



EWEA

THE EUROPEAN WIND ENERGY ASSOCIATION

EWEA response on the consultation on the ENTSO-E Research and Development plan EUROGRID 2020

EWEA response on the ENTSO-E R&D Plan EUROGRID 2020

EWEA welcomes the ENTSO-E document «Research and development plan - EUROGRID 2020» as a significant step forward in implementing the third liberalization package. The proposed R&D programme contains key elements for the integration of large quantities of renewable electricity in the European system by 2020, particularly wind power, and is therefore also key for the implementation of the renewable Energy Directive (2009/28).

EWEA believes that in addition to facilitating the 2020 European system, the proposed R&D programme must form the basis for the *transformation* of the present European power system into a 2050 renewable-based power system.

The ENTSO-E R&D plan proposes to create strong synergies with the relevant energy sectors in the framework of the SET-Plan. The wind sector welcomes this invitation. On its side, the European Wind Industrial Initiative also stresses the need for strong coordination with the TSOs.

EWEA stresses the need for an adequate level of coordination between the European Grid Industrial Initiative and the European Wind Industrial Initiative given the involvement of the European Wind Industry in the R&D process.

As a technology accelerator, the SET-Plan requires the selected technologies to perform beyond business-as-usual. In this framework, the European Wind Industrial Initiative, with a budget of €6 billion over the next 10 years, sets ambitious targets for the development of the wind energy sector. The European Wind Industrial Initiative foresees a high penetration of wind in the electricity system: 20% in 2020, 33% in 2030 and up to 50% in 2050, with fully competitive wind electricity on the electricity markets – onshore in 2020 and offshore in 2030. These ambitious objectives raise high expectations regarding the development of Europe's electricity infrastructure, system operation and market integration. It also puts constraints on European wind manufacturers to provide products adapted to the future network requirements at wind turbine and wind farm level.

As a follow-up to the publication of the European Commission Communication on Financing the Development of Low Carbon Technologies, the European Commission required from the wind sector a 2010-2012 implementation plan providing key actions, budgets and performances indicators.

For this first period, the focus of the European Wind Initiative in the grid integration area is to *“provide the necessary basis for the transformation of the present European power systems with substantial amounts of mainly onshore wind energy into the future pan-European power system with massive amounts of onshore and offshore wind energy, and other renewable sources”*. The roadmap towards a successful transformation of the power system includes R&D and demonstrations within the following priorities:

- Grid connection and power transmission;
- Secure and stable system dynamics;
- Balancing and market operation.

For the period 2010-2012, a set of key activities are launched under these priorities, to ensure the compatibility of HVDC VSC technologies on the market, the development of Virtual Power Plant providing equivalent services to conventional power plants, and creating the tools and market conditions for an integration of large amounts of variable electricity supply. The two

major European initiatives, the FP7 project TWENTIES and specific European Energy Program for Recovery (EERP) activities were considered in this analysis.

In the following section the 2010-2012 activities for the launch of the European Wind Industrial Initiative are presented, and synergies exist with the ENTSO-E R&D plan work programme proposal.

Overall, the ENTSO-E R&D project proposals (*Annex 1 of the ENTSO-E R&D plan*) are compatible with the recommendations of the Wind Industry priority activities for the 2010-2012 period.

European Wind Industrial Initiative: Grid connection and power transmission, activities starting in the period 2010-2012

One expected result from the EERP initiative is an extension of the planned Kriegers Flak (€ 150 m) projects from individual national grid connections to a combined solution including interconnections between the countries involved. This demonstrator is included in the wind implementation plan, and is recognized as a key step forward to the implementation of the future offshore grid.

The main expected results from the TWENTIES project on power transmission is investigations and demonstrations of options for more flexible HVAC transmission grids. TWENTIES also deals with HVDC grids, with focus on demonstration of critical building blocks for dynamic security and protection. The results of the TWENTIES project are duly mentioned by the implementation plan, and complemented by specific activities to be launched in the 2010-2012 period.

As mentioned by the ENTSO-E R&D programme p. 20 *“HVDC appears to be the appropriate technology to interconnect offshore wind farms and link them to the AC mainland grid”*. The wind industry agrees with this statement, which raises strong technical concerns. Therefore, to prepare the large-scale deployment of offshore wind in the near term, the European Wind Initiative focuses on a critical aspect for the development of large meshed DC grids, especially offshore and with the North Sea as the most challenging case. In this area, it is required to improve and verify the technology for this application at large scale. A special source of concern is compatibility of DC network components from different suppliers, which will hinder the stepwise modular development of the future European electricity system. This activity has to start at short notice, to ensure free and fair competition between suppliers before large scale DC grid development is launched.

In this area, the EERP project HVDC Hub (€ 74 m) (Shetland – Scotland) contributes to the activity, since it demonstrates a multiple connection platform using HVDC VSC technology. This project, though, does not primarily address the compatibility between components of different suppliers. The Cobra Cable (HVDC connection between Netherlands and Denmark) also contributes to this activity as it includes a study on how this cable can accommodate the future connection of wind farms that will be installed in the area of the planned cable route. These EERP activities were duly included in the budget calculations for this component.

This activity is also related to the 2nd cluster of the proposed ENTSO-E R&D plan¹, *“Demonstration of technology to make the transmission system more flexible, intelligent and secure”* and supports project abstract 6.4 *“Demonstrations of power technology for novel network architecture”*.

¹ ENTSO-E, 2010. Public consultation document *« Research and development plan EUROGRID 2020”*. Available at: http://www.entsoe.eu/fileadmin/user_upload/_library/consultations/Open_Consultations/RandD_Plan/100111_ENTSOE_RD_Plan_consultation_final.pdf

Under this priority, and although falling beyond the scope of the European Wind Initiative, EWEA welcomes project abstracts 6.1 “A toolbox allowing new network architecture assessment in the pan-european transmission system” and 6.2 “Advanced tools to analyse the pan-european network expansion options according to energy scenarios for Europe”. For the latter, EWEA stresses the need to consider ambitious scenarios for the development of renewable energy sources, reflecting the need for Europe’s electricity supply to be carbon free by 2050 in order to decrease its CO2 emissions by 80% economy-wide.

European Wind Industrial Initiative: Secure and stable system dynamics, activities starting on period 2010-2012

Activities under this priority focus on the development and demonstration of the Virtual Power Plant concept. The aim is to ensure a secure and stable operation of the future power system with very large scale wind power integration. In existing power systems, the dynamic security and stability is mainly ensured by conventional power plants, i.e. thermal and hydro plants with directly connected synchronous generators. To operate the future system in an optimal way, the renewable generation will have to provide the necessary services to ensure a secure and stable dynamic operation of the system.

The proposed activity can be considered as a follow-up of WindGrid, FENIX and PEGASE, and is complementary to TWENTIES. TWENTIES is limited to demonstrating existing technologies and to provide secondary frequency control and voltage control, whereas this sub-programme focuses on the concept of virtual wind power plant with future technologies, including the delivery of ancillary services of offshore wind farm clusters to the HVDC network.

This activity is related to the 3rd cluster of the proposed ENTSO-E R&D plan, *Network management and control* and supports project abstract 6.5 “Demonstrations for renewables integration”, 6.12 “Tools for renewable market integration” and 6.13 “Tools for the integration of active demand in the electrical system operations”.

European Wind Industrial Initiative Balancing and market operation, activities starting on period 2010-2012

Activities under this priority will show the feasibility of balancing power systems with high penetration of wind, supplementing the support from interconnections with the support from advanced wind power plant capabilities (frequency & voltage control), large-scale storage systems (e.g. hydropower, pump storage) and new flexible options such as electric vehicles, heat pumps, demand side response and more flexible thermal generation.

Foreseen changes in the electricity systems are supported by various automation and commercial measures, e.g. adequate system coordination methods, and cross-border intraday markets based using data from prediction systems. The impact of wind on other actors in the electricity market and on electricity prices will be assessed.

These two activities are strongly related to the second and fourth cluster of the proposed ENTSO-E R&D plan: “Demonstration of technology to make the transmission system more flexible, intelligent and secure” and “Market simulation techniques to develop a single European electricity market”, and support project abstract 6.3 “Demonstrations of power technology for more network flexibility”, 6.10 “Advanced tools for pan-european balancing markets” and project abstract 6.12 “Tools for renewable Market integration”.

Synergies between the European Wind Initiative and the ENTSO-E Research and Development plan

The ENTSO-E priorities listed p. 6 of the ENTSO-E R&D plan proposal are the following:

- Optimal choice in architecture, implemented progressively between 2015 and 2020;
- Reliable state-of-the-art transmission and power technology, with measured benefits starting 2015;
- Implementation of improved monitoring and control tool and procedures, both for today's and tomorrow's grids;
- Novel market designs validated through intensive market simulations.

Considering the priorities required for the implementation of the European Wind Initiative for the period 2010-2012, and relating those to the ENTSO-E R&D priorities and individual projects, clear synergies exist between the ENTSO-E R&D plan proposal and the European Wind Initiative implementation plan.

In this framework, EWEA wishes to emphasize the need for strong cooperation between the European Wind Initiative and ENTSO-E in the framework of the SET-Plan process. For its grid component, the European Wind Initiative foresees a total budget above €1 billion. For the period 2010-2012, the implementation plan foresees an R&D budget of €410 million, of which €113 million is additional to the EERP (€65 million from EU funds, and €48 million from the industry). In EWEA's view, this budget is partly overlapping with the proposed ENTSO-E budget of €510 million.

Recommendations

Considering the need for joint implementation of the R&D priorities, the proposal from ENTSO-E to include representatives of the Industrial Initiatives in a Stakeholder Advisory board will not ensure the right level of coordination. In EWEA's view, the governance body of both initiatives should share implementation and monitoring activities, such as Key Performance Indicators required by the Joint Research Centre of the European Commission. Furthermore, when relevant, joint result exploitation is recommended and the focus should include sharing of scenario databases and system modelling tools with the interested expert community.

EWEA therefore invites ENTSO-E to discuss with the European Wind Energy Technology Platform an efficient and non-bureaucratic governance structure, enabling a high level of interaction between the European Wind and the European Grid Industrial Initiatives. This process should start early, in order to enable the European Wind and Grid Industrial Initiatives to be both launched in June 2010, under the Spanish Presidency.

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The European Wind Energy Association (EWEA) is the voice of the wind industry, actively promoting the utilisation of wind power in Europe and worldwide. It now has over 600 members from 60 countries, including manufacturers with a 90% share of the world wind power market, plus component suppliers, research institutes, national wind and renewables associations, developers, electricity providers, finance and insurance companies and consultants. This combined strength makes EWEA the world's largest and most powerful wind energy network. www.ewea.org