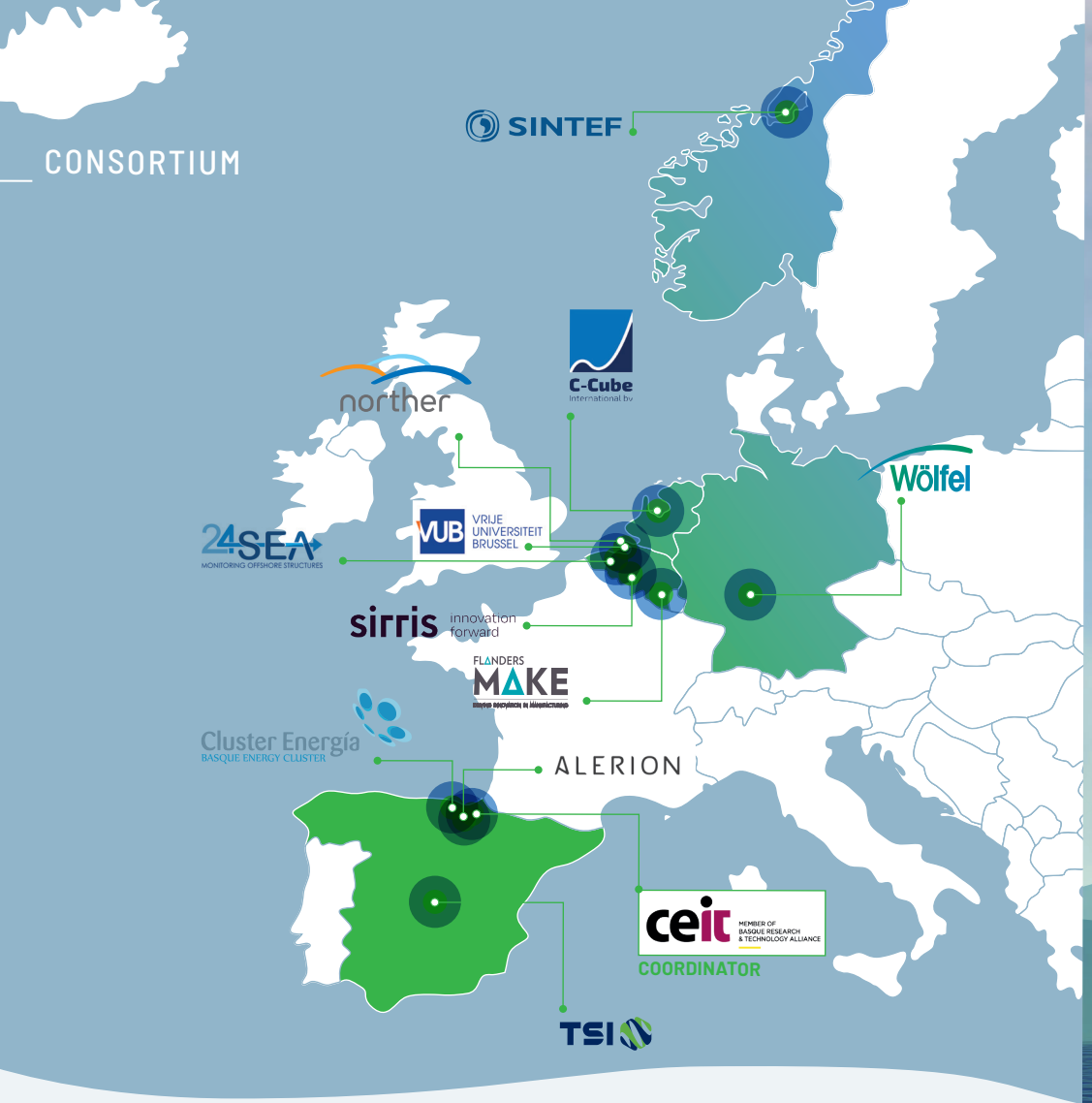
CONSORTIUM



ADVISORY BOARD

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WILLOW

Wholistic and integrated digital tools for extended lifetime and profitability of offshore wind farms

Funded by the European Union

willow-project.eu

HOW WILL WILLOW ADDRESS THESE CHALLENGES ?

CONTEXT

The systematic maximization of the wind energy production has already been questioned.

- Wind farms (WFs) should deliver commanded output power (rather than maximum) following the needs of the grid operator.
- This implies downregulation of the WF (producing less power than available).

HOW IS IT DONE TODAY?

- Stopping a few turbines and letting the others produce maximum power.
- Downregulating each turbine by the same amount.

↘ Negative effects in fatigue life.

CHALLENGE

CURRENT PROBLEM

Lack of success in implementing new decision-making schemes.

WHY?

- Component degradation and grid integration particularly complex.
- Offshore additional degradation rates:
  - Corrosion due to moisture and salinity.
  - Additional loads (waves, tides and currents).

EXPECTED IMPACTS

MAINTENANCE COSTS

Corrosion cost represents 18% of maintenance costs.

↘ Reduction of 50% on the inspection costs.

DESIGN & OPERATION LIFE

5 additional years of operating life.

↘ 20% of lifetime extension in WFs designed with 25 years of lifetime.

ENVIROMENTAL IMPACT

Expectation of reducing noise pollution by 4%.

LEVELIZED COST OF ENERGY (LCOE)

Up to 10% reduction of LCOE, between 3.5 and 4.5€/MWh.