

# NordicSpatial

Marine Spatial Management Tool



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# Summary

The aim of the Nordic Spatial project was to facilitate a holistic approach to cross-border marine spatial planning, to create a shared understanding of the marine environment across national boundaries. The project was initiated by the Norwegian Mapping Authority and includes participants from Finland, Sweden, Estonia, Latvia, Lithuania, Denmark, and Norway. It was financed by the Nordic Council of Ministers, with an economic frame of DKK 10,905,000, and runs from 2022 until the end of 2025.

The project responded to challenges in marine spatial planning within the Nordic and Baltic regions, where differences in legal frameworks, data formats, and planning practices make cross-border cooperation difficult. Through workshops and collaboration between national agencies, the project group has identified use cases and mapped processes, data needs, and gaps in data maturity across countries.

The project resulted in the NordicSpatial mapping tool – a free, web-based map tool for data sharing and cross-border collaboration. By allowing users to combine and visualize marine data from different national and regional sources, the tool supports a common knowledge base for sustainable and coordinated management of marine resources in the Nordic and Baltic regions. This report shares the results of the NordicSpatial project.

# Introduction

Sustainable management of our marine resources requires cooperation across borders and across sectors, regarding Marine spatial planning (MSP) (Reimer et al., 2023). MSP is a process for analyzing and informing the spatial and temporal distributions of ocean uses to achieve ecological, economic, and social objectives (Ehler & Douvère, 2009). Activities in the marine domain, such as oil and gas extraction, fishery, establishment of renewable energy infrastructure and shipping activity, can influence activities or the natural habitat of marine species in neighboring coastal states (Foley et al., 2010; Thiagarajan & Devarajan, 2025). Once stakeholders across borders and across sectors understand the importance of cooperation, how can we secure that they are using the same authoritative data when engaging in cross-border cooperation? Do they have the same picture, the same situational awareness?

The aim of the NordicSpatial project was to facilitate a holistic approach for cross-border marine spatial planning, in contrast to single-country and single-sector planning practices, and to harmonize data sources to create a shared, consistent understanding of the marine environment across national boundaries. The project was initiated by the Norwegian Mapping Authority, and had participants from Finland, Sweden, Estonia, Latvia, Lithuania, Denmark, and Norway. It was financed by the Nordic Council of Ministers, with an economic frame of DKK 10,905,000. The project was started in 2022 and ended by December of 2025.

This report shares the results of the NordicSpatial project.

# Marine Spatial Planning in EU, the Nordic, and the Baltic

The European Commission agreed upon the importance of marine spatial planning and urged all the member states to create marine spatial plans that also took neighboring countries into consideration in 2014 (Directive 2014/89/EU, 2014). However, when the United Nations General Assembly proclaimed that 2021–2030 will be the United Nations Decade of Ocean Science for Sustainable Development – the theme began receiving increased international attention and recognition (Ocean Decade, n.d.). The High-Level Panel for a Sustainable Ocean Economy, consisting of 18 sitting Heads of State and Government, presented a new ocean action agenda in 2020 (Ocean Panel, n.d.). This agenda shows that it is a matter of urgency to develop a holistic approach to ocean management across the globe to achieve environmental, economic, and social goals set in the United Nations 2030 Agenda for Sustainable Development (Ocean Panel, n.d.).

The Nordic and Baltic states are facing several challenges in the marine areas that coordinated marine spatial planning can help alleviate. How would for instance restoring kelp forests in Sweden affect hypoxic zones in the Baltic Sea? How does livestock waste or fertilization in rivers affect our fjords? How do wind farms on one side of a national border affect marine mammals on the other side of the border?

However, the way marine spatial planning is organized today deviates across states and is regulated by different legal legislations. There also seems to be a common lack of understanding of marine spatial plans' vision and intentions, and they are often characterized by short time frames, and consultations with local communities, environmental NGOs, scientists, and public authorities starting too late in the process.

Furthermore, most marine spatial plans are created using near-static data. These data are often downloaded from various authoritative data portals and manually combined in various geographic information systems, while statistics and historical data are compiled from various sources into excel spreadsheets. Sometimes, the data you need is hard to access or evaluate whether it is up to date or not. The data also comes in different formats, making it hard to analyze and see in relation to other datasets.

If we are to develop our marine resources in a sustainable way, while also protecting the marine environment, cooperation across borders with a holistic, sea basin-based approach is needed. To achieve this, sharing and streaming of authoritative data and utilizing existing data from initiatives such as EMODnet and HELCOM, is essential to support a common knowledge base and situational picture. This requires that data is harmonized, standardized, and interoperable, ensuring it remains trustworthy, traceable, and continuously updated to reflect the dynamic nature of the marine environment.

The need for a unified understanding of the marine environment and coordinated data sharing provided the foundation for the NordicSpatial project. The project set out to develop a practical tool to support cross-border collaboration in marine spatial planning. The next chapter presents the main activities undertaken in the project and highlights the results that have emerged from this collaborative effort.

# The Nordic Spatial Project

The goal of the NordicSpatial project was to design a mapping tool to facilitate collaborative efforts in basin-level planning and improve coherence of marine spatial plans across borders in the Nordic and Baltic states.

## Project Activities

In order to develop a shared understanding of the competences and resources for each nation, as well as co-dependencies between nations, a project group was established. After identifying participants from relevant national agencies and establishing points of contact, the project group exchanged information on areas of responsibility, shared content, and status on marine spatial data infrastructures. This allowed for the identification of (dis)similarities between the national agencies. As a result, the project group developed a mutual understanding of the competences and resources associated with each nation, the interdependencies between them, and gained valuable insights into the different national models – knowledge that could feed back into national discussions and policy development.

Use cases were then defined through workshops with the project group, serving as planning scenarios for the prototype's development. The main use cases explored were cooperation related to offshore wind farm planning and the designation of marine protected areas. For these use cases, relevant datasets and data owners were identified, and gaps between data maturity and user needs were analyzed. Based on findings from desktop studies, user interviews, and user testing, recommendations were made to improve data fitness for purpose and communicate these needs to data owners.

As part of the NordicSpatial project, selected datasets also underwent an assessment of their FAIR (Findable, Accessible, Interoperable, Reusable) status. The aim of this activity was to demonstrate how FAIR assessments can motivate data owners to publish data in line with international standards.

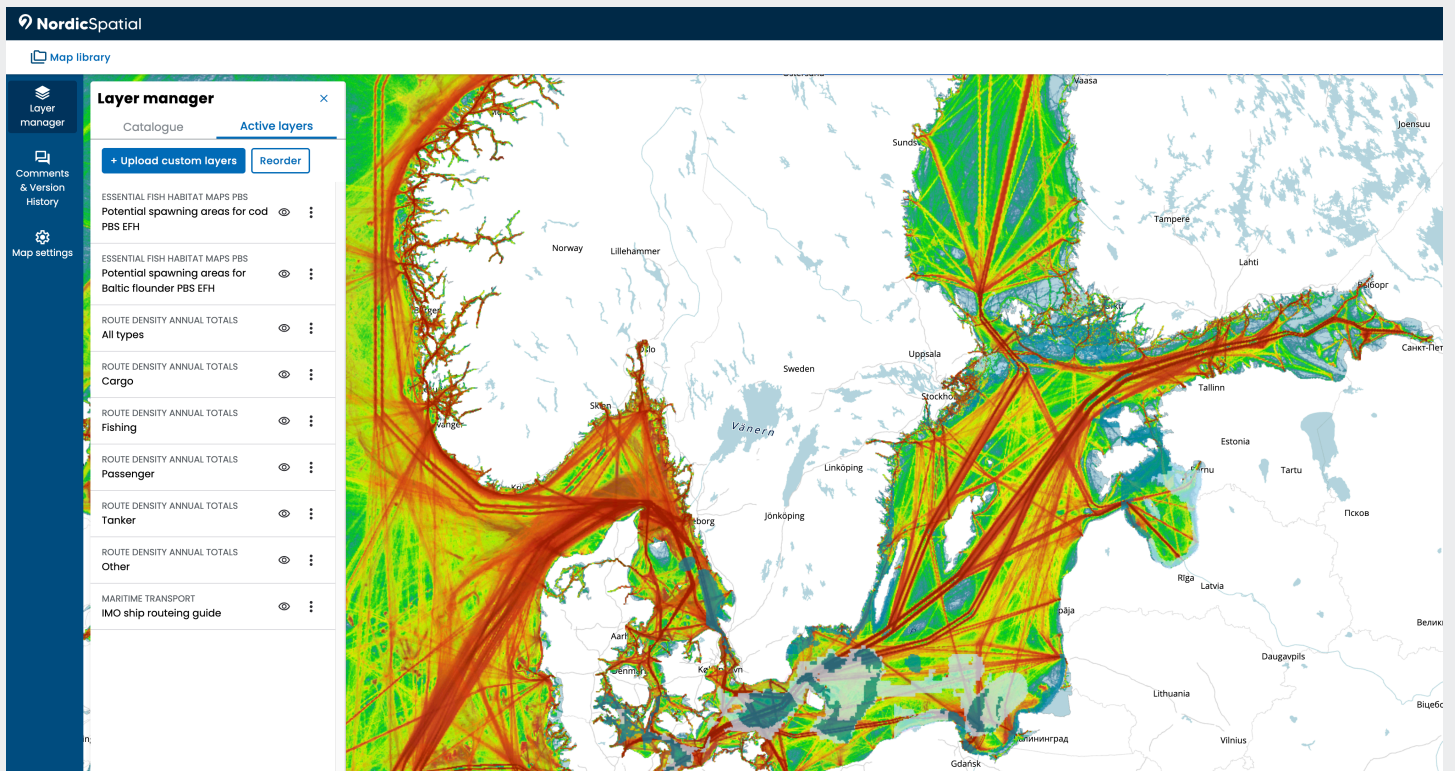
In summary, the project's activities focused on mapping marine spatial planning processes across participating countries, identifying user stories, and compiling the data foundations necessary for marine spatial planning in each state. Based on feedback and input from national participants, BarentsWatch developed a prototype of the NordicSpatial mapping tool, which was presented to the project group in August 2023.

## The Mapping Tool

Over the course of the project, NordicSpatial has developed a free map tool for data-sharing and cross-border collaboration for the Nordic and Baltic regions. The tool consists of a catalogue where you can stream marine geospatial data from EMODnet and HELCOM, which are the marine data portals for Europe and the Baltic Sea – where authoritative data from many sources is assembled and harmonized. The tool also allows for uploading independent WMS, GeoJSON or shapefiles, which you can control access to and combine with data from the catalogue to make and save maps. See Figure 1 for an illustration of how the map looks with added data.

The tool is free to use and requires no downloads or licenses. The need for special GIS-competences is minimal, and you can use it both in national cooperation with stakeholders or within your own agency or ministry. You can share maps and projects to provide a common understanding of each other's spatial plans and collaborate by co-editing maps and adding comments. The tool supports version control to ensure you keep track of your work.

All maps and projects are only accessible for yourself and the users you choose to share them with. If maps or projects are not connected to an owner, they are automatically deleted when leaving the website.



**Figure 1:** Route Density for Cargo Ships and Potential Spawning for Baltic flounder and cod visualized in the NordicSpatial Mapping Tool.

# Contributions to the Nordic Council of Ministers' Vision 2030

The Nordic uniqueness is our willingness to work together, and the NordicSpatial tool enables us to do so in marine spatial planning matters. The Nordic countries can hence lead the way in responsibly maintaining their sea basins by balancing the need for protection and harvesting of natural resources in a knowledge based and holistic way, in cooperation with neighboring countries.

Furthermore, the NordicSpatial project supports the Nordic Council of Ministers objective on becoming the world's most sustainable and integrated region in the world by enabling the Nordic and Baltic countries to include other nations' data, possibilities and challenges into their national marine spatial plans and cooperate in solving environmental and climatic challenges, as well as managing our resources responsibly and sustainably.

## Next Steps

The NordicSpatial tool is currently a demonstrator tool, demonstrating functionality in real scenarios with authoritative data, in which we can show cross-border and cross-sectoral cooperation. In order to harvest the full potential of the NordicSpatial project, the demonstrator will need to be further developed in cooperation with stakeholders to make it a fully operational marine spatial management tool.

Once further developed the NordicSpatial tool has great potential to better support cross-border marine spatial planning processes with the aim of fit-for-purpose services and enhanced reusability.

Norway has recently decided to replace its current Marine Spatial Management Tool with a new tool based on the platform from NordicSpatial. This can encourage increased use of the tool by neighboring countries – and lay the foundation for making NordicSpatial the preferred tool for marine spatial planning across the Nordic and Baltic countries.

### What did this project managed to do?

1. Create a free map tool Nordic Spatial for marine spatial planning across national borders
2. Strengthen Nordic cooperation, thinking about nature as a whole and not located in between countries
3. Create a FAIR register
4. Demonstrate use of live authoritative data (data you can trust).

# References

Ehler, C., Douvère, F. (2009). Marine Spatial Planning: a step-by-step approach towards ecosystem-based management.

<https://unesdoc.unesco.org/ark:/48223/pf0000186559>

European Parliament & Council. (2014). *Directive 2014/89/EU of 23 July 2014 establishing a framework for spatial planning*. Official Journal of the European Union, L 257, 135–147. [Directive - 2014/89 - EN - EUR-Lex](#)

Foley, M. M., Halpern, B. S., Micheli, F., Armsby, M. H., Caldwell, M. R., Crain, C. M., Prahler, E., Rohr, N., Sivas, D., Beck, M. W., Carr, M. H., Crowder, L. B., Duffy, J. E., Hacker, S. D., McLeod, K. L., Palumbi, S. R., Peterson, C. H., Regan, H. M., Ruckelshaus, M. H., Sandifer, P. A., Steneck, R. S. (2010). Guiding ecological principles for marine spatial planning. *Marine Policy*, 34, p. 955–966.

<https://doi.org/10.1016/j.marpol.2010.02.001>

Ocean Decade (n.d.). *Vision and Mission*. Ocean Decade.

<https://oceandecade.org/vision-mission/>

Ocean Panel (n.d.). *Transformations for a Sustainable Economy – A vision for Protection, Production and Prosperity*.

Reimer, J. M., Devillers, R., Zuercher, R., Groulx, P., Ban, N. C., Claudet, J. (2023). The Marine Spatial Planning Index: a tool to guide and assess marine spatial planning. *NPJ Ocean Sustainability*, 2:15. <https://doi.org/10.1038/s44183-023-00022-w>

Thiagarajan, C., Devarajan, Y. (2025). The urgent challenge of ocean pollution: Impacts on marine biodiversity and human health. *Regional Studies in Marine Science*, 81. <https://doi.org/10.1016/j.rsma.2024.103995>

# About this publication

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In 2019, the Nordic prime ministers presented a vision of the Nordic Region as the most sustainable and integrated region in the world by 2030. The work of the Nordic Council of Ministers is designed to pursue that goal by making the Nordic Region green, competitive and socially sustainable.

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