Methodology Market modelling

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Market modelling methodology: The EMPS modelling tool

The EMPS market model is used in RGBS to analyse demand, production and exchanges in the modelled area.

The EMPS is well-tested and used for long-term planning in a number of the regional TSO's. It has e.g. been used in

- Multi-regional planning project to look at specific projects connecting the Baltic countries more strongly to Poland and the Nordic area.

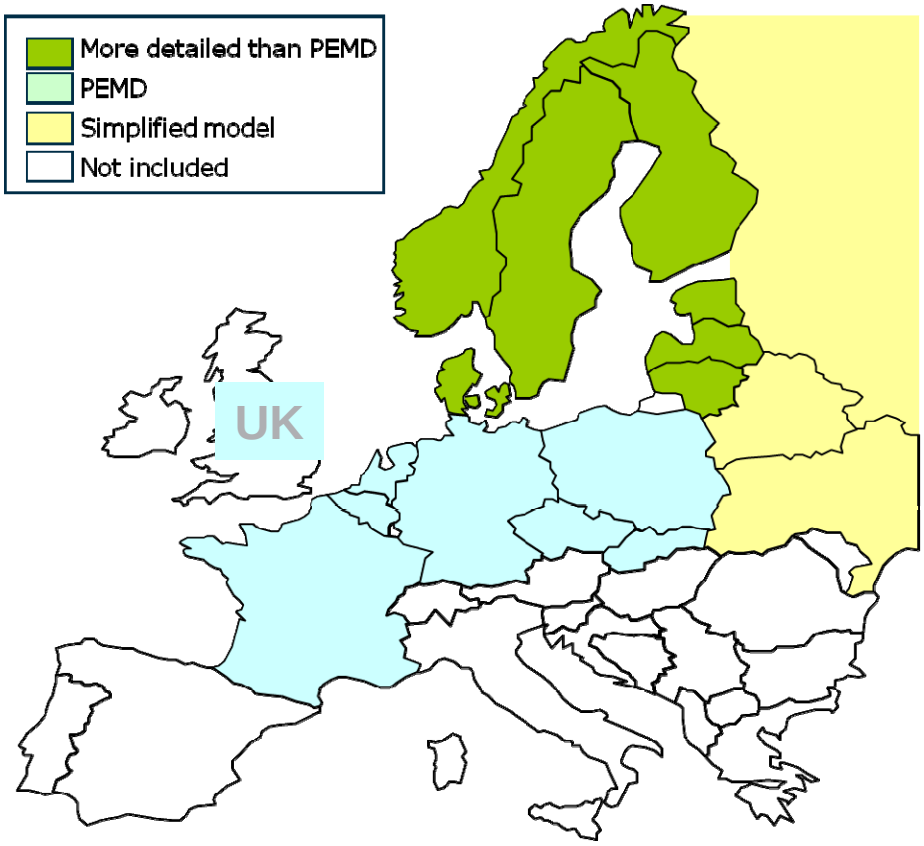
- Nordic Grid Master Plan to identify needs in the Nordic system

Market modelling methodology: Modelled areas in Baltic Sea region

Modelling is based on data for the ENTSO-E scenarios (B and EU2020) which is collected through the pan-European market database (PEMD)

Some specific comments about the modelling:

- Perimeter import to Poland modeled by reducing the consumption
- North-West Russia modeled as two areas. Kaliningrad assumed to be balanced



Market modelling methodology: Screening process with market modelling

Aim of the screening process is to

- investigate the new scenarios
- assess needs in the 2020 scenarios
    - e.g. identify potential projects (for future analysis)

Data:

Scenarios: EU2020 & B

Two different situations of net transfer capacities

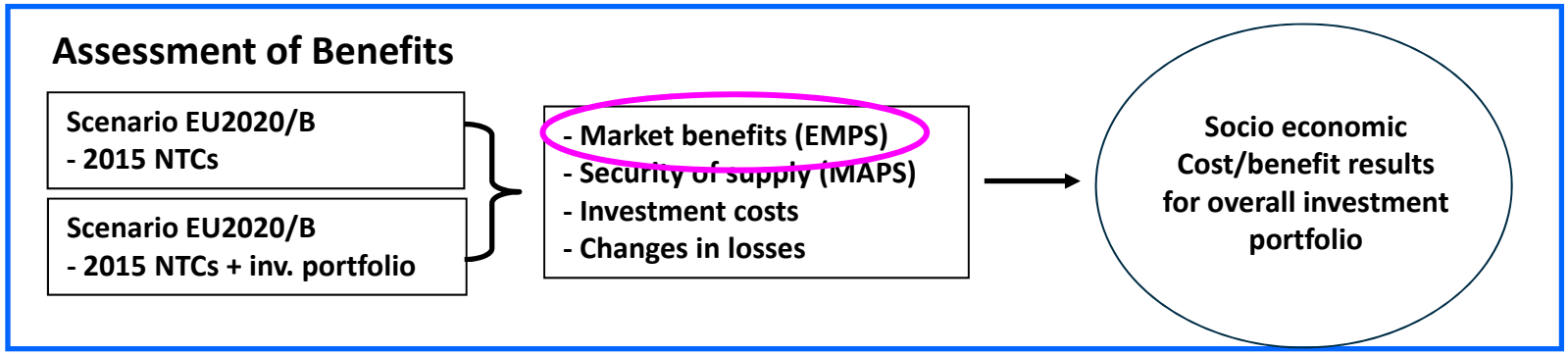
- NTC's for 2015 (Reference)
- NTC's for 2020 (Reference + expected projects 2015-2020)

Parameters used in screening proces

- Marginal benefits
- Duration curves
- Congestion rent
- Congestion hours
- …

Market modelling methodology: Social-economic benefit calculated with market model

Main focus of study



Benefits calculated for EU2020 and B2020 with the 2015 grid and 2020 grid

<u>Benefit of the portfolio of projects</u>

- Difference of absolute socioeconomic benefits between reference grid and reference grid plus package

Absolute socioeconomic benefit

- Annual benefit over simulated hydrological years
- Consists of benefits allocated for producers, consumers and TSOs
- Benefit from RGBS countries/all areas modeled included

Model-based assessment of Security of Supply (power adequacy)

Regional group Baltic Sea is planning to perform a model-based assessment of the ability the network and production system to meet the demand.

The tool (MAPS-model) has previously been used in Nordel for similar assessements.

The results will be given e.g. in loss-of-load-probability (LOLP)

The TYNDP scenarios will be investigated in different situations.

Ideas for discussion – other topics are welcome

- RGBS would like to also study sensitivity cases (specific variations of the scenarios). Ideas for sensitivity cases are welcome
- Comments on the market modelling tools?
- There are discussions in ENTSO-E about the definition of socio-economic benefit. Any messages you would like to send?
- Comments on the portfolio concept?