MARINEWIND

Market Uptake Measures of Floating Offshore Wind Technology Systems (FOWTs)
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Note on D4.1: MARINEWIND WebGIS tool

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Deliverable history

Issue date	Version	Changes made / Reason for this issue
31/10/2024	V1	First version of the WebGIS available online.
15/12/2024	V1.1	Suggestions and changes after consortium review.
11/07/2025	V2	Official launch of the WebGIS.
30/09/2025	V2.1	Final version with all sections integrated and completed, reviewed by PC and SC.
20/10/2025		Drafting of this descriptive note for D4.1 by RSE.
31/10/2025		Final descriptive note reviewed by PC and SC.

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3   EXECUTIVE SUMMARY

This document represents an overview of the deliverable "MARINEWIND WebGIS", describing its structure and functionalities. The MARINEWIND WebGIS (https://marinewind.rse-web.it/) represents a comprehensive geospatial decision-support platform for floating offshore wind (FOW) energy. It integrates spatial, regulatory and environmental information across multiple European partner countries (Greece, Italy, Portugal, Spain and the UK), providing a valuable resource for research, policy development and stakeholder engagement. While primarily serving as a visualization and information-sharing tool, its modular architecture enables future extensions toward deeper analytical capabilities.

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4   INTRODUCTION

The MARINEWIND WebGIS is a web-based Geospatial Information System developed within the MARINEWIND project (Horizon Europe Grant ID 101075572), which focuses on the advancement of FOW technologies in five European country "Labs": Greece, Italy, Portugal, Spain and the United Kingdom, starting from identifying the barriers and enablers for this technology. The WebGIS serves as an open-access platform providing spatialised data and analytical tools with the aim of supporting policymakers, industry, research communities and stakeholders from local communities in assessing the implementation potential of FOW, the status of projects, regulatory frameworks and environmental and social considerations. It has been designed with the aim of gathering the main results and recommendations of the project.

5 DESCRIPTION OF THE MARINEWIND WEBGIS

The open-source TerriaJS (https://terria.io/open-source) framework was used for the implementation of the MARINEWIND WebGIS, mainly because it offers the possibility of having a basic WebGIS, TerriaMap, which is already structured and can be modified as needed. The TerriaJS framework is released under the Apache Licence 2.0, which allows modification and redistribution. It is developed by the Australian research centre CSIRO Data 61 and is currently available in English, with extensive documentation. The source code is written in JavaScript (JS) using open-source libraries such as React JS and Leaflet. The framework natively supports the temporal display of information layers, as well as the ability to insert layers in multiple formats, including OGC (Open Geospatial Consortium) standard formats. The website is hosted on servers managed by RSE and will continue to be maintained and updated even beyond the end of the project.

5.1 WebGIS structure, contents and functionalities

The login page to the WebGIS, shown in Figure 1, contains a series of features to assist users in navigating the site, specifically it allows to:

- learn about the platform through a guided tour of its main features;

- open a more detailed help section that leads to a guide developed by the TerriaJS developers;

- directly access the exploration of data/layers available in the WebGIS.

This page has been customised by inserting as an introduction to the MARINEWIND project the first video, created as part of Work Package 5.
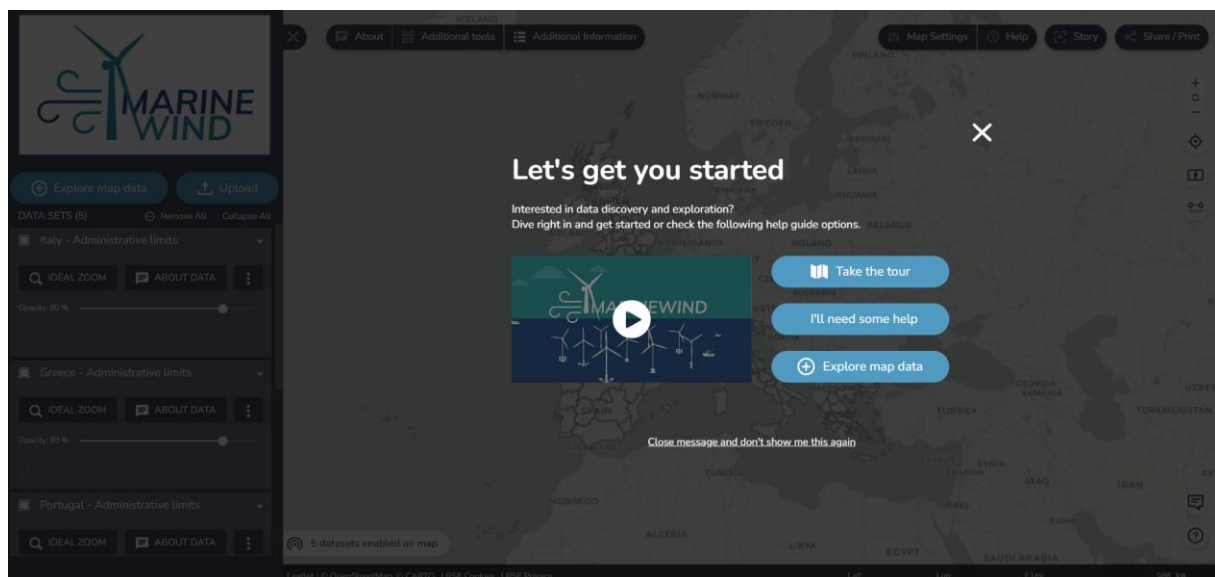

Figure 1 - MARINEWIND WebGIS login page

Once the login screen message has closed, the MARINEWIND WebGIS home page appears, displaying as default layers the regional administrative boundaries five national Labs of the Consortium: Greece, Italy, Portugal, Spain and the UK. (Figure 2).
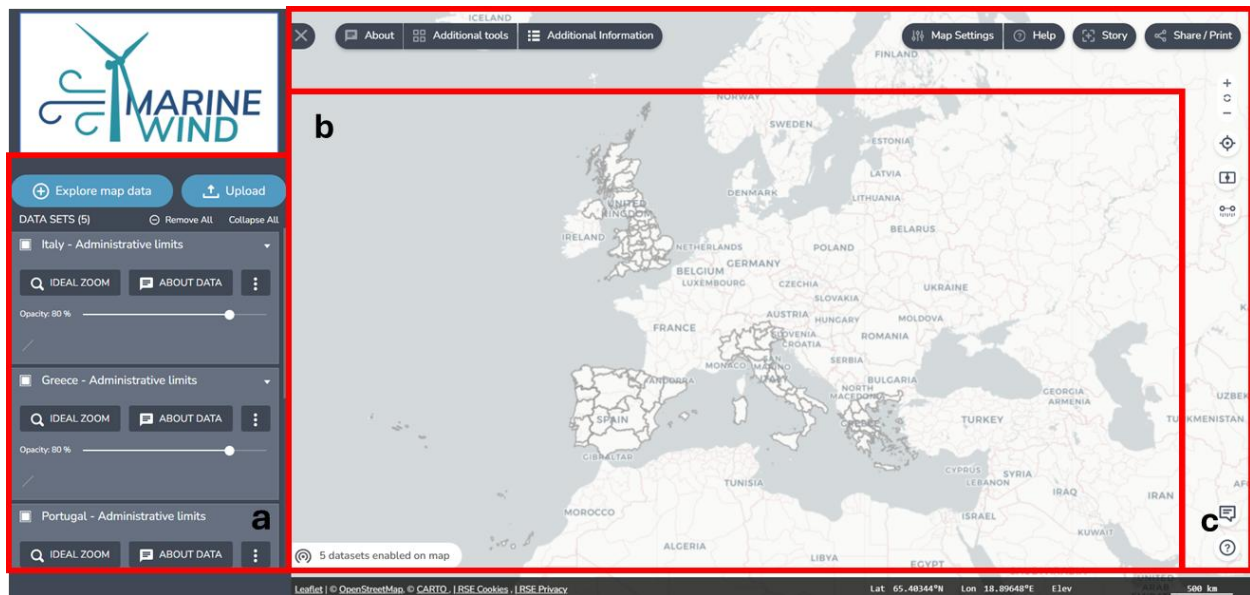

Figure 2 – General structure of the MARINEWIND WebGIS with its sections

Following the standard structure of this kind of tool, the MARINEWIND WebGIS mainly contains the following three functionality section (Figure 2).

a) **Section displaying the active layers**, which can be selected using the "Explore map data" button, with the corresponding legend. Using the "Upload" button, users can also add their own data or services to the map, in addition to those contained in the WebGIS. The display of this data relates to the specific session and cannot be saved.

b) **Section containing the actual map**, where the selected layers are displayed at the desired scale. All layers can be queried simply by clicking on them, and the information is displayed in a special panel on the right-hand side of the map.

c) **Section relating to map navigation features**, that includes basic tools such as zoom, linear measurement, user location acquisition from the browser, comparison of loaded layers (on the right-hand side of the screen), display support tools such as 'Map settings' and "Help", and content creation tools such as "Story", to create a sequence of annotated slides based on maps created with data from the catalogue, which can be shared via an external link using the "Share" button. In addition to the basic features, a short description of MARINEWIND WebGIS is accessible from the "About" button, and extra functionalies are available from "Additional Tools" and "Additional Information" sections.
The "Additional Tools" section (Figure 3) contains i) the access to the MARINEWIND LCOE Simulation Tool (https://marinewind-lcoe.hosted.york.ac.uk/MARINEWIND_LCOE_Simulation_Tool_York.html) realised as part of Work Package 3 and ii) the tool that allows users to update MARINEWIND data by submitting spatial and technical data of new offshore wind project proposals.

"Additional information" (Figure 4) gathers the main results and products of the MARINEWIND Project, such as a concise documentation on best practices, recommendations, financing solutions, guidelines, and environmental assessments to support information exchange among stakeholders and to support decision-making processes, the MARINEWIND database of potential stakeholders involved in the offshore wind sector and the access to MARINEWIND webinars and videos.
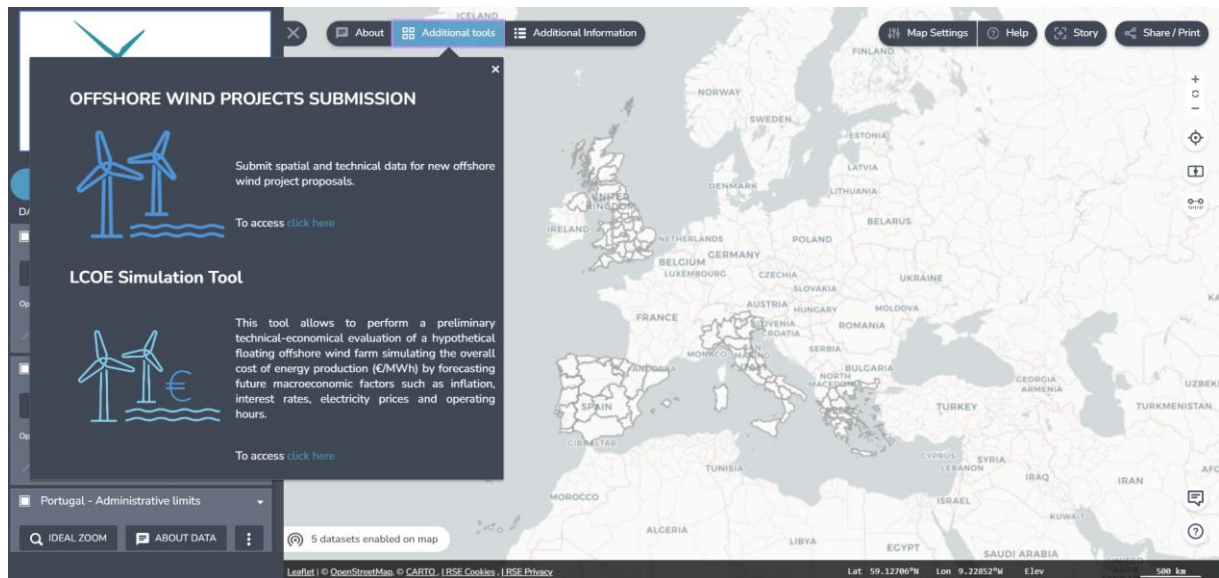

Figure 3 – "Additional tools" section containing the OW project submission form and the LCOE simulation tool
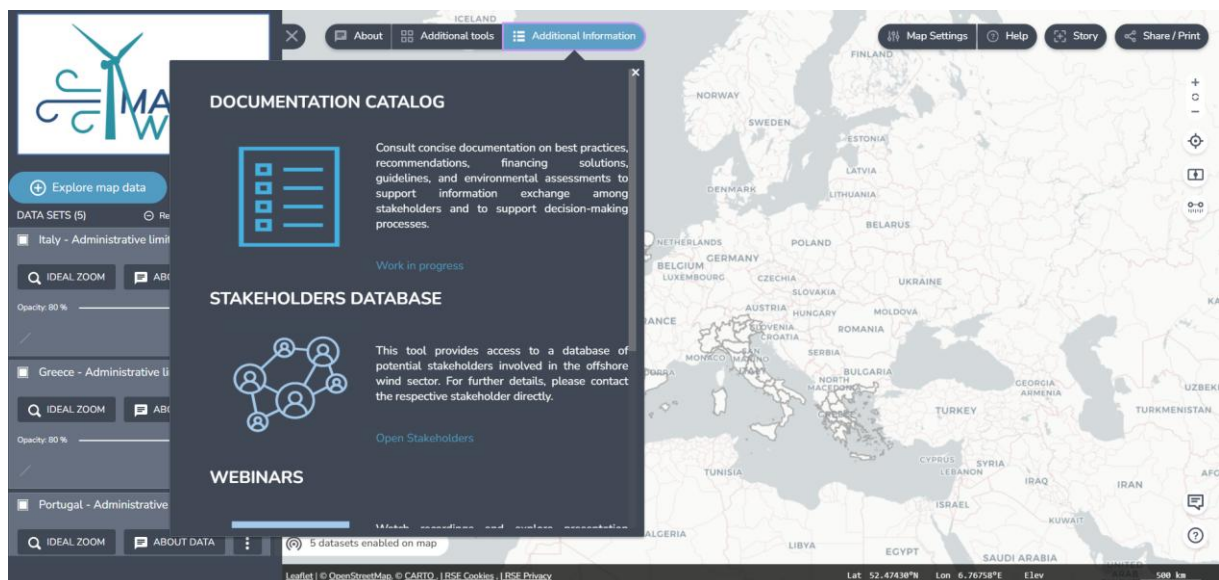

Figure 4 – "Additional information" section containing the documentation catalog, the MARINEWIND stakeholder DB and the links to MARINEWIND webinars and videos

5.1.1 Data catalog

In Figure 5, the structure and categories of data availaible in the MARINEWIND WebGIS is shown. For each of the five countries of the Consortium layers are grouped in Administrative boundaries, Marine

Cartography, OW projects, Protected Areas, Network Infrastructures. The last category Labs contain the main results of the three co-creation workshops with stakeholders conducted in each Country of the Consortium (Work Package 1). In addition, data related to protected areas, environmental characteristics and other sea uses at a european scale are contained in the General Data – European Level layers catalog. Data related to the five countries are stored and managed in a PostgreSQL relational database with a PostGIS extension and are displayed in the WebGIS through WMS services managed by RSE. The European-level general datasets, on the other hand, are managed by the respective institutions and are visualized through WMS services directly managed by respective institutions.

For each single layer a description is available together with a preview of it and the Web Map service (WMS) URL which generates map images on request to be used in GIS software (Figure 6). The data catalog also allows users to add their own data to the map visualization in several common spatial data formats (e.g., SHP, GeoJSON, KML). Once uploaded, the data will appear on the map and can be used by users for further analysis and/or comparison with the datasets already available on the platform. It should be noted that uploading data does not in any way modify the data catalog or the database behind the WebGIS, but exclusively applies to the current web session.
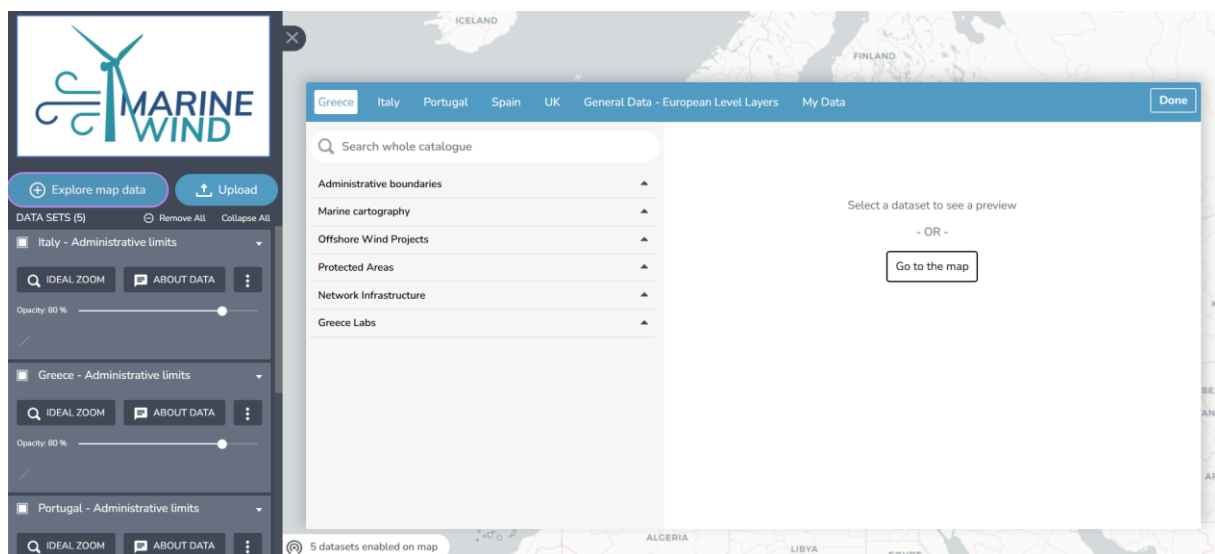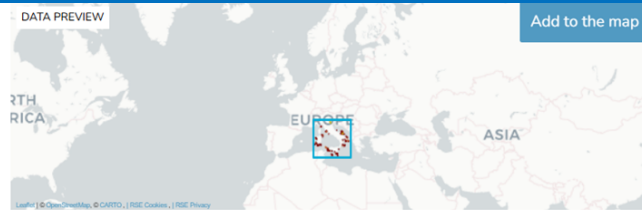

Figure 5 – MARINEWIND Data catalog

Figure 6 – Example of available layer information in the WebGIS

6   CONCLUSIONS

The MARINEWIND WebGIS is a multifunctional, publicly accessible web tool that provides stakeholders with customized information, best practices and guidelines on policies, environmental and social assessments, financial insights on FOW in the five countries of the MARINEWIND Consortium. The tool will remain usable even after the end of the project. It can be further updated and refined, serving as a resource for other research projects that require the analysis and processing of georeferenced data on FOW development. At the same time, the results of future projects can be integrated to update and enrich the WebGIS database, ensuring a broader and more lasting impact.