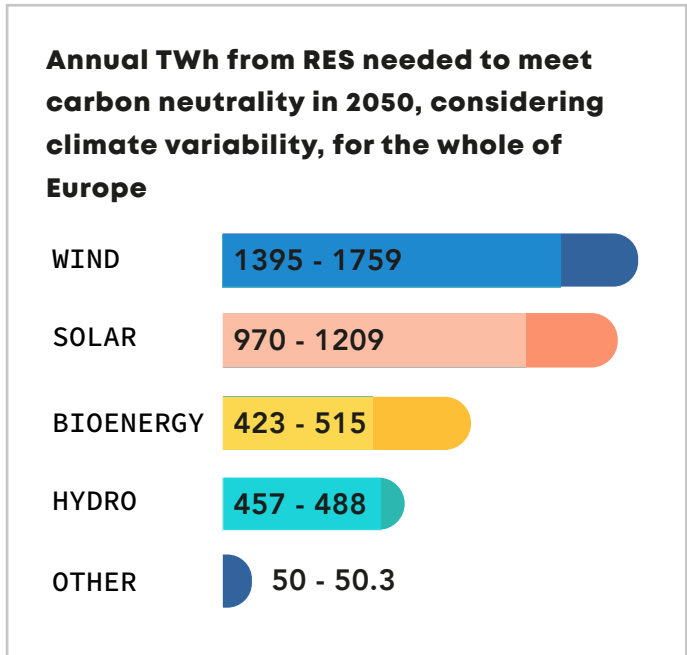


Reaching carbon neutrality under climate change in 2050



What is the share of variable renewable energy sources in the European electricity portfolio?

WHEN integrating climate variability in a highly renewable electricity system scenario in 2050 at the European level, there are relatively small variations in the output of most renewable energy sources (RES) (excluding geothermal and ocean). Compared to today (1050 TWh in 2018), it is estimated that at least 3295 TWh and at most 4022 TWh from RES need to be produced in 2050 in Europe to reach carbon neutrality accounting for variability in all considered climate projections.

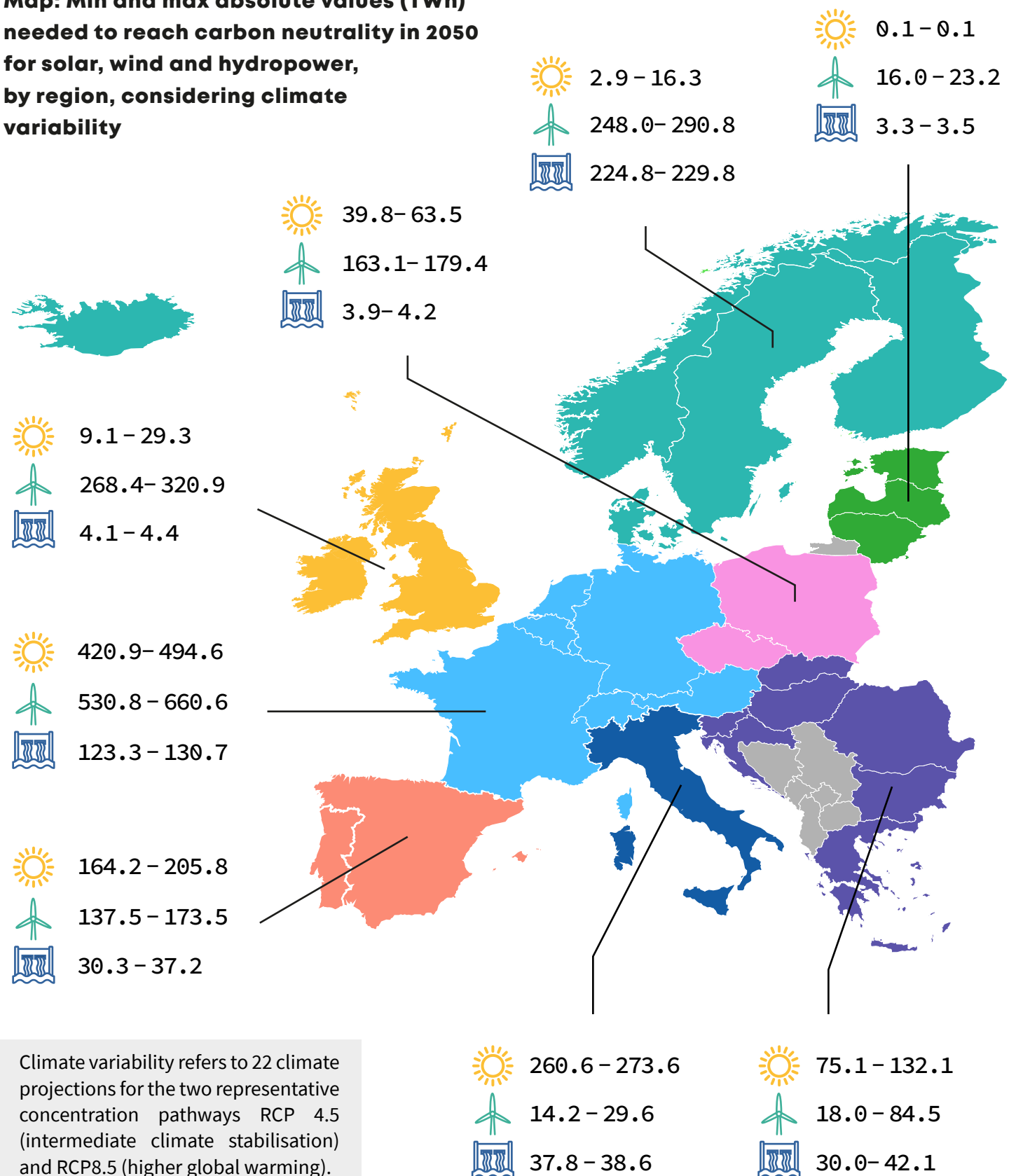


HOWEVER, when considering the impacts of climate variability at country (or groups of countries) level, there are substantial differences in the output of renewable energy sources (especially wind and solar) between climate scenarios, highlighting the role that future climate variability can play in the European power system (see map).



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Map: Min and max absolute values (TWh) needed to reach carbon neutrality in 2050 for solar, wind and hydropower, by region, considering climate variability



Climate variability refers to 22 climate projections for the two representative concentration pathways RCP 4.5 (intermediate climate stabilisation) and RCP8.5 (higher global warming).