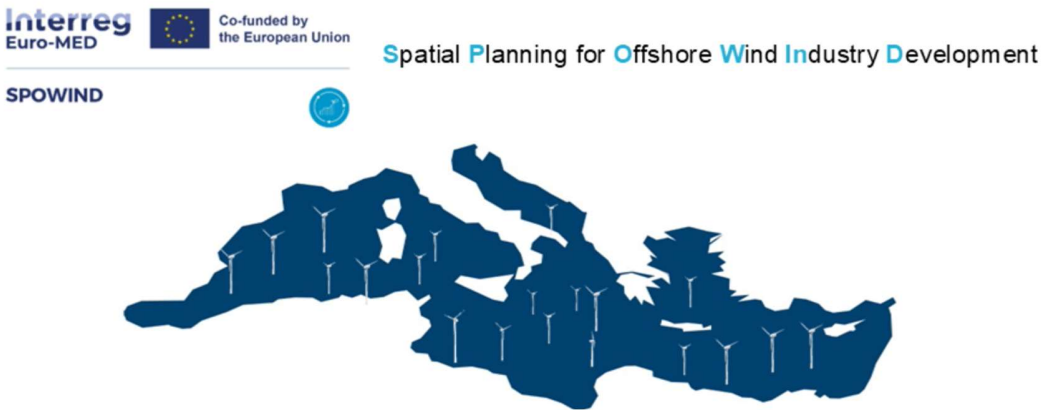
SPOWIND Newsletter #2 – November 2025



Introduction

The growth of offshore wind energy continues to accelerate across Europe, and the Mediterranean region is stepping into a defining phase of its energy transition. In this November issue, we highlight key SPOWIND project achievements over the past months — from advanced methodological developments to regional capacity-building workshops and the launch of our new WebGIS platform.

The insights and tools developed by SPOWIND are now shaping a more transparent, data-driven, and collaborative approach to offshore wind planning in the Mediterranean basin.

⚙ WP1: Electricity Transmission Grid Data Collection – A New Milestone

SPOWIND has completed Deliverable 1.3, *Electricity Transmission Grid Data Collection*, establishing a transparent and reproducible methodology for modeling national electricity transmission systems using only open-source data. The approach is based on the PyPSA-Eur framework and allows:

- Construction of detailed grid models including substations, lines, transformers, and generation units
- Integration of future offshore wind farms to assess grid impacts

- Simulation of future load and generation scenarios under decarbonization pathways

Grid models have been developed for **Albania, Croatia, Greece, Italy, Montenegro, and Portugal**, each accompanied by network statistics and visualization outputs.

This work significantly strengthens SPOWIND's foundation for spatial planning and reinforces the project's commitment to open data, interoperability, and regional collaboration.

Full report available on the SPOWIND web page: https://spowind.interreg-euro-med.eu/what-we-achieve/

🗺️ SPOWIND WebGIS Tool Officially Launched

One of the most important achievements this period is the release of the **SPOWIND WebGIS Tool**, an interactive platform designed to explore offshore wind potential across the Mediterranean.

The tool integrates spatial, techno-economic, environmental, and regulatory layers, enabling users to:

- Identify suitable offshore wind locations
- Understand constraints related to maritime spatial planning
- Examine grid infrastructure, environmental protections, and metocean characteristics
- Compare offshore wind and Power-to-X options

This platform is now publicly accessible and will serve as a long-term resource for policymakers, researchers, and industry stakeholders.

Access the tool here: https://spowind-webgis.polito.it/

🔬 WP2 & WP3: Advances in Techno-Economic Methods and Modelling

Techno-Economic Methods for Offshore Wind Farms Developed

A comprehensive methodology was completed to support offshore wind planning in the Mediterranean, integrating:

- Marine spatial planning constraints
- Annual energy production modeling (fixed & floating turbines)
- Wake effect modelling using the Jensen approach
- Electrical loss evaluation across inter-array and export cables
- Techno-economic assessment including LCOE, NPV, IRR, CAPEX, OPEX, DEVEX & ABEX

Key insights:

- Current bottom-fixed LCOE: 89–107 €/MWh (Northern Europe benchmarks)
- Floating wind LCOE: ~149 €/MWh, with strong cost-reduction potential by 2050
- Floating solutions remain crucial for deep Mediterranean waters
- Port infrastructure and service vessel availability significantly influence economics

This robust methodological framework guides strategic planning and investment decisions.

Full report available on the SPOWIND web page: https://spowind.interreg-euro-med.eu/what-we-achieve/

Methodology for Comparing Energy Transfer Solutions Finalized

WP3 has developed a full techno-economic simulation comparing five offshore wind energy transfer scenarios:

- Centralized offshore electrolysis
- Centralized onshore electrolysis
- Decentralized offshore electrolysis
- Offshore hybrid (power + hydrogen)
- Onshore hybrid solutions

The model evaluates:

- Hydrogen and ammonia production
- Pipeline versus shipping transport
- Power losses, wake effects, and transmission constraints
- Levelized Costs of Hydrogen (LCOH) & Transport (LCOT)

Key findings:

- Pipelines are cost-optimal for short to mid-range distances.
- Ammonia shipping becomes more competitive for long-distance export due to energy density and established logistics chains.
- Hybrid wind farm configurations show strong resilience to price volatility.

No single solution is universally optimal — site conditions determine the best option.

Full report available on the SPOWIND web page: https://spowind.interreg-euro-med.eu/what-we-achieve/

Power-to-X Technologies & Opportunities

SPOWIND's latest deliverable offers a deep dive into the integration of hydrogen and ammonia production with offshore wind farms, evaluating:

- Electrolyzer technologies (PEM, Alkaline, SOEC)
- Offshore vs. onshore hydrogen production trade-offs
- Floating and fixed substructure requirements
- CAPEX/OPEX, safety frameworks & regulatory gaps
- Case studies from the North Sea and Mediterranean

Power-to-X solutions are expected to play a growing role as Europe scales offshore wind and decarbonizes hard-to-abate sectors.

Full report available on the SPOWIND web page: https://spowind.interreg-euro-med.eu/what-we-achieve/

🎤 SPOWIND Events & Workshops

Interreg Euro-MED SPOWIND Webinar & WebGIS Demonstration

Held online, the webinar brought together Mediterranean stakeholders to receive a live demonstration of the SPOWIND WebGIS platform. Presenters from Politecnico di Torino, Sapienza University of Rome, EDP, and Albania's National Agency of Natural Resources guided participants through data layers, planning tools, and regional case studies.

The session concluded with an expert discussion on sustainable offshore wind development in the Mediterranean.

Second National Workshops – Croatia & Montenegro

Organized jointly by **EIHP** and **ENVPRO**, these national workshops gathered stakeholders from energy, maritime, environmental, tourism, fisheries, and public administration sectors.

Highlights:

- Demonstration of the WebGIS tool
- Presentation of advanced power transmission solutions
- Overview of national legal and regulatory frameworks
- Panel discussion on future offshore wind development in the Adriatic
- Open Day with live demonstrations and stakeholder Q&A

Key takeaway:
Stronger cross-sector cooperation is essential for unlocking offshore wind potential in Croatia and Montenegro.

SPOWIND Workshops – Cyprus & Greece (13 November 2025)

Hosted by **The Oceanography Center (University of Cyprus)** and **ICCS–NTUA**, the workshop presented progress on:

- Transmission solutions
- Marine spatial planning
- Country case studies
- Technology options for floating offshore wind

Participants emphasized the importance of shared data, regional alignment, and coordinated strategies in the Eastern Mediterranean.

🌎 Looking Ahead

As SPOWIND enters its final phase, efforts will intensify on:

- Finalizing comparative assessments of transmission and Power-to-X solutions
- Expanding the WebGIS platform
- Preparing policy recommendations and capacity-building activities
- Strengthening regional partnerships

With each deliverable, SPOWIND reinforces its goal: **supporting a sustainable, integrated, and forward-looking offshore wind sector in the Mediterranean.**

Stay connected for our next updates.

SPOWIND Team