ewis european wind integration study

ewis – european wind integration study a reference study on european level

European Wind Energy Study (EWIS) is an initiative of 15 European electricity transmission system operators. The final objective of EWIS is to set up a model for the integration of capacities of renewable energy sources on a large scale, and more specifically wind power within Europe. On the short term (2008) the study aims at bringing solutions for an easier integration of wind mills in the European synchronous power systems. For the longer term the goal is bringing common pan-European recommendations in order to facilitate integration of wind power at a larger scale.

The support of renewable energy sources is one of the key issues in European energy policy. One of the most relevant milestones was established in September 2001 with the adoption of the Directive on the promotion of electricity produced from renewable energy sources in the Internal Electricity Market (RES Directive). Included in this Directive are indicative targets, which have resulted in the distribution of the global EU goal (22% renewable electricity supply in 2010) over the individual Member States, as well as the recommendation to Member States to take appropriate measures to achieve them.

In order to cope with this challenge, European Transmission System Operators (TSOs) started to launch a European wide grid study on the integration of wind power need to be taken by legislators, regulators, grid operators and grid users aiming at establishing a harmonised set of rules for the integration of wind power. This set of rules for the operation of the electricity networks in presence of variable generation is vital for guaranteeing the security of the electricity networks. The scope of work covers all the technical, operational and market aspects related to the integration of large scale wind power all over Europe.

The attention will be focused on the system interaction of various wind turbines types, the effects on the system of variable power output and their ability to provide system service to enable the steady operation of an electricity grid. The final objective is to obtain the necessary information for the technical and operational countermeasures for risk mitigation and the secure operation of the European electricity grid founded on the investigations on a dynamic electricity grid model which is established within the study. For this market and regulatory aspects will be taken into consideration. RES targets are set accordingly as cornerstone. Nevertheless, wind energy is the relevant renewable energy source with the highest growth of all RES.

On 15th of June 2007 the EWIS study was started with the funding undertaking under the Framework Program of the Directorate-General for Transport & Energy of the European Commission. The project itself is an important part in the context of the European wide integration of wind power.

Extended steady state and stability investigations in all synchronous areas (ATSOI, NORDEL, UKTSOA, UCTE) will be performed for the installed wind capacities in Europe up to 2008/2015 based on common European wide scenarios. The analysis of the present situation in some regions signals that security of supply and cross border trading capacities in neighbouring countries are already affected. The conclusions for the present status can be resumed as follows:

- Concentration of wind power in different regions within Europe is already producing large load flows through domestic and neighbouring transmission grids and interconnections. These loop flows can result in overloads of neighbouring transmission and interconnection lines.
- Effect of high RES penetration is requiring rescheduling actions in national power plant pools.
- Market barriers due to the integration of wind power.

Based on different scenarios, necessary requirements for the further increase of wind capacities in national/regional generation mix from the point of view of system reliability, the measures to extend any limits and the costs of such measures are analysed. Interactions between operational/technical/ technological constraints, market designs and energy policies for all synchronous areas in Europe will be analysed. Consequences for the existing, medium and long term problems related to the integration of wind power will be discussed. The final results comprise stability impacts for the time horizon of 2015 and give recommendations for requirements for wind turbines which necessarily should be harmonised for a successful integration of wind power into European electricity grids.

The Consortium responsible for the project consists on 15 transmission system operators from 13 countries:

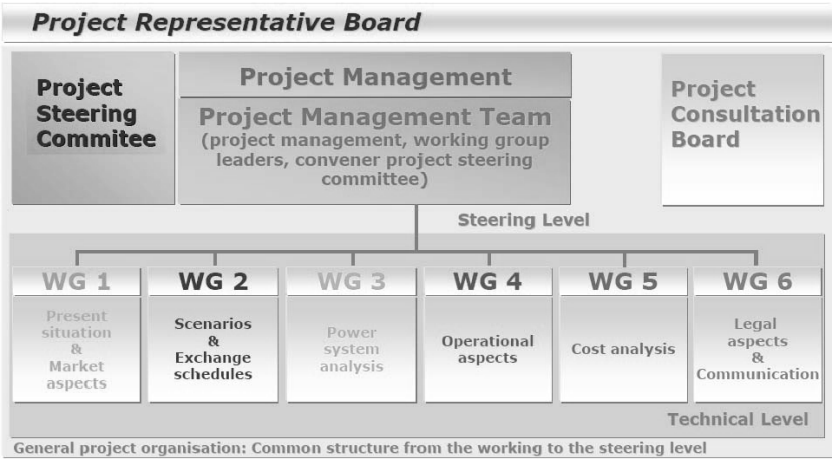
Elia System Operator, RTE EDF TRANSPORT SA and TenneT TSO BV: the Belgian, French and Dutch TSO at the heart of power flows from northern to southern Europe,

Energinet.dk, E.ON Netz GmbH, RWE Transportnetz Strom GmbH, Vattenfall Europe Transmission GmbH, Hellenic Transmission System Operator, Red Eléctrica de España, and **Rede Eléctrica Nacionalis**: the Danish, German, Greek, Spanish and Portuguese Transmission System Operators that face today massive wind penetration and management of power flow induced by wind power plant,

ČEPS a.s., PSE-Operator S.A and **Verbund - Austrian Power Grid AG**: the Czech, the Polish and the main Austrian TSO who are at the interface between Central and Western Europe,

National Grid Electricity Transmission and **EirGrid plc**: the TSOs representing the synchronous areas of the UK and of Ireland, and facing a massive wind penetration in their grid.

Energinet.dk is also representing the synchronous area of the Nordic countries.



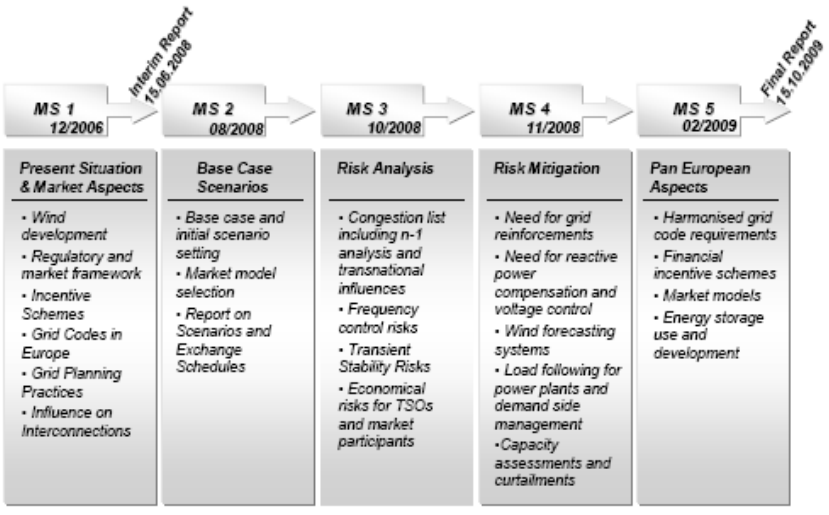
General project organisation: Common structure from the working to the steering level

On the technical level six working groups deal with the subtasks present status and market aspects, scenarios and exchange schedules, steady state analysis, system dynamics, operational aspects, cost analysis for the integration of wind power, legal aspects and communication.

The following external stakeholders with relevant experience on wind power integration are invited on a non-discriminatory basis to join a Project Consultation Board:

- Directorate-General for Transport & Energy - DG TREN
- Directorate-General for Environment - DG ENV
- European Wind Energy Association – EWEA
- TradeWind project
- European Federation of Energy Traders – EFET
- Industrial Federation of Industrial Energy Consumers – IFIEC
- Union of the Electricity Industry – Eurelectric
- Council of European Energy Regulators – CEER
- European Energy Institute
- European Parliament Committee Industry, Research and Energy
- International Energy Agency - IEA

The total project duration of 28 month – until October 2009 – is globally divided into several main phases such as collection of data and information, selection of relevant scenarios based on market aspects, analysis of risks, mitigation of risks and pan European aspects.



The first interim report of the project was published in June 2008. The final report will be available in October 2009.

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