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Background

The Baltic LINes project is a project in the Interreg Vb framework. Baltic LINes is supported as a flagship project by the HELCOM-VASAB MSP Working Group and approved by the EUSBSR national coordinators. Its goals correspond directly to the ambition of this Horizontal Action Plan to "Encourag[e] the use of maritime and land-based spatial planning in all Member States around the Baltic Sea and develop a common approach for crossborder cooperation". With its pan-Baltic approach, Baltic LINes helps to achieve the goal of implementing MSPs that are coherent across borders in a particularly comprehensive manner, and thus helps to develop enabling conditions for Blue Growth.

Baltic LINes focusses on maritime activities which are of a transnational nature, e.g. shipping and linear energy infrastructure. By discussing different transnational planning solutions and agreeing on common planning criteria Baltic LINes seeks to increase transnational coherence of shipping and energy corridors in Maritime Spatial Plans in the BSR.

It includes the following partners from around the Baltic Sea (listed in the order given in the project application): Federal Maritime and Hydrographic Agency of Germany; HELCOM; VASAB secretariat; Ministry of Energy, Infrastructure and State Development, Mecklenburg-Vorpommern; Swedish Agency for Marine and Water Management; Maritime Office in Gdynia; Maritime Institute in Gdansk; Coastal Research and Planning Institute, Lithuania; Ministry of Environmental Protection and Regional Development, Latvia; University of Tartu, Estonia; Alborg University, Denmark; Finnish Environment Institute (SYKE); Finnish Transport Agency; NHTV University of Applied Sciences, Netherlands.

It also includes the following associated organisations: Danish Nature Agency; Ministry of Infrastructure and Development, Poland; Finnish Transport Safety Agency; Ministry of Environment of the Republic of Lithuania; Maritime Administration of Latvia; ERMAK Nord-West, Russia; Ministry of Infrastructure and the Environment, the Netherlands; Ministry of Finance, Estonia.

The project started three years ago, in March 2016. Baltic LINes contributes to coherent maritime spatial plans by promoting the consistent planning of these infrastructures across borders.

Throughout the project lifespan, the project engaged with groups in the HELCOM and VASAB framework: The HELCOM-VASAB MSP WG supported this project with a letter of support from 30 January 2015. Germany provided regular updates on project activities (see HELCOM-VASAB 13-2016, Document 3-3 and 6-2; HELCOM-VASAB 15-2017, Document 3-2). The HELCOM SAFE NAV (FASE NAV 9-2018, Document 7-1)

and Maritime (MARITIME 18-2018, Document 2-4) groups were informed of the results of the shipping work packages in the project, in particular the document “A practical guide to the designation of ship corridors in Maritime Spatial Planning”.

The attached document provides a brief overview of project activities and results and then presents the “Recommendations to the HELCOM-VASAB MSP Working Group on future actions deriving from findings from the Baltic LINes project”. For background information, the Annex 1 to the document provides a “Summary of the recommendations developed under previous and current MSP projects”; Annex 2 provides a “Summary of the main outputs of Baltic LINes (as of February 2019)” and Annex 3 is related to the “Good practices identified under Baltic LINes”.

Action requested

The meeting is invited to take note of the project recommendations and – if time permits – to have an exchange of views on the recommendations and – if applicable – on possibilities regarding their implementation and possible prioritization.

Baltic LINes

Coherent Linear Infrastructures in Baltic Maritime Spatial Plans

Recommendations to the HELCOM-VASAB MSP working group on future actions deriving from findings from the Baltic LINes project

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Interreg Baltic Sea Region

EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

Introduction

The EU MSP Directive (2014/89/EU) requires all member states to adopt Maritime Spatial Plans (MSP) for their sea spaces by 2021. All EU Member States around the Baltic Sea Region are currently in the drafting phase (see table), designating areas for use of sectors in the coming decades taking into account nature protection. Planning a national sea area is a complex task in which different sectorial interests need to be carefully weighed against each other, conflicts have to be resolved and planning solutions need to be found.

Country	MSP (national plan)
DK	12/2020
EE	8/2020
FI	3/2021
DE	06/2021✶
LV	12/2018
LT	6/2020
PL	7/2019
SE	12/2019

✶DE: update of existing MSP

However, despite the long standing cooperation among MSP authorities within the Baltic Sea Regions, countries do not practice MSP in identical ways. Significant differences[1] are apparent in the following aspects: the overriding objectives of MSP in each of the countries; how binding the MSP plans are in legal terms; the temporal planning horizon or the scale of planning as well as how sectoral or nature protection planning can be influenced by MSP. Last but not least planning authorities have been allocated to very different ministries in each of the countries, which equally results in differences in resources and information directly accessible to them.

All this feeds into the challenge of achieving cohesion among MSP processes and especially the resulting MSPs across borders. In that regard transboundary cooperation and consultations are a key aspect in the proper implementation of MSPs, especially in relation to linear infrastructure.

Aims and outputs of Baltic LINes

The project Baltic LINes (implemented between 2016-2019) had been set up to address this challenge building on recommendations provided under previous MSP projects and initiatives (see Annex 1), while at the same time acknowledging that other projects running in parallel are addressing other issues identified as being of equal relevance to the further advancement of MSP within the BalticSeaRegion (e.g. Baltic SCOPE, Pan Baltic Scope, Baltic SCOPE, Plan4Blue, BalticRIM, BaltSpace, Baltic InteGrid, Baltic Blue Growth, SeaPlanSpace).

The Baltic LINes project sought to increase the transnational coherence of shipping routes and energy corridors in Maritime Spatial Plans in the Baltic Sea Region (BSR). It focused in particular on cross-border issues in relation to the shipping and energy sectors and the specific need for information on current and future connections between respective borders and structures. Building on this information, the project aimed to propose planning solutions for fixed linear infrastructure (cables and pipelines), fixed installations such as wind farms and designations of shipping lanes. Moreover the project addressed the need to install develop a tool to access

[1] See: *Identification of transnational planning criteria, Baltic LINes (WP 4.2.).*

pan-Baltic MSP decentralised data based on Marine Spatial Data Infrastructure (as recommended in previous projects such as BaltSeaPlan and PartiSEApate) to provide for the basis for the relevant information as recommended in previous projects. Furthermore it picked up on already existing good practices established within the NorthSea area within MSP as well as fostering an intensified dialogue between MSP authorities and specialists between the two sea basins in order to identify further sets of good practice on which to build on vice versa. In particular Baltic LINes transferred the so-called 'North Sea MSP Challenge' to the Baltic Sea Region environment, while at the same time testing new use formats. As such as the 'BSR challenge' was not only used for educational purposes; but it was also tested on how it could be applied to engage and gain more information from stakeholders as well as being used to inspire discussions among planners on cross-border issues.

Baltic LINes has resulted in the following set of report:

- Identification of Transnational Planning Criteria
- Infopaper: From Planning Issues Towards Planning Solutions

- Shipping in the Baltic Sea: Past, Present and Future Developments Relevant for Maritime Spatial Planning
- Exploring the future of shipping in the Baltic Sea
- A Practical Guide to the Designation of Ship Corridors in Maritime Spatial Planning

- Baltic LINes energy scenarios for the Baltic Sea 2030 and 2050"
- Capacity Densities of European Offshore Wind Farms
- Report on the Energy MSP Challenge in Copenhagen 2018
- A Practical Guide to the Designation of Energy Infrastructure in Maritime Spatial Planning

- Data needs and availability
- Data exchange and dissemination - prerequisites for a Systems Architecture for a Transnational Data Infrastructure for MSP

- Stakeholder Involvement in Long-term Maritime Spatial Planning: Latvian Case

A summary of these reports is presented in Annex II of this report.

About these recommendations

The following paper presents the recommendations, which have been derived from these analyses and activities carried out during Baltic LINes' implementation (Annex II) including also some good practices, that have been identified during its course (Annex III) as well as building on the analysis of recommendations provided under previous and parallel ongoing MSP projects (Annex I).

Whereas this report does not repeat recommendations, which have already been implemented; it incorporates those, which still hold true and have been reconfirmed by work within Baltic LINes. In other cases, recommendations from former projects have been further elaborated and advanced based on new knowledge gained throughout the project period.

Building on this work, the recommendations presented were developed and discussed by the Baltic LINes partnership during the partner meetings in Gdańsk (11-12.06.2018), Riga (13-14.11.2018), Hamburg (14.02.2019) as well as follow-up individual consultations. They represent the joint opinion of the entire Baltic LINes partnership.

The first target group for these recommendations is the HELCOM-VASAB MSP Working Group as they address agreements on actions to be taken jointly by the MSP authorities of the BSR countries. At the same time we recognise that some recommendations also address the wider group of stakeholders such as other more sector oriented national and transnational authorities and agencies as well as the industry itself – and as such cannot be implemented without their involvement. It is to that end, that Baltic LINes reconfirms the need for the BSR wide MSP community to create a stronger and closer engagement with these players.

The recommendations have been divided into the following four sections: 1) Horizontal Issues (which can be mainly addressed by the HELCOM-VASAB MSP WG and their MSP authorities directly); 2) Energy; 3) Shipping and 4) Data for MSP.

In all cases a short snapshot is provided about the relevant context, the current situation and competences and the requested changes of behaviour; which then lead to the concrete set of recommendations. In all instances the recommendations have a 'soft' character meaning that they aim for voluntary rather than legally binding practices and agreements among the respective national MSP authorities.

HORIZONTAL Recommendations

Regular update of planning criteria table

As has been shown within the Baltic LINes project, in view of different planning structures and systems throughout different countries, it is difficult to align planning criteria as to derive to common standards. At the same time a regular exchange on the respective planning and technical design criteria in use in all countries greatly enhances the joint understanding and prevents mis-matches.

Thus, it is recommended, that the planning criteria tables developed under the report "Identification of the transnational planning criteria"[2] (work package 4.2) should be regularly (at least once per year) reviewed and updated, where necessary, by the national MSP authorities.

Any changes within these planning criteria should be reported back, with the rationale being explained, during the regular meetings of the HELCOM-VASAB MSP WG. These changes could also be presented to other relevant international platforms of discussions such as the HELCOM Group of Experts on Safety of Navigation (SAFE NAV), HELCOM Maritime WG or any other relevant working group on Energy to be created (see recommendations below) or already existing in other contexts such as ENTSO-e.

It is recommended to use the format of the table as developed within the Baltic LINes project; but this should be agreed among the members of the HELCOM-VASAB MSP WG. Ideally the format could then also be adopted by other EU MS especially within the North Sea Basin; but could also be recommended to be brought forward within the European wide MSEG.

Whereas Baltic LINes focused so far on planning criteria for shipping and energy solely, it is necessary to extend the overview also to other sectors, in addition to shipping and energy.

Moving towards cooperation on MSP implementation

As shown in the analysis of recommendations provided so far (Annex I), recommendations have mainly concentrated on how to cooperate and consult across borders in view of the preparation of MSP. Also, the planners' forum successfully installed within Baltic SCOPE and currently continued within the Pan Baltic Scope project mainly concentrates on the identification of planning solutions.

In some cases, as shown in the samples provided on how shipping lanes are designated within the different countries (see Annex II), it is not feasible to align across borders how such uses are designated. Therefore, it will be increasingly important for the coming future to define processes and solutions designed to establish good cooperation and consultation on issues arising from the actual implementation of the given MSPs.

Baltic LINes recommends to the HELCOM-VASAB MSP WG to define concrete steps towards this goal; these could include voluntary agreements. Such agreements could be especially

[2] *For the full text of this and other reports, see the Baltic LINes website: https://vasab.org/project/balticlines/project-outputs*

helpful with regard to linear infrastructure and shipping priority areas while crossing national borders.

When appropriate, consider using the MSP Challenge Baltic Sea Edition

The MSP Challenge, for which a specific Baltic Sea edition has been developed under this project, has proven during the Baltic LINes project to be a good way to communicate with the energy and shipping stakeholders and involve them in the MSP process. At same time it has also been proven to be a good tool to stimulate discussions among planners to identify cross-border issues as well as testing solutions.

However, a careful design of the respective sessions is necessary and has to be done on case by case basis in order to fulfil the respective purpose. To this end, the given MSP authority (ies) have to closely align with the designers of the Baltic Sea 'MSP Challenge' edition and ensure that it can be used for engagement of both national and cross-border stakeholders (differences in language and planning cultures between BSR countries should be taken into account). The game should be extended to better take into consideration land-sea interactions and allow engagement on non- coastal countries such as Belarus.

Whenever technical possible, underlying data & information used within the Baltic Sea MSP Challenge should make use of BASEMAPS (the tool to access data via MSDI).

Continue and expand efforts to involve wider range of stakeholders

Following recommendations from former projects, Baltic LINes confirms the need to continue and intensify efforts to host 'Baltic Planning Forums', which are not only designed and attended by MSP planners, but are open to a wider range of stakeholders. A focus should be on inviting stakeholders that are of special relevance and can serve as multipliers for their sectors.

Thus such 'Baltic Planning Forums' differ from the 'Baltic Planners Forum' developed under Baltic Scope and continued under Pan Baltic Scope (see above), which are specifically designed as informal small working meetings among MSP planners to discuss concrete planning issues.

The 'Baltic Planning Forums' would more be in line with the string of 'Baltic MSP Forums' established as good practice by VASAB (Riga '14; Riga '16; Connecting Seas Hamburg '19, Riga '19). It is, however, recommended that such events should in future even more focus on reaching out to the wider range of stakeholders especially other ministries, sector associations and related projects & initiatives. These events should also provide more sector-specific interactions thanks to tools such as the MSP Challenge sessions, in order to solicit actionable input from stakeholders (e.g. in view of rerouting shipping lanes; planning of specific places; etc.).

The MSP platform project called Capacity4MSP, which has been submitted to the second platform call of the Baltic Sea Region Interreg programme in January 2019, plans to organise a series of workshops. These workshops could be used as a starting point for these Forums.

Given that these diverse fora are staffed by the same core of people – planners around the Baltic Sea – it should be achievable to co-ordinate their activities. The excellent experience

from Pan Baltic Scope planner's forums shows that they could serve in a hands-on coordinating role, while the focus of Baltic Planning Forums (including efforts in Capacity4MSP) would be stakeholder and third party engagement. The HELCOM-VASAB MSP WG could maintain an oversight over ongoing activities and continue to address policy questions as outlined in its work plan.

Increase and continue efforts to take into land-sea interaction effects

Proper planning of maritime space should also include on-land effects of maritime uses and vice versa; including shipping corridors (hinterland access to seaport and its development) and underwater electric grid development (location and capacity).

It is recommended that the HELCOM-VASAB MSP WG and possibly any sub-groups, continues to build on existing efforts made under previous projects and initiatives such as BaltSpace ('Spatial Cost Benefit Analysis Tool') as well as ESPON to develop analytical tools – especially in view of the transnational dimension of such land-sea interactions. The MSP WG should also take into account the results of Pan Baltic Scope, where Nordregio is leading a workpackage on land-sea interactions, including 2 different case studies performed by national countries. Finally, the approach developed by the Maritime Institute and the Institute of Development in Poland on land-sea interactions should be continued (https://bullmaritimeinstitute.com/resources/html/article/details?id=183816).

ENERGY Recommendations

ENERGY	HELCOM VASAB MSP WG	Planners, TSOs and key stakeholders
Relevant context	Baltic Sea Region Interreg has prioritised the area of energy Planning instruments of the energy sector are currently not well integrated into MSP The Baltic Sea Region Energy Cooperation (BASREC) has not resulted in permanent cooperation The Baltic Energy Market Interconnection Plan (BEMIP) initiative has already led to some cooperation on energy in the Baltic (grid orientation between TSOs).	The sector is increasingly growing with players from inside and outside the BSR countries.
Current competences / way of working	There is no energy workgroup in the Baltic (not under the MSP workgroup, as in the case of the data workgroup, and also not separate, like HELCOM Maritime).	TSOs and key stakeholders are not organised on a pan-Baltic level for offshore wind developments. However, some sectoral level of collaboration exists through Wind Europe, ENTSO-e, BEMIP (DG energy).
Change of behaviour requested	A better integration of energy planning into wider MSP should be sought, mainly focussing on OWF. Further discussions about offshore wind developments and energy grids required. Other initiatives should make use of the HELCOM-VASAB MSP WG - for example, ideas about future projects / ideas / technologies should be provided for planners Baltic wide, through the MSP WG.	Pan-Baltic body should be organised in the case of Offshore wind energy (including companies in the entire value chain). A starting point could be the Baltic Offshore Grid Forum (BOGF) established under the Baltic InteGrid project Other organisations / initiatives have to understand how the sectors are cooperating with each other.

Recommendations to invite and involve the energy sector in the HELCOM-VASAB MSP working group

The energy topics have proven to be missing in the HELCOM-VASAB MSP working group and we should take the opportunity of Baltic LINes to change this situation. Moreover, the MSP WG should take into account and build on the good practice established by the North Sea Energy Initiative.

The HELCOM-VASAB MSP working group should deal with maritime energy topics more often, via different actions:

- the HELCOM-VASAB MSP working group should organise dedicated energy sessions or workshops at least once a year.
- regular invitation of energy stakeholders such as TSOs, Offshore Wind Farms developers or civil servants responsible for renewable energy policy.

More specifically, the energy topics addressed within the HELCOM-VASAB MSP working group should build on the following recommendations provided by Baltic LINes:

- The templates developed under the Baltic LINes energy scenario reports should be validated and subsequently agreement sought on a regular review and update to be done by all BSR countries. This regular review could be organised during the dedicated energy session of the HELCOM-VASAB MSP working group.
- Other discussions should focus on coordination for linear infrastructure in MSP, such as power lines, data cables, pipelines, and on the definition of strategic corridors. The establishment of gates should be explored as well as other effective means of co-ordination.
- The limitations of terrestrial transmission grid for the development of an off-shore grid and the transfer of power from offshore energy installations should be addressed.
- Align and take into account the results and recommendations of dedicated energy projects, such as the Baltic InteGrid project.

Recommendations to establish a technical Pan Baltic Offshore energy and grid stakeholder group

- Building on the good practice established by the North Sea Energy Initiative, create a technical Pan Baltic Offshore energy and grid stakeholder group/initiative made up of experts, which could actively feed into future projects (e.g. platform projects).

SHIPPING Recommendations

SHIPPING	HELCOM VASAB MSP WG	Planners and other key stakeholders
Relevant context	Maritime Spatial Planners are not represented on the IMO forum, so do not have a relevant platform for discussion with the body providing key requirements in the maritime spatial planning process (shipping corridors structure) Innovations in the field of maritime transport will change the sector: increased digitalisation of ships, improved environmental performance of the ships, especially with the development of alternative fuels and development of highly automated vessels. Therefore, a relevant identification of how these changes will have an influence on MSP in transboundary scope is required	Diversity and freedom in the planning criteria results in mismatches in the maritime spatial planning process, Implementation of formal (legal) common transboundary requirements regarded as impossible Platform for discussion between planners created in the framework of the R&D projects can support a voluntary adoption of basic requirements (common standards)
Current competences / way of working	IMO requirements are considered an important element in the MSP process but are treated differently by planners from different EU Member States	MSP planners needs to implement national rules/attitudes toward the MSP Cross-border standardisation and unification of planning criteria are regarded as unfeasible, so a bottom-up approach seems the only solution in the process of improvement of coherence between the MSPs
Change of behaviour requested	There needs to be real impact on the shaping of the structures of shipping corridors at the IMO level in line with the needs of regional areas such as the Baltic Sea More exchange on MSP and shipping issues between the dedicated existing groups (HELCOM VASAB MSP WG, HELCOM Safe Nav and HELCOM Maritime). Future challenges towards shipping and maritime ports need to be identified and commonly included into the MSP process, especially in the transboundary sections	Planners need to update planning criteria (not just formally) for further improvements of spatial consistency of shipping corridors on the Baltic Sea Planners are encouraged to network with their respective colleagues which represent their country at IMO. Dedicated sessions of the MSP WG could serve to bring relevant decision makers together on an inter-agency level.

Recommendations to extend the prerogatives of an existing group or to improve the cooperation between existing groups on MSP issues in relation to shipping, safety and seaport issues

To this end, it is recommended to develop specific 'Terms of reference', which should explore how Helcom Safe Nav, HELCOM Maritime and Helcom-VASAB MSP WG should practically co-operate on that matter and what specific topics should be discussed on MSP issues dealing with shipping. The approval of parent bodies (HELCOM and VASAB) should be obtained.

In particular, these topics should build on the following recommendations provided by Baltic Lines, Baltic coastal states should

- cooperate in order to define common positions towards the IMO in view of possible shifting of shipping lanes (example of Sweden),
- discuss – in line with the efforts made within the North Sea basin – on how to better integrate and align IMO terminology within national MSPs,
- discuss and prepare an agreement establishing that a central shipping line should be used as a common starting point for shipping lines defined within national MSPs,
- Expanding on the current 'Planners' forums' continuously discuss, how potential transnational 'mismatches' between shipping lines of different national MSPs (resulting from different planning systems & cultures) can be dealt with on practical level, when it comes to MSP implementation,
- discuss further results on how and whether MSPs can take into account future developments within the shipping sectors; e.g. autonomous shipping,
- discuss further results on how planned development of the ports will influence the need for safe shipping areas in the future,
- discuss the results of the few existing tools to assess land-sea interaction effects between shipping, ports development and further on-land transportation of goods. Further explore and define of how such tools should be most effectively developed further.

DATA for MSPs Recommendations

DATA	HELCOM VASAB MSP WG	Planners, TSOs and key stakeholders
Relevant context	Limited access to coherent data and information on the spatial development of the Baltic Sea areas Lack of common standards and open access to data relevant for MSP and information in the Baltic Sea Region Lack of resources to encourage Member States to enhance their cooperation in the field of delivery of comprehensive data for the MSP	Limited access to coherent data and information on the spatial development of the Baltic Sea areas limits the cohesion of spatial planning in the transboundary areas A comprehensive, consistent and convenient access to up-to-date data covering the Baltic Sea area is necessary for planners dealing with marine spatial plans Stakeholders have limited access to data and information concerning the spatial development of maritime space, making the decision and investment processes more difficult
Current competences / way of working	Lack of access to relevant and cohesive data are major obstacles in the process of transboundary cooperation in the MSP development Different languages and formats	Data and information delivered to HELCOM by HELCOM Contracting Parties (HELCOM Map and Data Service). Access to data through spatial web services (BASEMAPS) The need to obtain relevant data from various sources and their further translation in the process of the maritime spatial planning increases the costs and may lead to misunderstandings
Change of behaviour requested	Amendment of BSR MSP Data ESG TOR to encourage data providers to deliver open data through web services using open standards for transnational consultations BSR MSP Data ESG responsible for updating and verifying of available information (via BASEMAPS) Dialogue in BSR MSP Data ESG will improve the quality and consistency of data and information, thus the process of the MSP development and verification will become easier and more effective	Fully consistent and convenient open data and information sources provided by national coordinators to drive the BASEMAPS Open access for relevant data and information will support the process of maritime spatial planning on the Baltic Sea Strive to data harmonization to have a common language, symbology and definitions for MSP data.

Recommendations for the MSP Data Sub-Group

Update the Terms of Reference of the Baltic Sea Region MSP Data Expert Sub-group (BSR MSP Data ESG) under the HELCOM-VASAB MSP Work Group as to reflect the following points:

- The BSR MSP Data ESG should work to support the data availability in the newly created tool to access Baltic Sea MSP data based on a Marine Spatial Data Infrastructure (an output of Baltic LINes called BASEMAPS) and make sure that their national data is included.

- The status of the data availability should be followed up at each group meeting of the BSR MSP data ESG. The data ESG should inform the HELCOM-VASAB MSP WG on the status of BASEMAPS' completion.

- BASEMAPS should be the focal point for getting an overview on MSP related spatial data stemming from national Marine Spatial Data Infrastructures (MSDIs). Therefore, BASEMAPS could be the starting point for cataloguing relevant data to be used by MSP related spatial decision support tools.

- BASEMAPS should be continuously fed and its data layers extended to other sectors such as aquaculture, underwater cultural heritage, etc.

- The BSR MSP Data ESG should encourage MSP data providers to establish English as an additional language to provide MSP transboundary data.

- Likewise, the BSR MSP Data ESG should also work to support a common symbology for MSP data and establishment of common term vocabulary to achieve semantic interoperability.

Annex 1: Summary of the recommendations developed under previous and current MSP projects

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02.2019

Annex 1: Summary of the recommendations developed under previous and current MSP projects

A substantial number of EU-funded, cross-border research & development projects have taken place and/or are still going to facilitate cooperation between EU countries in the management of maritime space to support the implementation of the MSP legislation. In fact, as shown on the EU MSP Platform more than 100 projects have dealt with MSP. The below given table only showcases a selection of the main MSP projects, which have been implemented both within the Baltic Sea region as well as increasingly also throughout other EU sea basins (Table 1 below).

Key results of the projects were to enable the meeting and cooperation of specialists dealing with spatial planning at sea, identification of barriers and best solutions, as well as the development of dedicated spatial planning tools (e.g. map services, MSP tools, data portals). In many cases the projects have also resulted in recommendations.

Table 1: Main EU-funded MSP projects and the formats for their main outputs

Project	Duration	Sea Basin	Case studies	National Pilot Plans	Cross-Border Pilot plans	Sea Area Mapping	MSP tool	Data portal	Recommendations & guidelines	MSP consultation	Scenarios development	Good practice
BaltSeaPlan	2009-12	Baltic	+	+			+		+			
Plan Bothnia	2010-12	Baltic				+						
PartiSEApate	2012-14	Baltic			+				+	+		
BalticSCOPE	2015-17	Baltic				+	+		+			
BalticLINes	2017-19	Baltic					+	+	+	+	+	
Pan Baltic Scope	2019-19	Baltic					+	+				
NorthSEE	2016-19	North Sea					+		+		+	
TPEA	2012-14	Atlantic			+							+
SIMCELT	2015-17	Atlantic	+					+				
SIMNORAT	2017-18	Atlantic	+				+			+	+	
ADRIPLAN	2013-15	Adriatic					+	+				
SUPREME	2017-18	Adriatic-Ionian	+				+		+	+	+	
SIMWESTMED	2017-18	WestMed	+				+			+	+	
MARSPLAN	2015-17	Black Sea	+		+	+	+					
MarSP	2018-20	Macronesian					+					
OCEAN METISS	2017-19	La Reunion					+					

In view of the recommendations provided under the Baltic LINes initiative, we herewith highlight in particular the recommendations provided under the three predecessing Baltic Projects *BaltSeaPlan, PartiSEApate, Baltic SCOPE* as well as the parallel ongoing 'sister' project *NorthSEE (see table 2)*.

The table indicates, which recommendations have already been acted upon and thus are now active practice; which recommendations have been followed up by Baltic LINes itself and which recommendations still need future actions. In view of recommendations from NorthSEE they have been analysed in view of their applicability to the Baltic Sea Region.

The recommendations indicated in red are those, which are part of the Baltic LINes recommendations; blue recommendations are regarded as completed; those written in black fond have not been dealt with and/or regarded as relevant under Baltic LINes.

Table 2:
Main recommendations developed under selected past and current MSP project

PROJECT (end date)/ Recommendations	Stage (BSR)	Actions & information (BSR)
ENERGY		
BaltSeaPlan (2012) – Energy Visions 2030		
Baltic Sea States have put pan-Baltic energy infrastructure into place (Super-Grid)	Still under discussion	Taken up in Baltic LINes / InteGrid – but not in place
Land- and sea-based infrastructure is well integrated	Confirmed – but in progress	Taken up in Baltic LINes / InteGrid – but not in place
Cable connections from OWF and SuperGRID are bundled together in suitable corridors, incl Gas Pipelines – where possible/necessary	Confirmed – but in progress	Taken up by national MSPlanners – but not a formal requirement in BSR
Co-use of offshore wind farms is actively promoted	Taken up – but not achieved	Taken up in MUSES project – but not national practice yet
Enough total Baltic Sea space set aside to achieve RES targets	Confirmed – but in progress	Part of all BSR MSP processes
Careful siting of OWF & grid infrastructure in relation to other sensitive uses	Confirmed – but in progress	Part of all BSR MSP processes
Baltic SCOPE (2017) - Energy		
Develop a pan Baltic long-term picture on renewable offshore energy – needs, capacity, other sectors' needs, impacts, etc.	Completed – but regular update according to joint standards	Energy Scenarios developed by Baltic LINes - periodic update needed
Consider existing or approved infrastructure and plans of neighbouring countries as well as potential cumulative effects on the environment and other sectors of the combined development	Confirmed by Baltic LINes – but further work needed	To be taken up by the Planning Forum
Develop joint cross border gates for linear infrastructure in MSP (power lines, data cables, pipelines)	Confirmed by Baltic LINes – but not implemented	Confirmed recommendation by Baltic LINes – but not implemented
Notify concerned countries early on about spatial plans and projects with transnational impact.	In progress	Reconfirmed recommendation from PartiSEApate; adopted HELCOM-VASAB guideline; good practices identified, cooperation projects (e.g. BaltiLINes) facilitation (current assessment in progress)
Ensure collision-friendly installation design (turbines)	In progress	Responsibility of stakeholders (energy investors), best practices needed
NorthSEE (2019) - Energy		
Create a concrete national energy policy roadmap to achieving 2050 energy targets	Completed or in progress	National authority competence
Energy policy targets should be translated into the same units for all NSR countries. This will allow a comparison between countries.	Soft recommendation	Baltic LINes Energy Scenarios template: soft recommendation
Support the integration of the European internal energy market.	No progress	National authority competence

NorthSEE (2019) – Future energy industry trends		
Encourage and support multi-use developments in order to use space more efficiently and sustainably	In progress (soft)	Multi-use development recognized in MUSES / not covered in Baltic LINes / not implemented consistently in BSR MS
Suitable locations should be identified for floating wind across countries in the North Sea.	In progress	Floating wind turbines technology recognized and analysed in the Baltic LINes
A transnational oil spill contingency plan should be set up across all NSR countries to aid transboundary incidents and fully engage with the emergency response command structures for other member states	Not relevant	Not part of Baltic LINes – relevant?
Identify demand for grid connections, interconnector routes and gates, grid and connection points on land	Completed – but update needed	Energy Scenarios (Appendix 3) developed by the Baltic LINes, periodic update needed
SHIPPING		
BaltSeaPlan (2012) – Shipping Visions 2030		
Baltic Sea States have jointly agreed on spatial shipping strategy taking an integrated view of ports & shipping lanes and taking into account of other spatial needs in the sea	Still under discussion	Taken up in Baltic LINes – but not in place
It has become accepted that shipping lanes may be rearranged	Confirmed – but in progress	Taken up in Baltic LINes – but not in place
Intelligent corridors and designated routes established for most intensively used navigation areas to ensure safe transport – where necessary these routes have been defined as traffic separation schemes by competent authority IMO	Confirmed – but in progress	Taken up in Baltic LINes – but not in place
Areas have been defined and designated by IMO that have to be avoided by shipping to protect other important goods & functions	No progress	Taken up in Baltic LINes – but not in place
Safety zones are designated around areas with obstacles for shipping (OWF)	Implemented – but not according to same standards	Taken up in Baltic LINes – part of all national MSP processes – but not according to same standards
Port development areas have been identified and designated; so that the function of ports as key distribution centres and transport nodes is ensured for the future	In some cases, implemented in the national MSP process (Poland for instance)	National MSP process
High risk areas have been identified and compulsory pilotage systems have been put in place with IMO regulations	In some cases, implemented in the national MSP process (Poland for instance)	Not intensively explored in Baltic LINes – still progress needed
Best technologies are used to support safe navigation	Part of HELCOM Saf Nav – but not MSP	Not part of Baltic LINes
Transnational response contingency planning and system of ports of refuge have been jointly agreed by Baltic Sea States	Part of HELCOM Saf Nav – but not MSP	Not part of Baltic LINes
Baltic SCOPE (2017) - Shipping		
Take each other's shipping routes into consideration in MSP and strive for cross-border coherence by aligning shipping routes at the border, using the centre-line	In progress (voluntary)	Confirmed by Baltic LINes – but not yet in place

Integrate of common safety guidelines and regulations into national plans (criteria for safety distances)	Not feasible	Implementation of a common standards for the BSR regarded as unfeasible – confirmed by Baltic LINes
Limit rerouting of the shipping lines (based on IMO measures). When rerouting, planners should find the best possible alternative route and take impact on other sectors into account.	In progress	Lack of relevant tools and measures for final estimation of impact – needs further work (added value identification) => adapted recommendation from BaltSeaPlan
Shipping interest in MSP should be classified according to their importance.	In progress	Lack of relevant tools and measures for final estimation of impact – needs further work (added value identification)
Small vessels traffic should be also included during the MSP development (AIS, VMS).	In progress	Responsibility of MSP planners and authorities. Not yet a guideline formally taken on board by HELCOM-VASAB MSP WG. However, a tool on AIS data was created by HELCOM during the Baltic SCOPE project and planners are encouraged to use it.
DATA		
BaltSeaPlan (2012) – MSP Data		
Infrastructure: Interoperable MSP relevant data and metadata must be created	In progress	BASEMAPS developed by Baltic LINes
Specifications: The MSP data infrastructure should be based on agreed lay-out and specifications with regard to data issues, data scope, formats and technical requirements etc. This must be in line with the INSPIRE Directive.	In progress	BASEMAPS developed by Baltic LINes
Exchange network: MSP data exchange should consist of: Pan-Baltic MSP Data Coordinating group; National MSP Data Contact Points; Regional MSP Data Points (for larger countries); MSP Data Providers.	Completed	Pan-Baltic: BSR MSP Data ESG
Data exchange: should be facilitated via a Baltic Sea MSP data portal, offering OGC compliant map and data services. These could be linked and/or integrated into individual applications.	In progress	BASEMAPS developed by Baltic LINes
Data exchange: National/Regional MSP Contact Points should provide for updated data sets in the data infrastructure in regular 6-month intervals	In progress	Lack of relevant formal requirements but BASEMAPS and realtime services could solve this issue
Expert/Advisory Group: A permanent MSP Data Expert Group in advisory capacity to the Pan-Baltic MSP Data Coordinating Group	Not fully taken up	BSR MSP Data ESG – but not two groups
Legal policy: The pan-Baltic data infrastructure should draw on unrestricted and free of charge data produced	In progress	BASEMAPS concept based on such data sources – but not all data open source yet
Resources: Baltic Sea states should grant adequate financial and organisational resources for securing the implementation and maintenance of a sustainable MSP data network and infrastructure	In progress	Under discussion – so far BSR MSP Data ESG time limited mandate
PartiSEApate (2014) – Data needs and network		
National MSP data contact points need to be set	In progress	Data focal points are nominated and

up in the BSR		the list is available on VASAB webpage under Data EG section
A pan-Baltic Spatial Data Infrastructure (SDI) for MSP should be set up, allowing decentralised data holding	In progress	Development of the BASEMAPS under the Baltic LINes
Common priorities need to be set for data compilation, bearing in mind the concrete evidence to be generated for MSP	In progress	Development of the BASEMAPS under the Baltic LINes
Common data standards need to be developed for data exchange, focusing on issues of trans-boundary relevance	In progress	Development of the BASEMAPS under the Baltic LINes
Socio-economic data gaps need to be filled	In progress	Partly via projects: BaltSpace, Pan Baltic Scope
Strong metadata needs to be included to create transparency on data reliability and significance	In progress	Development of BASEMAPS under Baltic LINes
NorthSEE (2019) - Data		
Use and maintain existing data infrastructure and encourage industry to submit their data to both national data portals and other portals such as EMODNET	In progress (soft)	BASEMAPS for Baltic Sea Region
Contribute data to the MSP Challenge Game in order to help generates simulations of the future energy industry trends to determine available marine space.	Completed	MSP Challenge Game Baltic Sea Edition implemented in the Baltic LINes
Share data relevant to oil spill contingency with all NSR countries to aid a fast and efficient response to oil spill emergencies	Not relevant	Maritime authorities' issue
GENERAL MSP		
BaltSeaPlan (2012) – General Recommendations		
MSP should be guided by 'sustainability', pan-Baltic Thinking, Pan-Baltic topics, pan-Baltic approach	Partly taken up	Taken up in Baltic/Pan Baltic Scope; Baltic LINes and EBA/coherence in MSP Directive – but national considerations prevail
Planning criteria based on 'Spatial connectivity', 'Spatial efficiency', 'Spatial subsidiarity'	Partly taken up	Not explicitly mentioned in all national planning criteria
All Baltic States need to establish MSP structures	Completed	All BSR countries have established MSP authorities (MSP Directive)
Planners should ensure coherence by means of international consultation and concertation during preparation of plans	In progress	Requisite of MSP Directive; attempted by all – supported by Baltic SCOPE, Baltic LINes, Pan Baltic ScopeBaltic SCOPE – not everywhere achieved
A transnational MSP coordinating body set up – responsible for drawing up transnational objec-tives and targets for the Baltic Sea space as well as requirements for tailored monitoring	Partly achieved	HELCOM-VASAB MSP WG is in charge of the development and update of the HELCOM VASAB MSP roadmap which main goal is the development of coher-ent national MSPs across the BSR
PartiSEApate (2014) – Baltic MSP Governance		

MSP Country Fiches developed	Implemented	Country Fiche Template adopted – regular voluntary update of EU MS BSR countries (template also used for EU MSP Platform)
Suggestions for amended cross-border consultation on MSP (e.g. early start of consultation process prior to plan development; involvement of MSP authorities in addition to ESPOO environmental SEA points)	In progress	Adopted transnational guidelines on cross-border / stakeholder consultation (currently under assessment on whether implemented by BSR MS)
HELCOM-VASAB MSP Working Group as main policy driver – decision-making body at national level	In progress	Increasingly in place in all BSR MS
VASAB secretariat (with HELCOM as support) coordinator of MSP Dialogue	Project application	Baltic MSP Platform submitted for approval – Planners Forum in place since (Pan) Baltic Scope (see below)
MSP expert groups to develop recommendations for MSP – suggested topics: data, interplay MSFD/MSP; Linear infrastructure; site allocation for specific sectors such as aquaculture / UCH; offshore development and impact on land; aligning fisheries & nature conservation	Partly in progress for specific topics via projects	Formal MSP Data ESG adopted; Linear Infrastructure: Baltic LINes project; UCH in BalticRIM project; Aquaculture partly in Baltic Blue Growth project. OWF impact on land in Land Sea Act project => other topics not covered
Set up of pan-Baltic practitioners' network: a hub for exchanging information & knowledge	Partly in progress	Regular MSP Forum (every 1-1,5 years via projects); Planners' Forum; MSP Platform project application
Link to other pan-Baltic Sector/Stakeholder Organisations (by sector)	Not in progress	Confirmed need by Baltic LINes for energy / shipping – not implemented
NorthSEE (2019) - General		
Carry out a comparative analysis of the different MSP approaches and processes between NSR countries to foster the understanding of other national MSP processes to enhance cross-border cooperation	Completed	Review of the approaches of the BSR countries completed by the Baltic LINes
Establish an over-arching North Sea MSP body or mechanism that can coordinate efforts and facilitate cooperation between NSR countries after the lifetime of the NorthSEE project	Completed	HELCOM/VASAB MSP WG
Create a MSP dictionary which defines general terms to make terminology comparable to facilitate a better understanding of each other's MSP processes	In progress	Some terminology also adopted in Baltic LINes (MSP timeline) => but not formally and consistently adopted
Define general steps in an MSP process, where countries can put their specific MSP activities in a timeline.	In progress (soft)	Relevant structure for the BSR completed also taken over and adopted by the Baltic LINes
Cooperate in projects such as the NorthSEE project as an opportunity to improve coordination of a number of aspects related to MSP	In progress (soft)	Continuous project 'history' in BSR – no need to be adopted

Annex 2: Summary of the main outputs of Baltic LINes (as of February 2019)

Report prepared by: Prof. Maciej Matczak and Clara Coornaert

February 2019

Table of contents

Introduction

Baltic LINes aims to develop Baltic Sea planning solutions for shipping routes and energy transmission corridors. These are to be incorporated into the respective national maritime spatial plans. It prevents cross-border mismatches and secures transnational connectivity as well as efficient use of Baltic Sea space. Thereby Baltic LINes helps to develop the most appropriate framework conditions for Blue Growth activities (e.g. maritime transportation, offshore energy exploitation, coastal tourism etc.) for the coming 10-15 years increasing investors' security.

In order to accomplish this goal, a consultation process with national and transnational stakeholder bodies has been conducted in the course of the project. The project partners have also compared and learned from their respective planning criteria and MSP data. A Baltic Sea-wide information tool has been developed as a result, helping the planning authorities establish the most suitable basic parameters for „blue growth".

In the course of the project, several reports have been produced, namely[3]:

- "Shipping in the Baltic Sea: Past, Present and Future Developments Relevant for Maritime Spatial Planning"
- "Stakeholder Involvement in Long-term Maritime Spatial Planning: Latvian Case"
- "Exploring the future of shipping in the Baltic Sea"
- Baltic LINes energy scenarios for the Baltic Sea 2030 and 2050"
- "Capacity Densities of European Offshore Wind Farms"
- "Identification of Transnational Planning Criteria"
- "Infopaper From Planning Issues Towards Planning Solutions"
- "A Practical Guide to the Designation of Energy Inftrastructure in Maritime Spatial Planning"
- "A Practical Guide to the Designation of Ship Corridors in Maritime Spatial Planning"
- "Report on the Energy MSP Challenge in Copenhagen 2018"
- -The infographic presenting "The future of maritime spatial planning data access"
- "Data needs and availability"
- "Data exchange and dissemination - prerequisites for a Systems Architecture for a Transnational Data Infrastructure for MSP"

Their main results will be presented in this Annex 2 to the Baltic LINes recommendations.

[3] All these reports are available online on the Baltic LINes website: https://vasab.org/project/balticlines/project-outputs

1. Maritime navigation trends related to spatial aspects

1.1 Current status and development trends of the Baltic shipping

This section of the Annex 2 to the Baltic LINes' recommendations is based on the results of two reports elaborated under Baltic LINes: "QUO VADIS - Exploring the future of shipping in the Baltic Sea" and "Shipping in the Baltic Sea – Past, present and future developments relevant for Maritime Spatial Planning".

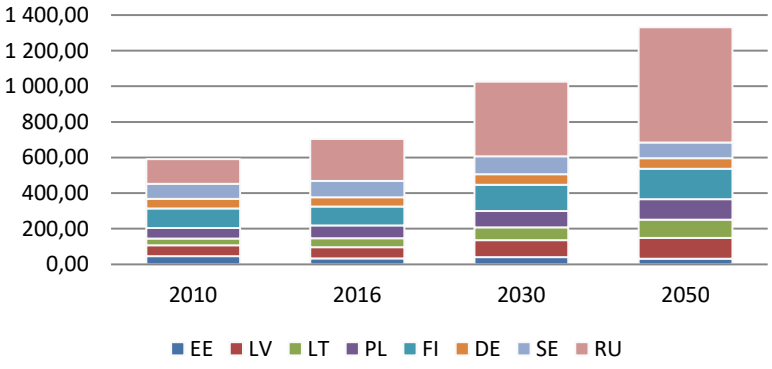
Up to 15% of the world's cargo traffic is handled in the Baltic Sea Region, creating one of the busiest maritime spaces worldwide. There are more than 2000 ships in the Baltic marine area at any given moment. About 400 seaports operate on the coast, and around 90 occupy significant positions in the transport market. Baltic Sea ports handled a total of 888.4 M tons of cargo in 2017, most of which were handled in Russia (247.5 Mt), Sweden (176.0 Mt), Finland (96.9 Mt), Poland (87.3 Mt) and Denmark (83.5 Mt). More than 234.9 million passengers have been transported via the Baltic. In recent years (AAGR 2007-2017), the main engines of traffic development have been Russia (+5.7%) and Poland (+4.5%).

Growth in Baltic shipping activity will be driven by various factors and trends, both internally and externally in nature. Taking into account key elements in particular areas, the following issues can be listed[4]:

a) growth of trade flows on both a regional and a global scale,
b) re-routing of international trade, dominated by increased trade volumes from Russian and Polish maritime ports, and development of new inland corridors (e.g. Rail Baltica, New Silk Road, Baltic-Adriatic Corridor),
c) improvement of environmental standards in shipping and seaport operations (e.g. SECA, safety regulations on ferries, BWMC, The EU Emissions Trading System, CO2 reduction, Sewage delivery).
d) evolution of fleet structure, ship size and capacity (bigger vessels),
e) pro-environmental technological changes, such as: new/alternative fuels (LNG, electric) or engines & propulsion systems (wind), exhaust gas reduction systems & devices (e.g. scrubbers),
f) new technologies and ship operating patterns (digitalisation, autonomous unmanned vessels),
g) seaport extensions and fuller engagement leading to more complex logistics services.

According to research completed within the Baltic LINes project, improvements in turnover of maritime port cargo

Estimation of future cargo turnover of the Baltic maritime ports [Mt]



[4] *QUO VADIS Exploring the futur*

should reach levels from 58.8% (limited growth scenario) up to 77.7% (fast growth scenario) during the period 2016 – 2030. Growth of over 148% is expected up to the year 2050 (see Figure).

This impressive increase in cargo turnover in maritime ports will have an effect on shipping activities in the Baltic area. Significant growth in sizes of vessels, especially container and bulk carriers, will coincide with a decrease in traffic intensity. If we consider the period between 2015 and 2050, the highest growth is expected in the group of dry bulk carriers (+152,1%), container ships (+94,7%) and liquid bulk carriers (+96,1%). As a result, total vessel traffic on the Baltic should decrease (-10.2%) until 2050. However significant changes in the structure of ship types, as well as in sizes, should occur.

Based on the outlined changes at the global level, as well as taking into account the influence of external and internal factors, the general trends for the shipping sector can be summarized thus[5]:

- Shipping is likely to increase on an intra- as well as on an extra-European scale due to global population growth & migrations, economic growth and the effects of increasing global and regional trade.
- It is expected that a modal shift of transport from road to sea will take place in Europe. The Baltic Sea favours waterborne transport over shorter distances because of the high density of harbours. Here, Short Sea Shipping often reduces the total distances compared to road freight transport. Developments towards the raising of road-, bridge-, and tunnel taxes in several EU countries favours this shift from road to sea.
- Further implementation of environmental regulations will increase the costs of transport services, thus a modal back-shift (from sea to road & rail) could also occur.
- A greater number of larger vessels is expected to enable more efficient and cost-saving maritime freight transport. Larger ships with deep draughts will represent a major challenge, especially for routes entering the Baltic Sea or crossing its shallow areas as well as for the port development as channels and trans-shipment quays will need to be deeper and wider.

These rising trends may force a concentrations of cargo in bigger ports which have a better chance of financing port infrastructure. Small and medium sized ports will not be able to handle larger ships, so further concentrations of cargo in bigger ports will be observed.

1.2 Consequences of the shipping sector trends on MSP development process

All above listed trends do have a significant influence on the process of defining of MSPs. As the plans should be prepared with the long-term perspective, the future needs referred to the shipping corridors capacity, spatial structure and international or inter-sectorial coherence are the key challenges. Because of the process should secure the sea areas free of navigation obstacles, MSP authorities should pay attention also to economic factors, navigation safety and environmental pressure.

[5] *QUO VADIS Exploring the future of shipping in the Baltic Sea. Baltic LINes (WP 2)*

Other lesson learned by the Baltic LINes partnership is a need of multi-criterion approach applied to seaward development of ports being the modal nodes connecting the shipping industry with the markets. For instance, impact on coastal erosion or impact on hinterland by road or rail traffic created by the shipping activity have to be included into considerations.

Connectivity over the national borders is another issue which needs to be ensure in order to secure safety of navigation, both on main shipping corridors and short-sea or leisure traffic. MSP authorities should take into consideration the new demand, promote smart positioning of OWF and aquaculture areas or calculation of the financial burden for the shipping sector related to the location of permanent navigation obstacles.

In addition, international (or Baltic) standards should be agreed among MSP authorities with regard to sea areas in terms of minimum safety requirements for ships with normal and dangerous cargo separately.

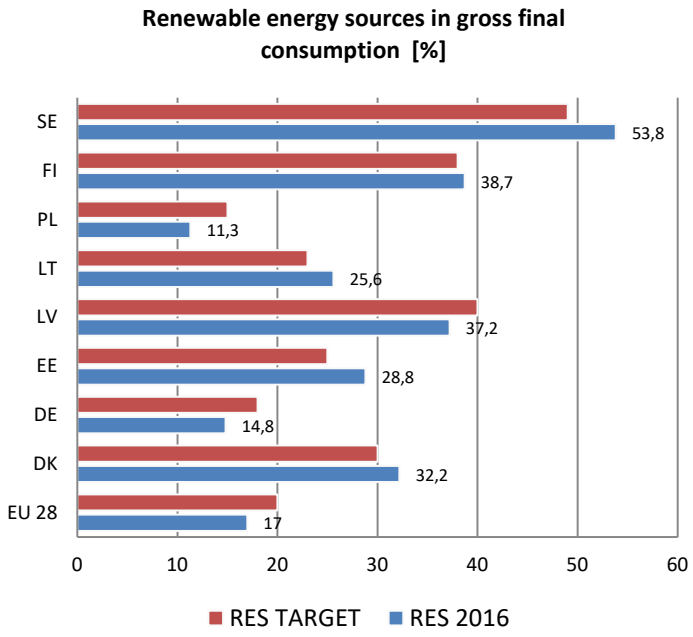
The research outcomes confirm also the role of stakeholder consultation in the process of MSP development. Active engagement of representation of shipping operators by regular contacts or effective dialogue with MSP authorities or other sea users should streamline the process. Dynamic changes in the shipping sector also confirm the need for constant monitoring and corrections of prepared plans (relevant level of flexibility), so creation of effective communication channels becomes an important development challenge.

2. Energy sector trends – offshore wind energy & regional energy links

This section of the Annex 2 to the Baltic LINes' recommendations is based on the results of two Baltic LINes' reports: " Baltic LINes Energy Scenarios for the Baltic Sea 2030 and 2050" and "Capacity density of European Offshore wind farms".

2.1 European and Baltic energy trends

Today, the EU is highly dependent on imported non-renewable energy sources, especially from Russia and Norway, which are responsible respectively for 40% and 37% of total gas imports in 2015. Relevant actions should be implemented to balance the structure of deliveries, both in relation to spatial pattern of fuel sources and the means of energy production. Developments in the field of renewable energy sources (RES) are therefore foreseen. Production of RES has strong political support, therefore significant growth is expected in the total megawatts produced, including from offshore wind farms (OWF). Similarly, national renewable energy targets will likely lead to a favourable climate for investment and growth up until 2020, and beyond, based on EU wide targets for renewable energy (see Figure).



In February 2015, the European Commission adopted "A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy". This strategy builds on the 2030 policy framework for climate change and energy which laid down three key targets for the EU by 2030[6]:

1) at least 40% cuts in greenhouse gas emissions compared to 1990,
2) at least a 27% market share for renewable energy, and
3) at least a 27% improvement in energy efficiency.

6 *European Parliament, 2016*

This strategy has five inter-related strains which also act as development directions for the Baltic Sea region:

- Energy security, solidarity and trust,
- A fully integrated European energy market,
- Energy efficiency contributing to moderation of demand,
- Decarbonizing the economy,
- Research, innovation and competitiveness[7].

Two main aspects of this policy and their further contribution to the MSP process has been investigated by the Baltic LINes partnership:

1) development of offshore wind farms on the Baltic Sea,
2) improvement of energy interconnection between Baltic countries (underwater grid).

2.2 The Baltic offshore wind farm development

Denmark (12 wind parks with 506 turbines), Germany (3 wind parks with 171 turbines) and Sweden (5 wind parks with 77 turbines) have been forerunners in the development of offshore wind energy. In other Baltic countries, the process of OWF development remains at differing stages, from expressions of interest provided by investors (e.g. Latvia, Estonia), via the implementation of EIA procedures (Lithuania), up to obtaining permits for first constructions (Poland).

Referring to OffshoreDC (2015), the scenarios for the development of offshore wind parks in Baltic countries assume 27,493 MW of power will be available between the years 2020–2030.

In the long term perspective, Sweden, Finland, Poland and Denmark could become key producers of offshore wind energy. Taking into account technological trends in offshore wind energy, a clear preference towards increased turbine sizes has been identified. For the year 2030, implementation of wind turbines with a rotor diameter of up to 228 m, and power of 15 MW, is foreseen.

Summing up the key trends in OWF developments, the following issues should be considered:

a) increases in wind farms, becoming bigger, more powerful and moving further offshore in deeper waters,
b) a trend for increases in development areas (no. of turbines) is not clear because, due to spatial restrictions, more powerful turbines may be favoured,
c) floating wind turbines will become more popular in deeper waters and further offshore, which will unlock suitable deeper water sites, and which might in the long run become competitive even in shallower waters, due to ease of installation and scale effects around the Baltic Sea,
d) however the ice conditions in the northern Baltic Sea may be a challenge and limit the applicability of floating turbine technology in the region,

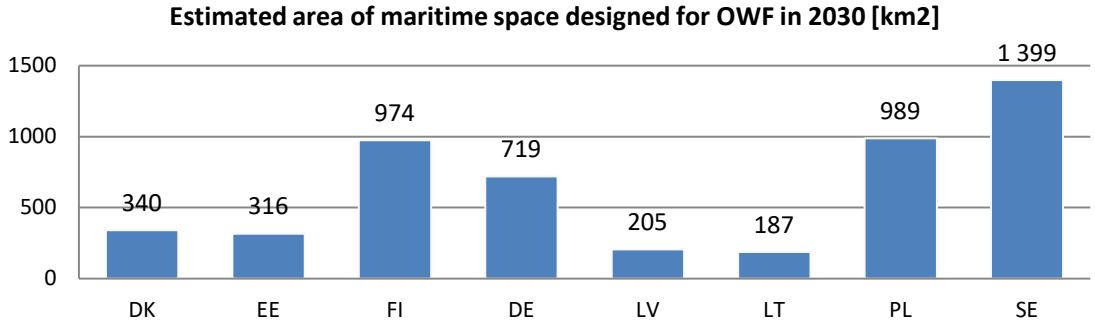
[7] *Baltic Sea Region Energy Sector Synthesis Report. Baltic LINes (WP 2.1.)*

e) floating wind turbines are – depending on the substructure and mooring - also expected to be able to support larger wind turbines, for example 12-15 MW, which is consistent with a trend in increased capacities of wind turbines,

f) trends for bigger parks and bigger turbines together with advancements in the ability to build further offshore, as well as in even deeper waters, need to be considered as critical in the MSP process.

2.3 Spatial challenges of OWF implementation

Offshore wind farms require suitable maritime space estimated theoretically at 5.36 MW/km² (Europe's gross offshore wind potential and capacity density)[8]. The OffshoreDC scenario assumed that the installed offshore wind power capacity will reach 27,473 MW in the Baltic Sea within the period 2020-2030. Thus, the future area for offshore wind energy development on the Baltic Sea can be calculated at 5,129 km^2 in 2030 (see figure[9]). However, wind farm capacity densities show high variances, and significant differences exist between national averages. The slightly lower average wind speeds in the Baltic Sea region might cause wind turbines to have a lower specific power rating than wind farms in the North Sea region, thus a further extension of the estimated area is possible.



Calculation based on the „BalticSea Region Energy Sector Synthesis Report" – Table 5 with a capacity density of 5,36 MW/km2.

Further development of OWF installations on the Baltic Sea will be dependent on different incentives, such as energy demand or trajectories needed for each country to reach their energy targets, scenarios which will be derived from various authorities, industries and stakeholders. Considering the long-term perspective (2050), the expected maritime area designated for OWFs could range from 28,390 km^2 (low scenario) up to 226,831 km^2 (high scenario). It should be realised, that the high scenario implementation would mean that 12% of the area of The Baltic Sea would be covered by off-shore wind installations (see Map) [10].

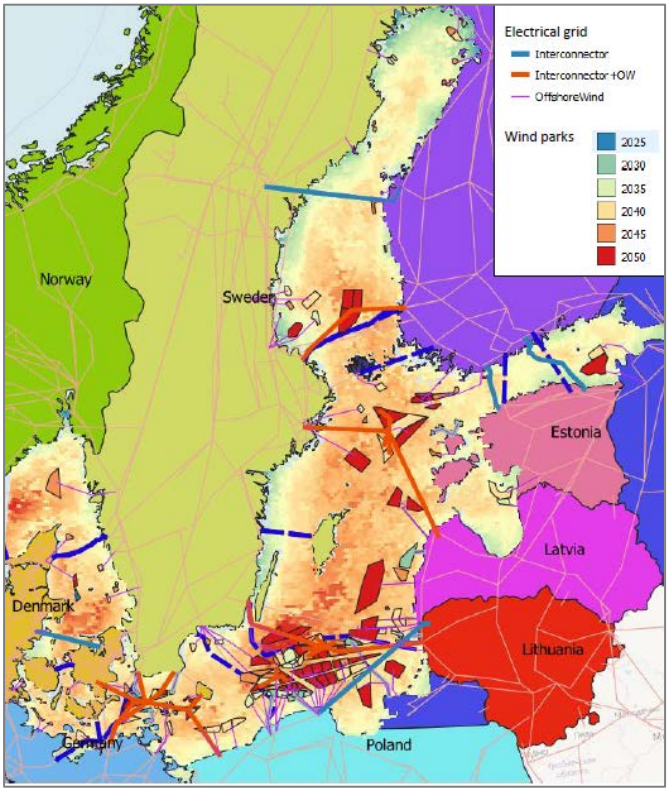
[8] *Capacity densities of European Offshore wind farms, Baltic LINes (WP 2/ WP 4.2.)*

[9] *„BalticSea Region Energy Sector Synthesis Report" – Table 5*

[10] *Table 1 - Baltic LINes Energy Scenarios for the Baltic Sea 2030 and 2050, Baltic LINes, 23.10.2018, pg. 11.*

Significant trade-offs between the energy and transport sectors, especially in the central Baltic area, could occur.

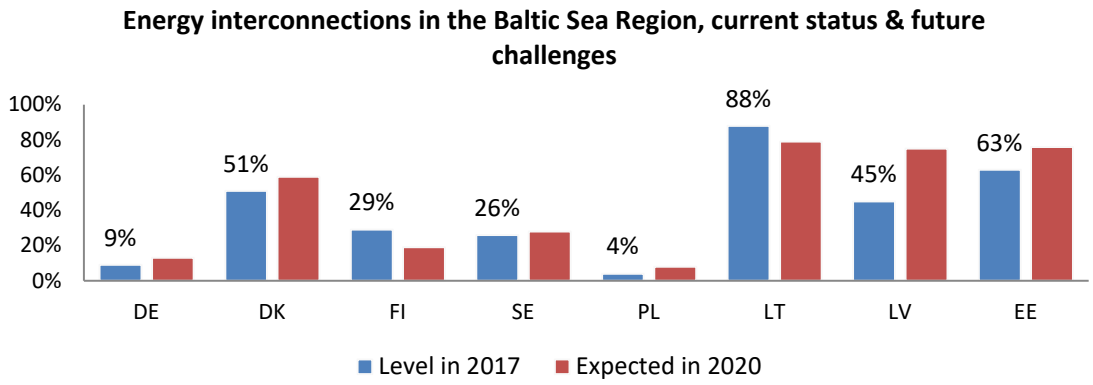
Identification of the relevant spatial challenges in the process of OWF implementation would include the following elements:



- maritime spatial planning can help the development of OWF by designating areas suitable for energy production including areas in deeper waters (stability and clarity for investors and project costs reduction),
- spatial planning can reduce spatial conflict within congested inshore waters and guide higher densities of marine users (see Figure – high scenario),
- time frames for realising offshore wind energy projects are considerable and should be taken into consideration in maritime spatial planning.

2.4 Cross-Baltic energy interconnections – requirements and trends

Deployment of renewable energy technologies that make use of wind resources in the BSR, requires a suitable capacity of energy interconnections. This will decrease total costs significantly and accelerate developments in the process of wind power plant clusters. In October 2014, the European Council called for a "speedy implementation of all the measures to meet the target of achieving interconnectivity of at least 10 % of their installed electricity production capacity for all Member States" by 2020. Then, the Commission suggested in the European Energy Security Strategy (EC, 2014), that it should extend its 10% electricity interconnection target by 2020 to 15% by 2030. EU countries need to be able to rely on their neighbours to import the electricity they need. Without infrastructure, it would be impossible to buy and sell electricity across borders. Connecting isolated electricity systems is therefore essential for the security of supply. Reliable connections with neighbouring countries will lower the risk of electricity blackouts, reduce the need to build new power plants, and make it easier to manage variable renewable power sources such as solar and wind.



As a result, new electricity infrastructure projects will be required mostly in Poland (4%) and Germany (9%). These infrastructural upgrades and interconnections for electricity are being supported by the EU under the Baltic Energy Market Interconnection Plan (BEMIP)[11] and under Europe's Network Development Plan to 2025, 2030 and 2040 (TYNDP) in four Trans-European Networks for Energy (TEN-E) electricity priority corridors: *North-South Interconnections East*, *NSI West Electricity Corridor, Northern Seas Offshore Grid* and *Nordic and Baltic Sea*[12].

2.5 Power grids in the MSP development process

The development of wind parks and energy connections needs to be included in the maritime spatial plans, so knowledge about development plans and its requirements is important. The Baltic LINes partnership investigated in details the future projects of the offshore wind farms and transmission, so relevant information (e.g. project capacity, number of turbines, sea area, depth, distance from shore, developer/owner) becomes more available for authorities and stakeholders[13]. Similarly, a practical guide to the designation of space for energy infrastructure in maritime spatial planning, referring to both OWF and cables was prepared[14]. As a summary of the analysis, the following principles can be considered particularly important for the energy sector in the maritime spatial planning processes. It can where possible utilising a holistic approach be considered as a good practice to:

- consider maximum bundling possible by parallel routing: cables and other offshore infrastructure should be integrated whenever possible to maximize concentration of sea uses and reduce use of space,
- consider existing and approved uses and adequate safety distances to constructions and shipping routes,
- consider crossing of priority and reservation areas for shipping by the shortest route possible/as right-angled as possible (for safety reasons, covered by the provisions of UNCLOS),
- consider routing as far outside of Natura 2000 areas/protected biotopes,

11 https://ec.europa.eu/energy/en/topics/infrastructure/high-level-groups/baltic-energy-market-interconnection-plan, BEMIP *website*

12 *https://tyndp.entsoe.eu/tyndp2018/*

13 *Baltic LINes Energy Scenarios, Appendix 3: Offshore wind parks and transmission projects in planning, SwAM, RISE 9.01.2019*

14 *A practical guide to the designation of energy infrastructure in Maritime spatial planning, Baltic LINes WP 4.4.*

- apply consideration of cultural heritage sites, esp. wrecks and other underwater obstacles
- apply special consideration of sites where munitions have been discovered,
- consider shortest route possible (relevant from economic perspective), under consideration of conflict minimisation with other uses and nature protection issues,
- consider coverage where possible utilising holistic approach, which ensures a permanent safety of subsea cables,
- consider avoiding cable crossings (increase the risk of malfunctions, higher maintenance requirements, increased traffic of maintenance/repair vessels, which should be avoided),
- consider routing of interconnectors through transfer gates at EEZ borders.

A likely effective solution for OWF and grid development at seas, currently investigated by the Baltic InteGrid[15] project, is the implementation of a meshed offshore grid in the Baltic Sea region. Optimization of the power grid at the bottom of the Baltic should lead to savings, both at the level of public as well as private investment and the functioning of the energy system across all Baltic Sea Region countries.

3. Planning criteria in the pan-Baltic MSP development

MSP is by definition an approach that aims to balance out different interests by following an ecosystem-based approach. Thus, all relevant users and its requirements should be included in the process of MSP definition (Figure), so in practical terms MSP means the end of the era of shipping freedom. In fact, the designation of ship corridors is often one of the first steps when drafting a MSP[16].

A reliable determination of the spatial structure of the maritime space requires relevant and consistent planning criteria in the scope of the Baltic Sea region. These criteria can be seen as factors necessary for the assessment, regulation and spatial designation of specific spatial uses and activities. Thus, planning criteria include different factors that need to be considered when identifying and deciding which areas are suitable for specific use. Three types of criteria for spatial designation can be listed:

1. exclusionary criteria "no go areas",
2. restrictive criteria "soft con-

[15] *http://www.baltic-integrid.eu/*
[16] *A practical guide to the designation of ship corridors in maritime spatial planning, Baltic LINes (WP 4.4.)*

straints",

3. textual criteria (e.g. legislation).

According to the research completed by the Baltic LINes project, big differences between different countries concerning planning processes and criteria were revealed.

3.1 Planning criteria of shipping corridors

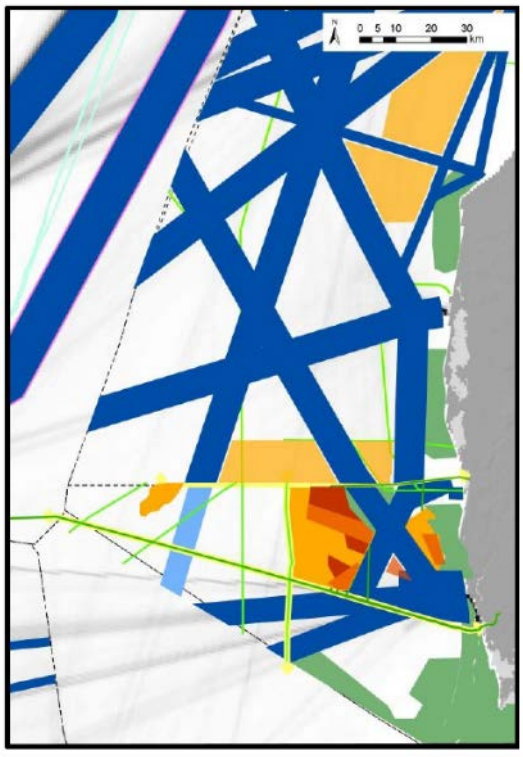
Spatial restrictions for navigation are the result of a slowly evolving process over centuries, conducted by the IMO since 1958. The key regulations for maritime spatial planning are the SOLAS and CORLEG conventions and GPSR system. Implementation of routing measures by the IMO covers only part of the global maritime space (main routes), therefore further relevant spatial planning, especially in coastal areas is required. For that purpose, relevant and transboundary coherent planning criteria are needed.

As regards the criteria implemented during the MSP exercise in relation to shipping corridors, a number of aspects were identified in Baltic countries. They are[17]:

- width of priority areas and safety zones designed according to traffic density – AIS data (DK, EE, FI, DE, LV, SE);
- ship size and frequency of traffic (DK, DE, LT);
- maritime port traffic (LV);
- not identified or "freedom of navigation" corridors (PL, SE – smaller routes).

As a result, significant mismatches between MSP development in the area of implementation of shipping corridors are noticeable. Regarding the most important types of mismatches identified by Baltic LINes, the following issues can be listed (Figure):

a) some countries add additional safety zones along routeing measures while others just transfer the spatial dimension of the IMO routeing scheme as such (DK vs. SE);
b) ship corridors are designated in one country but not continued in the next bordering country (LV vs. SE);
c) ship corridors have different widths in one country when compared to its continuation in the next bordering country (PL vs. LT).



The experiences gained on the Baltic LINes project, however, shows that those mismatches

[17] *Identification of transnational planning criteria, Work package 4.2, Baltic LINes*

sometimes have a more symbolic character, but do not necessarily lead to planning issues in reality.

Implementation of transboundary dialogues between countries would improve on a common approach to the planning criteria in the shipping sector. However standardization of national approaches seems to be fairly difficult due to differences in planning systems. More useful could be to suggest a way forward on how to approach the planning of shipping for MSP on a practical level. A permanent platform/forum for MSP planners could create effective measures for exchanges of knowledge and experience.

This statement is built upon by the Baltic LINes project that has managed to identify a number of solutions that can effectively reduce discrepancies between the national MSPs. Referring to the results of the analysis the following solutions can be considered:

- more coherence between national MSP processes and its timeframes as well as common knowledge of the progress would help to prevent planning issues,
- authorities should provide to partners as early as possible the precise data in the draft plans,
- the earlier the consultations will be started, the fewer mismatches will be created,
- streamline the process by providing relevant maps including as far as possible plans of the involved neighbouring countries thus taking a broader view of the MSP process,
- common approach to calculation methods for width of shipping areas for all BSR countries could be a possible (but voluntary) solution; based on the alignment of centre lines.
- a better balancing of sectors would be required, however relevant measures of impact assessment are needed,
- stronger international competence or regulation for offshore energy installations would be desirable, as there is no international, IMO-like organization for energy,
- by offering a map showing planning mismatches in the plans including the surrounding areas authorities can create a better overall view,
- dissemination of knowledge on national MSP approaches and planning criteria will increase transnational understanding.

The currently executed process of designation of MSPs in the Baltic countries shows that consultations between countries allow for reaching an agreement that results in increased coherence of the plans. As an example, the Polish-Lithuanian case can be presented. Poland has voluntary taken into account the existing plan for the Lithuanian maritime space increasing significantly the coherence of shipping lines which have a marginal importance for Polish transport.

It should be remembered, however, that any changes in maritime space cause specific consequences, both current and future, so it is necessary to determine the effects of such changes both for the country and its neighbor. Again, there is the question of availability of appropriate assessment tools useful for planers.

3.2 Offshore wind farm development on the MSP level

Investigations carried out by Baltic LINes reveal that different criteria are implemented in the decision processes regarding the location of offshore energy installations at sea. In particular, the relationship between sectorial decision-making and MSP differs. In some countries, MSP simply takes into account the decisions made in sectorial planning, while in other countries MSP steers sectorial decision-making. It could also be stated that there is no common understanding of the factors that need to be considered when planning and designating new locations for OWFs.

As a result of discussions between Baltic LINes partners, a set of 24 criteria for OWF planning for MSP processes was elaborated. Such criteria were divided into seven categories:

1) technical infrastructure and connections,
2) environmental habitats and species,
3) physical and natural conditions,
4) other sea uses,
5) economic factors,
6) policies, and
7) social aspects.

It is clear from the detailed investigations of national criteria that significant differences exist (e.g. suitable depth indication).

The OWE planning is a rather new topic in many countries, thus the methods, criteria and approaches have not been relevantly developed and stabilised. There are also no existing international bodies which could take the role of developing common sets of criteria.

Considering the nature of the MSPs, the spatial overlap of the potential offshore wind farm areas and the corridors with intensive maritime traffic, should be regarded as a possible transnational and cross-sectorial planning issue. For this reason a relevant hazard analysis, with the traffic safety as a key challenge in the spatial planning process on the seas is needed. It is particularly important to regard development plans of OWF as well as shipping activity and assure appropriate safety zones between the areas. Even though it is understood that there is no one size fits all solutions, but an example of good practice and possible solution to the presented issue are requirements of the UK OREIs related safety of navigation guidance [UK, 2016].

3.3 Energy grids and cables planning challenges and solutions defined by the Baltic LINes

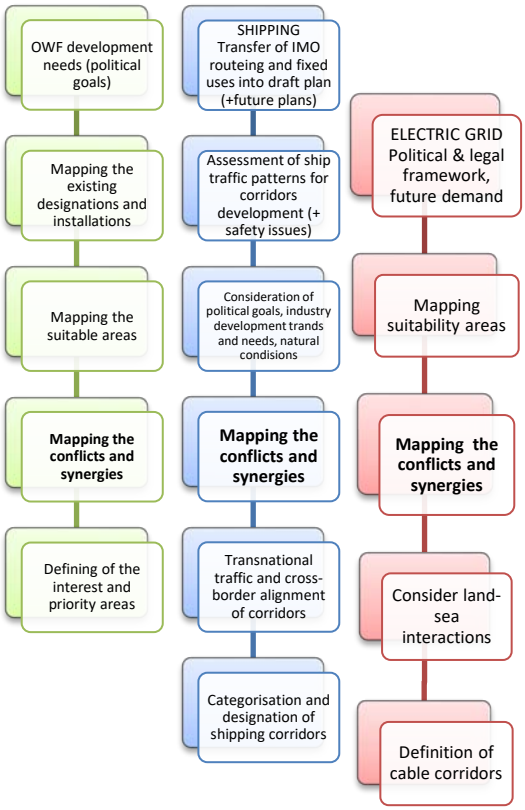
Based on Baltic LINes partners joint assessments, electricity cables as well as data cables or oil/gas pipelines seem less confrontational with other interests than shipping or OWF, so identification of planning criteria for subsurface linear infrastructure seems simpler[18]. The main

[18] A PRACTICAL GUIDE TO THE DESIGNATION OF ENERGY INFRASTRUCTURE IN MARITIME SPATIAL PLANNING Work Package 4.4, pg. 12

differences between the approach of Baltic countries are connected with formal implementation of the transfer gates for interconnectors at EEZ borders (e.g. Germany, Lithuania) or lack of such regulations (no cable corridors in maritime spatial plans – such as in Sweden). Taking into account tendencies for 'over-planning', the following criteria for electricity cables can be listed: space needed, safety zones around it, existing cables and pipelines, other sea uses (e.g. heritage sites, construction works, dumped munitions), location technically suitable for connection. A big challenge for further development of planning criteria is the fact, that it is difficult to identify a given one single group within the energy sector to discuss offshore energy developments as well as energy grids within the Baltic Sea Region. For instance, within the European ENTSO-E network Baltic Sea is not a focus area in itself.

4. Guidelines and solutions in the MSP model procedures and consultation requirements

The Baltic LINes project identified the relevant steps in the process of MSP development with regard to OWF installations, shipping corridors and electric grid and cable connections (Figure)[19]. Comparisons between the particular processes revealed common stages as well as the differences between them. In the case of energy elements (OWF, grid) the political framework is the main aspect which will enable future development. However, other different aspects were noticed in the process of shipping corridors implementation. Global routeing of IMO corridors create a starting point for procedures. The planning of shipping corridors also seems to be a process which is most dependent on future market, technological or environmental changes, thus a detailed analysis of the development of this sector is necessary (scenario development).



As regards the MSPs, all of the users of the maritime spaces will have to be involved, with comprehensive identification of conflicts and synergies being an integral part of each procedure. Linear infrastructure development, like international shipping corridors and transfers of energy between electrical grids, also requires transboundary coordina-

[19] *A practical guide to the designation of ship corridors in maritime spatial planning. Baltic LINes (WP 4.4.), A practical guide to the designation of energy infrastructure in maritime spatial planning. Baltic LINes (WP 4.4.).*

tion.

Therefore, vertical as well as horizontal coordination & consultation will be key drivers for a coherent development of maritime spatial plans. These processes have to include multi and cross-level cooperation, with special attention paid to the relationships between planning authorities and sector stakeholders as well as proper transboundary coordination and consultation between planning authorities.

Because consultations between MSP developers and representatives of maritime sectors are vertical in nature (e.g. shipping, seaports, OWF investors and operators, grid operators, fishing industry), a wide range of communication (formal meetings and informal relationships) within a cooperation framework should be established. Bearing in mind that it is important that the business sector should understand the MSP requirements and procedures this cooperation should be carried out according to relevant time plans, using clear and understandable language and using flexible communication approaches.

A crucial element of the consultation process is stakeholder identification based on relevant analysis and mapping, engagement of leaders, multilevel cooperation and flexibility to unpredictable changes. Effective communication between MSP authorities and stakeholders should be carried out by specialists, with clearly defined goals, tasks and time schedules for the cooperation. Shortcomings in communication or methods of involvement will have a negative effect on the willingness of sector representatives to participate and to continue cooperating in the engagement process.

Accordance with MSP requires long-term perspectives, and the active involvement of sector representatives in any scenario development is necessary. The best results can be obtained when:

- previously prepared materials are distributed between stakeholders,
- everyone involved understands the purpose of the process and their role in it,
- the process must be creative and adaptive and show results so that participants want to be involved in each subsequent stage and step of the process.
- the process should be sequential, following on from each prior event and achievement.
- the involvement process should be adequately documented[20].

The engagement of stakeholders helps to resolve conflicts, increases knowledge and acceptance as well as creating ownership of the joint product (MSP).

Regarding transboundary horizontal cooperation, a selection of complete recommendations was presented in the Baltic SCOPE project. In the case of general outcomes, the following issues should be noted:

- planning authorities should draw attention to pan-Baltic and bilateral issues at the national political level to deal with conflicting national interests which cannot be resolved through informal dialogue between planners,

[20] *Stakeholder Involvement in Long-term Maritime Spatial Planning: Latvian Case. Baltic LINes*

- planning authorities should strengthen cooperation with sector agencies, which act as contact points to international decision-making organs, including HELCOM, VASAB, IMO and IALA,
- planning authorities should develop a more symbiotic relationship with sector authorities also in sector negotiations across borders,
- there should be implementation of a common policy framework towards the initiation and development of common policy level agreements on environmental-related aspects[21].

All of the above elements are fully coherent with the observations and experiences gained during the implementation of the Baltic LINes project.

5. Data availability for effective maritime spatial planning – BASEMAPS development

Maritime spatial planning and deeper cooperation requires a comprehensive set of information and data. The main challenge of transboundary data and information exchange is to access relevant data through spatial infrastructures. Theses spatial infrastructures can provide complex open datasets that are flexible to use. The table below presents the key requirements for shipping and energy planning purposes selected by the planners in the interviews completed in the Baltic LINes project [22].

	Most of the planners answered	Other answers
Important elements for shipping	Up-to-date data Metadata viewer Open/remove layer Download data	Upload your own layers to the system Include AIS data Select/filter the types of ports
Important elements for energy	Metadata search and views Download data Present and plans in bordering countries	Link inshore/offshore grid Meteorological station/data Safety zone of structures gateways

According to the INSPIRE implementation schedule, installations and infrastructure datasets should be ready and made available to every EU country by the end of 2020, since they are part of the INSPIRE Annex III. As for today, this access is limited, and the following issues can be regarded as the most crucial problems to be solved:

- lack of data distributed in standard protocols,
- most of the important datasets for MSP are in the Annex III of INSPIRE (countries are supposed to have it ready in 2021—long after the end of the project)
- the specifications for INSPIRE are not yet so fully developed,

[21] *Recommendations on Maritime Spatial Planning Across Borders. Baltic SCOPE, March 2017*
[22] *Data Exchange and Dissemination. Baltic LINes (WP 3.3./D 3.3.)*

- data distributed in standard systems but with no standard languages in many cases,
- data lacks harmonization in visualization styles and language in many cases.

Regarding best practices, some examples of marine geoportals implemented by other countries can be mentioned: Canada (GeoGratis, DFO GeoPortal), Australia (AMSIS, IMOS), Ireland (MIDA), UE (INSPIRE Geoportal), and the HELCOM Data & Map Service. This shows the development of marine geoportals, based on open source technology, have been introduced all over the world. However, they appear to lack:

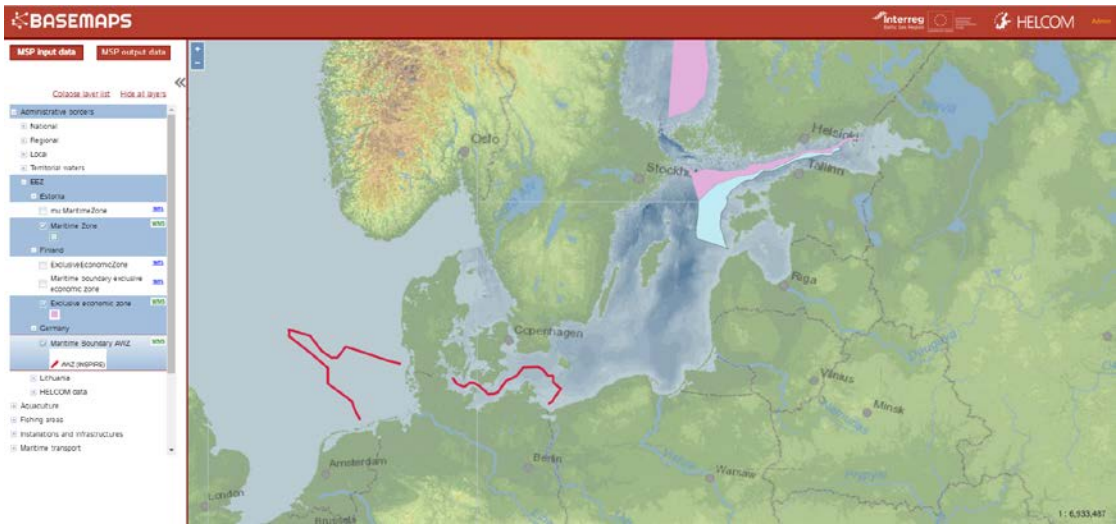
- a single-entry point,
- an overview over the origin, the quality, and the resolution of the data,
- an overview of download and access options,
- proper marine data overview catalogues,
- collaboration with private data owners,
- specific procedures for updating the data, which are clear to users of the portal.

As regards the effective exchange and dissemination of data required by MSP procedures and cooperation, some recommendations have been defined[23].

According to the research of the Baltic LINes, only one single overall national geoportal entry point providing a clear overview of all data (regularly updated, good quality and resolution) and download options should be available. A clear strategy should also be developed for how the data is published and updated. Geoportals should include web services to allow the data to be viewed in the users' own applications, improving inter-operability. International, open technical standards should be used, ensuring inter-operability between platforms of different countries. If any overlap between data in different portals exists, it needs to be clearly communicated to the users of the portals. Easy-to-read guides should be provided for how to use the portals. Strategies should be implemented to improve the data sharing of private data shareholders to expand the sources of open marine data.

An important step in the process of development of relevant MSP data systems is the solution implemented by the Baltic LINes – the firsttool to acces MSP related data based on a Marine Spatial Data Infrastructure. A new Baltic Sea Map Service (BASEMAPS) will provide a transnational data infrastructure in comprehensive and coherent manner (Figure).

[23] *Data Exchange and Dissemination (WP 3.3./D 3.3.) Baltic LINes*



As per assumption the BASEMAPS is a hybrid systems architecture based on a mixture between a pure centralised solution (HELCOM portal) and a decentralised solution, which will be updated gradually over time, when more data will be available through web services. In a decentralised system data is stored and maintained in its origin location and published using WMS or WFS protocols. In order to deal with the challenges concerning access to decentralised data, the tool was tested and adjusted during the project, and the further steps will focus on data harmonisations tools. HELCOM developed the prototype during the project implementation period. All data included in BASEMAPS should in principle be available through the public authorities and required to follow the INSPIRE Directive.

The language issue, being an important limit of the usefulness of the system, will be solved in BASEMAPS through a translation table for the layer names in the map services from the different countries around the Baltic Sea (English). According to the concept, this principle can later be extended so that the users in the individual countries can use their native languages when requesting data from the neighbouring countries.

The currently developed tool (BASEMAPS) can only define and analyse the existing conditions and maintaining the present state of affairs. Because MSP is a future-oriented activity, planning should be able to reveal also possible alternative futures, so modelling functionality in the MSP data systems should be regarded as important measure. Consideration of trends and developments in planning procedure will help to recognize spatial pressures in the future. Other type of challenge concerning the MSP data systems are shortcomings in the availability of socio-economic and socio-cultural data suitable for the MSP process. Data related to these issues are in many respects missing or not easily usable, which is also a challenge in implementing the Ecosystem-Based Approach (EBA). Relevant MSP data system should have an ability to aggregate and interpret the data to fulfil the needs of the planners. So called the second generation MSP requires more analytical information and strategic evidence, has been challenging for the EU member states. The BASMATI project[24], executing in the Bonus Blue Baltic programme (2017-2020) develops integrated and innovative solutions for MSP including methods and tools

[24] *https://bonusbasmati.eu/*

for the assessments of different plan-proposals, while including spatially explicit pressures and effects on marine ecosystem services in order to create a spatial decision support system (SDSS) for the Baltic Sea region to facilitate broad access to information.

Other example of simulation-kind of interactive tool tested by the Baltic LINes partnership is a computer-supported simulation game based on accurate data “MSP Challenge 2050 Baltic Sea Edition”. The game in a North Sea version has proven to be an effective tool for raising awareness of the various MSP stakeholders for the processes involved in MSP, so relevant edition designed for the Baltic has been prepared. The game allows for multidimensional visualizations and feedback that gives maritime spatial planners insight in the diverse challenges of sustainable planning of human activities in the marine and coastal ecosystem.

Glossary

AIS	Automatic identification System
BASREC	the Baltic Sea Region Energy Cooperation
BEMIP	Baltic Energy Market Interconnection Plan
BWMC	Ballast Water Management Convention
COLREG	International Regulations for Preventing Collisions at Sea
EEZ	Exclusive Economic Zone
EUSBSR	the EU Strategy for the Baltic Sea
FSA	Formal Safety Assessment
GPRS	General Provisions on Ship's Routeing Systems
HELCOM	Helsinki Commission - Baltic Marine Environment Protection Commission
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
ICPC	International Cable Protection Committee
IMO	International Maritime Organisation
INSPIRE	Infrastructure for Spatial Information in the European Community (Directive)
MARPOL	International Convention for the Prevention of Pollution from Ships
MPAs	Marine Protected Areas
MSC	Maritime Safety Committee (IMO)
MSDI	Marine Spatial Data Infrastructure
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Plans
NCSR	Committee on Navigation, Communication and Search and Rescue (IMO)
OGP	Spatial Offshore Grid Plan
OREI	Offshore Renewable Energy Installation
OWF	Offshore Wind Farm
SOLAS	International Convention for the Safety of Life at Sea
SWB	Source Water Protection
TS	Territorial Sea
TSS	Traffic Separation Scheme
UNCLOS	United Nations Convention on the Law of the Sea

Annex 3: Good practices identified under Baltic LINes

Report prepared by: Prof. Maciej Matczak, Angela Schultz-Zehden and Clara Coornaert

03.2019

Good practices to be learnt within the methods and tools of innovative maritime planning

A number of best practices related to MSP have been identified during the implementation of the project. Most of these are related to previous experiences of particular partner-countries in the process of maritime spatial planning or implementation of related regulation and policies as well as refer to achievements and standards developed by national or international organisations. Selection of the best practices revealed and proposed to use in MSP development process is presented below.

One example is the *Offshore Grid Plan* as a sectorial plan, which contains quite detailed regulations for the planning of energy cables in the German EEZ (incl. technical specifications and planning principles).

Considering the data availability, the extensive amount of information provided by the German and Danish authorities can also be regarded as a benchmark (however not all of the researched datasets are available yet)[25]. Implementation of the principle of Open Government Data by Denmark and Finland is another good example for further consideration.

An area where particularly good practices can be indicated is a definition of parameters of the sea safety zones. In this case, we can refer to such practices as:

- UK OREIs related safety of navigation guidance [UK, 2016] providing requirements towards spatial overlap between the potential offshore wind farm area and the intensive maritime traffic.
- An objective way to determine the safe distances between shipping lanes and offshore wind farms that are still consonant with nautical safety requirements is included in a White Paper on Offshore Wind Energy developed by the Netherlands (2013).
- Determination of the path widths for maritime spatial planning included in the AIS study completed by Maritime Institute of the Netherlands (MARIN).
- The PIANC assessment of width of shipping corridors (larger safety zones of 2nm to both sides of a path for the UK).
- Determination of areas not possible for offshore energy installations provided by regional planning authority form Satakunta region (Finland) in cooperation with a range of stakeholders sea uses.
- Appropriate distances between the cables included in guidelines of the International Cable Protection Committee (ICPC) and the European Subsea Cables Association (ESCA) can give helpful advice.

[25] *Data needs and availability, Baltic LINes, D 3.1.*

A study investigating the issue of so-called capacity density of offshore wind farms (OWF) and the main influencing factors could be also regarded as the compilation of good practices. The research completed by Deutsche WindGuard GmbH for the Baltic LINes project includes both technical-economic issues and regulatory frameworks influence the capacity density. Although no detailed recommendations have been developed, the report provides some key analytical insights which are relevant for planners working or starting to work on zoning for offshore wind in their MSPs.

Other type of good practices being observed during the period of the Baltic LINes project execution were practical consultation between the Baltic countries. As indicated above, the discrepancies observed in national MSPs became the subject of consultations. The voluntary consideration of common needs has helped to increase the spatial coherence of plans and thus eliminate a number of mismatches. For instance, Poland designated shipping lanes to safeguard Klaipeda port.

Undoubtedly, good practices are also the practical guides prepared within the framework of the Baltic LINes project regarding the process of designation of maritime infrastructure planning. Separating the basic stages of the process and indicating potential options and solutions on each of them will support planners in the preparation MSPs.