

EWIS

European Wind Integration Study

ATSOI

UKTSOA

Why do we need an European grid study on RES integration?

- EU set ambitious CO2 targets
- RES targets are set accordingly as cornerstone
- Wind power has highest growth potential of all RES
- Present situation of RES in some regions already affects neighbouring countries
- Impact on (short term/real time) security of supply and crossborder trading capacities
- Up to now only investigations on national level, no common reference study on European level

EWIS planning of organisational framework

- a reference study on European level
- broadly accepted and supported by major players in business and politics

- Stakeholders
 - EU commission
 - Regulators
 - Wind association (EWEA)
 - Industry/Grid users (Eurelectric)
 - Scientific associations (expertise)

Phenomenon's

- Concentration of wind power in different regions within Europe is already producing huge load flows through neighbouring transmission systems
 - Overloads of neighbouring transmission- and interconnection lines
 - Loop flows between different countries in case of high wind penetration
- Upstream power flows from lower network levels to the transmission network
- Effect of high RES penetration to the regional/national power markets
- Indication of decreasing overall security of supply in the European interconnected power system
- Short time licensing procedures for wind capacity v long time procedures for transmission grids enlargement

Questions to be answered by the joint grid study

- Impact on cross-boarder electricity transits
- Is a harmonisation of adopted connection requirements and regulatory provisions necessary in order to maintain frequency and voltage stability? E.g:
 - Wind power generation reduction in case of over frequency or critical grid situations
 - Which requirements are needed to ensure voltage and frequency stability
 - Different national subsidy RES schemes
- Is the future secure operation of the transmission system possible in case of large scaled wind power in feed?

Objectives of the Study (EWIS)

To seek proposals for a generic and harmonized European wide approach towards wind energy issues addressing:

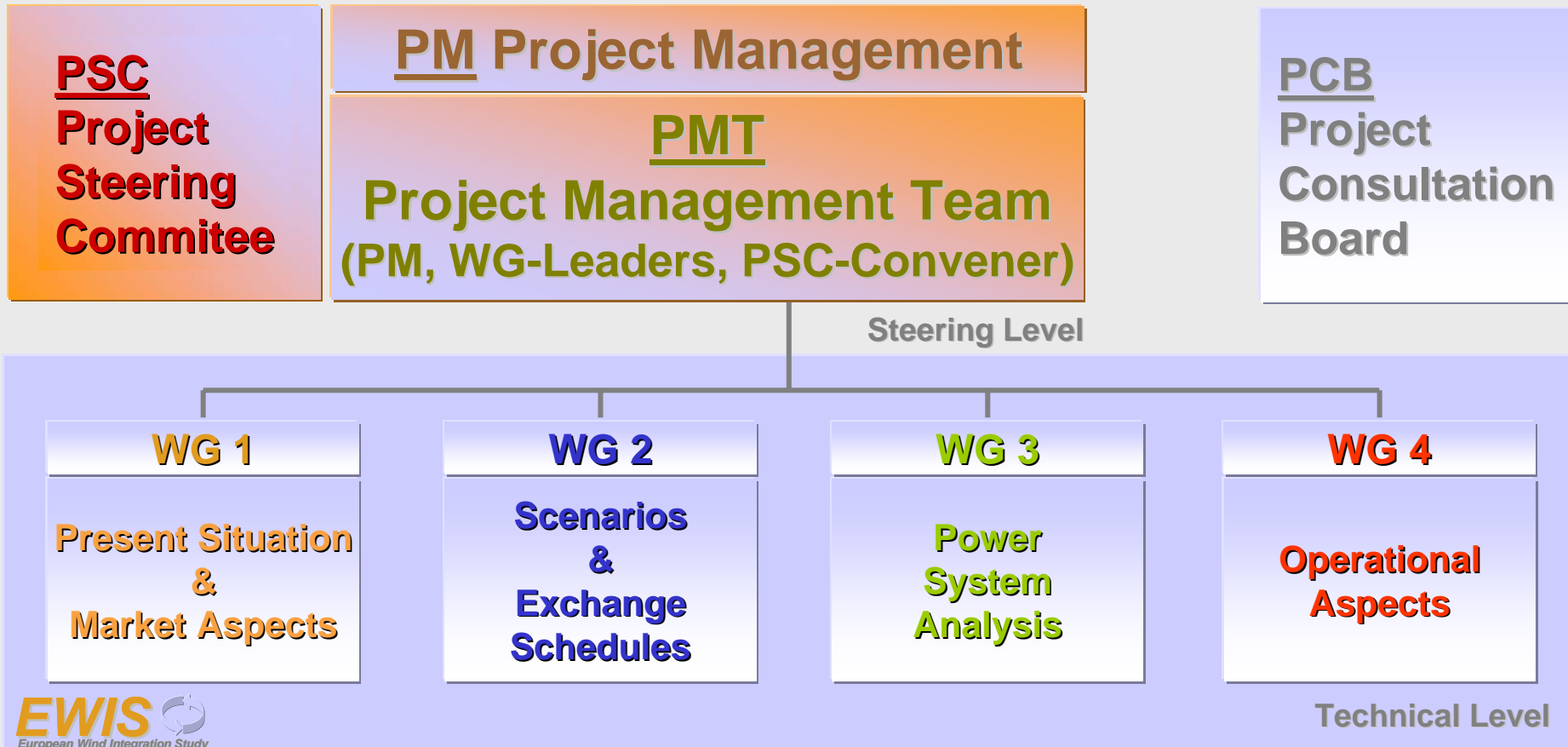
- operational/technical aspects including grid connection codes,
- market organizational models and procedures
- regulatory/market-related requirements,
- common public interest issues and even some political aspects impacting the integration of wind energy

General Project Organisation



Pre-phase project Organisation

for the preparation of the general project



Pre-Phase Deliverables

(Time Horizon 2008)

WG 1

Present Situation & Market Aspects

- Wind Development in Europe until 2008
 - Distribution of the Wind power production in EU
- Exchange with neighbouring Countries
- Generation Units 2008
- Regulatory Framework Models
- Grid Connection Requirements
- Power system Operation

WG 2

Scenarios & Exchange Schedules

- *Methodology of Scenario setting*
 - *Scenario A*
 - *High Load*
 - *Low Load*
 - *Scenario B*
 - *High Load*
 - *Low Load*
- Set up scenarios for the regional wind power infeed and conventional generation as snapshots.*
- Exchange schedules between control areas will be established.*

WG 3

Power System Analysis

- Methodology of investigations
 - Risk Analysis
 - Congestions
 - n-1 Analysis
 - Risk Mitigation
 - Grid re-inforcements
 - Reactive Power Compensation
 - Pan European Aspects
- Investigations in all four synchronous areas

WG 4

Operational Aspects

- Analysis of Risks, Tasks and incentives of market actors
- Risks in case of large wind penetration concerning system security and generation adequacy
- Analysis of risk management and risk mitigation
- Countermeasures
- Recommendation and compilation of the results

Scope of Work General Project Outlook

Investigations for the time horizon until the **year of 2015**

- realistic scenario setting
- security of supply aspects
 - impacts on power system stability
 - damping of inter-area oscillations
- impacts on transmission networks in particular cross-border lines and impacts on neighbouring countries
 - Grid reinforcement
 - congestion management (allocation of capacity)
 - Security management
- Cost Analysis
 - economical investigations
 - Efficient investments
- Legal Aspects & Communication