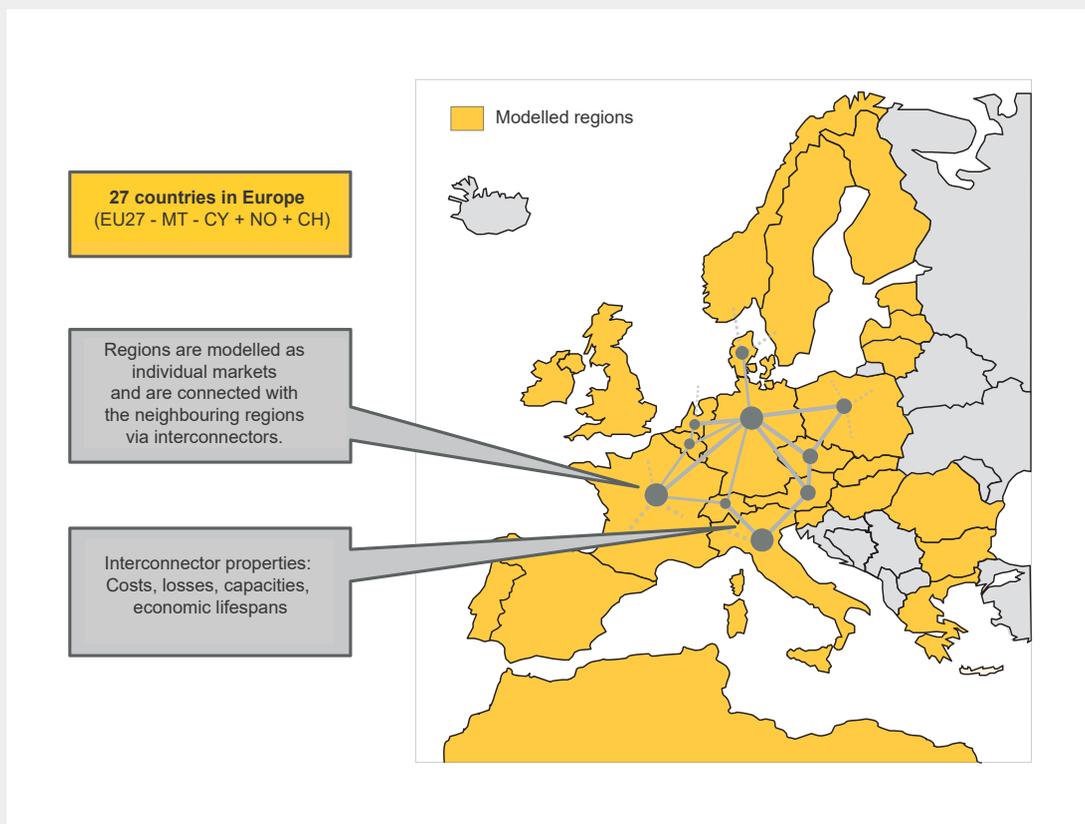


DIMENSION

The model

DIMENSION is a simulation model for the European power markets. The model forecasts the future development of power plants as well as storage capacities. In doing so, the model estimates the cost-minimizing dispatch as well as necessary capacity additions and reductions of various technologies. In particular, the deployment of renewable energy sources is considered within a cost-minimizing framework, taking into account the surrounding political circumstances.

The years to be simulated and the temporal resolution can be freely specified. Currently, DIMENSION covers 27 countries, which for the most part coincide with the EU27. The individual power plants and storage capacities of these countries are characterized in the regularly updated ewi ER&S databank.



In addition to the core DIMENSION model explained above, various modules have also been developed such as the Demand Side Management (DSM) module, combined heat and power module as well as the intraday and balancing energy modules.

An additional module that complements DIMENSION is the simulation of the controlled charging of battery electric vehicles against model-based hourly electricity prices. The power-to-gas module, on the other hand, allows for the coupled analysis of the power, heating and transportation sectors.

Electricity Market Analyses

Possible applications

Price forecasts

DIMENSION provides forecasts for the day-ahead, intraday, and the balancing energy markets as well as network tariffs, EEG levy and other price components.

Asset valuation

DIMENSION acts as an asset valuation and decision support tool regarding investment decisions for assets such as power plants and storage systems.

Strategies for grid expansion and regulation

DIMENSION allows the calculation of optimal grid expansion and its impacts on power markets. Additionally, various congestion management mechanisms, redispatch, zonal pricing as well as nodal pricing can be analyzed.

Middle- to long-term scenario analysis

DIMENSION enables the analysis of the variation in political framework (CO2 trading, support mechanisms for renewables and combined heat and power, ...) for middle- and long-term scenarios.

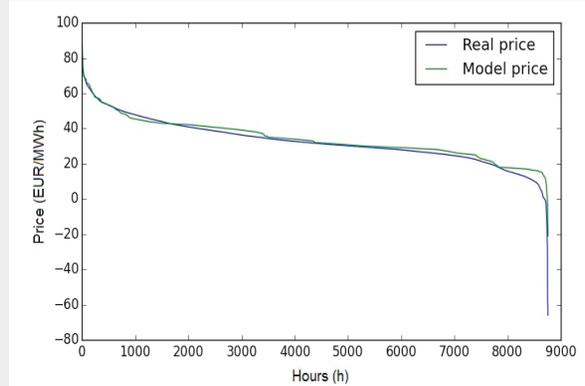


Fig. 1: Price duration curve, Sources: ewi, data from EEX.



Fig. 2: Electricity price development in the long-run. Source: Own diagram

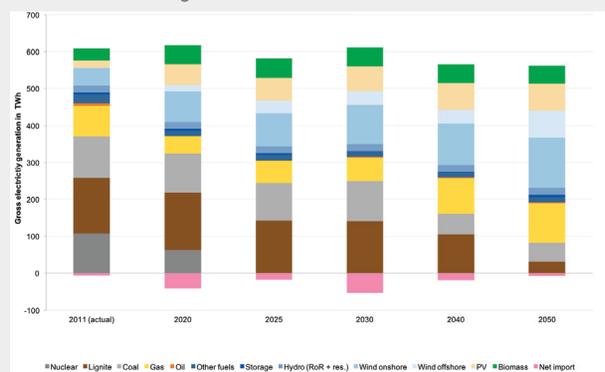


Fig. 3: Gross electricity production in Germany (2011-2050)