

# Climate reference system»

## Representation of the effects of climate on the electrical system: modelling Wind and Solar Generation

### Specific modelling work for the conversion of climate data into wind and solar production chronicles

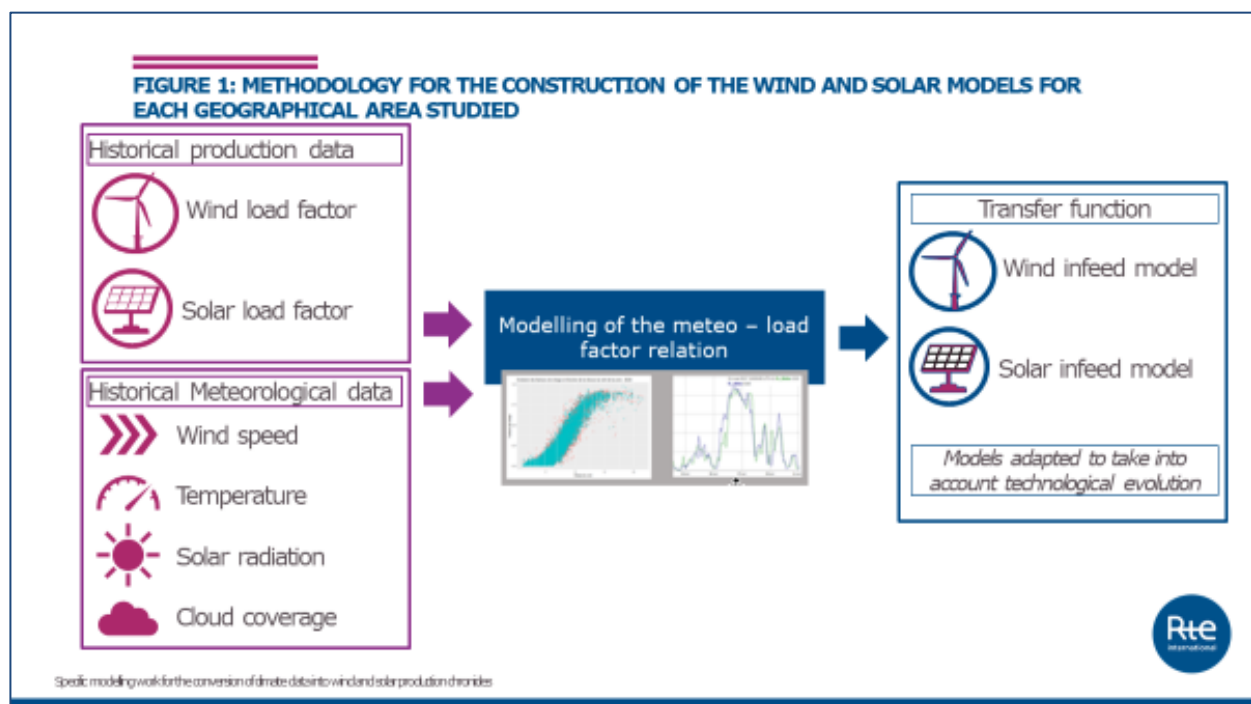
Once the data from the climate reference frame and the installed capacity assumptions have been defined, the second step consists in converting the climate data (temperature, wind, radiation, cloud cover, etc.) into wind and solar production records, based on the construction of "transfer functions". The construction of transfer functions is based on a statistical learning model based on the analysis of the historical behaviour of wind or solar production according to the climatic data obtained.

The historical records for France of renewable generation at all levels of aggregation are available.

For the rest of the countries within the scope of the study, the data are mainly taken from the Transparency Platform.

For neighbouring countries of France, a detailed comparison with different data sources (including network operators) was carried out to guarantee the quality of the historical data used. The climate data come from climate reanalysis models and are available on a fine geographical grid covering Europe.

The calibration of these transfer functions can be differentiated by technology and by production area, provided that a sufficiently representative production history is available.



Once these transfer functions have been built, calibrated, and tested on historical data, they can be applied to climate baseline data projected to 2025 and 2050. This allows to finally obtain the simulated production chronicles on the different climatic reference frames provided by MétéoFrance. These data are then used to simulate the operation of the power system and the supply-demand balance at hourly intervals.

