



Impact of climate change on demand and supply balance

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The electricity supply-demand balance is an everyday challenge for transmission system operators especially during wintertime under severe weather conditions. With the increase of intermittent renewable energies and the European goal to extend these renewable energies in the energy mix, it is important to help anticipate the temporary risk of imbalance between a strong demand and a poor renewable energy potential. As a consequence, the study of this demand and supply balance at different time scales is essential as it can help energy practitioners to take short and long term decisions. In the scope of the Copernicus project CLIM4ENERGY, this work is conducted (in collaboration with RTE, the French transmission system operator) at climatic time scale.

In this work, we design indicators for electricity demand (based on heating degree day) as well as indicators for wind and solar capacity potential. The impact of climate change on their evolution is assessed using EURO-CORDEX ensemble data.

The use of an ensemble is necessary to draw robust conclusions. Significance of the change is also looked at, as well as the behavior of climate model over the reference period.

First results show a robust and significant decrease in heating degree day at 2050 horizon in winter while wind capacity shows no significant change for a major part of Europe.