

# **The EERA Joint Programme on Wind Energy**

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# Ambition/vision of the Joint Programme

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The EERA vision for the joint programme on wind energy is

- to establish the scientific–technical *medium to long term* research strategy to support the Technology Roadmap’s activities on *wind energy* and
- on basis of this, to perform the necessary scientific research.

The vision calls for all the EERA institutions and associated partners

- to align their research in wind energy topics which influence the use and deployment of wind energy and
- perform the research coordinated and structured in medium to long-term research programmes with shared research facilities.

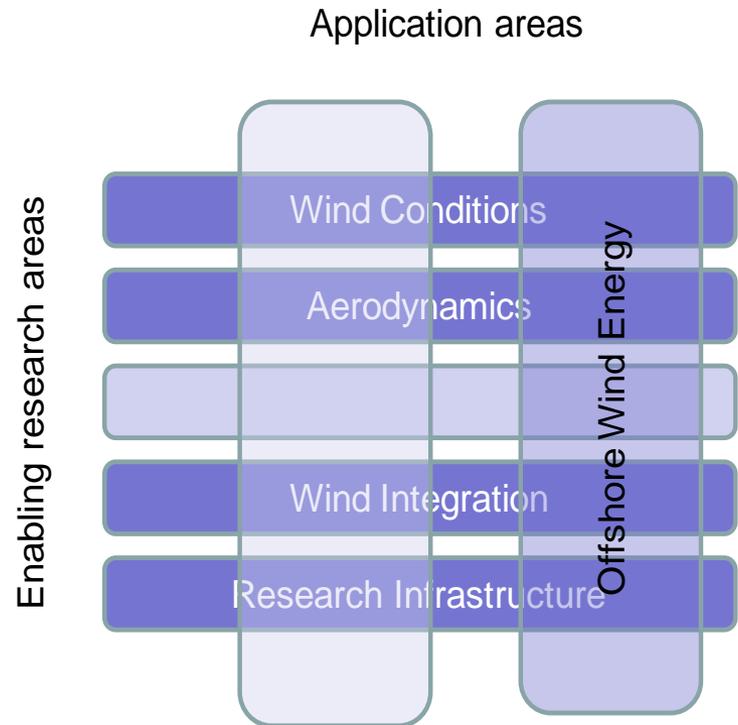
The overall objective is

- to produce scientific results on the highest and recognized international level to be used by industry, communities, member states and the international scientific community.

# General structure

The joint programme is coordinated by Risø DTU and comprises the following 5 sub-programmes:

- Wind Conditions. Coordinated by Risø DTU in Denmark.
- Aerodynamics. Coordinated by ECN in the Netherlands.
- Offshore Wind Energy. Coordinated by SINTEF in Norway.
- Grid Integration. Coordinated by FhG IWES in Germany.
- Research Facilities. Coordinated by CENER in Spain.



# Main activities and outcomes

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## **Established in 3 phases:**

1. An immediate joint programme is initiated with shared results from ongoing programmes. Parallel a detailed survey of the research activities in the identified fields; a gap-analysis at the EERA partners and on a global scale providing the background for the activity in next phase
2. Formulation of a detailed joint programme with a concentrated effort towards removing the barriers that prevent or impede close research cooperation.
3. Finally launch of the full joint programme.

## **Basic structure:**

1. Theory and models,
2. data acquired from well focused experiments,
3. verification of theory and models by the data and
4. development of new generic technology concepts.

The participants have agreed on organizing themselves with shared model developments, shared databases and commonly developed schemes for verification as well as sharing research facilities.

# Offshore Wind Energy sub-programme

- Development of integrated numerical design tools for large deep offshore wind turbines; a database with measurements for validation of tools
- Characterization and interaction of wind, wave and current as input for assessment of site conditions and developing standard design load cases for large deep offshore wind turbines.
- Development of numerical tools for assisting decisions on offshore grid development and wind farm electric design, in particular connection to HVDC transmission.
- Development of numerical tools for predictive maintenance (component degradation); a database with operational and failure data for validation of tools.
- Identification and assessment of novel concepts for offshore wind turbines and substructures (bottom-fixed and floaters) to pin-point cost-effective solutions for deep-sea wind.



# Research Facilities sub-programme

- Inventory of EERA research facilities, which are or could be conditionally accessible for all EERA partners.
- Data base of projects carried out by the partners in the last ten years, utilizing the existing research infrastructures.
- Identification (gap-analysis) of the necessary research facilities which are either non-existence or not available for the EERA partners.
- Modes of agreements on the use of partners' facilities.
- Interaction with the other sub-programmes in order to identify new joint research projects that could be developed using the research facilities. (Windscanner EU)



# Partnership and resources

The Joint Programme is open to all research organizations which will commit a significant effort of the order of 3-5 man-years per year in one or more of the sub-programmes.

Participants Name	Country	Scientists	PostDocs, PhDs and visiting scientists	Technical administrative staff
Risø DTU	DK	70	28	21
ECN	NL	60	4	20
CRES	HE	14	5	7
CENER	ES	57	3	25
CIEMAT	ES			
FhG IWES	DE	70	15	15
LNEG/INETI	PT	22	12	6
UoP	PT	23	5	17
SINTEF	NO	35	25	
VTT	FI	35	1	10
UoS	UK	25	50	5

Partners' human resources in man-years available primo 2010 with a potential for alignment in the joint programme

Participants Name	Country	Human Resources (man-years)
Risø DTU	DK	24
ECN	NL	13
CRES	HE	10
CENER	ES	15
CIEMAT	ES	3
FhG IWES	DE	19
LNEG/INETI	PT	16
UoP	PT	3
SINTEF	NO	10
VTT	FI	6
UoS	UK	5,5

Estimate of human resources in the 5 sub-programmes for 2010

## Next steps

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- Develop a detailed governance structure for the Joint Programme on Wind Energy
- Agreements with Non-ExCo joint programme partners (Declaration of support)
- Experience developed by aligning existing research with national funding
- Scientific workshops: surveys of research activities, competences and facilities
- Establish platform for communication with the EC and national research programmes and with industrial fora and initiatives
- Medium-to-long-term research strategy formulated on wind energy
- Detailed scientific programme 2011-2014 formulated and launched