



Climate data and the energy sector: the ECEM experience

Matteo De Felice (1), Laurent Dubus (2), Sandra Claudel (2), Duc-Huy Khong (2), Thierry Ranchin (3), Lucien Wald (3), Hazel Thornton (4), and Alberto Troccoli (5)

(1) ENEA, Department of Sustainability, Roma, Italy (matteo.defelice@enea.it), (2) EDF, (3) MINES ParisTech, (4) Met Office, (5) University of East Anglia

ECEM is a Copernicus Climate Change Services project focused on the role climate has on the European energy mix (supply/demand).

Climate data is converted into energy variables (energy demand and production for renewable energy sources) at country-level using statistical and physical models. Energy dataset have been gathered from a wide range of sources (e.g. ENTSO-E data and individual countries TSOs' data) to build a common database to be used to analyse the relationship between climate information and the energy sector. For the climate side, ERA-INTERIM reanalysis has been used for the essential climate variables after a bias-correction procedure.

Modelling results reveal the uniqueness of each national power system, underlining the need of a diverse set of modelling methodologies. In fact, both physical and statistical models have been used, calibrated with all the available observed climate and energy data. Results demonstrate the good performance of the climate data as predictors for the target energy variables: cross-validation error for daily national electricity demand is below 2.5% while for RES generation it is commonly below 10%. Furthermore, the work has highlighted the need of high-quality and complete metadata to maximise the impact of the produced data on the targeted user community.