

Finance, Regulations, Politics and Market Design

In order to find decisions in finance, regulations, politics including long term strategies for the electricity system and strategic planning on the industrial side, a holistic view on the overall energy system and markets is required at different levels of detail. These include mainly aggregated regional views of:

- power production units (differentiated according to technologies)
- electricity networks (AC/DC)
- weather predictions and renewable feed in
- demand forecasts (industry, trade sector, households)

and in different representations of markets (long term, spot, intraday, balancing) and participants producers (including productions of renewables)

- network operators
- consumers including demand side management
- policy and regulations
- traders and aggregators

The aim of a system modelling approach is to investigate the development of the system with respect to different time levels and corresponding questions.

Strategic (10-50 years):

On the strategic side problems of interest are:

for policy makers

- development of long term pathways to energy transition
- defining long term targets of the electricity system depending on e.g. climate, emission and renewable targets
- sensitivity analysis and system security aspects
- investigations of different policy designs on their impact on the system

for producers

- the perspective of long term market and general technology development
- the effects of support schemes on the profitability of (renewable) production
- the influence of political regulations and targets on the energy system
- long term strategic portfolio effects

Tactical (1-10 years):

for policy makers and regulators:

- system security and reserve capacities

for producers

- influence of regulations and market rules on dispatch
- influence on the political debate and market design issues

for traders and industries

- medium term portfolio effects including long term bilateral contracts

Operational:

network operators and regulators:

- influence of balancing of uncertainties in renewable feed-in and demand

producers:

- predictions of market development and revenues depending on weather and demand forecasts
- support of optimal dispatch decisions
- assessment of uncertainties and risks

marketeters

Contributors:

Prof. Christoph Helmberg, TU Chemnitz