

Essential Innovations



European Wind Energy
Technology Platform

Essential Innovations: Den Helder (12 – 13 February, 2009)

Structure of the presentation:

- **Part One:** Introduction on TPWind
- **Part Two:** SRA / MDS
- **Part Three:** The offshore strategy of TPWind



PART I: Introduction on TPWind



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TPWind - Objectives

❑ Scoping sector innovation and R&D needs

- R&D  SET- Plan, FP7, other EU and National plans

❑ A single, powerful voice for R&D

- EU, Member States, industry, other energy sector, R&D institutions and financiers

❑ Maximal sector sensitivity. Better communication

- Within the wind sector & externally (other industry sectors & technology platforms)

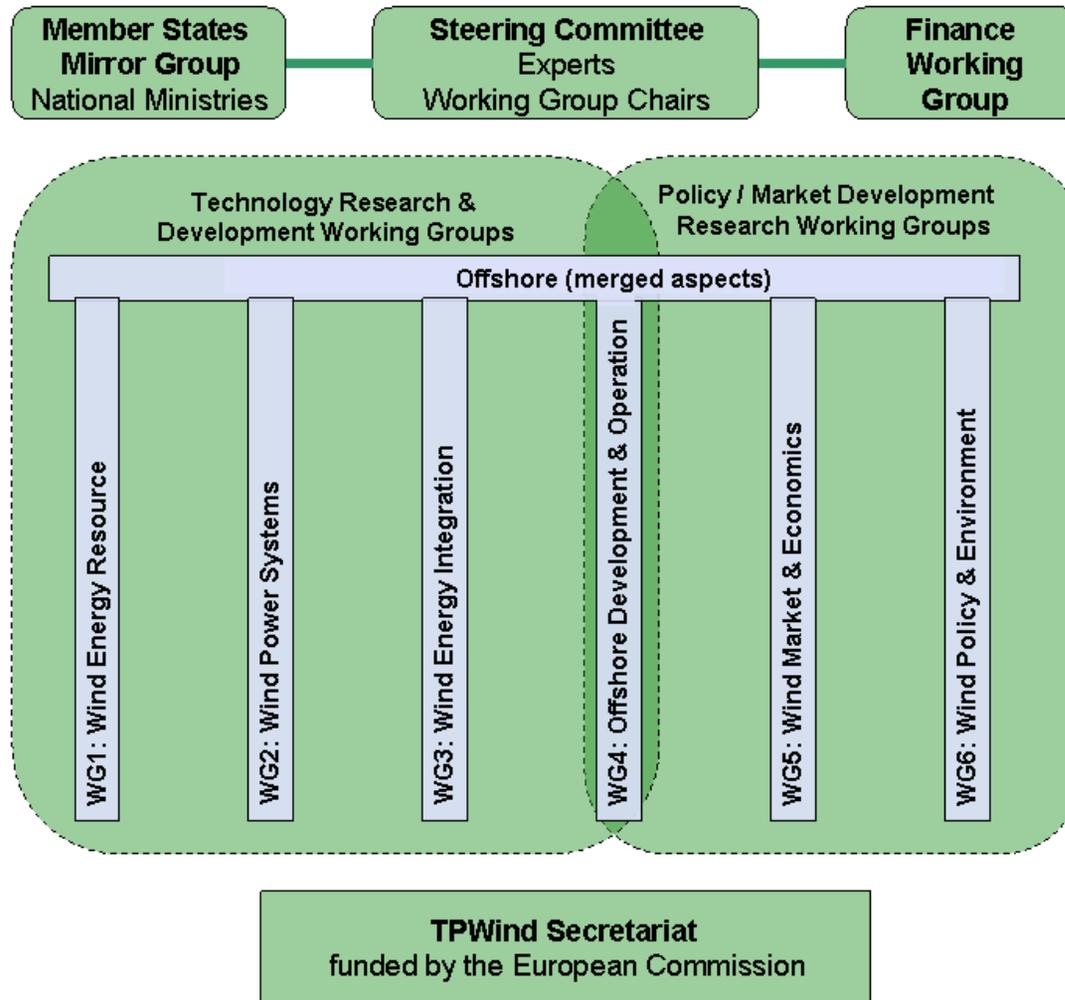
❑ “Docking station”

Monitor ongoing initiatives (EC / other EU & national)	Strengthen the ERA 	Assess and monitor ongoing and new research projects
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❑ Effective Action Plans, for technology and policy

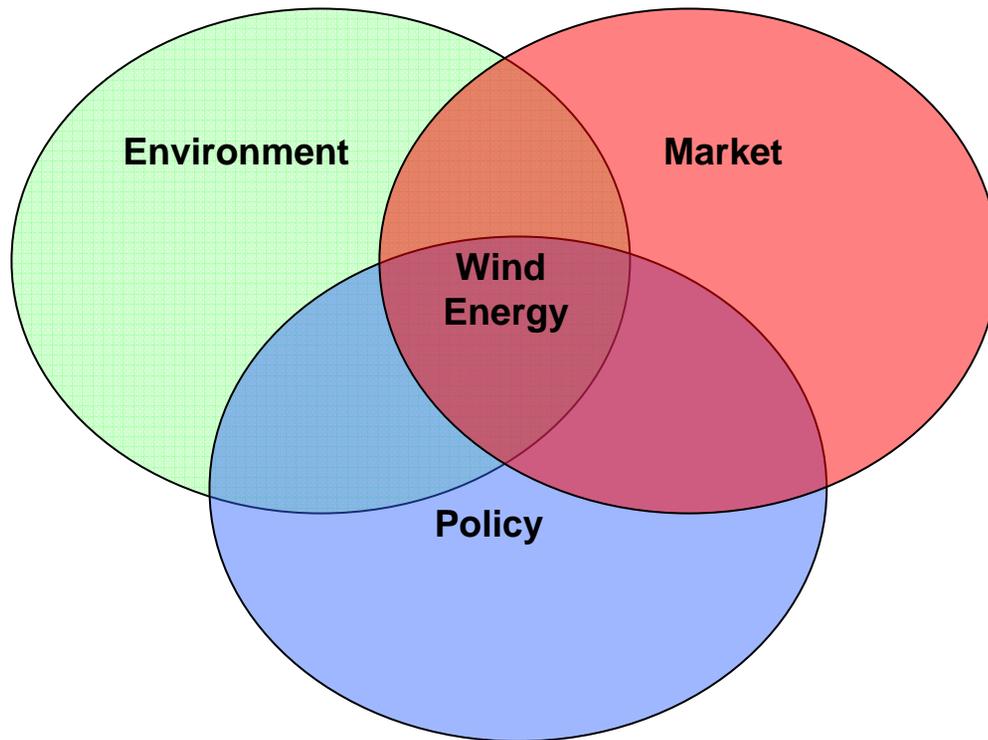
- Strategic Research Agenda (SRA) & Market Development Strategy (MDS) – published in July 2008

TPWind - Structure

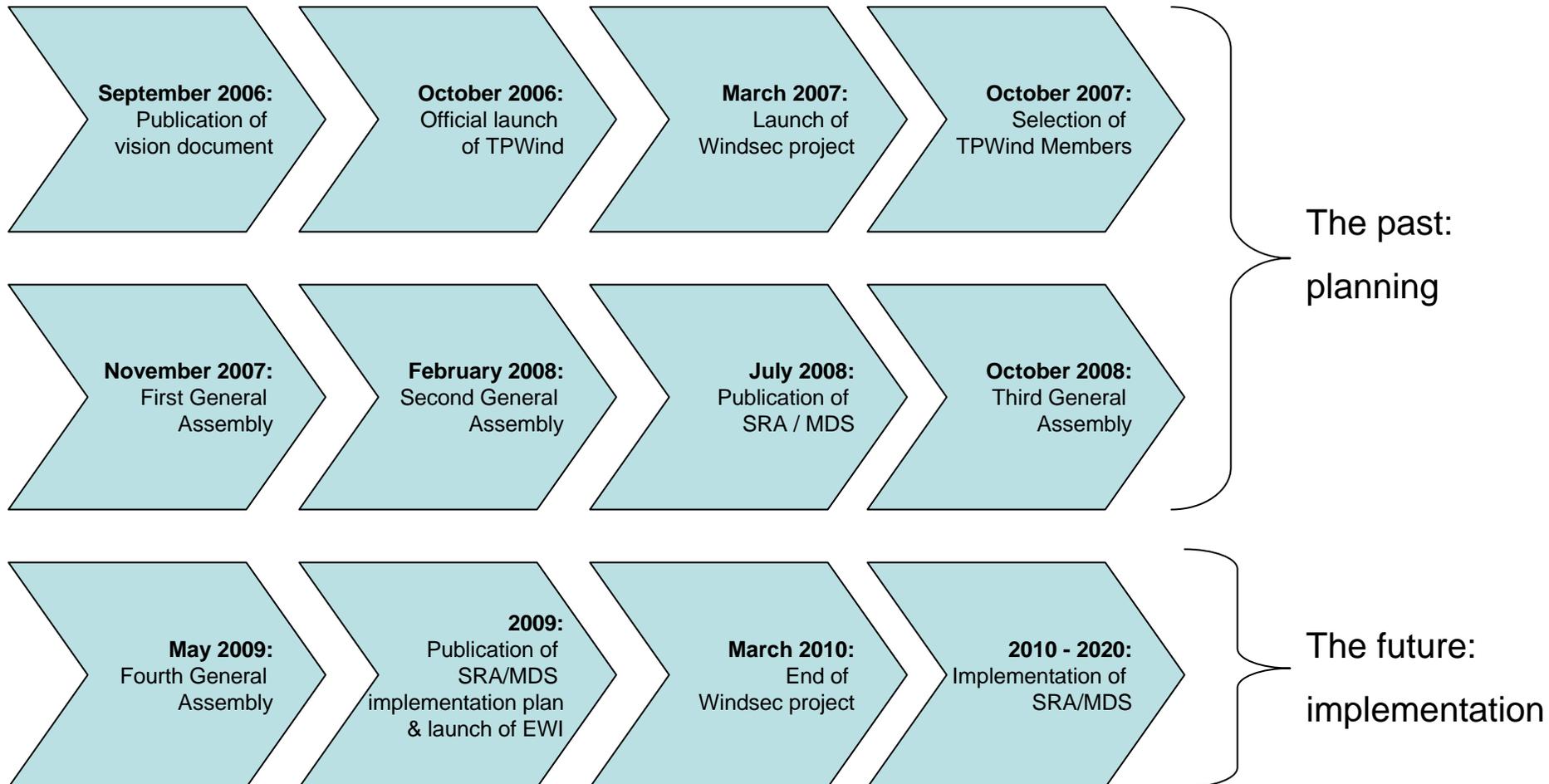


TPWind - Working Groups

R&D is not the only issue to be considered in the development of wind energy!



TPWind - Activities



TPWind - Main Deliverables

- ❑ Vision document on wind energy up to 2030 (published in September 2006)
- ❑ Strategic Research Agenda (SRA) / Market Development Strategy (MDS), to cover technology issues, policy R&D and market development (published in July 2008)
- ❑ SRA / MDS implementation plan (to be finalized in the first half of 2009)
- ❑ Action plan outlining the future of the Platform (i.e. after the end of the “Windsec” project). The action plan will be finalized in the first half of 2009
- ❑ Development of the “European Wind Initiative” in cooperation with the European Commission (EWI to be launched before the end of 2009)

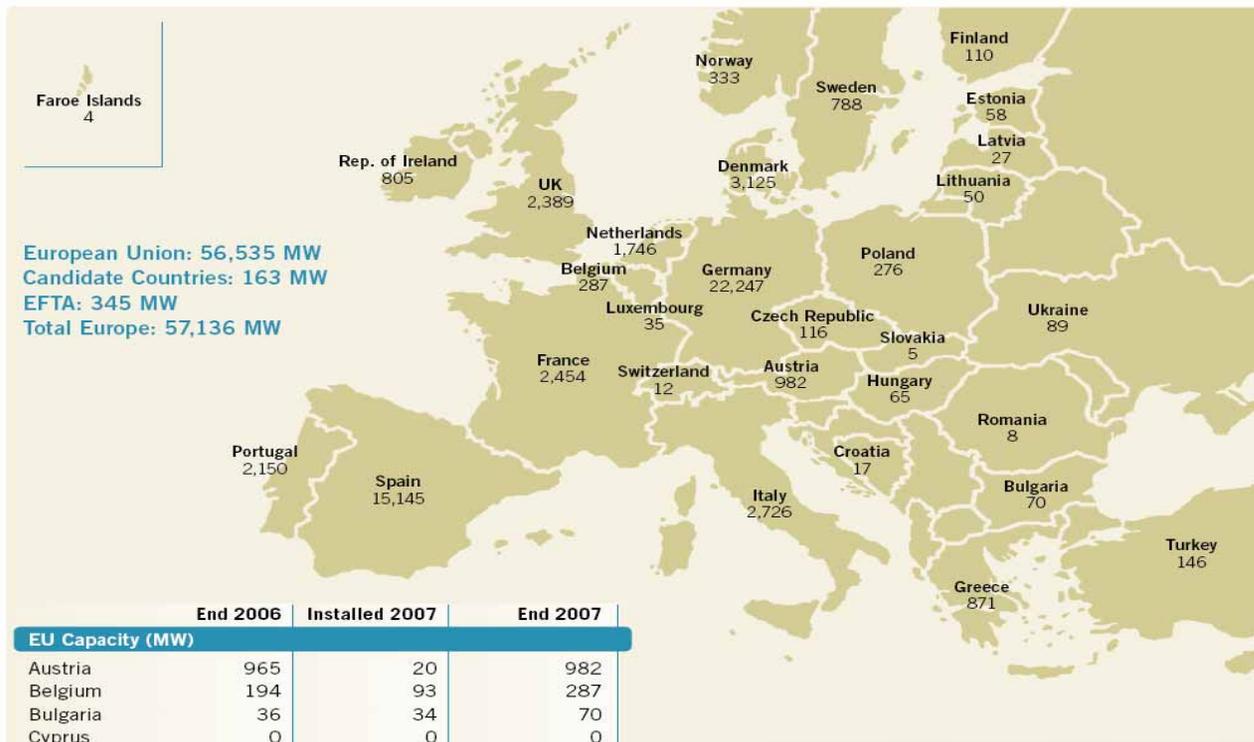
PART II: SRA / MDS



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SRA/MDS - TPWind 2030 Vision: the starting point

Wind power installed in Europe by end of 2007 (cumulative)



57 GW today



180 GW by 2020
(i.e. 12/14% of EU's
electricity
consumption)



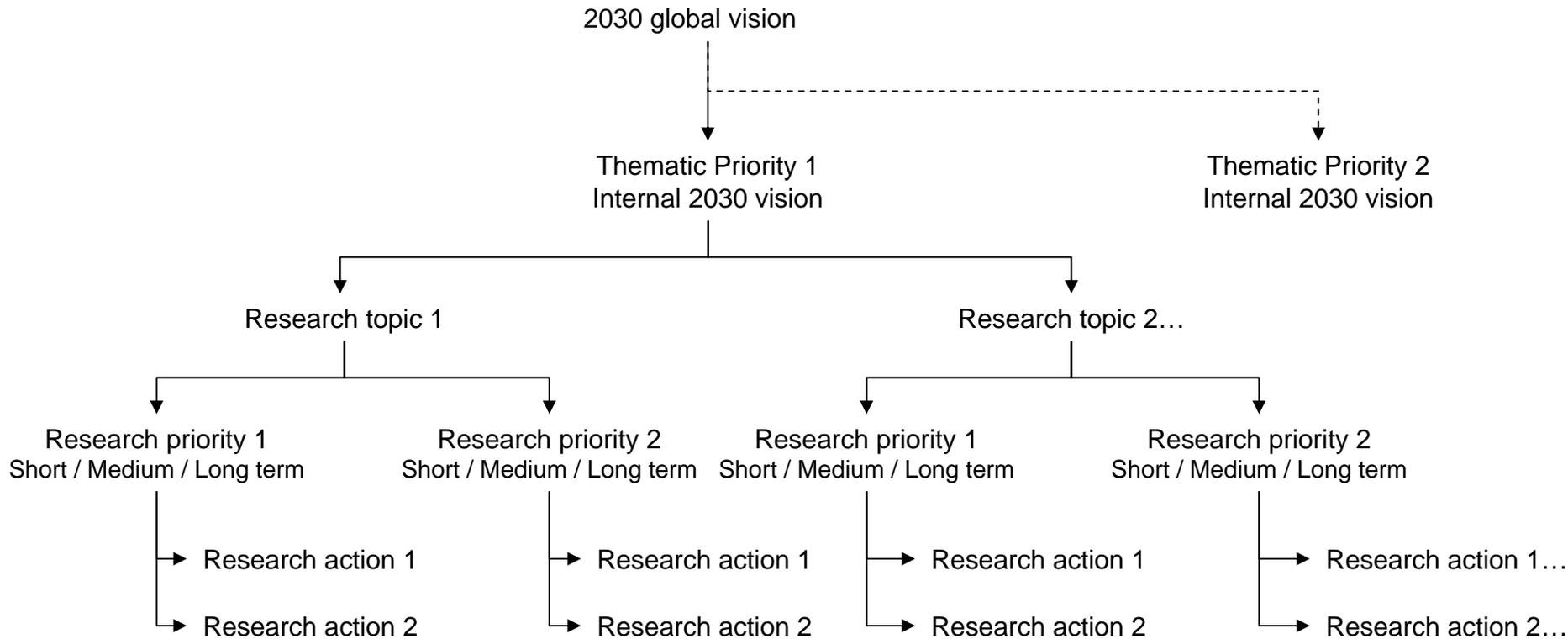
300 GW by 2030
(i.e. 25% of EU's
electricity
consumption)

To achieve the proposed objectives, 10 to 15 GW of additional capacity must be installed every year, i.e. 20 3MW turbines per working day

SRA/MDS – Two documents merged into one

- ❑ The “Strategic Research Agenda” (SRA) and the “Market Deployment Strategy” (MDS) were originally planned as two different documents;**
- ❑ Because of their multiple interconnection, they were eventually merged into a single paper, published in July 2008;**
- ❑ However, the focuses of these two components remain different:**
 - SRA = R&D priorities;**
 - MDS = Market and Policy issues.**

SRA/MDS - Structure of the analysis



The result is a research implementation plan at short / medium / long term

SRA/MDS – Overview of R&D Thematic Priorities

- **The SRA is divided into five thematic priorities, which reflect the vision of the sector for 2030 (as expressed in the vision document published in September 2006) as well as the structure of TPWind:**
 - **Wind conditions;**
 - **Wind turbine technology;**
 - **Wind energy integration;**
 - **Offshore deployment and operation;**
 - **European research infrastructure.**

SRA/MDS – The future

- ❑ The SRA/MDS has been published in July 2008: TPWind is now working on its implementation
- ❑ The relevant implementation plan will be published by the end of 2009: this document, together with the new “European Wind Initiative” (EWI), will drive wind energy R&D in the next decade
- ❑ The implementation of the SRA/MDS will contribute in meeting the ambitious 2020 targets recently set by the EU and will play a key role in fighting climate change
- ❑ TPWind has just entered a new and more challenging phase: implementation!

Part III: The offshore strategy of TPWind



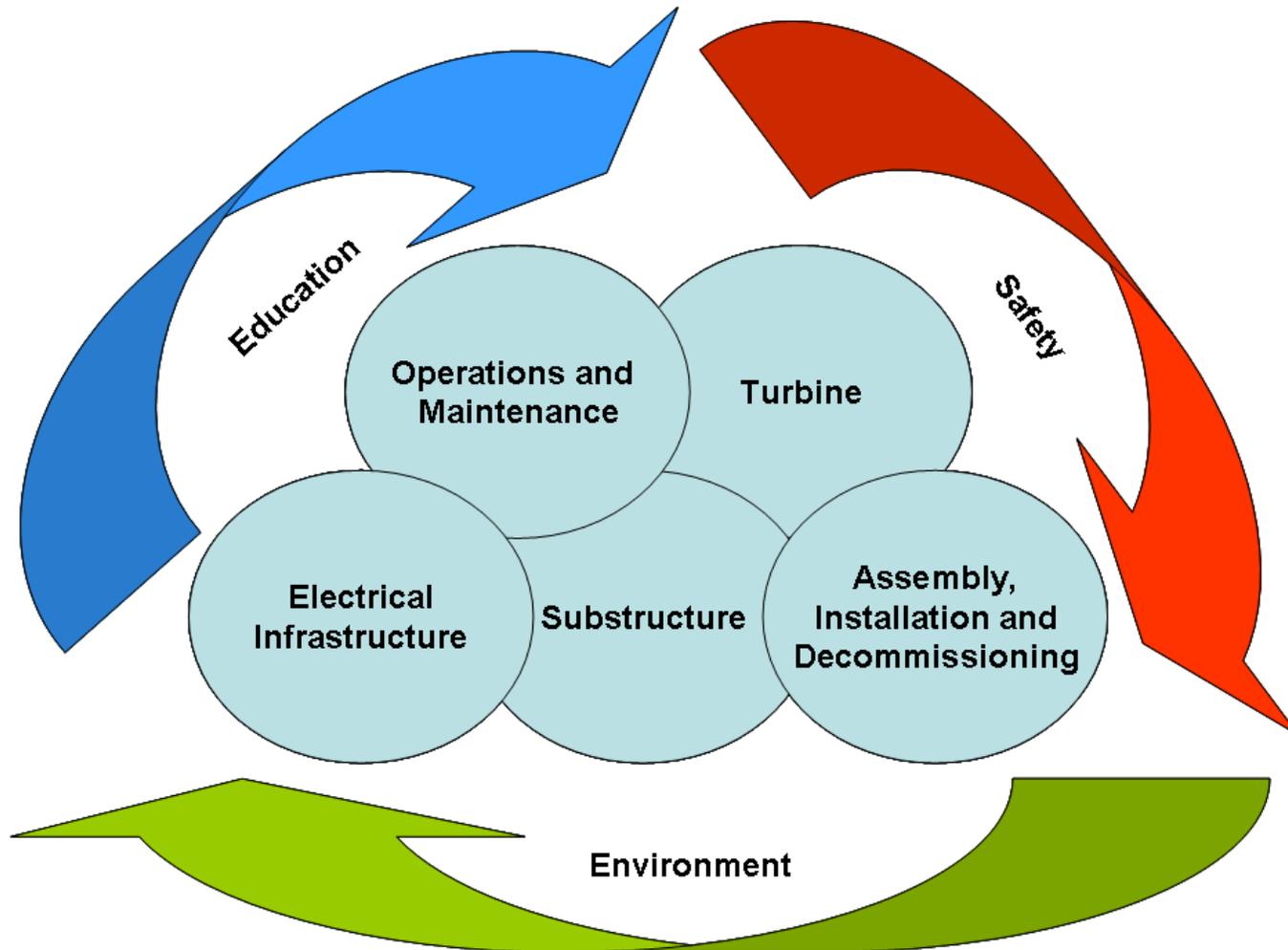
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Offshore strategy – Main objectives

- ❑ Focus on deployment
- ❑ Offshore wind farms to produce 10% of EU electricity by 2030 (i.e. 180 GW, which can be generated by approximately 10.000 offshore wind turb



Offshore strategy - Priorities



Offshore strategy – Identified projects (I)

Standardisation and harmonisation across the EU

The purpose of the project is to create the conditions for achieving the standardisation and harmonisation of safety policies across the EU. To this aim, the project partnership will list all the rules and regulations currently in force, while the TPWind Mirror Group will push for the adoption of one single European standard on safety. The most important safety concerns appear to be the following:

- Safety of operational personnel (working on WTGs)
- Safety of marine operations (required to develop and operate offshore wind farms)

Identification of training centres

The goal of the project is to list all the relevant EU training facilities and identify their specific competencies. At the same time, project partners will also identify the training needs of the wind energy industry in order to create the conditions for the development of new European centres capable of filling the current gaps. It should be noted that to improve the training of operational personnel, WTG manufacturers should provide more information on their machines, which are currently hard to obtain.

Make environmental data public

The aim of the project is twofold:

- To standardise Environmental Impact Assessments (EIA) and environmental data by coming up with a common format
- To make environmental data public

This will lead to the implementation of the principle of publicly available environmental data (on soils, waves, winds, currents, birds, seals and so on), which will facilitate the development of new wind farms.

Geotechnical data

The aim of this project is to improve the acquisition and application of geotechnical data. This data can represent a significant cost at the early stage of the project and so the objective of the study will be to develop a process for acquiring the data in stages, allowing the cost to be minimised but ensuring there is sufficient data to allow the project to continue.

Re-engineering offshore substructures

The goal of the project is to re-engineer current offshore substructures on the basis of the data collected and experiences gained by offshore wind farms so far.

This will lead to improved design methods, upgraded standards and enhanced designs (which will be based on data measured on existing WTGs). Ideally, three “Reengineering offshore substructures” projects should be implemented to make sure that all lessons learned by current offshore wind farms will be identified and used to improve the current situation.

This project is expected to have a key impact on the current debate on the use of concrete or steel in the installation of offshore WTGs.

Offshore strategy – Identified projects (II)

Manufacturing automation

The aim of the project is to automate the manufacturing process of substructures.

As a result, the whole production process will be optimised and will lead to cheaper manufacturing and improved logistics.

Thanks to this project, the industry should be able to deliver enough structures to reach 10,000 units in 2020.

Improved vessels

The purpose of the project is to create the conditions for the development of new vessels capable of meeting the needs of the offshore wind energy sector (i.e. increasing the installation weather window).

To this end, a new funding scheme backed by the “European Investment Bank” (EIB) should be launched. This instrument will provide financial support to manufacturers capable of developing a new generation of vessels, and should be structured in cooperation with the TPWind Mirror Group (which is composed of representatives of EU Member States) and Finance Working Group (which deals with R&D financing).

In parallel, project partners should also define the design requirements for new vessels and identify deep water ports with the required infrastructures to service offshore projects.

New offshore WTGs

The goal of the project is to gather data and lessons learned from existing offshore wind farms in order to identify areas for improvement and the ideal characteristics of future offshore WTGs.

The project will focus on the following issues:

- Redundancy
- Reliability of WTGs (which is particularly important in offshore wind farms, where human intervention should be as limited as possible)
- Resistance to corrosion
- Condition monitoring systems
- Risk-based maintenance
- Helihoist option in offshore WTG design
- Possibility of designing bigger turbines

Better access methods

The aim of the project is to define access requirements for offshore WTGs in a consistent way, so as to improve access methods for operational personnel and if possible to increase the weather window for O&M (for example through the use of helicopters).

To this end, project partners will gather data on different solutions and will then test them on offshore wind farms for at least 1 – 3 months, also in adverse weather conditions.

Offshore strategy – Implementation

- ❑ Implementing the proposed strategy represents a key priority for the wind energy sector, which needs to fulfil the potential of offshore
- ❑ The political conditions for doing it appear to be very favourable, since the European Commission is clearly interested in backing the development of offshore wind – see COM(2008) 768 “Offshore Wind Energy”
- ❑ The resources for implementing all the identified projects will come from the EWI (the FP7 is not expected to play a key role), the EIB and the EBRD (which will manage a considerable budget dedicated to renewables – see COM(2008) 800 “A European Economic Recovery Plan”)
- ❑ However, public funds will not cover more than 50% of project costs in any case: the rest will have to be covered by the private sector
- ❑ For this reason, a clear commitment of the industry will also be needed

Thank you for your attention!



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