FOWRCE SEA

Future offshore wind research center at sea

DURATION: 12 months (2020-2021) | **BUDGET:** €202K

CONTEXT

A more detailed knowledge of the physical and biological environment of future offshore wind farms is necessary to characterise the energy resource, and to improve the design of the farms and the understanding of the interactions between the marine environment and wind turbines. **Beyond the acquisition campaigns, it seems complementary and necessary to have a platform hosting a large panel of sensors and measurement instruments to ensure long-term monitoring.**

OBJECTIVE

To study the technical and economic feasibility of an offshore research platform meeting the needs of the offshore wind sector

MAIN ACHIEVEMENTS

- Identification of the sector's needs in terms of physical and biological parameters to be collected and instrumentation to be deployed
- Development of a methodology to define the optimal number of sensors to deploy, such as lidars, within a given area and the optimal positioning of these sensors
- Technical specifications of an offshore research platform for environmental and ageing monitoring of wind farm components
- Proposal of an economic model for such an infrastructure taking into account both OPEX and CAPEX

CONCLUSION

A roadmap for a sustainable grid to support the development of offshore wind energy has been defined. The latter is fully in line with the French national strategy to improve risk planning and knowledge. This observation network will be a valuable tool:

- to observe the interactions between offshore wind turbines and the environment on a coastline scale in order to assess the effects on ecosystems, to quantify the physical parameters and their spatio-temporal variation, and to adapt the monitoring protocols,
- to access to qualified data and processing tools,
- to assist in the decision making process for the deployment of future farms.

TECHNOLOGIES

STAGES OF THE VALUE CHAIN

Preliminaru studies | Design | Installation Construction | O&M | Dismantling

RESOURCES GENERATED

- **Review of the sector's needs** in terms of environment, sensors, technological components and research activities
- **Algorithm** for defining the ideal sensor network for various applications such as wind resource characterisation
- **Roadmap** for a sustainable national observation network consisting of state-of-the-art instrumentation installed on various fixed and floating structures, complementary to existing means of measurement at sea and on the coast

PARTNERS

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