



## The Copernicus Climate Change Service ‘European Climatic Energy Mixes (ECEM)’

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The energy sector is undergoing a major transformation. This transformation in the energy sector is taking place against a variable and changing climate. Given the weather-and climate-dependency of both renewable energy and demand (even in the case of large storage uptake), it is important to develop robust climate-based tools to advise energy planners and policy makers. These must quantitatively assess:

- The ways in which energy supply and demand over Europe are affected by the spatial and temporal variations of their climate drivers; and
- How scenarios with different energy supply mixes can meet demand at the European scale, particularly given the projected high level of highly climate-sensitive renewable energy.

The EU Copernicus Climate Change Service European Climatic Energy Mixes (ECEM) aims to produce, in close collaboration with prospective users, a proof-of-concept climate service, or demonstrator, whose purpose is to enable the energy industry and policy makers to assess how well different energy supply mixes in Europe will meet demand, over different time horizons (from seasonal to long-term decadal planning), focusing on the role climate has on the mixes.

The presentation discusses an assessment of climate variables produced by reanalyses taking various sources of measurements as reference. An assessment of the physical coherence/co-variability between calibrated climate variables, such as between wind speed and solar radiation, is also carried out to achieve an optimal spatial and temporal co-variability, which is critical when attempting to achieve a balanced energy supply.

This work is also important in pointing to the dominant climate drivers influencing overall supply-demand balance at both national and continental scales, such as in the case of winter-time North Atlantic Oscillation, which can have a profound influence on demand and power production.