

1. Proposed name of the initiative

WINDLEADER

Ensuring long-term EU Leadership for the Wind Energy sector

2. Why should it be an EU initiative in the SET-Plan? Rational behind the proposed initiative.

The foreseen contribution of wind energy to the installed generation is expected to reach an installed power capacity by 2030 of 300 GW, which represents 23% of the EU electricity consumption. This proposal is aimed at securing the EU leadership in the Wind Energy Sector. This leadership is based on a strong EU internal market, technological leadership and support of foreign markets' penetration. The SET-Plan action shall simultaneously support these three pillars.

Added-value for EU: The added value is of major level on two complementary aspects: First on the contribution of wind energy to the reduction of greenhouse gases and the 20% binding target for renewables, in compliance with the Barcelona and Lisbon strategy objectives, security of supply; and second to the EU competitiveness on global markets and achievement of EU excellence in the key energy supply systems. The consequences are a better environment, an increased EU-GDP and additional a highly-qualified industrial structure for a clean and independent power supply.

Barriers/Market failures to overcome:

1) Following "business as usual" leads to a relative loss of the technological leadership position of the EU wind industry and probably leads to a loss of market in Asian countries and the US. The European wind industry is facing major challenges in intellectual property and technology development. There is a global understanding in the sector that the only possible solution is in investing in R&D and technology leadership.

2) System integration in two different aspects:

2.1) Grid integration: The grid management still follows a paradigm prior to the development of wind energy, a change is needed and there is a important field for activities on management and control strategies for wind energy integration both in the specific technology and in the traditional sources role in supporting a grid with management constraints.

2.2) Energy markets integration: in the future scenarios of the energy markets, wind energy will have to compete with "conventional" energy, therefore it is necessary to work on all the mechanisms to provide the systems and tools required to have access to the energy markets: policies, technical wind energy management, and regulatory development

3) In relation with the increasing industry activity, it is mandatory to reinforce the research centres activity through the promotion of Public / Private research initiatives.

3. Main objectives/scope of the initiative

The main orientations of this initiative are: to guarantee the European leadership in the Wind Energy sector and to reach the 20% binding target on renewable energies in 2020. The initiative is structured in the following:

- Wind Energy Resource: optimising the location of Wind parks (on/offshore) and securing investments (*includes: wind resources mapping instruments and models, advanced wind parks sitting instruments, advanced wind power forecasting tools*)
- Wind Power Systems Optimisation: decreasing the costs of wind energy through technological improvement (*includes: design know-how, new materials, optimized components, reliability, maintainability, optimized maintenance, increased turbine efficiency, optimized control systems and logistics*)
- Wind Energy Integration: ensuring a high-penetration level for Wind Energy (*includes: grid structure adaptation, grid planning and operation instruments, prediction tools*)
- Offshore development & operation: ensuring the deployment of offshore wind (*includes: implementation and maintenance, dedicated grid infrastructures, zoning of marine activities*)
- Wind Market and economics: ensuring a sustainable long-term market structure for wind energy in competition with “conventional” sources of energy (*includes: certification tests & standards for efficient exchanges, optimisation of the supply chain for costs reductions, enabling a sufficient profitability, optimizing financing and risk-sharing instruments, policies supporting access to the energy markets*)
- Wind Policy & Environment: ensuring a sustainable long-term policy framework for wind energy (*includes: raising political awareness, optimising administrative procedures, optimising environmental impact assessment, life-cycle assessment and monitoring, ensuring social acceptance*)
- Collaboration: Increasing collaboration between public and private research leads to significant cost-reductions and efficiency improvement. This major increase in joint research has to be structured through European networks of excellence, also represented in the European Wind Energy Technology Platform.

4. Main elements of the initiative

The steps of the initiative have to be deployed sequentially, to enable the wind sector to use its full growth potential. The strategy is divided in three phases:

- § Phase 1: main market is onshore and offshore is strongly developing,
- § Phase 2: market is global in both onshore and offshore, exports are increasing and European wind industry is leading,
- § Phase 3: main market is in re-powering and exports stay strong.

Phase 1: Short-term (2020 / 180 GW): *The market matures in Western countries and develops in Eastern countries. Offshore begins its large-scale deployment.*

Initiative: **research actions** for ensuring technological leadership (see 3.); **grid integration**, infrastructure development and management; **demonstration** platforms (large turbines, offshore & deep-offshore); **risk financing** for new markets (*support from the European Investment Bank*); **market & policy improvements** are needed.

Preparing phase 2: **test facilities** are needed urgently for technological evolution and improvement; **training of both engineers and PhDs** is already the major bottleneck (*European Academy of Wind Energy and European Institute of Technology*), support is needed for **investing** in manufacturing capacities even in traditional component industry to supply the required market growth. Public support requested: 136 M€y (see 5.)

Phase 2: Medium-term (2020-30 / 300 GW): *Wind energy is mature on all its applications, on-shore and off-shore. Main developments in further cost reductions and high penetration technology. Deep-offshore develops at industrial scale. Exports are growing. Competition with*

low-labour costs countries is increasing.

Initiative: integrated research actions on offshore wind, offshore market has to be secured (**market incentives schemes are needed**). Support to large DC grid implementations and large-scale storage capacities are needed. Following phase 1, technological leadership is recognized worldwide. Thus, **International cooperation** (see 3.) is needed to prepare for phase 3. Public support requested: 136 M€y (see 5.)

Phase 3: Long-term (2030-50): *Main market is in re-powering and exports stay strong.*

Initiatives: Support for promoting the EU knowledge in wind engineering and environmental science abroad. Formal partnerships between the EU and countries with high potential market shall be implemented. Intellectual property must be protected. Support shall be provided to companies willing to penetrate foreign markets. Public support requested: 136 M€y (see 5.)

5. Instruments and resources

Wind energy is able to provide a major contribution in fulfilling the EU energy objectives in the short, medium and long term. The European wind energy industry is currently making a considerable effort in maintaining its global leadership position, and is investing 300M€year for R&D. Complementary to the objectives related to energy (independence of supply, cost stability and environmental) the industry is providing a continuous working space and technology development framework.

Resources: The expected installed power capacity by 2030 is 300 GW. The 2006 installed capacity was 48 GW. Reaching 300 GW implies the installation of 10.5 GW/y. If the average investment cost is 1.3 €/W (onshore figure 2006), the yearly investment level would then be 13.7 b€y.

The Research and Development effort of the sector might be of 3% of the annual turnover. The effort is then 410 M€y. Two thirds of this budget may be invested by the private sector, and 1/3 by the public sector. **The average public annual support is then 136 M€y.** Finally, if 50% of this support is provided at national level, and 50% at EU level, the effort at EU and national level is 68 M€y.

Instruments: For public Research, it is of capital importance to reorient the framework programs (**incl. FP7 now in launching process**), involve Member States (article 169), and foster public-private R&D partnerships (JTI). The private sector shall benefit from tax incentives and support of the European Investment Bank.

6. Involved parties

Partnership has already been put into place: the Wind Energy Technology Platform is boosting initiatives for a sustainable long-term development of the wind energy sector. It involves high-level representatives of the industry (project developers, turbine manufacturers, infrastructure services and component manufacturers), research laboratories, universities, financial institutions, and EU Member States. It is currently making connections with main EU-funded consortiums, Research networks and other Technology Platforms.

In the declarations of the Offshore Conferences in Egmond aan Zee, Copenhagen & Berlin, and during the international conferences (EWEC, EOW), all stakeholders claimed their confidence in this sector. A coherent plan is now needed to put the vision into actual and global actions.