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Contents

Abstract

This document describes the stakeholders and users relevant for terrestrial and maritime spatial planning (MSP and integrated coastal zone management work) and operating within the demonstration areas of the BalticAIMS project. In addition, their working practices, such as operating practices, information collection activities and data handling and analysis systems are described. The follow-up deliverable D1.2 User Requirements Specification describes the use cases and their requirements defined by the main stakeholders and users.

Glossary

BD	Biodiversity directive
AG	Working Group (Arbeitsgemeinschaft)
BLANO	Bund/Länder-Arbeitsgemeinschaft Nord- und Ostsee (GER)
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (GER)
BSAG	Baltic Sea Action Group
BSAP	Baltic Sea Action Plan
BSH	Federal Maritime and Hydrographic Agency (GER)
EEA	European Environment Agency
EEZ	German exclusive economic zone
EMEP	European Monitoring and Evaluation Programme
ELY	Centre(s) for Economic Development, Transport and the Environment (FI)
EO	Earth Observation
GIS	Geographical Information System
HELCOM	Helsinki Commission
ICES	International Council for the Exploration of the Sea
IOW	The Leibniz Institute for Baltic Sea Research, Warnemünde (GER)
LAWA	National and Federal Working Group for Water (GER)
LLUR	Regional Authority for Agriculture, Environment and Rural Areas in Schleswig-Holstein (GER)
LUNG	Regional Authority for Environment, Nature Protection and Geology (GER)
MDI-DE	Marine Data Infrastructure Germany (GER)
MMM	Ministry of Agriculture and Forestry (FI)
MSFD	Marine Strategy (Framework) Directive
MSP	Maritime Spatial Planning
MSPD	Maritime Spatial Planning Directive
ND	Nitrate Directive
OGC	Open Geospatial Consortium
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic (abbreviation according to Oslo and Paris Convention)
PLC	Pollution Load Compilation (database in HELCOM)
SEA	Strategic Environmental Assessment (Sweden)
SYKE	Finnish Environment Institute
SwAM	Swedish Agency for Marine and Water Management
UBA	German Environment Agency
UUSELY	Uudenmaa Centre for Economic Development, Transport and the Environment
YM	Ministry of Environment (Finland)
VARELY	Varsinais-Suomi Centre for Economic Development, Transport and the Environment
WFD	Water Framework Directive

1 Introduction

1.1 Basics of terrestrial and marine spatial planning

The Baltic Sea is heavily impacted by various human activities. The main anthropogenic sources of environmental impacts are the growing population, agricultural production, expanding transport and energy infrastructure (e.g. Korpinen et al. 2012). At the maritime side, this is particularly important in areas nearby coastline, where most human activities take place. Coastal waters are the areas where nutrient loading from drainage basin is largest. The consequences of Baltic Sea wide eutrophication are largest in coastal waters and most evident and of greatest concern for the citizens. Also, many of the natural phenomena, like resuspension and upwelling occur in or affect the coastal waters. In addition to nutrient loading from drainage basin and other point sources, these events are of interest in marine monitoring and management due to their ability to carry nutrients to surface waters (internal loading). In national means, marine management often combines marine monitoring and maritime spatial planning. Terrestrial and Maritime Spatial Planning (MSP) is a process that aims for the mitigation of the impacts of human activities and eventual improvement of the state of the environment through coordination and implementation of various practices and policies. In maritime spatial planning, important sectors include energy production, maritime transport, fisheries, aquaculture, tourism and recreation. In the planning process, also environmental and nature values, the characteristics of maritime areas, and the interaction between land and sea play important role. Furthermore, other themes, such as cultural heritage, blue biotechnology, and maritime industry are typically addressed in the plans. What makes this planning work challenging, is that human activities compose multiple pressures and their impacts are not straightforward to evaluate and measure. Furthermore, the different interests conflict each other and must be balanced and a good communication in the planning process among the interest groups is important. In addition to the spatial planning, national marine management focuses on coastal waters. In national and international organizations, marine management and spatial planning responsibilities are often well coordinated and organized to operate in close interaction. Due to the recently passed deadline of Maritime Spatial Planning Directive (March 2020), most Baltic countries have just released their new MSPs and are preparing for its follow-up work. This work is also ongoing in the working groups of HELCOM.

One important action for the improvement of the state of the Baltic Sea is to improve the territorial and maritime spatial planning capabilities of organizations responsible for the planning in national and regional scale. Ecosystem based spatial planning requires reliable and up to-date information about the activities and processes taking place in the area – both in the terrestrial and marine environments. Earth Observation (EO) can contribute here by providing relevant information in a temporally frequent and spatially extensive manner and thus can improve effectively the material prepared for spatial planning by other means. While a lot of useful data (both EO and GIS material and other) already exists, EO has not yet been integrated into MSP and pressures-related information systems so that they cover both land and water themes in a user-friendly way.

1.2 Objectives of the project and this document

The BalticAIMS project seeks to provide innovative ways to access and analyze information relevant for MSP and integrated coastal zone management. Our goal is to develop an integrated data approach to obtain a full view of the essential processes of land and coastal water areas by combining various currently available satellite data sources, in situ observations and model predictions about dynamic landcover and water quality characteristics. The relevance of the MSP techniques supported by EO will be demonstrated for selected areas in Finland, Sweden, Germany and Poland. The main themes included are related to changes in environment due to agriculture, land use, aquaculture and changes in runoff.

The objective of WP1 is to develop a consolidated view of stakeholder requirements for the forthcoming BalticAIMS information service. In this deliverable (D1.1) we describe the stakeholders and users relevant for terrestrial and maritime spatial planning (MSP and integrated coastal zone management work) and their working practices. This includes operating practices, information collection activities and data handling and analysis systems. In addition to MSP and coastal activities, also agriculture and land use impacts of coastal waters are part of the information service.

The follow-up deliverable (D1.2) summarizes the use cases and their requirements defined by the main stakeholders and users. Together these two documents are used as input in WP2 Service Chain Specification.

2 User segmentation

Coastal processes are under responsibility of many institutes and organizations within the Baltic Sea countries. Most of the international activity is coordinated at HELCOM and EEA level and many of the concerns relate to the quality of the coastal waters are under various EU directives, such as WFD, MSFD, ND, BD, MSPD (see glossary for abbreviations). Within the Baltic Sea regional level, coastal processes, terrestrial and maritime spatial planning is coordinated by HELCOM working groups. However, national practices and legislation related to terrestrial and maritime spatial planning vary. We identified the relevant organizations responsible for the coordination or planning in practice for the countries of which the test sites shown in Figure 1.

The BalticAIMS project identified national primary organizations and expert users for both user cases (Table 1). A broader list of users and stakeholders is given in Table 2. Most of the identified users have been interviewed or initially contacted.

2.1 Regional level

The main regional level actor in the Baltic Sea is The Baltic Marine Environment Protection Commission (also known as the Helsinki Commission or HELCOM). HELCOM is an intergovernmental organization (IGO) and a regional sea convention in the Baltic Sea area established in 1974. It is a regional platform for environmental policy making and aims to protect the marine environment of the Baltic Sea from all sources of pollution. HELCOM operates through eight Working Groups – each tasked to handle specific topics related to the Baltic Sea's environment or maritime activities. The most relevant groups for the BalticAIMS project are AGRI, Pressures, and HELCOM-VASAB MSP. These working groups are composed mostly of experts nominated by member states. They prepare material and reports and work as "filters" before dissemination to different policy groups. The working groups also make sure the results are correct and simplify where needed and summarize.

The European Environment Agency (EEA) has a role in the larger picture as it provides independent information on the environment including all European Seas. EEA also coordinates interactions between HELCOM and OSPAR (Convention for the Protection of the Marine Environment of the North-East Atlantic).

2.1.1 Agri working group in the Baltic Sea (under HELCOM)

The HELCOM Agri group enhances dialogue between agricultural and environmental authorities on the development and application of sustainable agricultural practices on the Baltic Sea. The agricultural sector is the main source of land-based nutrient pollution of the Baltic Sea. Therefore, the agricultural practices for reduced nutrient leakage are key focus areas for the group. Agri and Pressures working groups have joint aim in reducing nutrient inputs from land to sea.

According to the groups terms of reference, 'the Group will deal with agriculture in relation to the implementation of the ecosystem-based approach.' The agriculture sector has been identified in the Baltic Sea as having important potential for environmental gains in relation to the nutrient losses and thus the status of the marine environment. Therefore, the group will respond to the need to find solutions how the sector could further contribute to reaching Good Environmental Status of the Baltic Sea by 2021. The Agri group involves representatives from agriculture and environment authorities of the Baltic Sea countries, as well as EU, and HELCOM Observers. It was also established 'to provide a platform for agri-environmental policy measures and instruments and for joint discussion on the Baltic agriculture in the context of the protection of the marine environment to address nutrient inputs and emissions from agriculture'. The work is organized as close co-operation with the pressures-working group (see below).

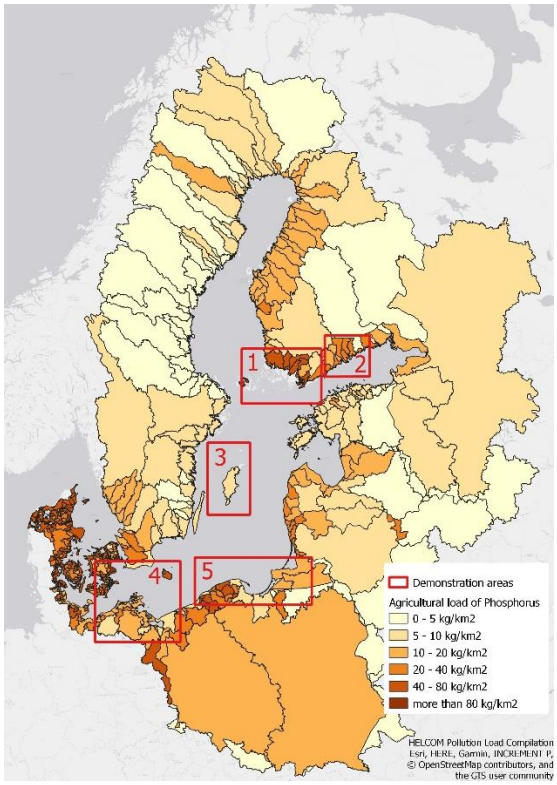

Figure 1. Service demonstration areas of the BalticAIMS project (red rectangles with numbers). The background shows the agricultural load of phosphorus in the drainage basin level in the Baltic Sea.

Table 1. Primary users and stakeholders identified and contacted for service specification and testing in the defined demonstration areas.

Use case \ Country	**FI**	**GE**	**SE**	**HELCOM-groups**
1. Agriculture	Regional Centre of South-West Finland (VARELY) Regional centre of Uusimaa (UUDELY), Ministry of Environment	German Environment Agency (UBA) and ministries for environment and agriculture in the federal states (e.g. Ministry for agriculture and Environment MV)	County Administrative Board of Gotland	AGRI, Pressures
2. Coastal activity mapping	Regional centre of Uusimaa (UUDELY), Helsinki-Uusimaa Regional Council, City of Helsinki Regional Centre of South-West Finland (VARELY), Ministry of Environment	Federal Maritime and Hydrographic Agency of Germany in EEZ (BSH), federal ministries and agencies (e.g. Ministry for Energy, Infrastructure and Digitisation MV)	County Administrative Board of Gotland, Region Gotland	HELCOM-VASAB MSP, Pressures

Table 2. Users and stakeholders organizations that participated to the definition of the user requirements and provided feedback on the service contents of the BalticAIMS project. * not contacted yet.

Level	Organization	Role	Comment /Contact person
Regional	HELCOM	Main stakeholder, User requirements	Working groups: AGRI, HELCOM-VASAB MSP, Pressures. Chairs of these groups and HELCOM responsible chairs and co-chairs
	BSAG (Baltic Sea Action Group)	Independent non-profit foundation (Fin). Works to find solutions and right actors to restore the good ecological balance of the Baltic Sea.	Content Director*
National (FI)	Finnish Ministry of Environment	The highest-level environmental authority in Finland. National Stakeholder.	Three ministerial advisors, responsible of MSP, natural underwater species, coordinator of national environmental monitoring
	Finnish Ministry Agriculture and Forestry	The highest-level authority in agriculture issues in Finland, national stakeholder	Coordinator*
	Regional councils	Competent authority in MSP in Finland	Coordinator, planners
	Regional environmental authorities in Finland (Gulf of Finland region) e.g. VARELY*, UUDELY)	User requirements, in situ data (automated riverine stations)	Responsible persons
	City of Helsinki	User requirements, in situ data	Coordinator, experts
National (GE)	Federal Maritime and Hydrographic Agency of Germany (BSH)	User requirements for spatial planning EEZ	
	German Environment Agency (UBA)	National thematic coordinator Copernicus Land Service – land cover classification – influence from land	
	German Environment Agency (UBA)	User requirements concerning the influence of human activity and agriculture for Baltic Sea water	
National (SE)	Swedish Agency for Marine and Water Management (SwAM)	SwAM is responsible for marine and water planning, oversight, and regulations	
	Swedish Board of Agriculture	The Board of Agriculture is the Government's expert authority in the agro-food sector and is responsible for all matters related to agriculture and horticulture.	
	County Administrative Board of Gotland	Swedish authority and link between local municipalities and government, parliament and national authorities.	
	Region Gotland	Responsible for implementation of political decisions.	For Gotland the Region is also the municipality of Gotland (planning responsibilities).
	Blue Centre Gotland	A development center for water issues on Gotland. Managed by	

		Uppsala University Campus Gotland, in collaboration with the County Administrative Board and Region Gotland.	
National (PO)	Ministry of Maritime Economy and Inland Navigation	Co-chair of HELCOM working group HELCOM-VASAB MSP	Not yet interviewed
		National working group participants (several institutes)	*

2.1.2 Pressures (HELCOM)

The HELCOM working group Pressure provides, according to their terms of reference, the necessary (technical) basis to the work on inputs of nutrients and hazardous substances from both diffuse and point sources on land. They also follow-up of the implementation of the HELCOM nutrient reduction scheme. Relevant recent publications from the group focus on reducing nutrient inputs from point sources (Input of nutrients: potential to reduce input from point sources, Action report, HELCOM, 2020). The report summarized the submitted inputs of HELCOM countries to PLC database and the areas, where nutrient inputs could be reduced.

Within the work plan for 2021-2022, the group will 'coordinate and organize the monitoring and assessment activities of HELCOM related to waterborne and airborne discharges, emissions and inputs of nutrients and hazardous substances'. This includes the following (direct reference):

- Guide Pollution Load Compilations (PLCs) (Water, and Air in cooperation with EMEP) and continuous work on improving data reporting and quality, as well as prepare assessment reports meeting policy needs, and in relation to PLC be responsible for that.
- HELCOM core indicators for pressures on marine environment are developed and operationalized to serve e.g. holistic assessments according to the goals and objectives of the Baltic Sea Action Plan, HELCOM Ministerial Declarations, and the EU Marine Strategy Framework Directive for those Contracting Parties also being EU Member States.
- PLC-associated technical guidelines for quality assurance are developed and updated to ensure confident monitoring and assessment results for inputs of nutrients and hazardous substances, taking into account the existing international guidance documents.

The group also e.g.:

- 'Monitors and assesses the implementation of the HELCOM nutrient reduction scheme, as well as supports the review of the scheme based on the best available scientific knowledge in cooperation with other relevant subsidiary bodies and institutes and modelling centres.
- Develops and maintains a system to evaluate progress by the HELCOM countries in meeting their country-allocated nutrient reduction targets of the HELCOM nutrient reductions scheme, follows-up on the progress and prepares reports and recommendations for improved implementation.
- Cooperates to address nutrient emissions and inputs from non-Contracting Parties to meet the expected reductions according to the HELCOM nutrient reduction scheme, the work of river basin management commissions/bodies.
- Identifies and prioritizes needs for further reduction of nutrients'.

2.1.3 Coastal activity mapping (and MSP) in the Baltic Sea (under HELCOM VASAB-MSP)

Large portion of coastal activity is balanced by maritime spatial planning, which makes it an important part of coastal activity mapping use case. For this reason, it is also highlighted in this deliverable. In the Baltic Sea, jointly formulated HELCOM-VASAB MSP principles (HELCOM-VASAB 2010) as well as a roadmap for MSP in the Baltic Sea Region (HELCOM-VASAB 2013) support the national MSP processes. Maritime Spatial Planning has been identified as the central instrument for creating a balance between sectors and managing the sea more coherently and is supported by the European Union (EU). The adoption of the EU Directive on Maritime Spatial Planning (2014/89/EU) has promoted the process of MSP as it requires all coastal EU member states to prepare cross-sectoral maritime spatial plans by 2021. The MSP Directive recognizes that MSP is a national competency - each member state defines the topics, format and process of their national MSPs. But the principle is to call for consistency and coherence of national maritime spatial plans across borders.

A recent Baltic Sea Region Interreg-funded BalticLines-project summarized the national organizations responsible for the maritime spatial planning and how it has been legally arranged in the Baltic countries. A modified version of this summary (Table 3) is given below. One of the BalticLines-project deliverables summarizes the criteria for transnational planning (Meyer et al. 2019). The work was done under HELCOM VASAB-group. Most Baltic Sea countries have proceeded in time requested by the directive. MSP is balancing between the economic interests by shipping, offshore energy industries fishery, recreational use ad the areas vital for environmental protection. It is a highly complicated task to account all these in coordinated planning across borders in areas with varying legislation practices

The national MSP practices have variation within the Baltic Sea countries (Table 3). Most relevant differences between the practices followed by the countries are:

- how binding the MSP plans are in legal terms
- the temporal planning horizon, i.e. how long is the period to which the plans were made
- the scale of planning (i.e. the level of detail the plans).
- the type and number of sectors addressed in MSP.
    - The countries planning authorities are allocated at very different ministries ranging from the ones responsible for the environment to those that are in charge for transport infrastructure or the economic development of a country.

Accordingly, the overriding objectives to which MSP shall be used for can vary considerably; emphases may be put on economic, social or environmental preferences depending on the countries' future aims.

Table 3. Summary of MSP practices in Baltic Sea countries (according to Baltic Lines, 2019).

	Sweden	**Germany**	**Finland**	**Denmark**	**Estonia**	**Latvia**	**Lithuania**	**Poland**
Competent Ministry	Ministry of Environment and Energy	Ministry of Transport and Digital Infrastructure	Ministry of Environment	Ministry of Industry, Business and Financial Affairs	Ministry of Finance	Ministry of Environmental Protection and Regional Development	Ministry of Environment	Ministry of Maritime Economy and Inland Navigation
Competent planning authority	Swedish Agency for Marine and Water Management	Federal Maritime and Hydrographic Agency (for EEZ) & Ministries of Coastal Federal States	Department of Built Environment & Regional Councils	Danish Maritime Authority	Spatial Planning Department	Department of Spatial Planning	MSP tendered to consortium led by Klaipeda University	Department of Maritime Economy & Maritime Offices of Szczecin, Słupsk and Gdynia
Number of planning areas	3 Regional MSPs (from 1nm zone)	1+2 1 EEZ 2 Territorial Waters (SH and MV)	3 +1 3 Regional MSPs +1 Åland	1	1 (+2) 2 earlier regional plans incorporated into national MSP	1 National MSP	1 National MSP	1 Coordinated between three regions
Scale of MSP	1:700.000 – 1:1.000.000	1:400.000	Not decided yet	Not decided yet	1:200.000	1:200.000	1:200.000	1:200.000
Planning horizon	~2050	Not decided yet	Not decided yet	~2050	~2030	~2030	~2050	~2030
Binding/nonbinding MSP	Non-binding	Binding	Very strategic, non-binding	Binding	Binding for all structures, incl. OWE installations	Non-binding	Binding	Binding
National MSP objective	Describe Governments' & institutions overall view on how we use our oceans (now & future), support the development of sea-linked industries, increase predictability for actors that intend to operate offshore, facilitate management work (i.e. environmental assessment, fisheries policy and MPA protection).	Promote sustainable spatial development, which brings social and economic demands regarding sea space in line with the sea's ecological functions and leads to a permanent, large scale balanced order.	Promote sustainable development and growth of different uses of marine areas, sustainable use of marine resources and achieving good status of the marine environment.	Promote economic growth, the development of marine areas and the use of marine resources on a sustainable basis.	Define the longterm uses of the assigned marine area through a public process, taking into account the different economic, social, cultural and environmental interests and needs.	Balance environmental, societal and economic interests and promote sustainable development of marine space by allowing or limiting actions at sea and seacoast. Balance interests of coastal municipalities and the state.	Foster the regulation of marine uses and create preconditions for development of maritime economic activities. MSP as precautionary measure for sustaining a good status of the marine environment.	Create preconditions for blue economy growth and to coordinate (functionally and spatially) the various maritime economic activities. Ensure the realization of maritime investment' projects in sustainable way.

2.2 National level

2.2.1 Finland

The Maritime spatial plan of Finland was approved in Dec 2020. Currently, a reporting and monitoring phase is on-going. The second round of planning begins later in 2021. In Finland, MSP is not legally binding. Instead, the regional and municipal level plans have the legally binding effect. It can thus be stated that the Finnish sea-use planning has a nested format: the national MSP gives a general view of preferred spatial development of the seas. Regional and municipal plans specify the actual sea use and act as a base for e.g. permitting.

In Finland, spatial planning and environmental monitoring are done by organizations at different levels (see the summary in Table 4 and Figure 2). The Finnish **Ministry of Environment (Finnish abbreviation YM)** is the highest-level environmental authority while the **Finnish Ministry Agriculture and Forestry (Finnish abbreviation MMM)** is the highest-level authority in agriculture issues in Finland. They do overall coordination, allocate funding and communicate with the international community (e.g. EU, EEA, etc.). From the point of view of the BalticAIMS project they are main national stakeholders.

The **Finnish Environment Institute (SYKE)** is a research and expert organization under Ministry of Environment. SYKE manages the national environmental information systems and develops methods for collecting environmental data (incl. EO, modelling, citizen monitoring). The Marine Research Centre (MRC) of SYKE is a central hub for marine ecological research in Finland. MRC has participated actively in the development of the national maritime spatial plans and contributed to the entire MSP process in Finland by delivering a spatial data layers of ecologically and biologically significant underwater areas and organizing a series of workshop on this matter to spatial planners. SYKE's experts produced also a multi-criteria analysis of optimal locations of offshore wind production at Finland's sea areas and a guidance document on application of ecosystem-based approach in MSP. Thus, SYKE includes both users and providers of data within the context of the BalticAIMS project.

Regional councils are *'*the main bodies promoting the interests of their regions and they also act as statutory joint municipal authorities*'*. They work together with central government authorities, cities, municipalities and universities in their regions and are responsible for the regional development strategy and overall regional development. There are 19 regions in Finland (18 regions in Mainland Finland and the Province of Åland) and their statutory tasks include regional development and regional land use planning. These regional plans include the long term (20-30 years) development vision. In MSP matters the Regional councils are the so-called Competent authorities in Finland. This means that the Regional councils are responsible for the maritime spatial planning for Finland's sea areas, including the Exclusive Economic Zone. There are roughly 20 planners in the eight coastal Regional councils and at the Province of Åland who are responsible for the practical MSP work. Thus, they are a core user group for the BalticAIMS project.

Similarly to the Regional councils the **Centres for Economic Development, Transport and the Environment (ELY Centres)** are regional authorities. Their Environment sections are responsible for[1]:

- Reporting and monitoring the state of the environment
- Nature conservation and landscape protection
- Environmental protection
- Steering and monitoring of land use
- Use and management of water resources

The environmental monitoring is based on measuring various biological, physical, chemical and other variables and by analyzing interaction between them. This includes collecting and using information about loading and monitoring the algae situation and other environmental issues. The inspectors of ELY Centres also monitor the environmental impacts of industrial and agricultural activities taking place in their regions and are involved in permitting processes. This is very relevant for the goals of the BalticAIMS project.

[1] https://www.ely-keskus.fi/web/ely-en/environment

Municipalities such as the **city of Helsinki** are responsible for collecting environmental data from their area and deliver those to the ELY Centres. They are also in charge of local level sea and coastal use planning and sometimes also on permitting processes.

Table 4. Organizations involved in marine and terrestrial planning and environmental monitoring in Finland.

	National level	Regional level	Municipal level
MSP	Coordinator & ministry/ministries SYKE	Regional councils: • Uusimaa Regional Council • Regional Council of Southwest Finland	Cities of Helsinki/Turku/Hanko
Terrestrial planning	Coordinator & ministry	Regional councils: • Uusimaa Regional Council • Regional Council of Southwest Finland	City of Helsinki/
Marine management	Ministry coordinates (SYKE)	Regional environmental authorities VARELY UUDELY	City of Helsinki/Turku/Hanko
Marine monitoring	SYKE	Regional environmental authorities (e.g. VARELY, UUDELY in case I&II areas)	City of Helsinki/Turku/Hanko

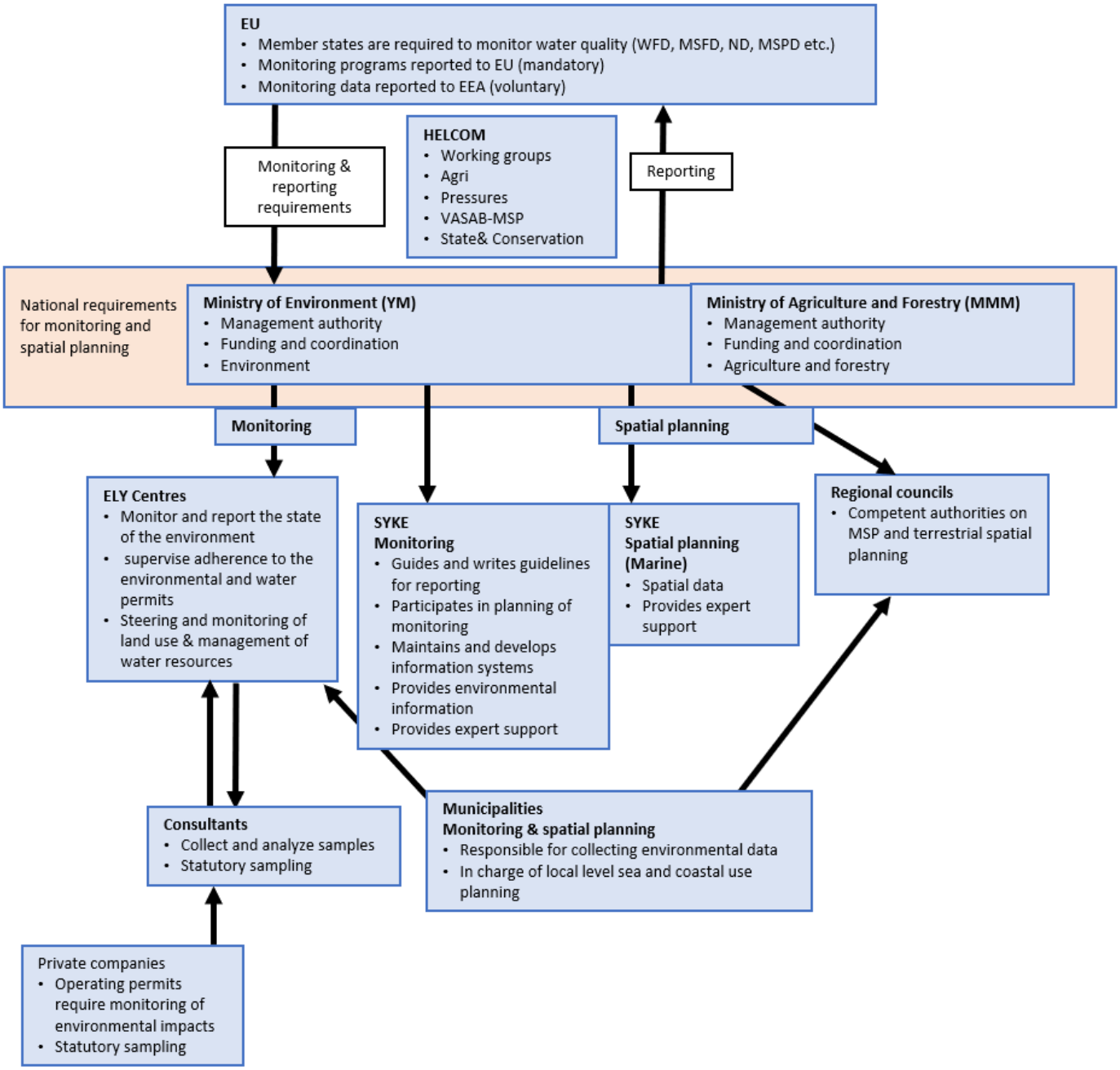

Figure 2. A simplified version of relations and interactions between the organisations and actors involved in Finnish water management and spatial planning.

Figure 3 illustrates how terrestrial and maritime spatial planning is drafted in one of the BalticAIMS test sites, around Helsinki area in Finland. The area has a large population and it is a representative example of area with active terrestrial and maritime spatial planning requirements. Human activities are manifold, and area represents a case of multi-use in spatial planning. Seasonality is of importance in the planning. Figure 4 in turn shows examples of legally binding regional plans in the Helsinki test site.

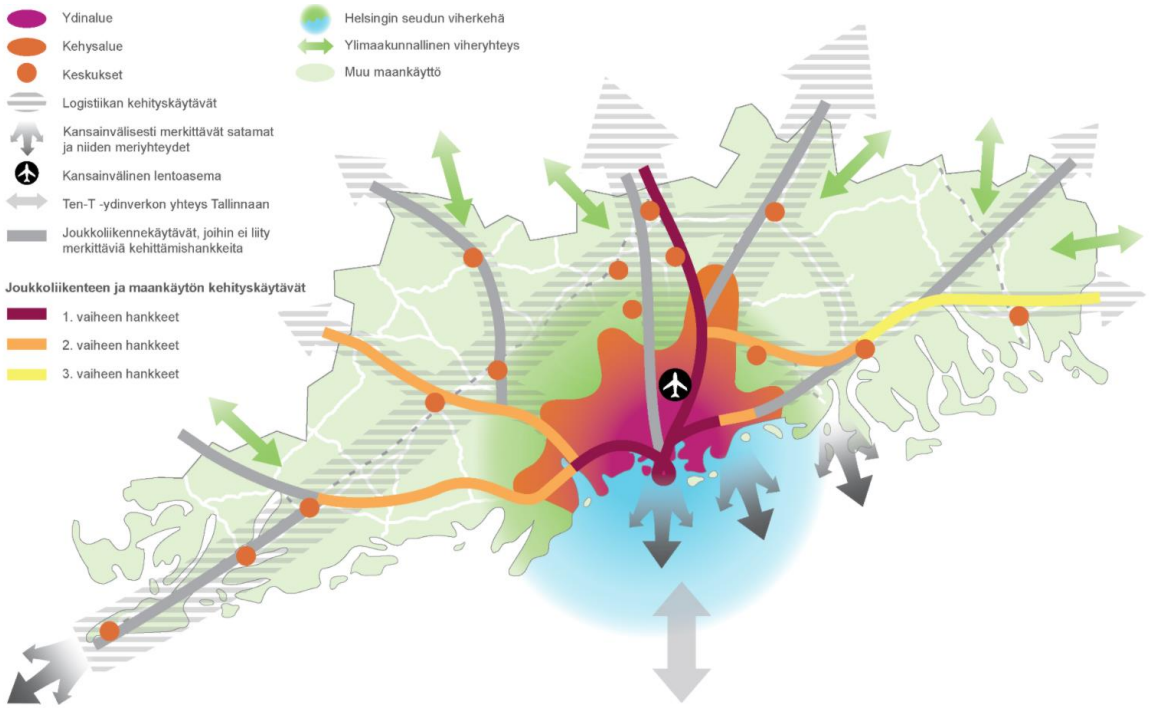

Figure 3. Example of how terrestrial and maritime spatial planning is drafted in one of the BalticAIMS test sites, around Helsinki area in Finland.

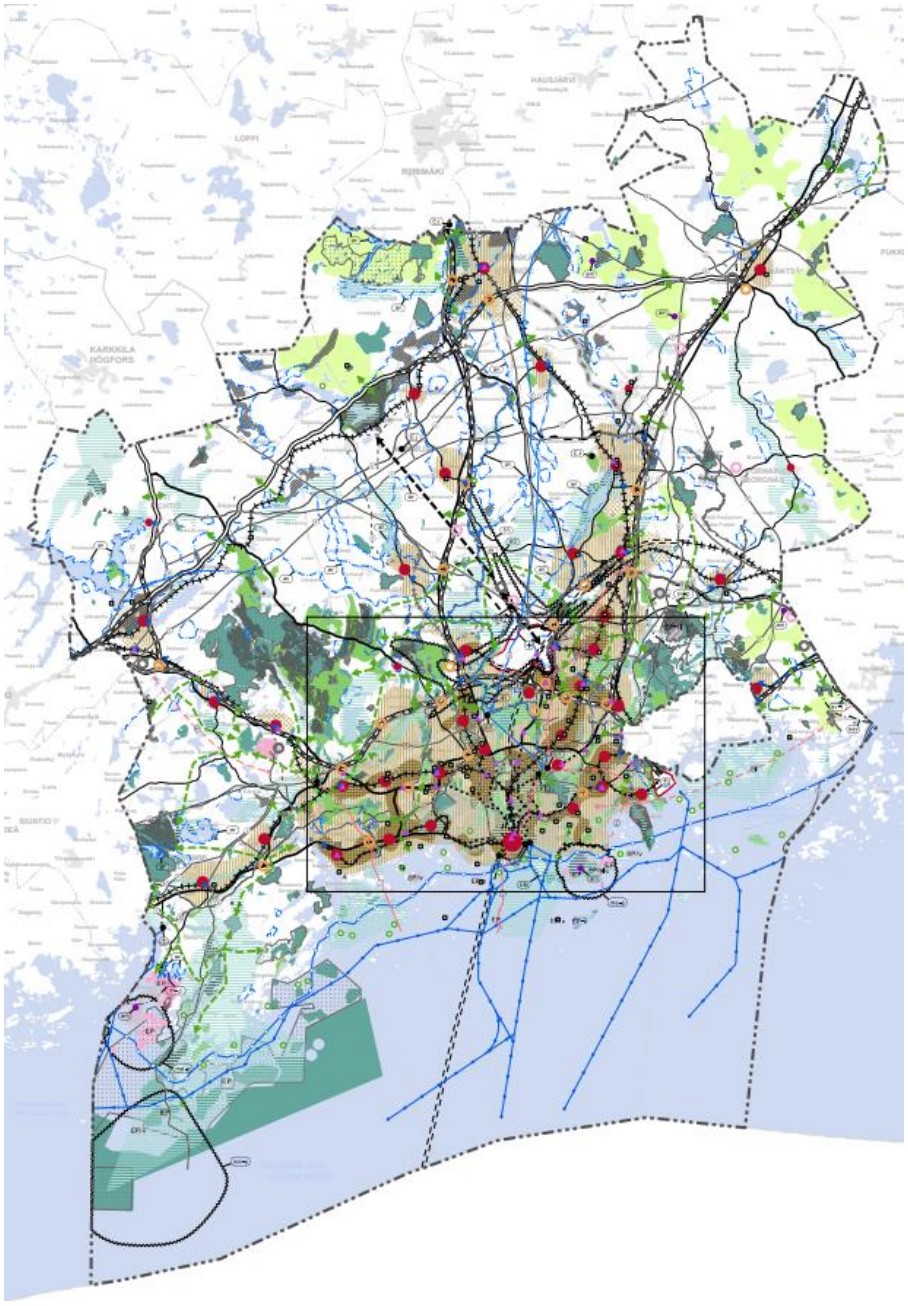

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Figure 4. Examples of legally binding regional plans in the Finnish test site 2, Helsinki & surrounding Uusimaa region. See previous image for interlinkages between terrestrial and maritime spatial planning and its interactions. Map legend is not available in English. Brown areas are urban areas, light blue is water, blue line identifies largest ship routes, various nature protection areas are shown in variations of green color.

2.2.2 Sweden

The marine spatial planning and environmental monitoring is done by organizations at different levels in Sweden and a summary overview is presented in Table 5.

With respect to MSP, the Swedish Environmental Code and the Plan and Building Act constitute the legal basis and as in Finland, the MSP is not legally binding. According to the Environmental Code there shall be three marine spatial plans: Gulf of Bothnia, Baltic Sea, and Skagerrak/Kattegat (Figure 5) covering the area one nautical mile from the baseline seawards (incl. the Exclusive Economic Zone (EEZ) as shown in Figure 6. The plans, which shall be adopted by the Government, shall be guiding and contribute to sustainable development. The Government may, according to the legislation, adopt regulations prohibiting or limiting activities in destined geographical areas. The MSP process is regulated by the Marine Spatial Planning Ordinance, which contains provisions on geographical boundaries, the content of the marine spatial plans, the responsibility for preparation, consultation and cooperation in the proposal process, and monitoring and review. **The Ministry of Environment** is the highest-level environmental authority in Sweden, but the **Swedish Agency for Marine and Water Management (SwAM)** is the responsible agency for developing the marine spatial plans, working together with other agencies and the county administrative boards while consulting coastal municipalities, NGOs and the public.

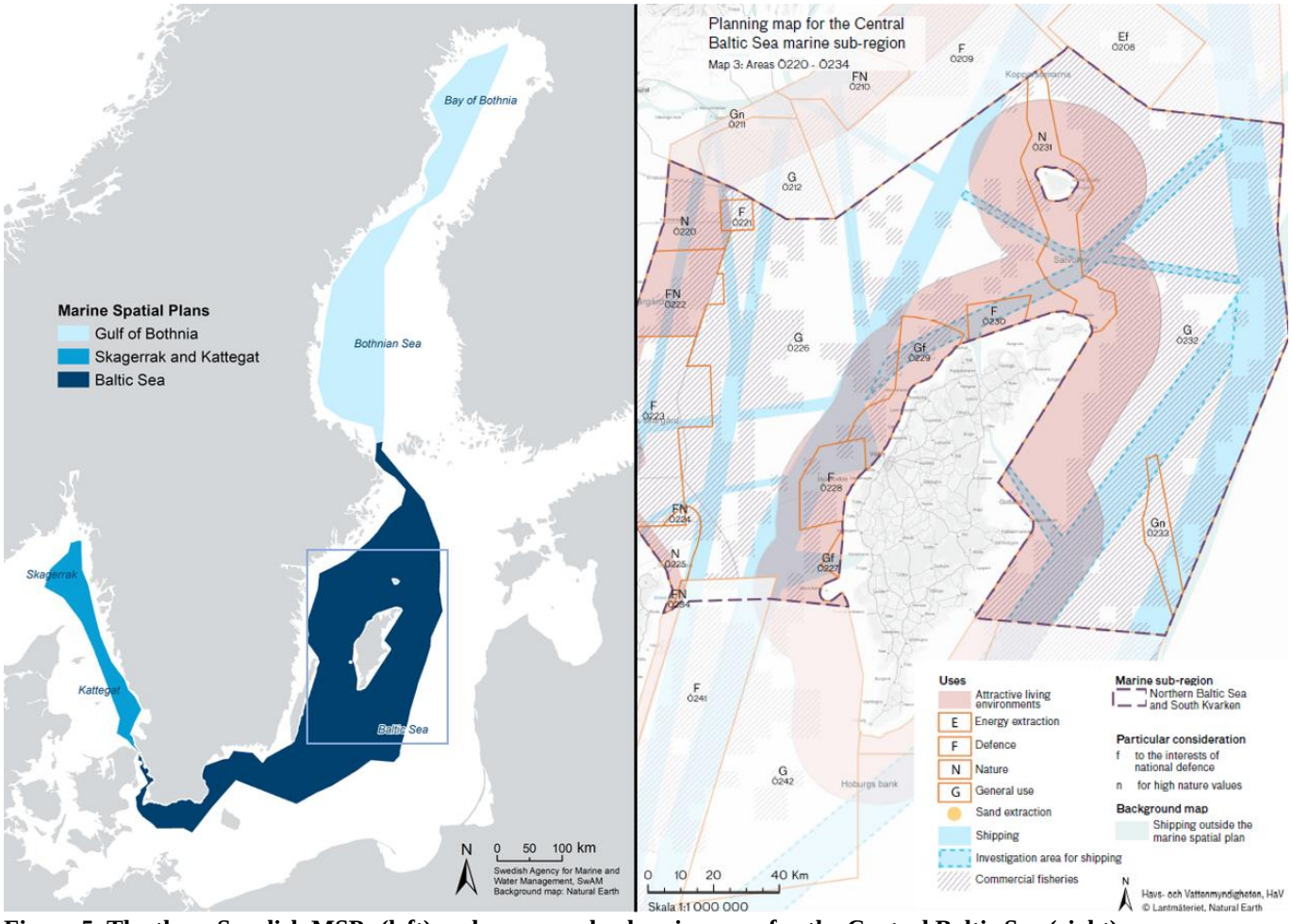


Figure 5. The three Swedish MSPs (left) and an example planning map for the Central Baltic Sea (right).

In parallel, the Plan and Building Act regulates the responsibilities and mandate for the appr. 80 coastal municipalities to plan land, coast and water including the territorial sea. This Act is the basis for the Swedish planning system, which consists of regional plans, comprehensive plans, the area regulations and detailed development plans. Only the area regulations and the detailed development plan are legally binding documents and are defined and managed by **the municipalities**. However, the regional plan and the comprehensive plan, as well as the national maritime spatial plans, can be seen as indicating the overall direction of the municipality over a

significant time period and as guidance in the development of the detailed development plan and in the permit granting process.

The responsibility for monitoring and management of the aquatic environment is shared by many and Figure 7 gives an overview of the complexity of these responsibilities and the reporting structures in Sweden. With respect to marine monitoring and management, the responsibility lies with five of the twenty-one county administrative boards, which are designated **regional water authorities (WA/VM)**. SwAM supports these water authorities through guidance and regulations for surface water. The role of the water authorities is primarily coordination within their own water districts. National cooperation between the offices of the water authorities and SwAM must see to it that all stakeholders are working towards the same goal. Each water authority has a **water delegation** consisting of expert representatives designated by the Government. The delegation makes decisions on larger issues for the entire water district, for example environmental quality norms, measure plans and management plans. Each water authority also has an office that coordinates the work within and between water districts.

On the **regional level, the county administrative boards** have major responsibilities and broad mandates in the area of water and the environment. Some of the tasks of the boards are to monitor the condition of the county's waters and to supervise activities connected with the water. There is an advisory group secretariat on every board, charged with helping the water agencies implement the Water Quality Management Ordinance. The work must be carried out in dialogue with the municipalities and local water stakeholders, for example through water councils. The regional county administrative boards are responsible for the monitoring programs and the actual data collection.

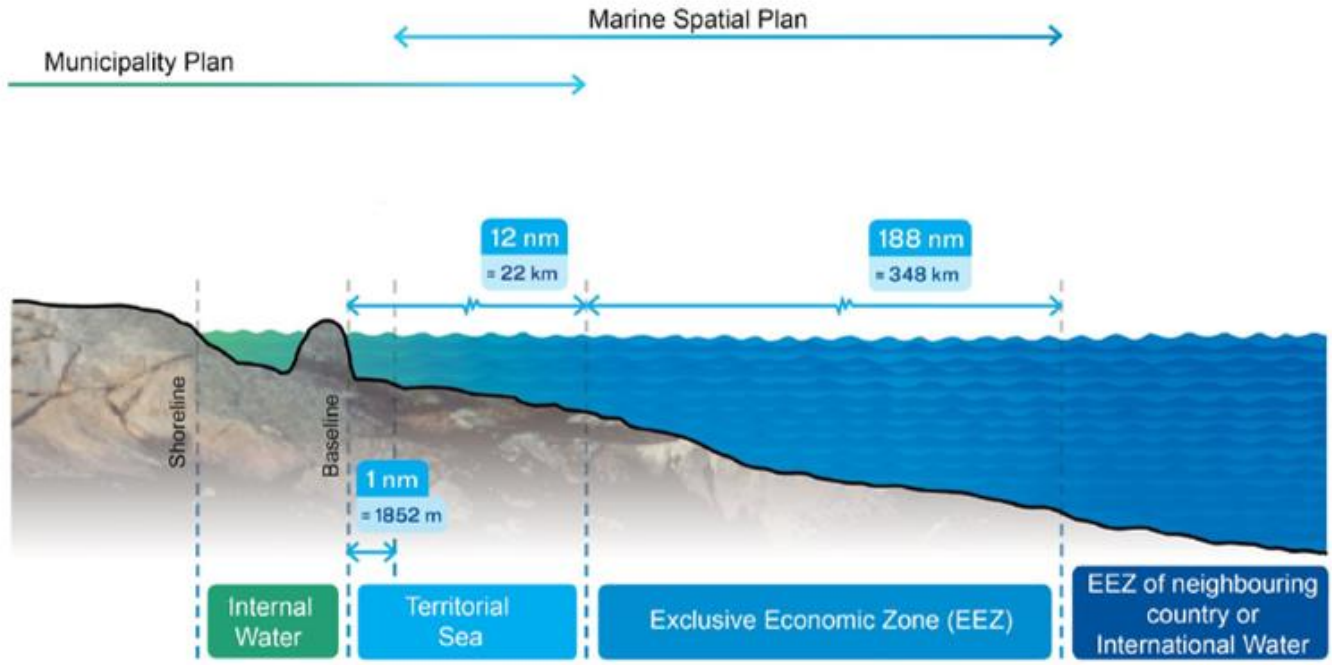


Figure 6. Terms, boundaries and planning responsibility. In the territorial sea, the state shares planning responsibilities with the municipalities. In the exclusive economic zone, the State has planning responsibility.

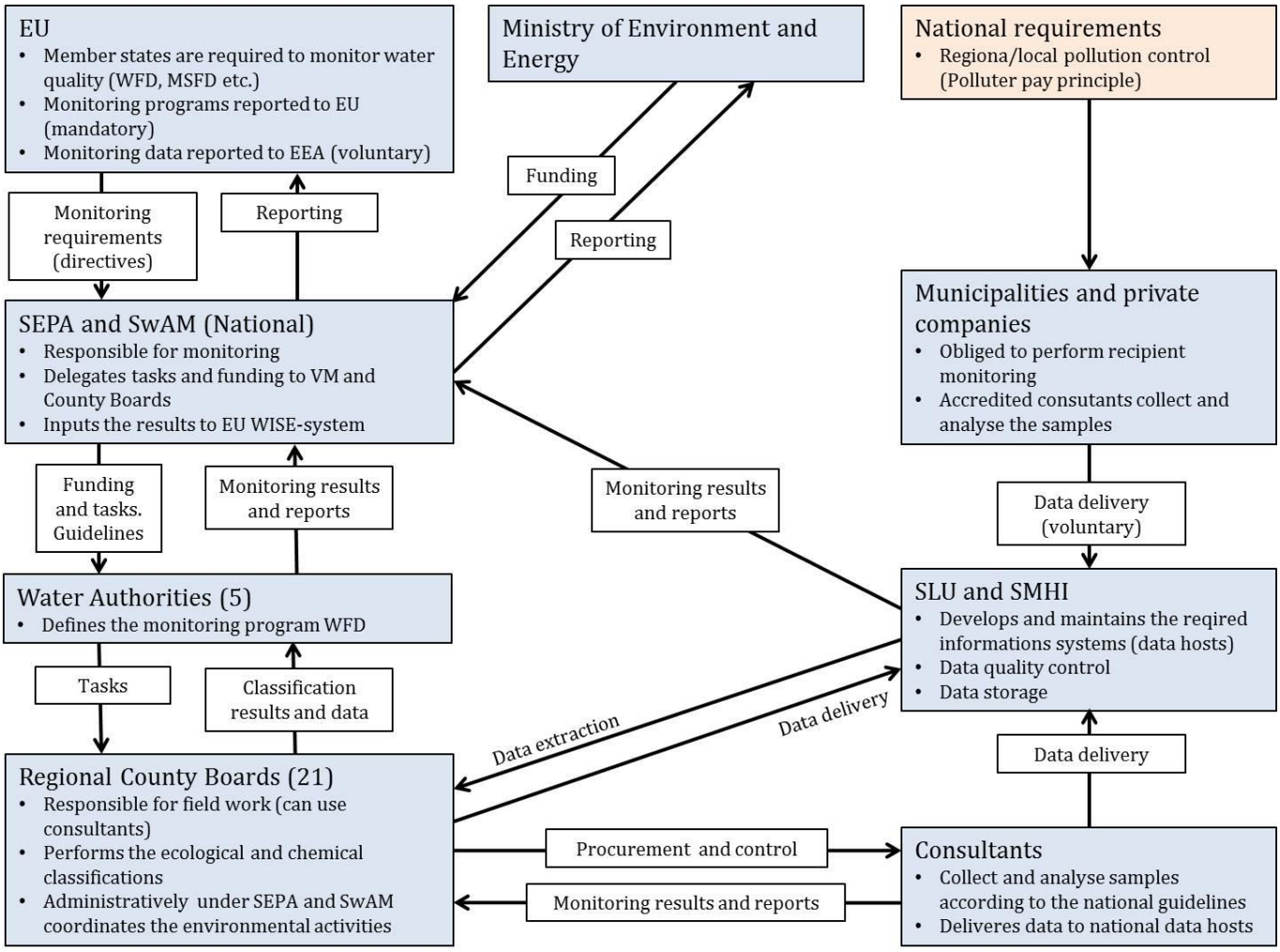


Figure 7. Relations and interactions between institutes involved in Swedish water management.

Table 5. Organizations involved in marine and terrestrial planning and environmental monitoring at different levels, in Sweden.

	National level	Regional level	Local level
MSP	SwAM	County Administrative Boards (Advice and support)	Municipalities – Region Gotland (also municipality of Gotland)
Terrestrial and coastal zone planning	The Swedish National Board of Housing, Building and Planning	County Administrative Boards (Advice and support)	Municipalities – Region Gotland (also municipality of Gotland)
Marine monitoring and management	SwAM	County Administrative Boards - County Administrative Board of Gotland	Municipalities – Region Gotland (also municipality of Gotland)

2.2.3 Germany

The organization of Maritime Spatial Planning is Germany is divided in the planning of the EEZ and of the territorial waters.

The responsibility for the EEZ lays in hand of the Federal Ministry of Interior, Building and Community (BMI) for setting up maritime spatial plans for the North Sea and Baltic Sea and specific plans are prepared by the Federal Maritime and Hydrography Agency (BSH). The planning at regional level is performed by the Ministries of the federal states. The two states Schleswig-Holstein und Mecklenburg-Vorpommern are located at the Baltic Sea and the restive Ministries responsible for the Maritime Planning are Ministry of Interior Schleswig-Holstein in the Ministry of Energy, Infrastructure and Digitalisation in Mecklenburg-Vorpommern. They have the authority to develop MSP plans for the territorial sea (12 nm-zone).

The legal basis of general spatial planning is the Spatial Planning Act ("Raumordnungsgesetz"/ROG), which was made applicable to the EEZ in 2004 and amended in 2017. The plan sets binding rules and regulations for authorities, mainly about licensing procedures and approval of projects. Maritime spatial plans exist for the German North Sea and Baltic Sea EEZs (2) and for the territorial sea areas under jurisdiction of the three coastal federal states (Lower Saxony, Schleswig-Holstein, and Mecklenburg-Vorpommern) (3), while Lower Saxony is only adjacent the North Sea.

2.2.3.1 EEZ

The process of revising the current MSP is ongoing. The international consultation for the revision of the maritime spatial plans for the German EEZ started early in the process in the first quarter of 2020. Documents on the international consultation are now available online. Maritime Spatial Plan for the German EEZ of the Baltic Sea covers the topics: Shipping, Mineral extraction, Offshore renewable energy production, Fishing, Underwater cultural heritage, Nature protection, Military, Scientific Research, Submarine cables and pipelines.
The plan area covers the German EEZ in the Baltic Sea. There are discussions about the area approaching the harbors of Świnoujście and Szczecin, because of contradictory legal opinions.

The guiding principle for Maritime Spatial Planning in Germany is sustainable spatial development, which brings social and economic demands regarding space into line with the sea's ecological functions, leading to a permanent, large-scale balanced order. In order to coordinate the growing conflicts regarding maritime uses, in particular between space required by offshore wind farms and marine environmental protection goals, as well as traditional maritime uses such as shipping and fisheries, an integrative and sustainable approach is needed for the development of the German Exclusive Economic Zone (EEZ).

2.2.3.2 Territorial waters

The German territorial sea which adjoins the German Baltic Sea's EEZ, is in the responsibility of the Federal States. In Mecklenburg-Vorpommern, this is the Ministry for Energy, Infrastructure and Digitisation (Ministerium für Enerigie, Infrastruktur und Digitalisierung). Mecklenburg-Vorpommern broke new ground in both the national and European context by including the territorial sea in its spatial development at an early stage. In 2009, the federal government adopted spatial development planning for the German exclusive economic zone (EEZ) for both the North Sea and the Baltic Sea. Responsibility for the content of regional development itself lies with four regional planning associations, which are made up of counties and independent cities, large cities belonging to counties and medium-sized centers. In the four planning regions, there are offices for regional planning and state planning, which have dual functions. As the lower state planning authority, they perform tasks for the respective region that serve to coordinate spatially significant projects on a regional scale. As offices of the regional planning associations, they support them in their tasks, in particular in drawing up and updating the regional spatial development programs.

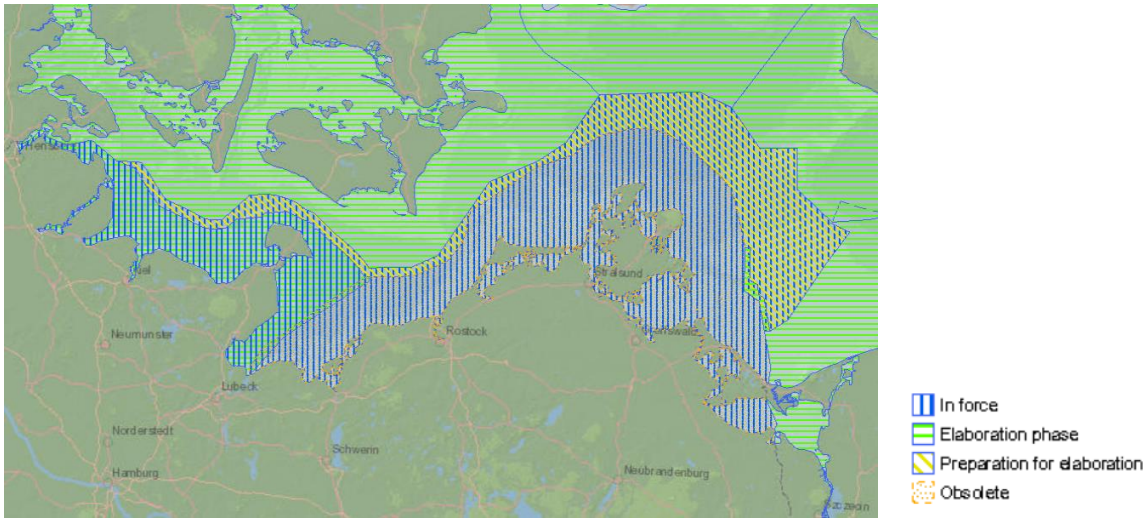


Figure 8. Status of Plan Area in German Baltic Sea Federal States Schleswig-Holstein and Mecklenburg Vorpommern. Source: Basemap MSP output data

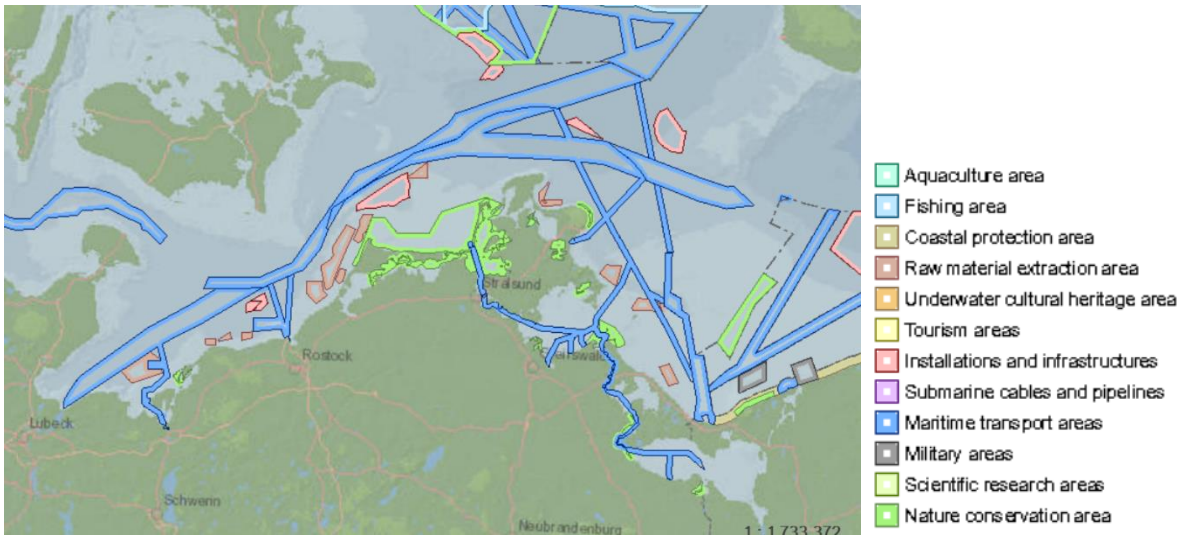


Figure 9. Planned Priority Sea Uses in the Baltic Sea along the coastal waters of Mecklenburg-Vorpommern.

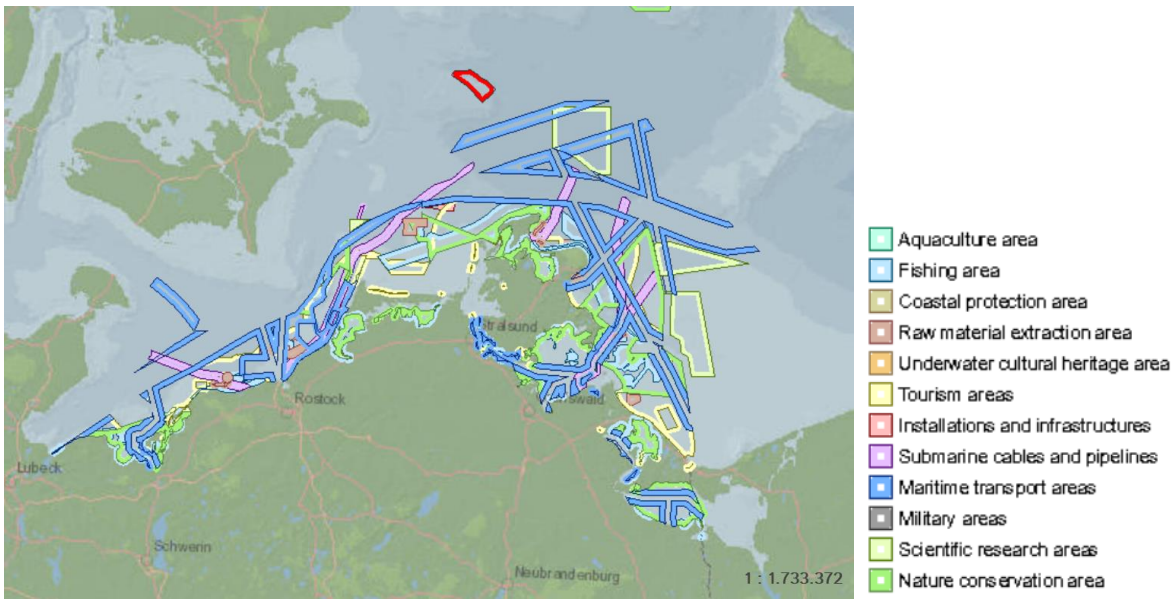


Figure 10. Planned Reserved Sea Uses in the Baltic Sea along the coastal waters of Mecklenburg-Vorpommern.

When it comes to the assessment of the impact of human activities to the coastal waters, the ministries and agencies for environment and rural areas become responsible. For Mecklenburg-Vorpommern, this is the Landesamt for Environment, nature protection and Geology (LUNG). Further, the Federal Environmental Agency (UBA) is responsible for the assessment of influences from Land to coastal waters and involved in the relevant HELCOM and OSPAR groups.

The tasks of marine protection affect the federal government and the coastal states in many ways. Therefore, different working groups are established and organized in the BLANO (Bund/Länder-Arbeitsgemeinschaft Nord- und Ostsee). In BLANO, the management of the German part of the North Sea and Baltic Sea is coordinated and harmonized within the national and international framework. In addition to the implementation of the EU Marine Strategy Framework Directive, this includes the EU WFD (transitional and coastal waters), but also matters of the regional marine protection agreements (OSPAR, HELCOM).

Table 6 lists some of the relevant institutions on national and regional level. As the structure is diverse in Germany, cross-institutional working groups are established in order to harmonize the work between federal states and the federation. Those working groups also serve the work and working groups for OSPAR and HELCOM.

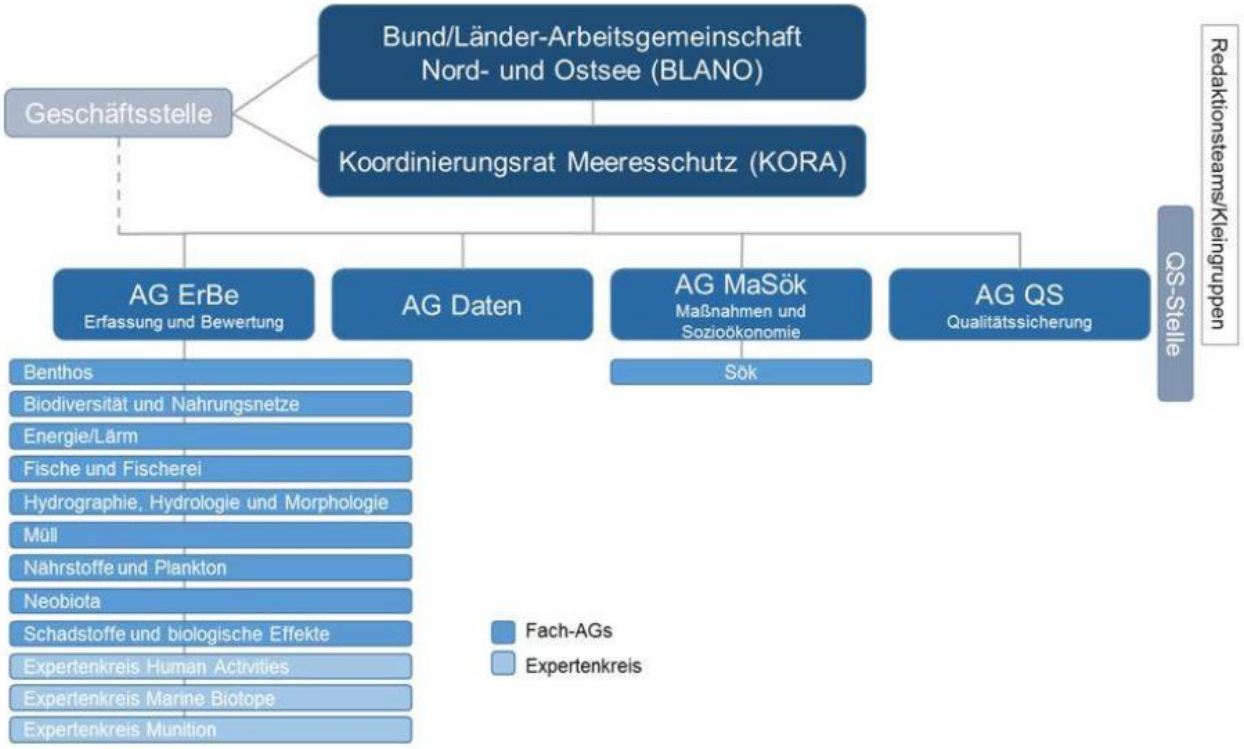


Figure 11. BLANO-organisation of working groups. AG = Working Group (Arbeitsgemeinschaft); AG ErBe: Working Group for data collection and assessment.

Table 6. Organizations involved in marine and terrestrial planning and environmental monitoring in Germany. Part of the responsibilities are handled by cross-institutional organizations.

	National level	In regional level	Cross- institutional working groups
MSP	Coordinator	Regional authority	
Terrestrial planning	BMI	Ministry for Energy, Infrastructure and Digitisation (MV)	
Marine management	BSH	Ministry for Energy, Infrastructure and Digitisation (MV)	
Marine monitoring	BSH, IOW	LLUR, LUNG	BLANO working groups, LAWA working groups
Human impact on Baltic Sea	UBA, BMU		BLANO ErBe working group human impact
Data collection	MDI-DE NOKIS	data nodes in all relevant ministries and agencies North Sea and Baltic Sea Information System (is integrated in MDI-DE)	

3 Interfaces used by the identified user groups

3.1 Regional tools

3.1.1 Helcom Maps and databases (MADS)

HELCOM Map and Data Service (HELCOM MADS) contains the geospatial data relevant for HELCOM work. The materials are collected for the purposes of HELCOM work groups from the wide range of status assessments to shipping density maps. The HELCOM Map and Data service contains various functionalities for viewing datasets, for example, identify features and attribute table functionalities. The service is linked with HELCOM Metadata catalogue to view metadata of each dataset and enables downloading of materials. HELCOM Data Services also provide direct access to all HELCOM geospatial datasets either by ArcGIS Rest interface or OGC WMS Standard

The GIS material related to pressures and human activities in MADS are linked to both BalticAIMS use cases. Part of them were mentioned specifically during the user interviews either as potential combinations with BalticAIMS EO materials and, on the other hand as materials needing more spatially and temporally comprehensive updates. The examples include:

- dredging and depositing of dumping materials,
- layers related to human activities,
- Baltic Sea pressures index,
- aggregated pressure layers,
- physical feature layers and
- layers describing shipping intensity (in particular small boats and leisure activities).

HELCOM collects data related to marine environment to various thematic databases, all gathered by HELCOM Contracting Parties. The databases that may be relevant for use cases in BalticAIMS are e.g.:

- HELCOM PLC Database contains all waterborne nutrient and contaminant discharges stemming from HELCOM pollution load monitoring.
- HELCOM COMBINE database contains data of oceanographic monitoring data within the COMBINE monitoring programme.
- HELCOM Biodiversity database (macrospecies observation data made available by HELCOM Contracting Parties).
- HELCOM MPA Database, the Baltic Sea Protected Areas, includes general information on the sites and their management plans, lists of species, biotopes, and biotope complexes.
- HELCOM AIS Database: AIS data on ship positions in the Baltic. The aggregated data products (shipping density maps), available in HELCOM Map and Data service, also via HELCOM AIS Explorer.

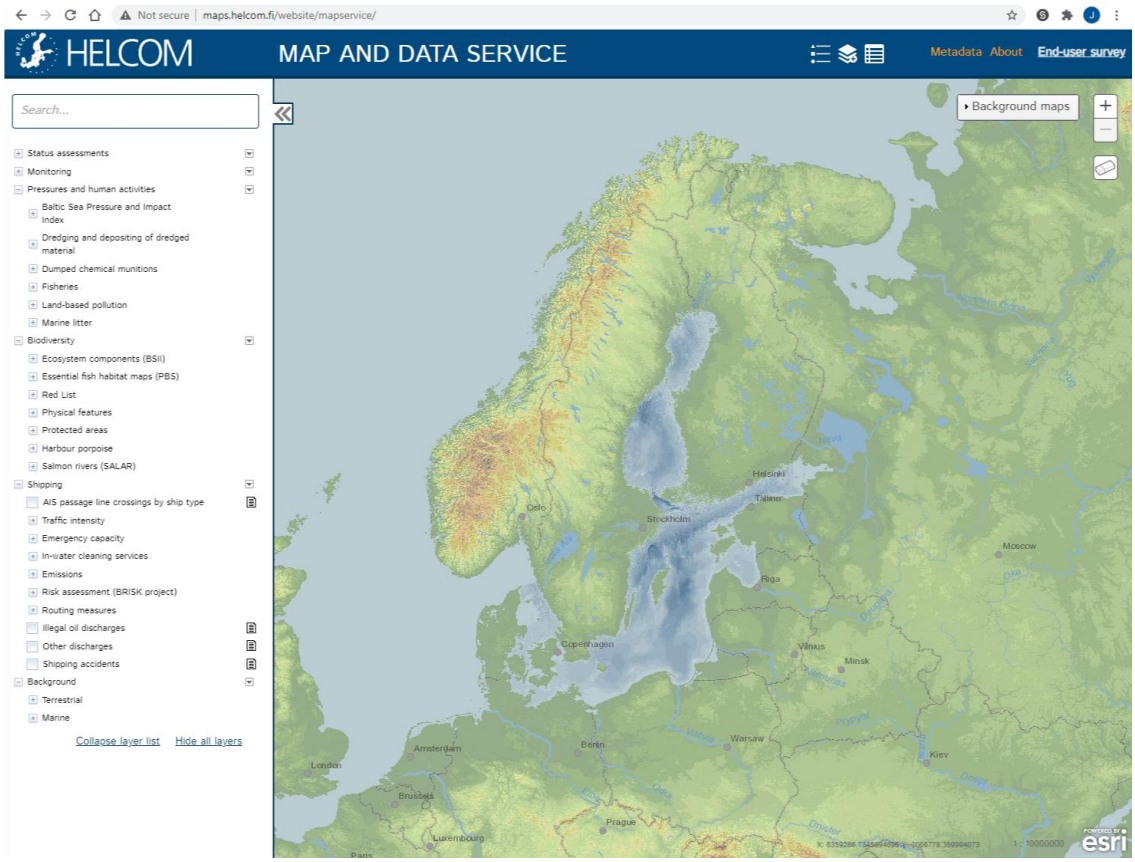


Figure 12. HELCOM Maps and databases and its catalogue listing.

3.1.2 HELCOM BASEMAPS

BASEMAPS is a map service to access Baltic Sea maritime spatial planning (MSP) relevant data from the original source where it is stored. BASEMAPS is developed by HELCOM in cooperation with national experts from HELCOM-VASAB MSP data expert sub-group and with a support from INTERREG BSR project BalticLINes (2016-2019) and EASME funded project Pan Baltic Scope (2019-2020). BASEMAPS allows users to view and download data/metadata published by national data providers through OGC open geospatial standards - WMS and WFS. It is aimed for planners, data providers and authorities dealing with maritime spatial planning in the Baltic Sea.

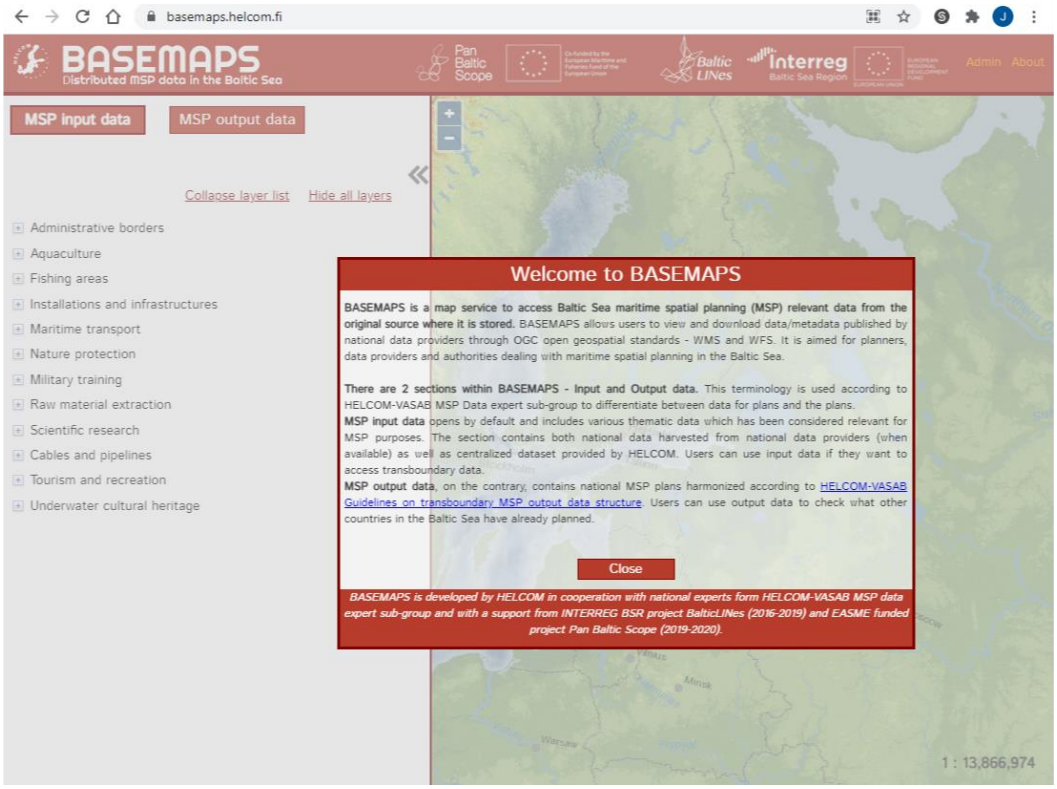


Figure 13. The frontpage of HELCOM BASEMAPS, a map service for MSP relevant data in the Baltic Sea.

There are 2 sections within BASEMAPS - Input and Output data. This terminology is used according to HELCOM-VASAB MSP Data expert sub-group to differentiate between data for plans and the plans.

- MSP Input data section contains MSP related input data that can be accessed directly from the original sources using web services.
- MSP Output data section contains MSP plan data provided by Countries in harmonized format according to the Guidelines on transboundary MSP output data structure in the Baltic Sea.

MSP input data opens by default and includes various thematic data which has been considered relevant for MSP purposes. The section contains both national data harvested from national data providers (when available) as well as centralized dataset provided by HELCOM. Users can use input data if they want to access transboundary data. MSP output data, on the contrary, contains national MSP plans harmonized according to HELCOM-VASAB Guidelines on transboundary MSP output data structure. Users can use output data to check what other countries in the Baltic Sea have already planned.

3.1.3 Baltic Explorer

The Baltic Explorer is an interface designed as planning tool for Baltic maritime activities. It allows users to:

- Explore spatial data and maps of the Baltic Sea,
- Collaborate on a shared map workspace
- Draw and edit shared features on the map
- Work together and apart on multiple devices

It supports interaction by a single expert user, as well as planning by groups in a collaborative setting, where discussions are facilitated through transparent analysis and visualizations on a large touchscreen device.

The spatial data in the Baltic Explorer can be divided into three groups, background maps, input data (e.g. pressures and ecosystem components used in CIA), and result data. Background maps are used to give spatial context to the analysis process. Therefore, it is important that the background maps are compatible with the input data, e.g. they should have similar scale, use the same coordinate reference system, and all elements in the background maps should be valid in the same time frame as the input data. The input data is used for the Baltic Explorer's CIA and suitability analysis tools that also produce the result data.

Figure 14. Main uses and contents of Baltic explorer wab map application.

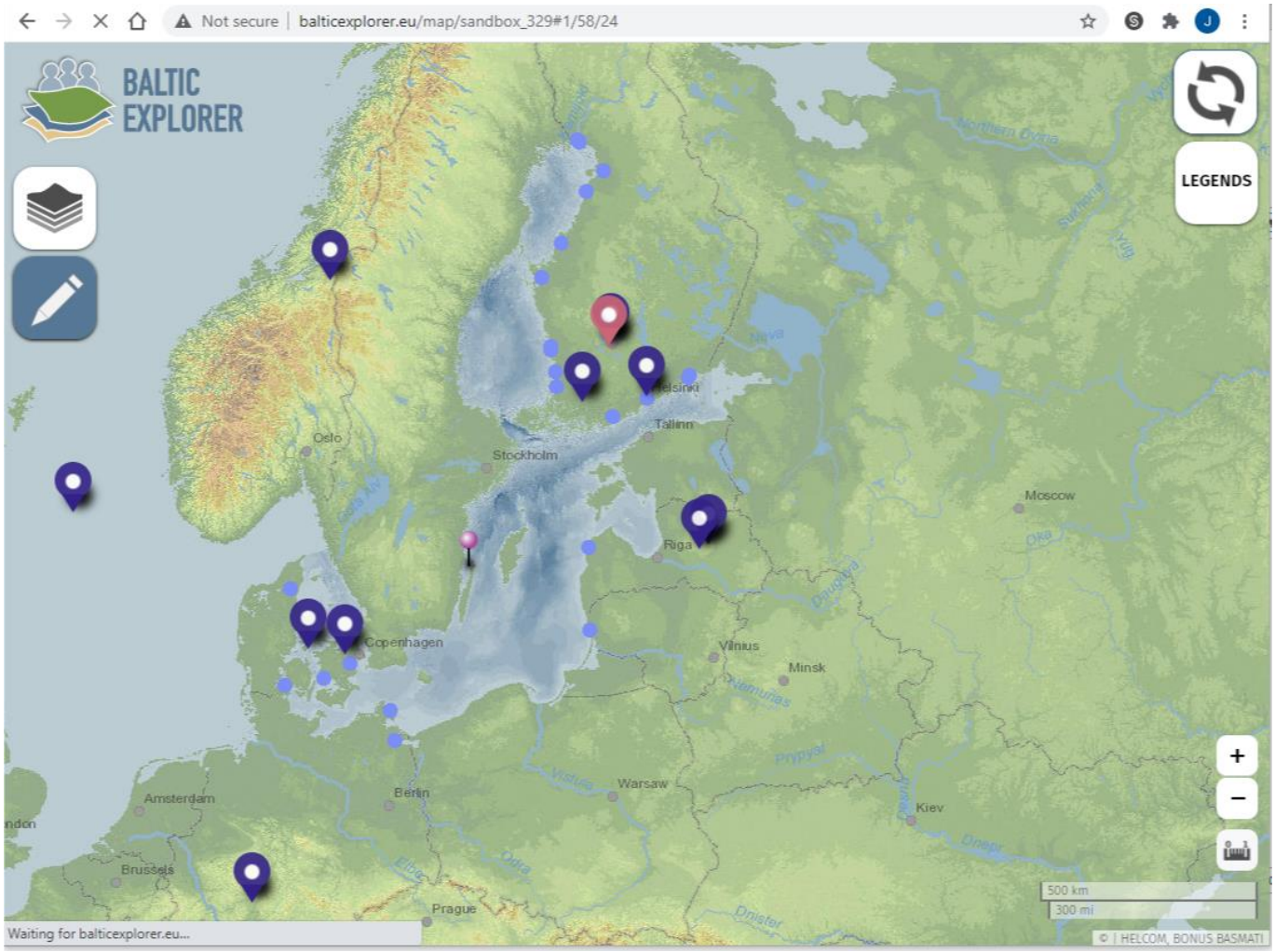


Figure 15. Frontpage of Baltic explorer-tool dedicated to MSP and developed under the BONUS BASMATI-project.

3.2 Tools and interfaces utilized in Finland

Expert users at SYKE, regional ELY-centres and cities utilize the TARKKA-interface (Figure 16) provided by SYKE in their day-to-day work related to EO. TARKKA includes true color images from Sentinel-2 and 3 and Landsat-8, and various products related to water quality, cryosphere and land cover. TARKKA is open to public and is utilized also by citizens. QGIS is also utilized to some extent. It suits well as a platform for plug-ins for combining raster type of data and GIS materials.

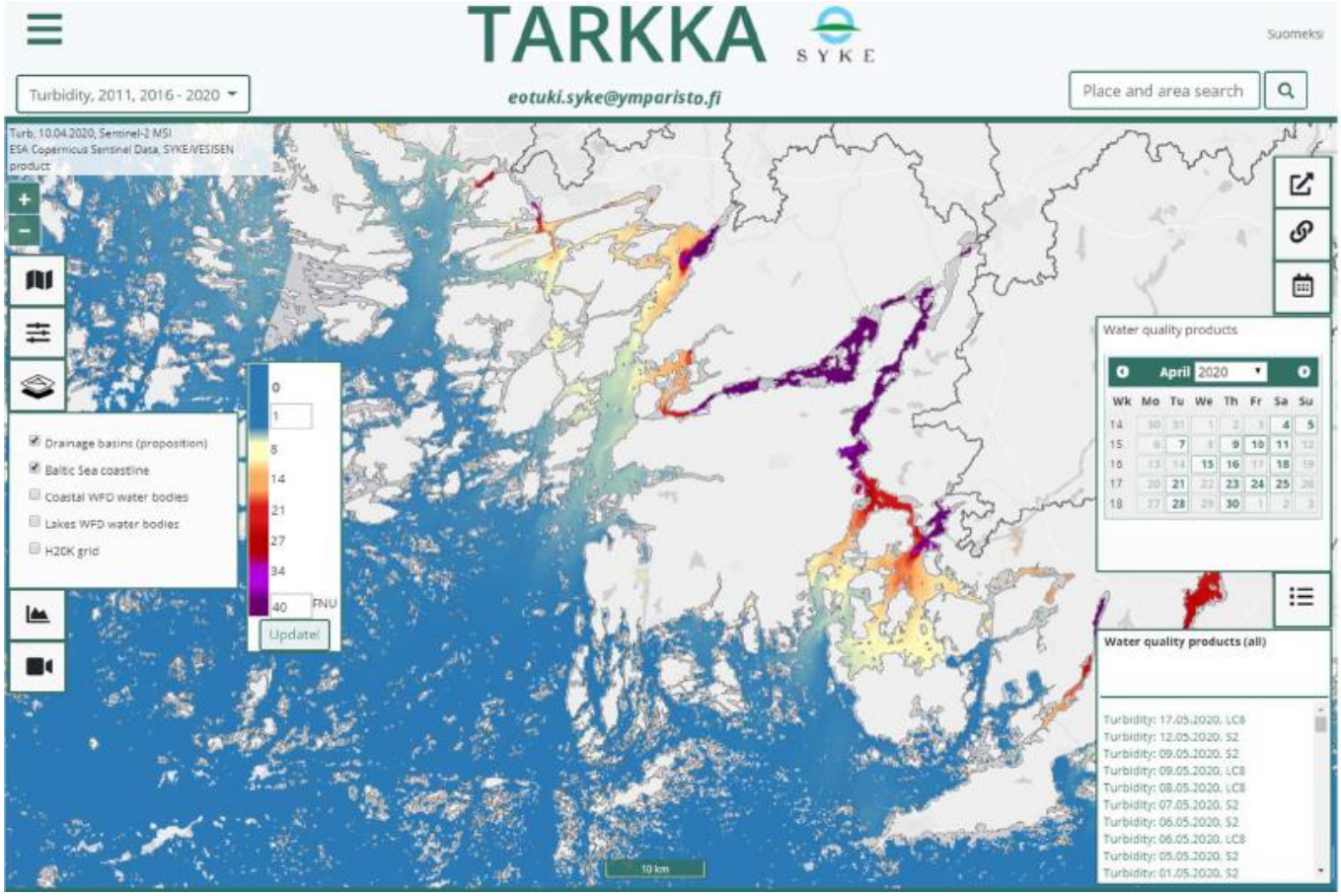


Figure 16. TARKKA interface showing turbidity values of the South-West Archipelago of Finland on April 10, 2020.

The authorities responsible for the MSP and spatial planning in the Regional councils work with GIS-tools such as ESRI ArcGIS. They are accustomed to read supplementary material from OGC interfaces as background layers for their work.

The VELMU interface (Figure 17) maintained by SYKE provides information on underwater and marine data on species observations, biotopes and habitats as well as environmental variables collected in the VELMU Programme (The Finnish Inventory Programme for the Underwater Marine Environment).

The Marine Finland webpage maintained by SYKE provides basic information on maritime spatial planning in Finland. There are plans to combine VELMU interface and maritime spatial planning interface under Marine Finland. It is identified as one of the user and stakeholder level interfaces, where some of BalticAIMS use case material could be included after the service demonstration phase.

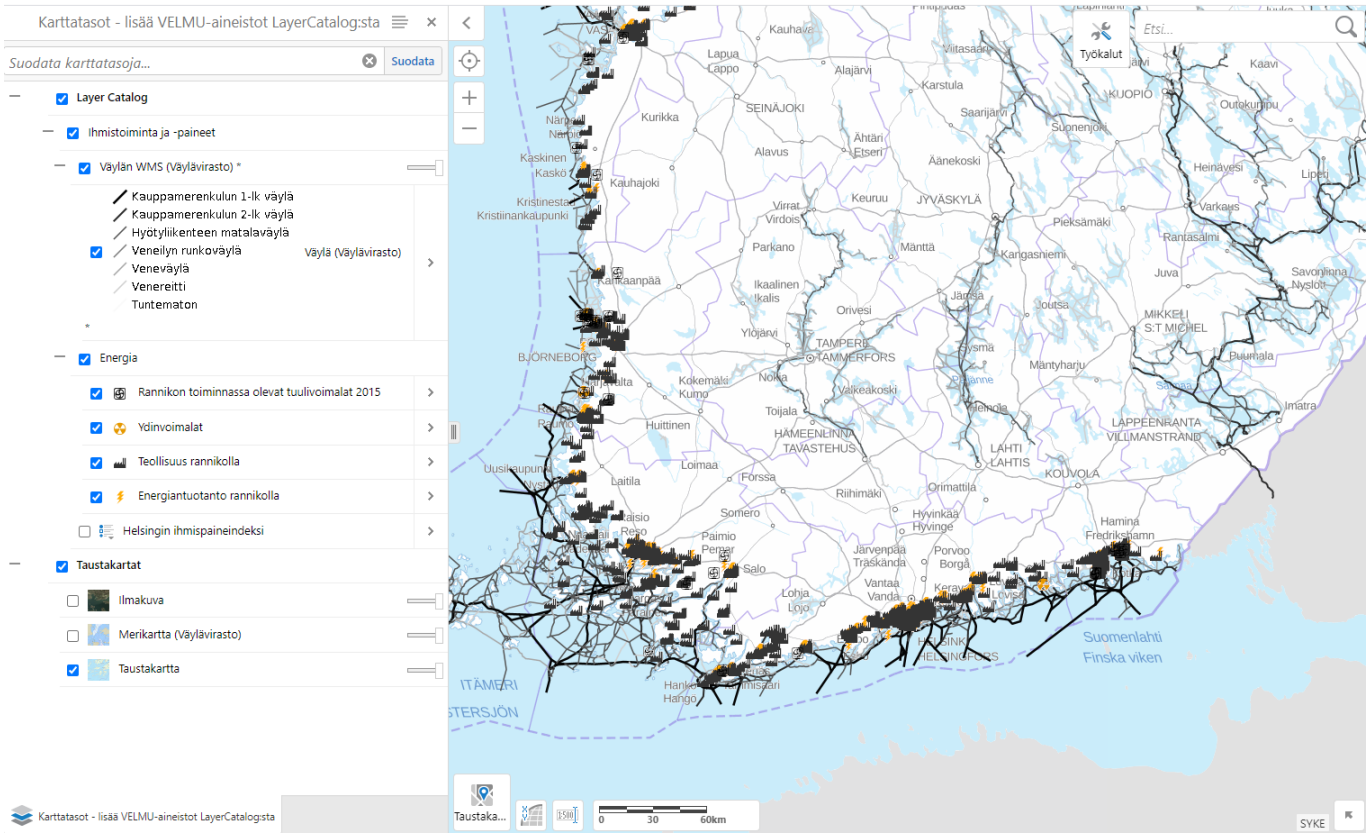


Figure 17. VELMU interface includes various datasets relevant for MSP.

3.3 Tools and interfaces utilized in Sweden

In Sweden, different tools are utilized by the various planning levels for the development of ecosystem-based national marine spatial planning. The main tool for ecosystem-based marine spatial planning used at the national levels is **Symphony** (havochvatten.se) (Hammar, 2018). It is a model-based assessment method with the objective to show at a general level how the distribution of the cumulative environmental impact from human activities varies across areas and how planning can affect the distribution, thereby facilitating environmental planning including providing baseline conditions. The analytical software platform used in Symphony for the marine spatial plans is called SyM (Mattson, 2018).

Symphony builds on a simple scientific method (Halpern *et al.* 2008, 2015), which it has in common with other similar tools in use for marine spatial planning, e.g. HELCOM HOLAS I and II that also evaluate environmental status. In contrast to other tools, Symphony enables scenario-based evaluations of different planning options. Several sister tools and co-developments are underway within for example the Pan Baltic Scope, Nairobi Convention in East Africa, South Africa and International agreement on BBNJ (biodiversity beyond national jurisdiction) as well as Swedish-Russian collaboration on further tool development. There is a plan to release Symphony and data for more general use. Before the planned release in mid-2022, a few updates related to the tool itself will be made and also adjustments to HELCOM HOLAS III input data sets.

The inputs to the model consist of three main components; maps of ecosystem components, pressures from human activities and emissions and a sensitivity matrix showing how sensitive each ecosystem component is to each pressure (based on expert judgement). The outputs are maps that show the cumulative impact (see Figure 18, left) and complementary data, e.g., specification of the impact from each pressure in any area of interest (pixel 250 x 250 m, although most input data is of lower resolution) and aggregated uncertainties. The calculation of the impact is a multiplication of the three main components. Although the results are based on many (70+) input layers

originating from many diverse sources, the calculations have an easy-to-understand structure and all assumptions are explained allowing for easy review and revision of the method. In addition to the cumulative environmental impact assessment a map is compiled that describes the aggregated ecological values. This product is designated the "Green Map" (see Figure 18, right) and depicts areas that are valuable for a large variety of ecosystem components. Compilation and standardisation of the input data and maps are presently stored in a local database system at SwAM.

The outputs from Symphony are used in an iterative manual analysis process together with other information to derive the final proposed marine spatial plans submitted to government. Symphony is used to produce a consultation version and then a review version of marine spatial plans. The final product is a plan proposal, including a Strategic Environmental Assessment (SEA) and sustainability assessment.

Mosaic is a tool for ecosystem-based spatial management of marine natural values utilized mainly by the national, regional (county boards) and local authorities to support their different planning activities.

Mosaic is a 2-step tool to identify valuable marine areas with importance for biodiversity and ecosystem services in viable and ecologically representative networks (green infrastructure). The first step is a preparatory phase (general non-spatial guidelines) followed by an implementation step where specific areas of high natural values are identified. The former is based on identification of general ecosystem components with detailed descriptions based on expert judgements. In step 2 these are combined with data/maps of continuous spatial ecosystem components (landscape perspective), point-based information, and field-based surveys. From these inputs core areas of high natural values are identified as well as networks of high value core areas.
The outputs of the tool provide information for spatial management in areas of marine and coastal planning, protection, restoration and fisheries management as well as work related to EU directives such as the Marine Spatial and Habitats Directives.

County board GIS tools:

The County Administrative Board of Gotland use both customized ESRI ArcGIS applications and the national WebbGIS and associated geospatial data catalogue to view and combine data for different planning purposes. The WebbGIS gives access to the large database of different national and regional geospatial data layers and a simpler visualization interface. The local municipality and region Gotland utilize the same ESRI based GIS application as the County Administrative Board for more Gotland specific applications including use of local information (e.g. digitised maps of natural values) and for revision of the legally binding detail plans.

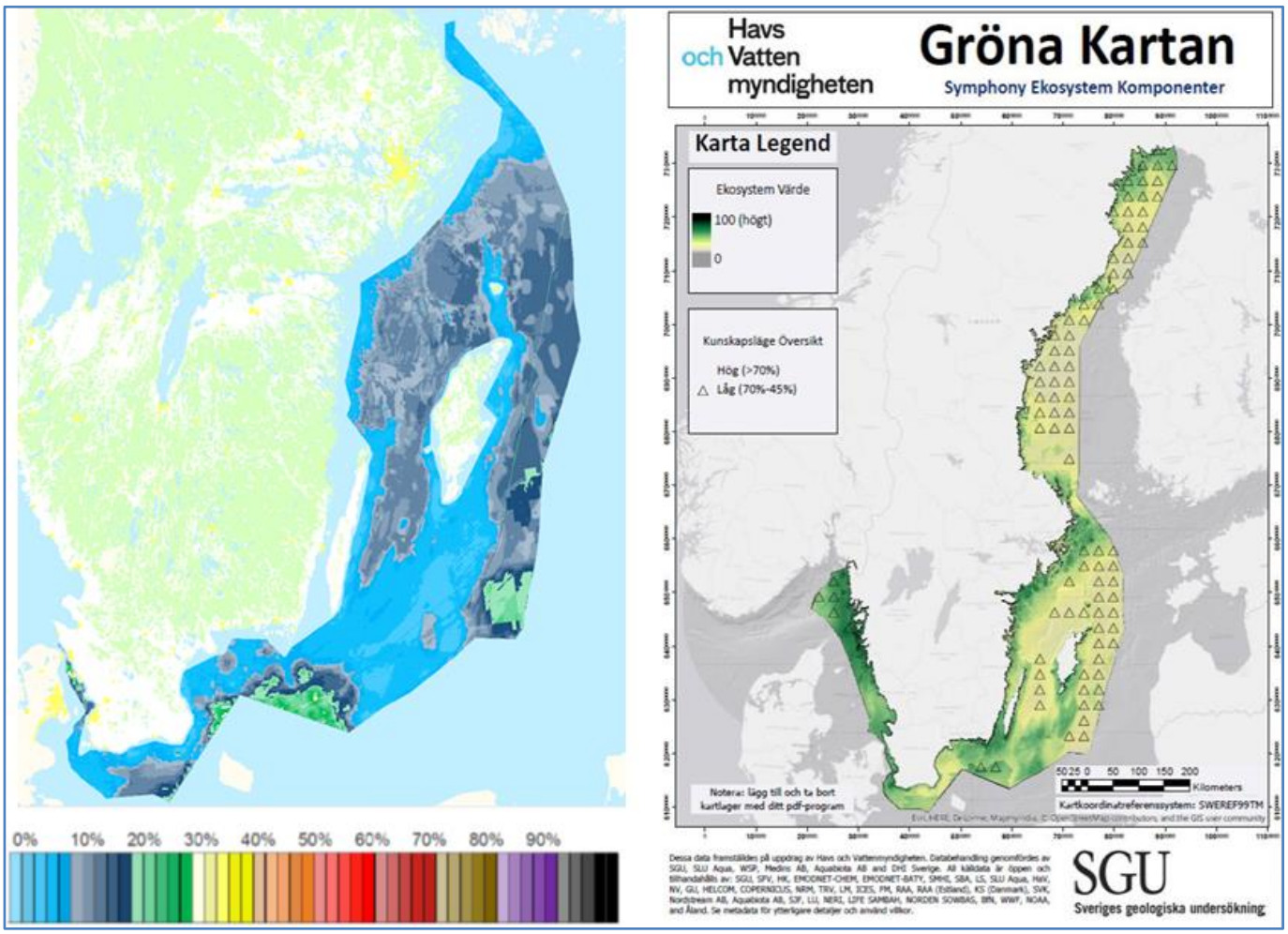


Figure 18. Output maps from Symphony. Left, a map of relative cumulative impact values. Right, the Green Map showing relative ecosystem values based on combined ecosystem components with indications of areas of low knowledge (triangles).

3.4 Tools and interfaces utilized in Germany

BSH is running the GeoSeaPortal as information platform providing all relevant information for North Sea and Baltic Sea (https://www.bsh.de/EN/DATA/GeoSeaPortal/geoseaportal_node.html). The system is organized among topics, which cover many different relevant fields from environmental information collections to human activities. Different topics are relevant for maritime spatial planning, especially the thematic collection for marine usage of the EEZ. Information on the spatial data can be researched and retrieved. The spatial reference data and thematic data of BSH are made available in the form of view services (Web Map Services – WMS) and download services. With the help of the map client in the GeoSeaPortal, the WMS can be visualized in map form and intersected with each other. Both the WMS and the Web Feature Services (WFS) can be integrated into other map viewers or own applications via their web address (Uniform Resource Locator – URL).

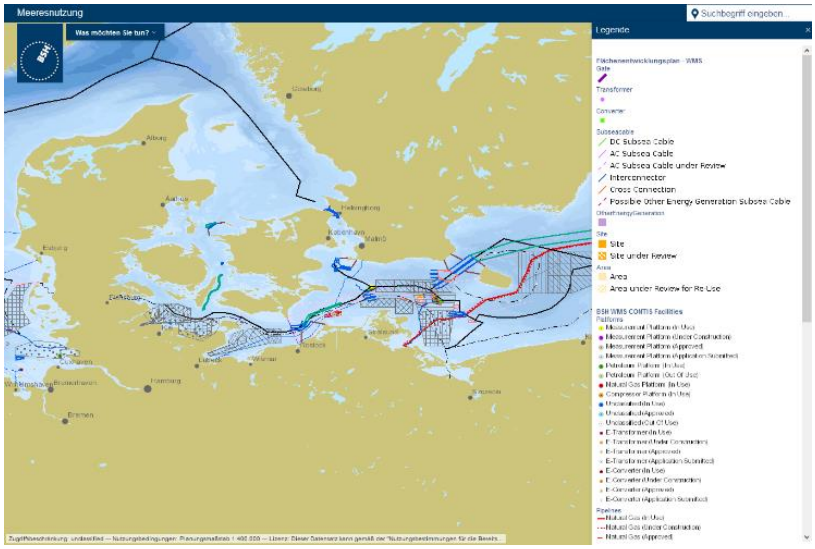


Figure 19. GeoSeaPoratal of BSH, showing the thematic collection for marine usage of the German Baltic EEZ

The federal states are running individual portals providing information about the environmental status or spatial planning on land and at the coast. GeoPortal.MV provides information layers about relevant topics concerning the Federal State Mecklenburg-Vorpommern). Among others the collection of planning and development of the coastal region. The area covered here is ending at the EEZ, where the BSH responsibly starts.

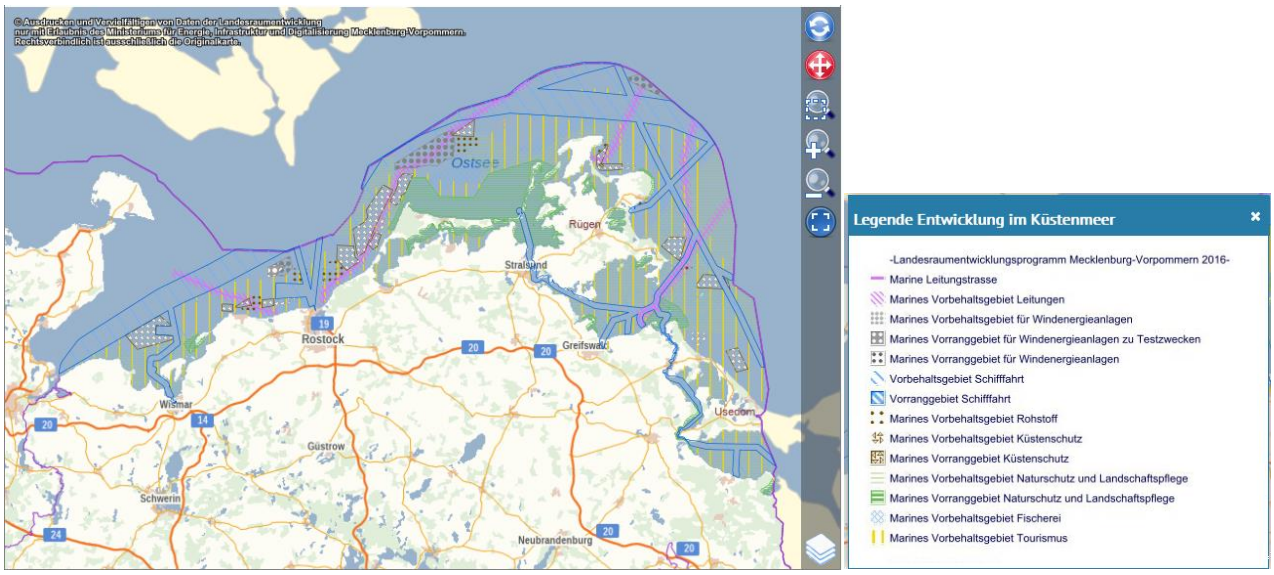


Figure 20. GeoPortal.MV showing the thematic collection for planning and development in the coastal region of Mecklenburg-Vorpommern

A compilation of relevant (meta-)data concerning the German marine areas, is the MDI-DE. MDI-DE stands for marine data infrastructure Germany. Altogether 11 Federal and State agencies provide coastal and marine data which are documented with metadata according to the ISO standard and presented with OGC (Open Geospatial Consortium) Web services. A new Web portal serves as central access point for spatial data and information from the German coastal zone and the adjacent marine waters.

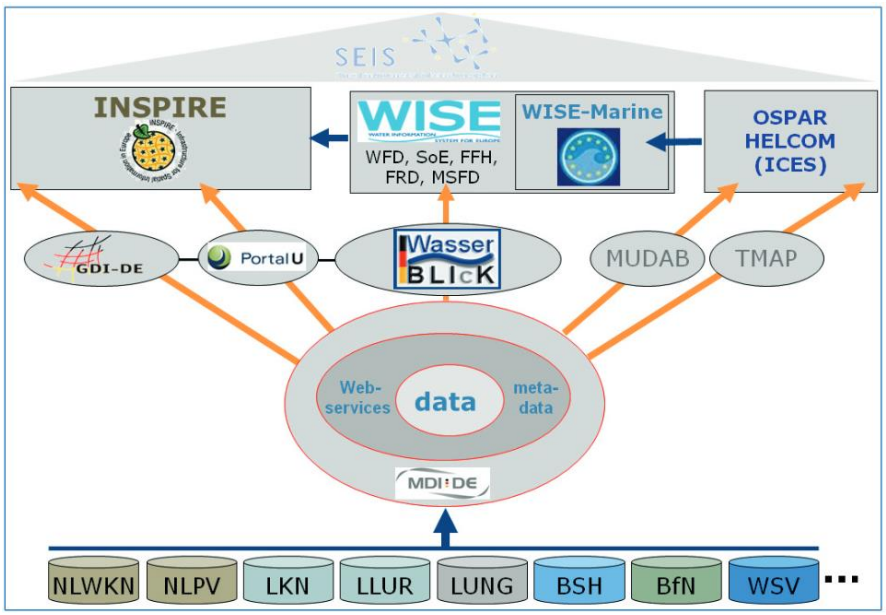


Figure 21. Data flow and reporting within the MDI-DE information network (source: Lehfeld, Die Küste https://izw.baw.de/die-kueste/0/k081104.pdf)

4 Background information

4.1 MSP legislation and practices EU

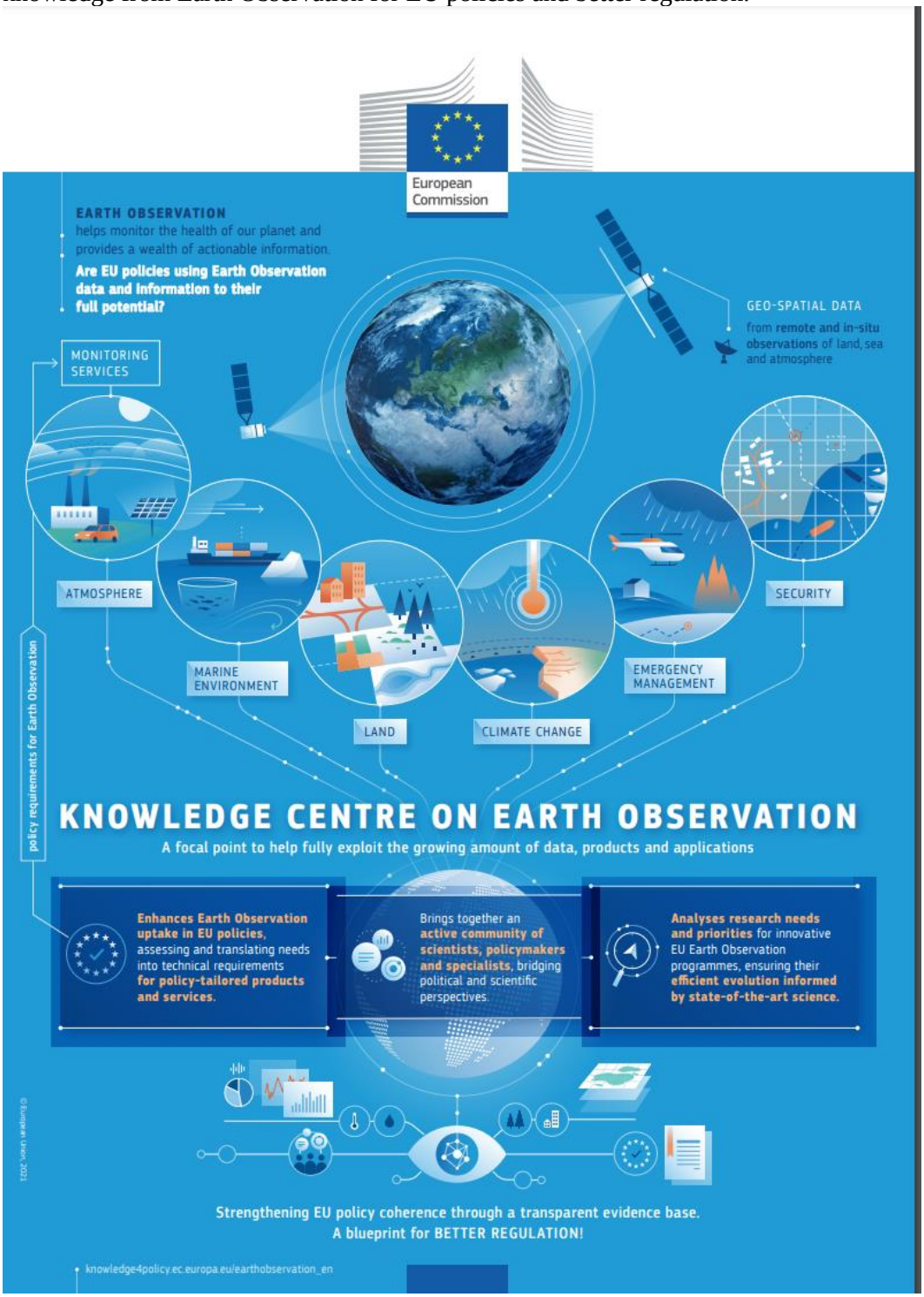
At European level, Maritime spatial planning-platform is an interface that draws together experience and expertise from across Europe. It also summarises the status and main practices MSP in each country. It also informs other useful data: https://www.msp-platform.eu/

- https://www.msp-platform.eu/msp-practice/countries gies a summary of EU countries MSP practices and status.
- https://www.msp-platform.eu/msp-practice/database the database and interface to it are designed to collect and search for MSP practices related information in EU.

4.2 Knowledge Centre on Earth Observation

European commissions **The Knowledge Centre on Earth Observation** helps EU policymakers to fully exploit the growing amount of EO data, products and applications by

- assessing needs of EU policies and translating these into technical requirements for EO products and services
- analysing research needs and priorities for innovating EU Earth Observation programme
- bringing together an active community of scientists, policymakers and specialists state-of-the-art knowledge from Earth Observation for EU policies and better regulation.



4.3 Relevant projects summarizing expert & stakeholder needs in the Baltic Sea

Due to the recently passed MSPD reporting obligations, there have been several projects interlinked with HELCOM VASAB-MSP working group. Some of these are summarized below, but an ongoing project Capacity4MSP is following them as part of HELCOM VASAB-MSP working group. Within the activity, the outcomes of relevant MSP in BSR will be followed and summarized (e.g., BalticLINes, Baltic InteGrid, BalticRIM, Baltic Blue Growth, BalticSCOPE, Pan Baltic Scope, BONUS BASMATI, MUSES, Land-Sea-Act etc.) will be analysed and synthesised in correlation with ongoing MSP processes in the Baltic Sea Region (BSR) countries.

4.3.1 CAPACITY4MSP

Capacity4MSP is a VASAB secretariat led Interreg BSR project (https://vasab.org/project/capacity4msp/ and https://www.msp-platform.eu/projects/capacity4msp-strengthening-capacity-msp-stakeholders-and-decision-makers).

It is stated that the project "will create a practically oriented and interactive collaboration platform for MSP stakeholders, decision- and policy makers that will inform, support and enhance on-going MSP efforts by capitalising on the outcomes of various transnational MSP projects and national MSP processes. It will deepen and widen the knowledge and experience gained from projects by synthesizing, amplifying and transferring the project outcomes to new practical solutions, as well as intensify the dialogue among MSP stakeholders (MSP practitioners, institutions responsible for MSP, blue economy representatives, environmentalists, etc.), decision and policy makers (e.g. EU COM, relevant ministries, HELCOM-VASAB MSP Working Group, its Data Expert sub-group, etc.)". Outputs include synthesis report describing outputs from ongoing MSP projects, support mechanisms for MSP implementation (reports, user guide and visualisation of BASEMAPS), proposal for tool for MSP follow up of commitments, workshops and planners Forum meetings and reports on MSP stakeholder engagement.
The project implementation period is August 2019 - March 2022.

Capacity4MSP is one of the two organizing projects of the 4th Baltic MSP online forum, which takes place on June 1-2, 2021 (the other being another Interreg BSR project called Land-Sea-Act), final outcomes to be updated. The Forum will serve as a final conference for both projects.

4.3.2 Baltic LInes

Baltic LINes (a project full name Coherent Linear Infrastructures in Baltic Maritime Spatial Plans, 2016-2019) was an INTERREG Baltic Sea Region (BSR)-funded project targeted to increase transnational consistency in MSP, in particular in shipping and energy-related planning. The overall objective of BalticLINes was to increase transnational coherence of shipping routes and energy corridors in Maritime Spatial Plans (MSP) in the Baltic Sea Region (BSR).

The project seeked to reduce cross-border mismatches and to secure transnational connectivity. Thereby Baltic LINes developed appropriate framework conditions for Blue Growth activities (e.g. maritime transportation, offshore energy exploitation, coastal tourism etc.) for the coming increasing investors' security. The main activities were related to developing requirements for MSP in relation to the shipping and energy sector in BSR; harmonizing BSR MSP data infrastructure for shipping routes and energy corridors, drafting guidelines for MSP data exchange and dissemination; identifying and agreement on transnationally coherent planning of linear infrastructures; providing recommendations for a formalized BSR agreement on transboundary consultations on linear infrastructure within the MSP process.

4.3.3 BONUS BASMATI

Bonus Basmati summarises MSP data needs in Baltic Sea level. According to their thorough review, MSP planner lever users requirements are:

Overall, marine and coastal planners and data users with a stakeholder perspective

- Appreciate easily understandable data, with clearly organized structure.
- the perspectives and needs and ability to work with data and a data management structure differ considerably.

Marine and coastal planners should be able to easily a) access and extract data, b) complement with their own data, c) share data with others and d) structure and (re)organize them according to their own purposes and questions.

Based on the above needs of planner's and stakeholder's, the data and database should provide and facilitate the following:

- *Accessibility & understandability*: a data repository and the data: technically easy to use and not require complicated extra training. Transferability between different organisations and countries.
- *Quality:* as high quality as possible, basic information, metadata.
- *Applicability and transparency*: information of for what use the data was planned & how it applies for other purposes. Transparency in relation how data was produced and assembled (if already combined): a planner should be able to decide whether it is possible to use specific data for new purposes and possibly be able to produce complementary evidence and if possible even contact information (where to learn more, get further information).
- *Scalability*: the possibility to compress and zoom out or to zoom into a dataset when needed, depending on the temporal and spatial scale of the planning question (important keywords: resolution, vector data).
- *Coherence/harmonisation*: From a cross-border and cross-level perspective (i.e. including different administrative/political levels of planning), coherence and harmonisation are important in relation to quality, data format, and resolution in time and space. It is also relevant that similar types of data are available to develop planning evidence to answer a specific planning question (e.g. a specific use sector).
- *Flexibility and possibility to combine data in new ways*: Planning implies a need to think interdisciplinary and across sectors and reacting to new questions and issues. Therefore, it is vital that data can be combined easily in different ways. Metadata is of importance to assess the quality (validity and reliability) of a specific dataset and to judge usefulness of the datasets and combinations of various datasets. Moreover, flexibility should include both to adapt the data and the database structure (flagging etc.) to the purposes and problems at hand (the data has to answer relevant planning questions and suit the biogeographical and societal and economic circumstance).

5 References

Halpern, B., Frazier, M., Potapenko, J. et al., 2015. Spatial and temporal changes in cumulative human impacts on the world's ocean. Nat Commun 6, 7615. https://doi.org/10.1038/ncomms8615

Halpern, B., Walbridge, S., Selkoe, K., Kappel, C., Micheli, F., D'Agrosa, C., Bruno, J. et al., 2008. "GlobalMapImpactMarineHalpernetal2008." Science 319 (February): 948–52. doi:10.1126/science.1149345.

Hammar L., Schmidtbauer Crona, J., Kågesten, G., Hume, D., Pålsson, J., Aarsrud, M., Mattsson, D., Åberg, F., Hallberg, M., Johansson, T., 2018. Symphony - An integrated support tool for ecosystem based marine spatial planning, Swedish Agency for Marine and Water Management Report 2018:1.

S. Korpinen, L. Meski, J.H. Andersen, M. Laamanen, 2012. Human pressures and their potential impact on the Baltic Sea ecosystem. Ecol. Indic., 15, pp. 105-114

Mattsson, M., 2018. SyM - Medins Havs Och Vattenkonsulter AB. http://www.medinsab.se/.