The Baltic Sea Region Maritime Spatial Planning Data Expert Sub-group

First Report
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Contents

1.   Glossary

BSR – Baltic Sea Region
EU - European Union
GIS – Geographic Information System
HELCOM – Baltic Marine Environment Protection Commission - Helsinki Commission
INSPIRE – Directive establishing an Infrastructure for Spatial Information in the European Community
MS – Member States (EU)
MSP – Maritime Spatial Planning
MSP Directive – Directive establishing a framework for maritime spatial planning
SDI - Spatial data infrastructure
VASAB – Vision and Strategies around the Baltic Sea
WG – Working Group

2. Introduction

Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning introduced an obligation to develop maritime spatial plans by 31 March 2021. What's more, Member States shall organize the use of the best available data, and decide how to organize the sharing of information, necessary for maritime spatial plans (Article 10) and newly created plans should be coherent and coordinated across the marine region concerned (Article 11). Those are the tasks all BSR EU countries have to deal with.

To facilitate MSP process, the joint HELCOM-VASAB Maritime Spatial Planning Working Group (hereinafter HELCOM-VASAB MSP WG) has elaborated, inter alia, "Guidelines on transboundary consultations, public participation and co-operation", adopted in 2016. According to those recommendations: *in order to obtain coherence in the plans, the underlying data should be as uniform as possible. In order to achieve this, a common understanding and documentation should be achieved on what thematic datasets should be sourced from international sources and what data is from national sources. In addition, listing of required parameters by thematic datasets needs to be agreed.*

In 2015 the Baltic Sea Region Maritime Spatial Planning Data Expert Sub-group (hereinafter MSP Data Group) has been established as a sub-group to the HELCOM-VASAB MSP WG to support data, information and evidence exchange for MSP processes with regard to cross-border and trans-boundary planning issues.

Main tasks of the MSP Data Group are described as following:
- to prepare a list of BSR National MSP Data Contact Points, including additional information about relevant institutions;
- to prepare a general overview on national state of play of "MSP Data" with regard to transboundary/cross-border issues in BSR States (availability), including an overview on:
    - available (relevant) data (incl. metadata, ownership, legal issues, licenses, cost etc.);
    - data services (accessibility etc.);
- to compile minimum requirements for trans-boundary/cross-border MSP "Output Data" (plans) and sharing of these data;
- to prepare an overview on gaps in relevant data/information/evidence, problems e.g. with ownership, licensing, cost, legal aspects in general.

The MSP Data group has been working since autumn 2015. So far, there were six face-to-face meetings:

- 01-02/10/2015 Riga, Latvia
- 19-20/01/2016 Hamburg, Germany
- 12-13/04/2016 Gothenburg, Sweden
- 13-14/06/2016 Tallinn, Estonia
- 15/12/2016 Warsaw, Poland
- 11-12/04/2017 Riga, Latvia

During the work, it was agreed that the main outcome of the MSP Data Group work should be a guidance document for data availability in Baltic Sea Region.

MS shall organize the use of the best available data, and decide how to organize the sharing of information necessary for maritime spatial plans but there is no obligation to exchange particular data sets – everything is left to MS as long as the goal of transboundary agreed and coherent MSP is achieved. Exact sharing of information should be clarified within the MSP process (how to share and where to get the data to prepare MSP) – it is not prescribed which data should be shared and how they could be shared. To make this process a standard, the BSR-wide consensus is needed which data and what way should be exchanged (whether data should be exchanged through the common web services or should be shared once when presenting the maritime spatial plans in transboundary consultations).

With the given timeline and available resources the MSP Data Group did not tend to harmonize (or modify) the Input data itself (due to the data formats, scope and ownerships this task would not be feasible), but focused on what kind and where particular data can be found.
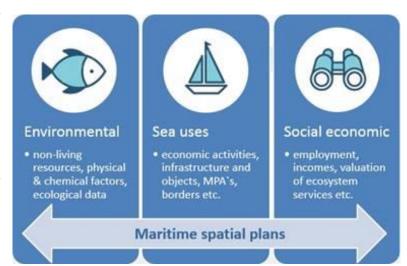
Because process of maritime spatial planning is underway, MSP Data Group looked at harmonization of data from maritime spatial plans (planned solutions). The proposed solution should have real influence and facilitate the process of cross-border cooperation.

This document shall be submitted to the HELCOM-VASAB MSP WG for consideration.

3. MSP Data

Data necessary for maritime spatial planning can be every kind of data related to the sea i.e.:

- Environmental data (non-living resources, physical and chemical factors, ecological data);
- Data on sea uses (economic activities, MPAs, infrastructure and objects, borders, restriction areas etc.);
- Social economic data (taxes, incomes, employment, valuation of ecosystem services etc.);
- Other maritime spatial plans.

MSP Data Group divided all MSP data into two categories:

- **Input data** - data used for planning process;
- **Output data** - outcome of maritime spatial plan, including draft versions for consultations.

To facilitate the process of data exchange MSP Data group compiled the list of National Focal Points indicating persons who are the main contacts of national MSP data issues (Annex 1). These focal points should be considered as a first-stop (especially in countries which have national maritime SDI, like Germany or Denmark) when looking for MSP data or information with regards to the transboundary coordination and consultations in the BSR. These focal points then can guide to the relevant institution/data source or provide information upon request. Nearly all BSR countries also compiled list of additional relevant institutions that are responsible for particular data sets.

3.1. Input Data

Input data in general is data, information or evidence that is used for preparation a maritime spatial plan, such as environmental data, information about sea uses, social economic data, as well as other maritime spatial plans (both national/regional plans within the country and plans of neighboring countries).

Although for national maritime spatial planning purposes there is a need for wide range of data sets concerning the scale and purpose of the plan, the specifics of area etc., MSP Data group agreed on most important data sets which are relevant from transboundary cooperation and consultation perspective, in other words, selected those data sets that one country may receive from its neighboring countries describing their development interests with transboundary impact. Thus the Input data list focuses primarily on sea uses rather than

environmental or social economic data. This approach was accepted as appropriate to give general overview with regard to cross-border planning issues.

The list on available Input datasets is structured accordingly to the themes that are listed in the Directive (2014/89/EU) establishing a framework for maritime spatial planning (MSP Directive) in Article 8:
- aquaculture areas,
- fishing areas,
- installations and infrastructures for the exploration, exploitation and extraction of oil, of gas and other energy resources, of minerals and aggregates, and for the production of energy from renewable sources,
- maritime transport routes and traffic flows,
- military training areas,
- nature and species conservation sites and protected areas,
- raw material extraction areas,
- scientific research,
- submarine cable and pipeline routes,
- tourism,
- underwater cultural heritage.

Two more themes were added to the list above:
- administrative and jurisdictional borders,
- other themes or uses that are not indicated at the moment, but might been considered as being relevant to transboundary / cross-border planning issues.

These 13 planning issues were agreed as most MSP issues in a cross-border/ transboundary context. Under those 13 planning issues MSP Data Group proposed 52 datasets as a set of Input data to maritime spatial plans in cross-border/ transboundary context (Annex 2). Then BSR countries were asked to give information about availability of those datasets in their countries (information on: data owner, restriction, fees, web access, data format). A full compilation on Input data by each BSR country is published in VASAB webpage.

In total there are identified more than 270 datasets, owned by about 100 different institutions in the Baltic Sea Region countries. Input data overview shows that the most of those proposed 52 datasets are under preparation or are planned to be made available by the HELCOM Data and Map Service.

Analyzing the Input data table, it is evident that different varieties of data sets are used in MSP processes in BSR countries. Acknowledging the scope and differences of available datasets (different structures, formats, languages, ownership etc.) it was noted that the MSP Data Group will not tend to harmonize these data. This task of harmonization could be further developed and tested by other thematic projects, e.g. in the ongoing BalticLInes project which develops guidelines and requirement specifications for arranging access to linear infrastructure related MSP Input data using webGIS tools.

3.2   Output Data

In general, the Output data is the data and information deriving from the maritime spatial plans (planned solutions, spatial designations); meanwhile the Output data can serve also as an Input data for another maritime spatial plan. Different countries have own views of MSP and therefore also specific MSP output data. The BSR countries are also at various stages of MSP implementation and therefore different stages of MSP data management systems. To

ensure that maritime spatial plans are coherent across the Baltic Sea, every country should consider extending their MSP data structures instead of implementing new data specification. This approach should be adopted especially for the output data, which can be characterized by two groups of data sets:
- the area of maritime spatial plan;
- the planning zones (sea uses).

The area of maritime spatial plan describes general information about current stage of specific spatial plan and should include geometry and attributes which describe the most important information about the plan (for example, title).

The planning zones contain detailed information about planned sea uses within area of spatial plan and could be structured accordingly to the MSP Directive themes (Article 8) corresponding to the sectors and demonstrating the possible issues to be solved within the MSP. Additionally, these themes were supplemented by additional themes like dumping, dredging, port, future designations etc. The planning zones (sea use) should include geometry and attributes characterizing particular planning designations. The key issue is to provide solution to make planning zones of one given country understandable for all BSR countries.

In order to seek the MSP Output data compliance with Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community (INSPIRE Directive), it was noted that the data set of the area of maritime spatial plan can be compatible with INSPIRE Directive. Full INSPIRE compliance could be investigated on later stage.

Each BSR country has one or several institutions responsible for MSP (usually one responsible institution for a particular plan). Due to the openness and transparency of MSP process, data sets with planning solutions do not have restrictions regarding data exchange, so licensing and fees should be no issue here.

A minimum list of Output data themes is given in Annex 3. Data themes here are organized in a very simple way with a moderate level of details.

Regarding the geometric data structures, it is up to the country what type of geometric methods to use to illustrate a particular data layer (point, line or area), however preferred geometry of data layers should be "polygon".

In order to ensure common language and understanding what particular data set is about, the glossary of possible sea uses could be developed (for themes provided by MSP Directive with possibility to be extended). Such approach will allow to keep the original data that each BSR country has, without data modification in significant way.
Simplicity in harmonization of Output data structure could be useful in terms of publishing those data sets via web services and facilitate easier comparison of area designations and regulations.[1]

Output data table is designed to facilitate the process of cross-border consultation or cooperation on maritime spatial planning. GIS data sets, generated on this basis, should

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[1] Within the Interreg VB project NorthSEE a study will elaborate on mapping all existing North Sea countries' MSPs, in such a way that objectives and regulations and area designations can be compared, and matches / mismatches become visible. The study shall include an assessment if and how this approach might be extended onto Baltic Sea MSPs.

include the attributes in English language and should be supplementary to the text of plan, maps and any other materials. Such approach should help to check in a general way the coherence of maritime spatial plans. In case of some suspected incoherencies or problems with edge-matching on borders, detailed data or information may be needed, as well as, deeper cooperation. Within the MSP planning circle Output data table could be adapted or adjusted in the future according to the planning needs.

MSP Data Group will further develop recommendations for minimum (including technical) requirements for MSP Output data exchange in BSR. Direct data exchange can be seen as an interim solution while the envisioned MSP SDI is not yet in place.

3.3 Data gaps and challenges

Data gaps means lack of some kind of data for particular phenomena or just inadequate or uncertain data. Challenges in terms of data gaps shows what can be improved in that area. Data gaps and challenges were discussed and identified on the basis of experience of each MSP Data Group members. The list of data and information gaps and challenges includes the most recurrent answers from all BSR countries:

Gaps:
- Some data or information is available in written format, tables, on papers - additional processing is needed for MSP purposes;
- Only information on military exercise areas is available, other information of defense is considered as restricted;
- There is poor information on owners and use of existing cables in sea;
- At national level there is no single database for tourism/recreational information – the information is fragmented at local or regional level.

Challenges:
- The availability and transparency of research data is not well organized at governmental level and planners lack systematic approach how to implement research data into MSP, as well as comprehensive information about what kind of information which institutions have;
- Many scientific institutions have developed GIS systems that could be integrated into MSP;
- Scientific or monitoring data usually cannot be used directly for MSP – additional clarification, harmonization and/or aggregation is needed;
- The performance of new initiatives (like improvement of data availability) is quite often affected by decreasing/insufficient number of employees in state administrations – existing recourses barely cover current duties;
- Different institutions use different terminology describing similar data sets that might be confusing when looking for relevant data for MSP.

4. Further steps and vision

Next steps of MSP Data Group would be towards developing recommendations for minimum requirements for MSP Output data exchange in BSR which should contain research on possible connections and benefits from INSPIRE Directive. This directive deals with the problems regarding the availability, quality, organization, accessibility and sharing of spatial information. Those problems are common to a large number of policy and information themes and are experienced across the various levels of public authority. Solving these problems requires measures that address exchange, sharing, access and use of interoperable spatial data and spatial data services across the various levels of public authority and across different sectors. The MSP Directive has referenced to the use of relevant instruments and tools that are already available under other EU policies, such as those mentioned in INSPIRE Directive. There are 34 INSPIRE themes for spatial data sets and 21 of them relate to maritime areas and are relevant to MSP.

The INSPIRE Directive should be taken into account when compiling the data sets that are needed for indicated transboundary issues, especially INSPIRE 'Data Specification on Land Use' as a guidance, but not copy it due to its complexity. In opinion of MSP Data Group, although INSPIRE themes cover a large share of the scope of MSP data, they insufficiently serve the MSP needs. Main reasons for that:
- in many cases data can be only viewed, not accessed;
- a lot of data is still missing;
- complexity of Data Specifications and used standards– specialist knowledge required;
- high costs of data harmonization and building or maintaining spatial data infrastructure, preferably in decentralized model.

On the other hand, Web services (geoportals etc.) are a very good example of use of solutions based on the INSPIRE directive area, which are considered as the most convenient way to obtain data. Those, in turn, implement open standards proposed by the Open Geospatial Consortium:
- WMS: standard for sharing raster maps,
- WFS: standard for sharing vector data,
- CSW: metadata interface.

Although INSPIRE suggests a decentralized model for data hosting, it is also possible to store data in a centralized system. Centralized data collection, processing and hosting in databases (for example, HELCOM Data and Map Service, EMODnet) - is considered only as interim solution and in the longer perspective is considered as *out-of-date* IT solution due to the huge resources needed, ineffectiveness, heavy update process, hosting etc. Within a decentralized IT solution with local infrastructure nodes providing data and services (for example of national implementation: MDI-DE) - data is hosted and managed by the data owners, but other users can reach the data through the web services (geoportals etc.).

When creating such a decentralized system, one should consider:
- Engagement of data hosts to share the data (and such data which is useful for everybody) is crucial;
- Some data sets are freely available and accessible, while others are the subject of fees or with restricted use.
- Such a system only can work if data is available and accessible;
- "*Win-win situation*" – data gains more value if it is more available for wider public (not only for individual use);

- Technical issues such as harmonization of data comes only after the agreement of cooperation;
- Data should be provided in a standardized way – data should be evaluated whether it is appropriate or if there is extra processing needed etc. (also interoperability of data use is considerable - data could be used interdisciplinary and provided for multiple uses);
- The data originators lack information and knowledge on what kind of data and which data attributes are needed for planners.
- Only data end-users can define what is most appropriate data needed for particular purpose - MSP planners should give a feedback what kind of data is needed, if particular data is useful, quality and frequency is sufficient, data can be used as provided or some additional processing needed etc.;
- After agreement on issues mentioned above, the next step is to provide access to data via web services etc.;
- It is rational to create a system where data remains with its originators (responsible ones for data quality, regular updates etc.);
- All involved partners should sign a contract or common commitment to bring more reliability to the system.

The work of MSP Data Group should contribute into ensuring the main task of MSP Directive - coherent plans across the borders. To facilitate this, MSP Data group will provide further work towards a **Baltic Sea Region web-map** of maritime spatial plans (Output data)[2] developed with comprehensive output data specification and cartographic visualization. This work requires extensive analysis and commitment from national data providers as well as organizational level agreement on setting up the platform. Resources for this work could be organized by thematic projects.

In future, INSPIRE data model can be officially extended for MSP purposes. With the progress in implementation of INSPIRE Directive, national spatial data infrastructures (SDI) shall be developed in a way that makes it possible to utilize a decentralized data approach for purposes of MSP. With such development, and involvement of authorities responsible for MSP, Input data could be provided in a shape/scope/aggregation or any other form that can be used for MPS purposes, and MSP planner will get what is actually needed. With bigger focus on MSP in national SDI's there are also opportunities to improve data quality.

In order to reach these goals there is a need for transboundary cooperation on ways and forms of data exchange. Common cooperation could also give promising results in utilizing ecosystem approach by using pan-Baltic environmental data products, in line with the rule: "one sea - one ecosystem".

Is important that even wide range of data availability and common understanding of data, will not ensure the coherence of the maritime spatial plans - countries should have cross-border consultations/discussions before drafting planning solutions.

5.   Annexes

Annex 1: List of national MSP data focal points and relevant institutions.
Annex 2: List of main transboundary/cross-border MSP issues and relevant Input data.
Annex 3: Minimum list of maritime spatial plan data: Output data.

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[2] One objective of the NorthSEE Study shall be to develop harmonized maps of the MSPs