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European Wind Integration Study (EWIS) Towards a Successful Integration of Wind Power into European Electricity Grids

EWIS Concluding Discussion
13th April 2010, Brussels

Introduction and EWIS overview
Dr. Wilhelm Winter – EWIS Project Manager

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Introduction

- Meeting EU renewable targets:
  - For this, the large-scale integration of wind energy is essential
- European electricity transmission networks developments
  - provide the route for the efficient transport of wind power from turbines to consumers
  - provide the means for efficiently managing wind variability by harnessing diversity and backup energy sources
- The EWIS project together with TradeWind is the first reference study on European level for wind power integration, initiated in 2007 by the European Transmission System Operators in collaboration with stakeholders to address the best way to progress
  - In particular, build upon the good work done by EWEA TradeWind

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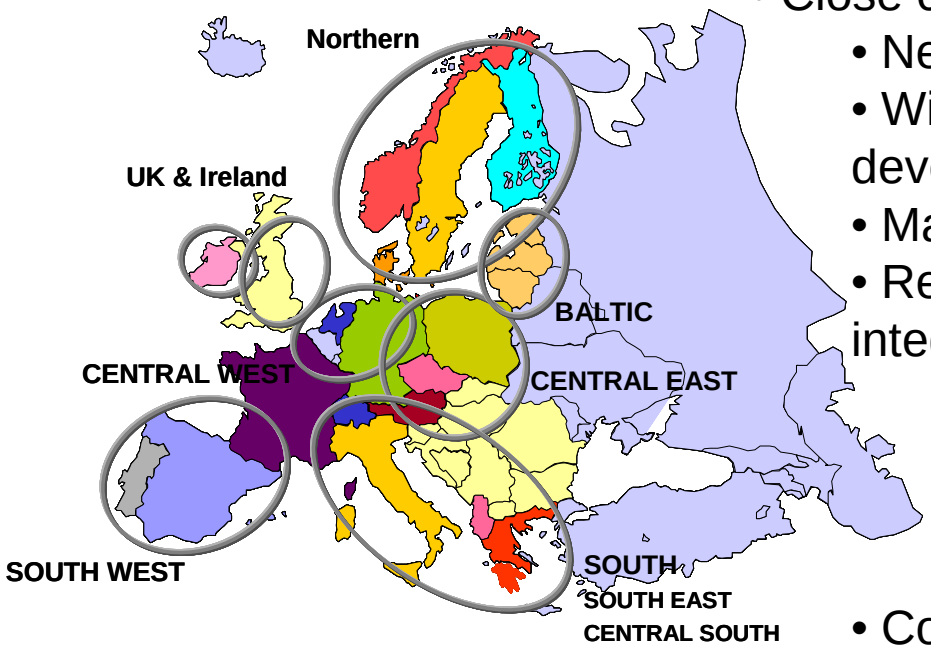
A Reference Study on European Level



- An EC SmartGrids project (FP6)
- Close cooperation with external stakeholders
  - Network operators (TSOs and DSOs)
  - Wind power producers and wind turbine developers
  - Market participants
  - Relevant studies and working groups on Wind integration
    - TradeWind, IEA-Task 25, Greenpeace study, EC Working group for Offshore/ onshore grid development, EWEA WG Grid Codes, PLEF, Wind on the grid …
  - Consumers
  - Regulatory representatives
  - National Governments and authorities…

accepted and supported by major European players…

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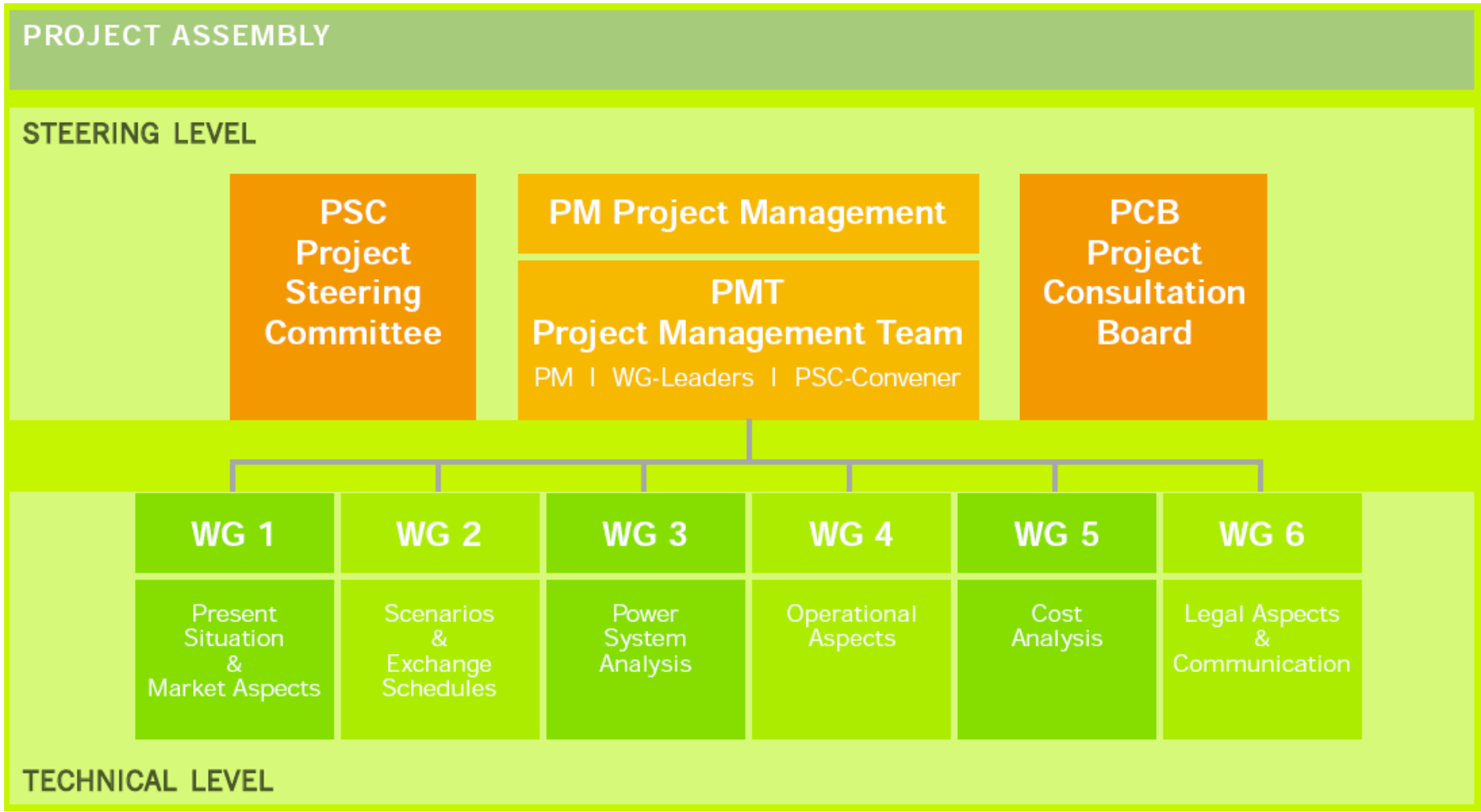
Project Organisation



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EWIS Final Report Cornerstones

EWIS achieved important results for the integration of wind power in grid systems and for power network reliability based on the technical work finalized as scheduled on 15th of October 2009

- ***Approach***: High Potential Market Model Partner
  - sustainable scenario approach based on year round and point in time
  - Challenge - Coupling between grid calculations – market calculations
- ***Grid security, capability and flexibility***
  - Candidate reinforcement measures as an input to TYNDP
  - Pilot for flexible line management to enhance the existing grid
- ***Operational Findings***
- ***Harmonized requirements on European Level***
- ***Quantification of costs & benefits***
  - EWIS studies identify wide range of integration costs for different locations
- ***EWIS beyond 2015 results*** as a starting point for detailed investigations of sustainable offshore grid infrastructure and offshore windpark cluster concepts e.g. for the time horizon 2020/2025

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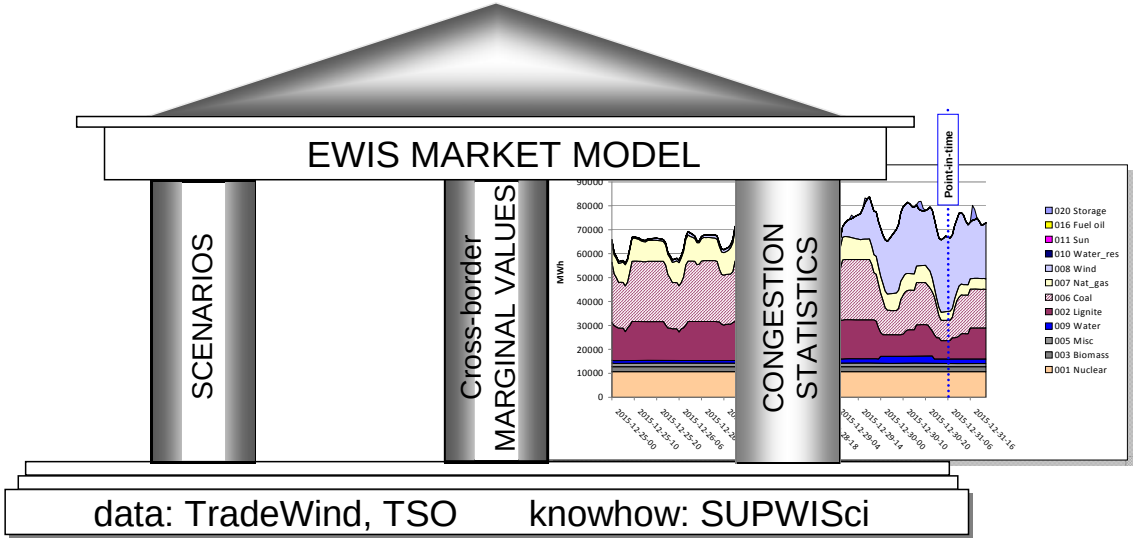
European Wide EWIS Market Model



- The EWIS study is the first time that a year-round market analysis has been coupled with detailed representations of the networks

- The results from EWIS are relevant to prioritizing the reinforcement of network pinch-points and identifying beneficial additional measures to those already identified in National plans

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Grid Security, Capability and Flexibility

- EWIS investigations found a significant potential for reducing congestion and maximising the use of existing transmission capacity
- Need to strengthen the existing grid with new grid infrastructure to maintain the existing level of system security
- The short term measures and candidate additional reinforcements identified by EWIS have been notified to the respective TSOs for further development and provided to ENTSO-E for inclusion into the ENTSO-E TYNDP

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Operational Findings

- While measures to strengthen transmission networks are being progressed in national development plans, EWIS assessments have also identified significant reliability and efficiency benefits that need to be achieved by enhancing operational arrangements
- Good experiences are already gained from inter TSO coordination such as coreso, CECRE, TSC, SEM, NOIS etc

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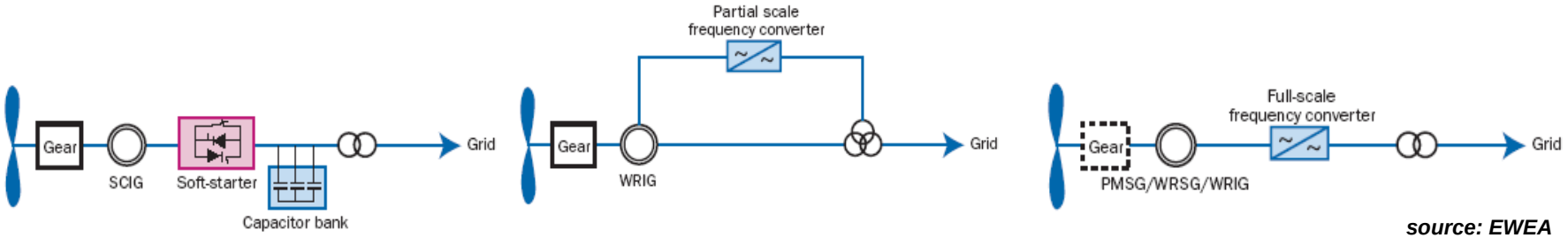
Harmonized Requirements for Wind Turbines on European Level



source: EWEA

  - EWIS technical analysis identified the need for Europeanwide and specific recognition of local issues

- EWIS has sought and obtained ENTSO-E agreement that Network Code work should progress as pilot. EWIS has provided basic inputs for the European Network Code development which are taken and have been further developed by ENTSO-E

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Quantification of Costs and Benefits

- EWIS developed a pan-European market model in order to improve power system economics to consider the present and the future development of wind support mechanisms and/or network access rules by year round simulations
- EWIS studies identified wide range of integration costs for different location

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Offshore Grids (Outlook)

- Need for standards and a secure well coordinated approach considering all offshore onshore perspectives
- EWIS beyond 2015 results as a starting point for detailed investigations of sustainable offshore grid infrastructure and offshore windpark cluster concepts e.g. for the time horizon 2020/2025.

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EWIS Concluding Discussion Topics

Detailed Presentations on …

Market model & EWIS scenarios

Network strengthening findings

Operational findings

Quantification of costs & benefits

Policy findings and recommendations

Thank You For Your Attention
EWIS Team