

## **A climate change compatible approach and database for energy systems prospective studies in Europe**

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The Pan-European Climate Database (PECD) is at the core of prospective studies of the European Network of Transmission System Operators for Electricity (ENTSO-E). Seasonal outlooks, European Resource Adequacy Assessments, Ten Year Network Development Plans and some other internal studies all require climatic information at high spatial and temporal resolution, to assess the effects of climate variability on the European power system. The PECD, being released publicly, is also used by other companies in the energy sector.

So far, the different versions of the PECD have used climate reanalysis (ERA-interim then ERA5). However, both scientific evidence and recent European regulation require that power system adequacy studies should take climate change into account when estimating the future potential of variable renewable resources, such as wind, solar and hydro, and the impact of temperature on electricity demand.

The PECD Task Force was set up in 2020 to propose a new approach with the goal to develop the next version of the database that will take climate change into account. Several options were studied, and a set of requirements and recommendations was formulated, based on both scientific and strategic considerations, and the recent evolution of the climate services offered in Europe [1]. The selected option relies on a partnership with the Copernicus Climate Change Service (C3S). In close collaboration with ENTSO-E, C3S and their contractor are developing the new PECD as part of the enhanced operational services for the energy sector.

We will present the rationale behind the chosen approach and the journey from the initial ideas to the project definition, including the interaction with all the stakeholders. We will also present preliminary results and comparisons of the new database with respect to the previous version. In addition, we will discuss future plans that will lead towards a fully open and flexible database, with a set of applications that can be used by anyone.

1. [1] Dubus, Laurent, David J Brayshaw, Daniel Huertas-Hernando, David Radu, Justin Sharp, William Zappa, and Laurens P Stoop. 'Towards a Future-Proof Climate Database for European Energy System Studies'. *Environmental Research Letters* 17, no. 12 (21 November 2022): 121001.  
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