The challenge for congestion management – reporting on TradeWind insights

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TradeWind objective and scope

- Objective:

  Formulate recommendations on market rules and new interconnections to accomodate 300 GW wind capacity in 2030 (incl. 120 GW offshore): 30% of electricity demand

- Scope: EU-27 (incl. UCTE, Nordel, GB, Ireland)

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Transmission congestions are analysed on an hourly bases

- Approach: Hourly Optimal Power Flow (OPF) calculations for a full year
  - perfect market conditions - cheapest generation dispatched first
  - No inter-temporal constraints
- Modeling difficulties with large system → aggregation
- NTC values (winter 2007-2008) used to define cross-country used throughout study
- Internal line constraints accounted for only in Germany and Austria

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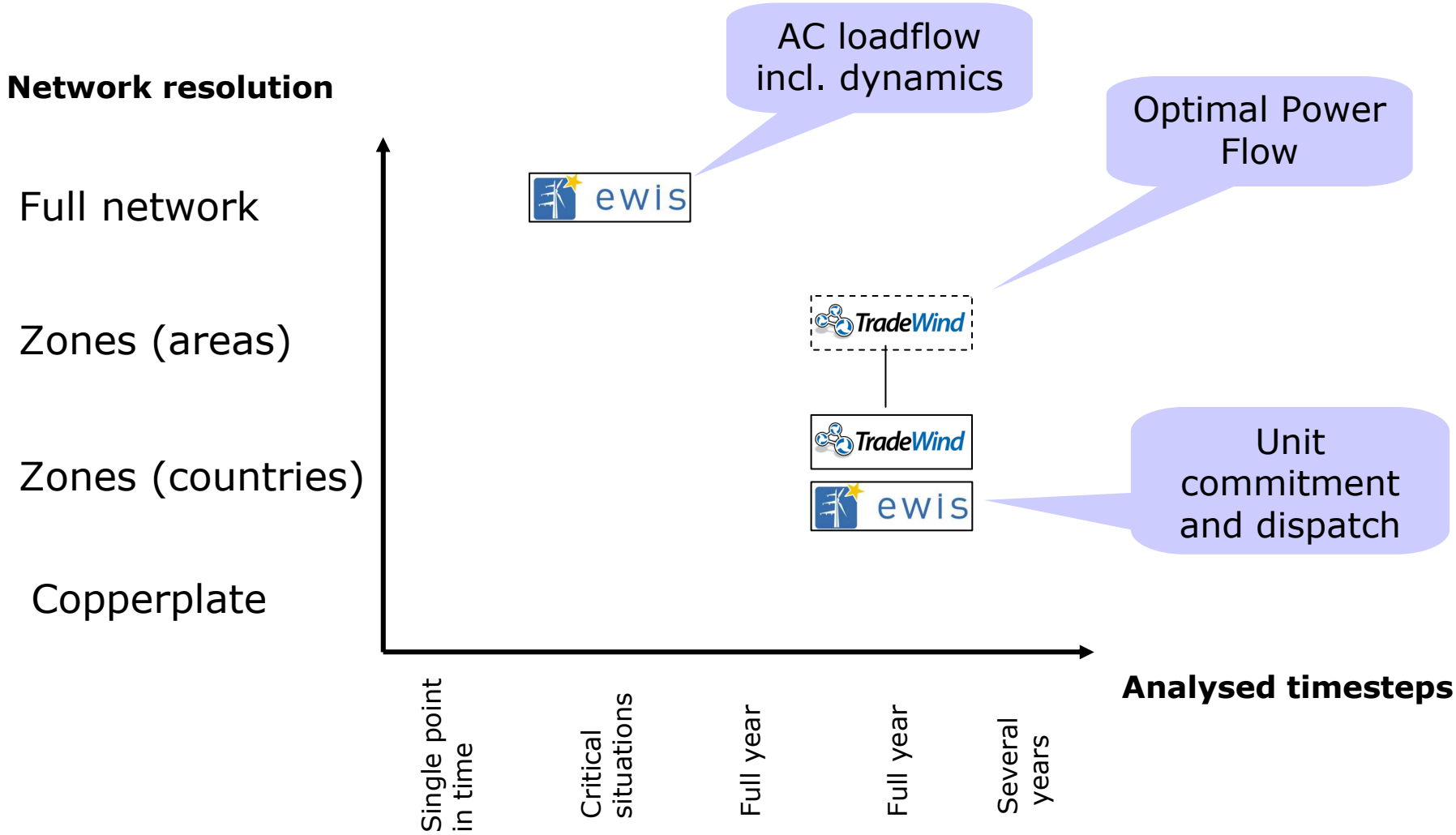
A link was established between the TradeWind and the EWIS project

Wind scenarios for 2015

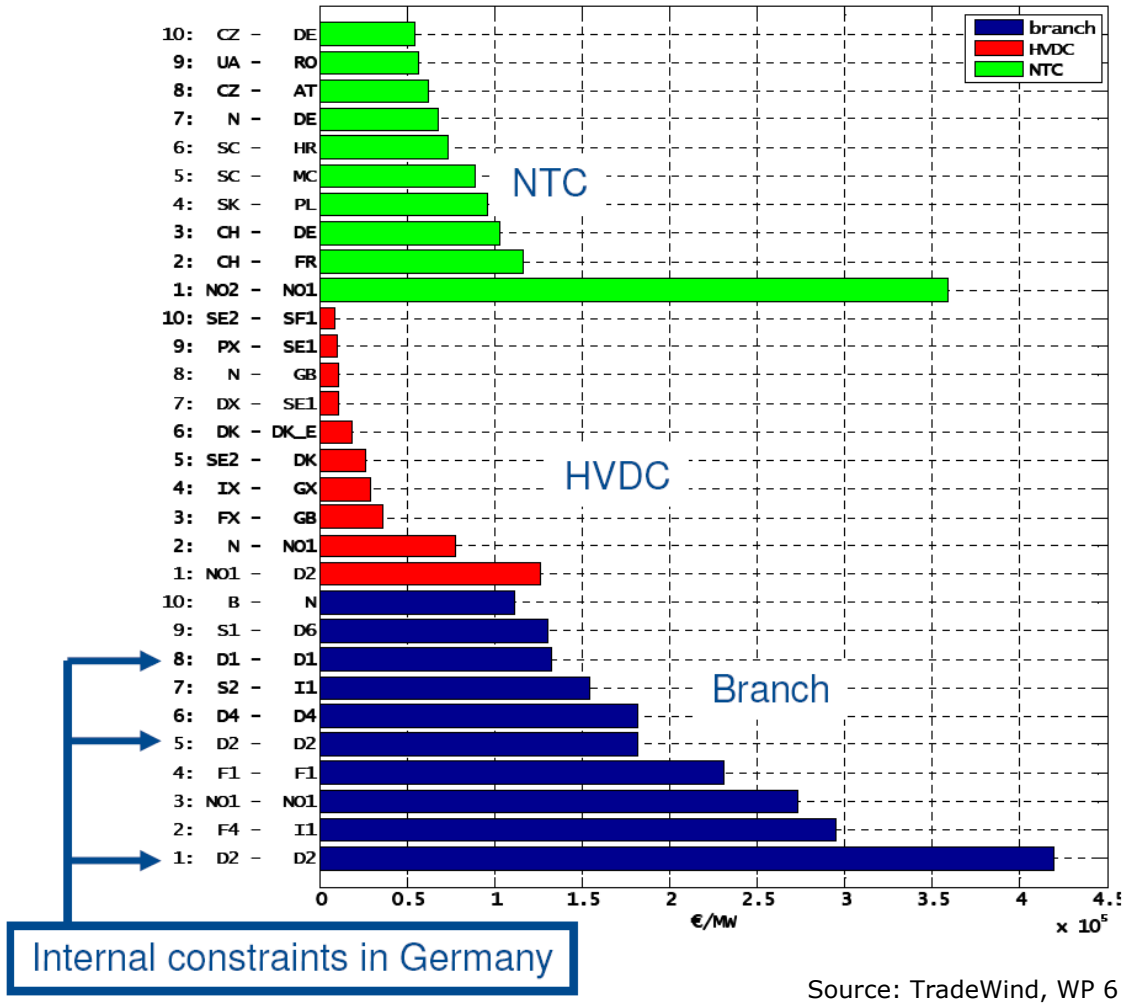
UCTE study „model“

Spatial and time resolution of EWIS and TradeWind



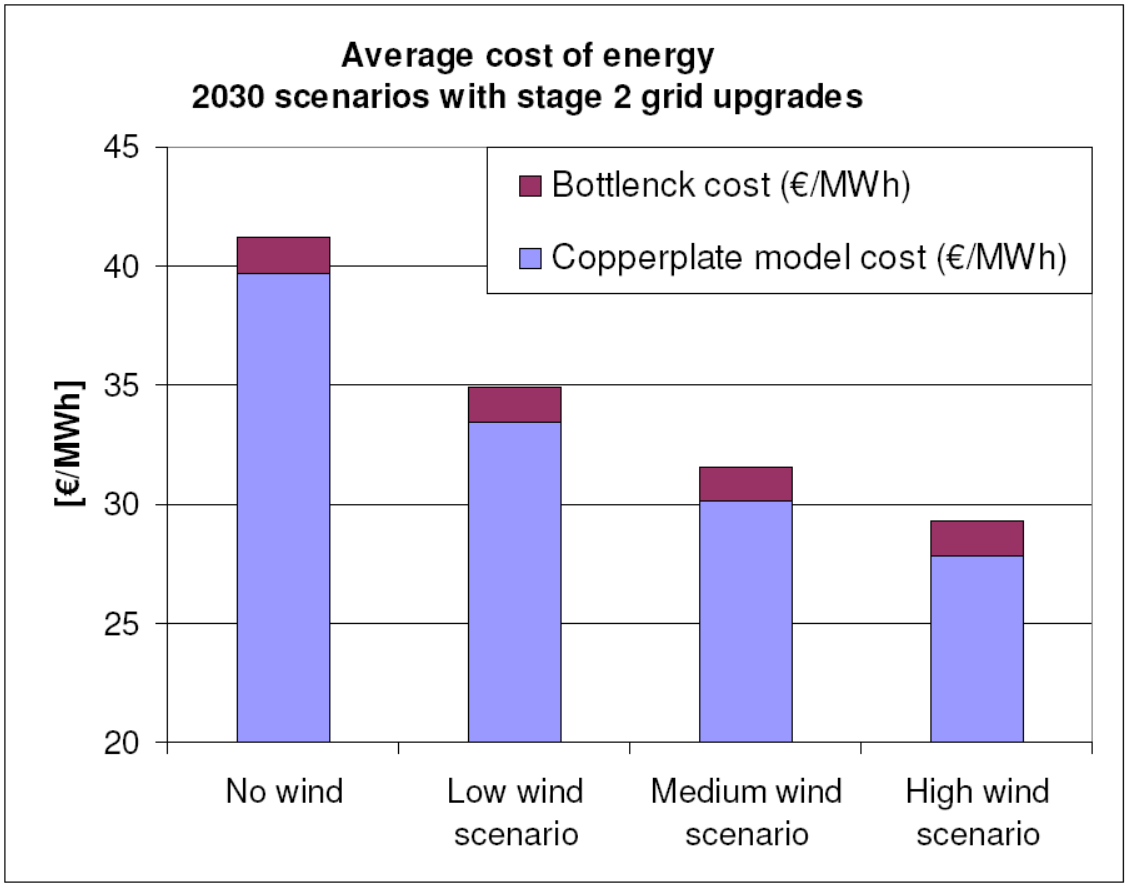
The transmission constraines were analysed with respect to their economic sensitivity

Sensitivity:
Change of operational cost as a result of incremental change in transmission capacity



Source: TradeWind, WP 6

Bottleneck costs show differences in operational cost induced caused by of limited transmission capacities



Source: TradeWind, WP 6

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Conclusions

- Internal congestions tend to have have high sensitivities
- Availability of high quality data sources (transmission and generation) is crucial for succesful modeling
- Minimum year round simulations are required for appropriate economic assessment of transmission
- In the 2030 scenario 42 identified transmission projects break even at an average of 475 Million € investment cost[1]
- A rough analysis reveals that a North sea offshore grid has overall positive economic effects.[1]

1) Analysis based on operational cost analysis

Contact and further information

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TradeWind reports and papers can be downloaded at: www.trade-wind.eu