Connecting Seas

NorthSEE – Baltic LINes MSP conference

Identification of planning mismatches and their origins in the Baltic Sea

Dominic Plug, German Federal Maritime and Hydrographic Agency (BSH)

North SEE
Interreg North Sea Region European Regional Development Fund EUROPEAN UNION
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The world from a Mariners‘ point of view

Freedom of navigation prevails – but space is getting scarce!

Goals of Maritime Spatial Planning

Goals

- Assessment of human activities
- Prevention from conflicts of uses
- Safeguarding safety standards
- Protection of maritime environment
- Implementation of political goals (e.g. Blue Growth Strategy, Renewable Energy Act)

How to get there?

- Precautionary principle
- Holistic approach
- Transnational cooperation

Baltic LINes core topics

SHIPPING

ENERGY

Key questions

What are the sectoral spatial needs – now and in future?

Which data(format) is needed to plan transnationally coherently?

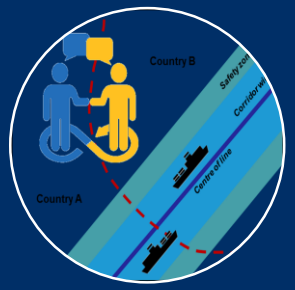
Which methods can be used to plan coherently across borders?

Work Package 4: Coherent planning of ship corridors across borders

Development of three deliverables with the following objectives:

Identification of planning mismatches and suggestions for planning solutions

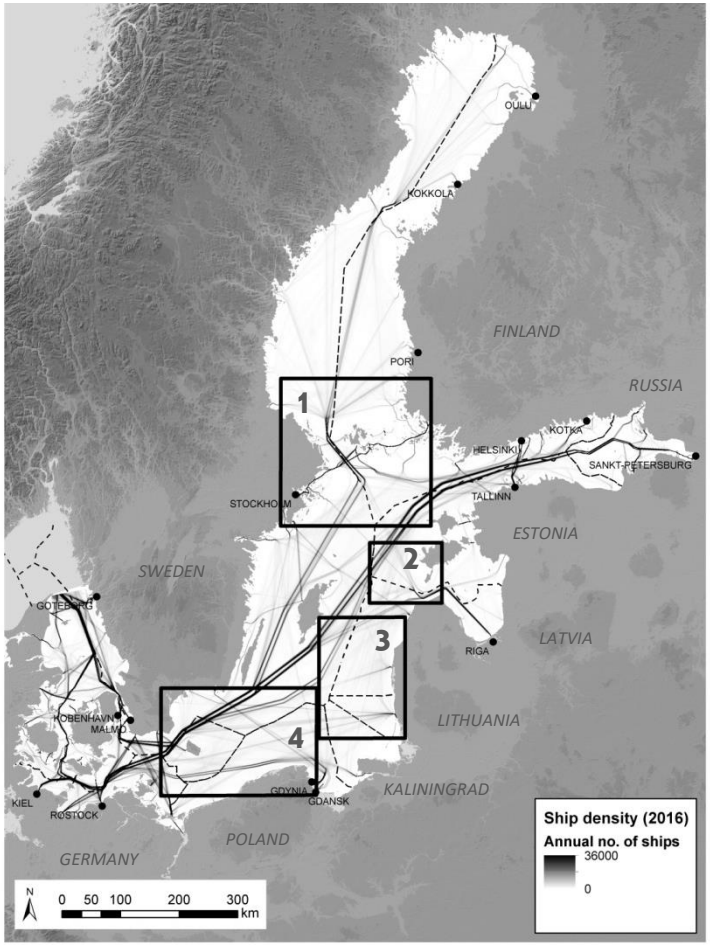
Assessment of national approaches and planning criteria (differences)



Step-wise approach for the planning of ship corridors in MSP

All reports available under https://vasab.org/project/balticlines/project-outputs/

EXAMPLES OF MSP PLANNING ISSUES IN THE BALTIC SEA

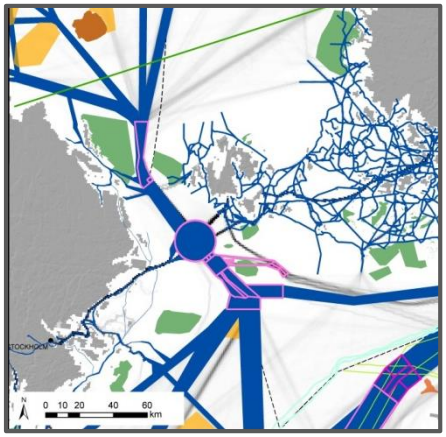


* Due to practical layout issues different national terms and definitions are not reflected here. Instead, collective terms are used to obtain similar color codes.

Case 1: Area around Åland

Countries: Sweden, Finland

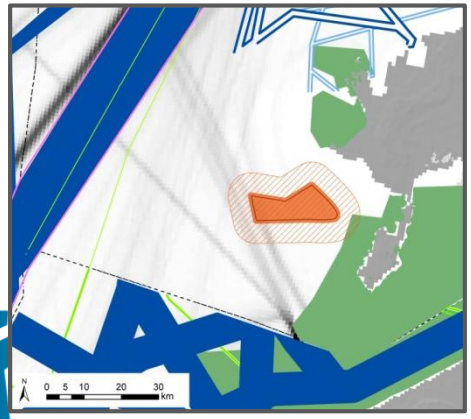
Planning issue: Different methods to transfer IMO regulations into national MSP ship corridors



Case 2: South-West of Saarema Island

Countries: Estonia, Sweden, Latvia

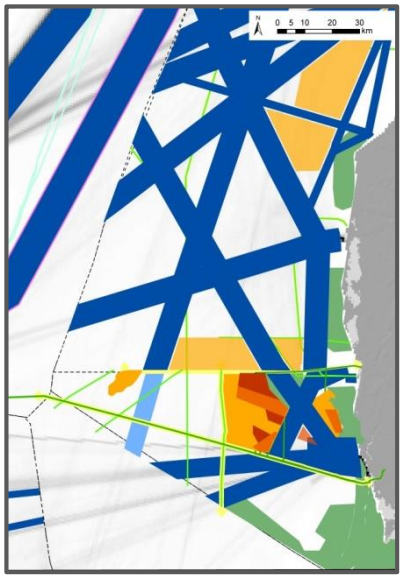
Planning issue: Mismatches between ship corridors and potential impact on navigational safety from planned offshore wind farm



Case 3: South-East Baltic Sea

Countries: Sweden, Latvia, Lithuania, Russia, Poland

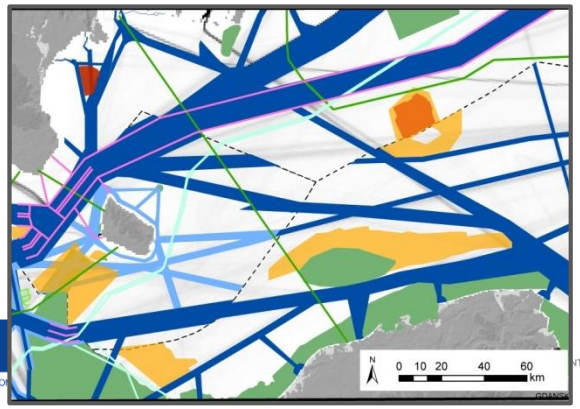
Planning issue: Mismatches between ship corridors of several countries (gaps between, and different widths of corridors)



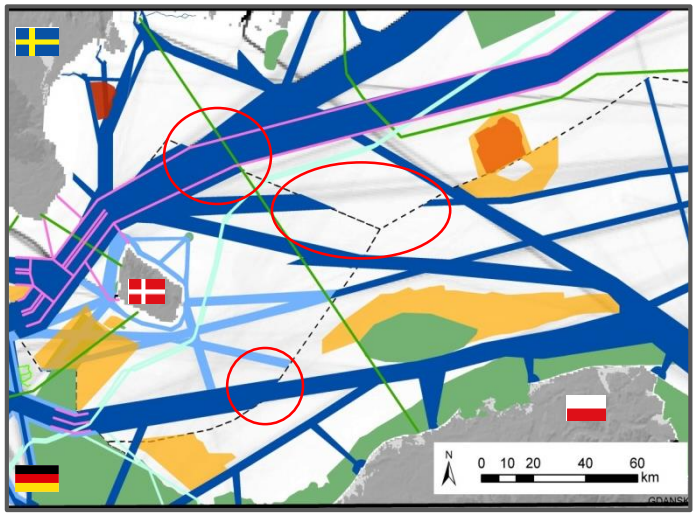
Case 4: Area around and east of Bornholm

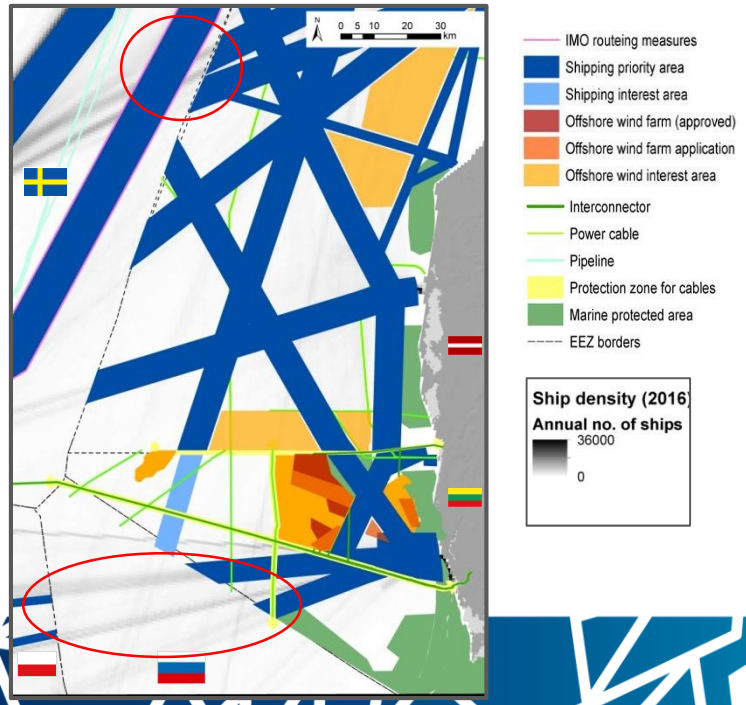
Countries: Poland, Sweden, Denmark, Germany

Planning issue: Mismatches between ship corridors (gaps between, and different widths of corridors), issues between shipping and energy (shift of traffic due to OREI)



Planning mismatches and their origins





Types of mismatches

- Some countries add additional safety zones along routeing measures while others just transfer the spatial dimension of the routeing scheme
  as such
- Ship corridors are designated in one country but not continued in the next bordering country
- Ship corridors have different widths in one country as compared to its continuation in the next bordering country

⇨ **Mismatches can lead to potential planning issues/ conflicts**

** Due to practical layout issues different national terms and definitions are not reflected in the maps. Instead, collective terms are used to obtain similar color codes.*

Assessment of national approaches in MSP

	Denmark	Estonia	Finland	Germany	Latvia	Lithuania	Poland	Sweden
Competent Ministry	Ministry of Industry, Business and Financial Affairs	Ministry of Finance	Ministry of Environment (); 3 MSP drafts: Coastal Regional Councils (coordinator:	Federal Ministry of the Interior	Ministry of Environmental Protection and Regional Development	Ministry of Environment	Ministry of Maritime Economy and Inland Navigation	Ministry of Environment and Energy
Con aut								
Nur are								
Exp MS								
Scal								
Plar								
Bin MS								
Nat	growth, the development of marine areas and the use of marine resources on a sustainable basis.	uses of the assigned marine area through a public process, taking into account the different economic, social, cultural and environmental interests and needs.	development and growth of different uses of marine areas, sustainable use of marine resources and achieving good status of the marine environment.	spatial development, which brings social and economic demands regarding sea space in line with the sea's ecological functions and leads to a permanent, large scale balanced order.	environmental, societal and economic interests and promote sustainable development of marine space by allowing or limiting actions at sea and seacoast. Balance interests of coastal municipalities and the state.	regulation of marine uses and create preconditions for development of maritime economic activities. MSP as precautionary measure for sustaining a good status of the marine environment.	preconditions for blue economy growth and to coordinate (functionally and spatially) the various maritime economic activities. Ensure the realization of maritime investment' projects in sustainable way.	Governments' & institutions overall view on how we use our oceans (now & future), support the development of sea-linked industries, increase predictability for actors that intend to operate offshore, facilitate management work (i.e. environmental assessment, fisheries policy and MPA protection).

Differences in national approaches for MSP relate to choice of

- Different stages in MSP process
- Scale and level of detail
- Temporal planning horizon
- Legal status of MSP
- Plan objectives (dependent on national political agenda)

National approaches for ship corridor designation in MSP

	Denmark	Estonia	Finland	Germany	Latvia	Lithuania	Poland	Sweden
MSP's role in providing space for ship traffic	Priority areas for shipping shall safeguard space for ship traffic, no	"Fairways" (parts of a waterway that are most suitable for water traffic) are	Presently priority areas are shipping lanes, traffic separation schemes	Priority areas for shipping shall safeguard space for ship traffic, no	Priority areas for shipping shall safeguard space for ship traffic. Safety	Priority areas for shipping shall safeguard space for ship traffic, other	Priority areas for shipping shall safeguard space for ship traffic, so that	Priority areas for shipping shall safeguard space for ship traffic,
Planning criteria used for MSP shipping area designations	Width of priority areas + safety zones according to traffic density (AIS data from 2016) and ship sizes on main traffic routes, guidance taken from Nautical Institute paper. Corridor widths between 6 and up to 10 nm.	AIS based shipping density is used for discussing/ deciding on multi-use of marine space or establishing spatial constraints (e.g. Ships' routs design).	Shipping density maps based on HELCOM AIS data will be used to determine corridor width	Larger corridors equal widths of TSS; 1nm width for 1000-4900 vessels/year; 10nm for >10,000 ships. Designations in MSP from 2009 based on AIS data from 2005-2009 (national stations).	Width of priority areas (incl. safety zones) based on traffic density (10 year AIS data + 2016), guidance taken from Nautical Institute paper. Corridors widths between 5.14nm from/to big ports and for transit, and 1.72nm from/to small ports.	Shipping routes and roadsteads are well defined and strictly respected in the MSP documents and charts. Yearly summary of ship density was taken as basic information for justification of the corridors.	Widths of priority areas not defined in detail yet.	AIS data was used to designate national interest areas which were the basis for later designations of areas in MSP MSP only covers the nationally most important corridors. Smaller routes rely on the "freedom of navigation".

Differences in designating ship corridors in MSP result from

- Different importance is given to the shipping sector in MSP
- Different methods are used to transfer spatial IMO regulations into the national MSPs
- Different methods are used to determine the widths of ship corridors

Shipping	Belgium	Denmark	Germany	Netherlands	Norway	Scotland	Sweden
MSP's role in providing space for ship traffic	Priority area for shipping, no incompatible activities in this area	Priority areas for shipping shall safeguard space for ship traffic, no incompatible activities (e.g. artificial installations) are allowed	Priority areas for shipping shall safeguard space for ship traffic, no incompatible activities (e.g. artificial installations) are allowed	TSS, precautionary areas, clearways and anchorages	In the ocean areas there is enough space. Within the coastal zone is designated shipping routes divided between primary and secondary fairway	Navigational safety is paramount to vessel movement and must be safeguarded. Displacement of shipping should be avoided where possible. Mitigate against potential increased journey lengths (and associated fuel costs, emissions and impact on journey frequency) and potential impacts on other	Priority areas for shipping shall safeguard space for ship traffic, conflicting or disturbing activities are restricted.

Differences in designating ship corridors in MSP in the North Sea

- Different variation (different vessel data used)
- Different timeline
- Criteria are in every country different
- Different identification of national lanes
- Different approach of priority (soft or hard spatial claim)

				space between the shipping route and wind farms at sea that shipping needs to be able to navigate swiftly and safely.			
Existing IMO routeing measures	Several routes were already regulated By IMO. Because of the windfarms, new IMO routing measures were made	Large area is regulated by IMO, which will be transferred to MSP + 2nm safety zones along TSS	Large area is regulated by IMO, which is also transferred to MSP + 2nm safety zones along TSS	The traffic separation scheme (TSS) and accompanying 'precautionary areas' and *inshore traffic zones* have been established by the International Maritime Organisation (IMO) of the United Nations.	Large area is regulated by IMO, which is also transferred to MSP + 2nm safety zones along TSS	IMO traffic routing measures in Scottish waters including Traffic Separation Schemes (TSS), recommended routes, deep water routes, area(s) to be avoided (ATBA) and precautionary area.	Large area is regulated by IMO, which will be transferred to MSP, no safety zones added

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Planning transnational shipping in the North Sea
Report from WP4 in the NorthSEE project

Henrik Nilsson, World Maritime University

North SEE

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Baltic LINes

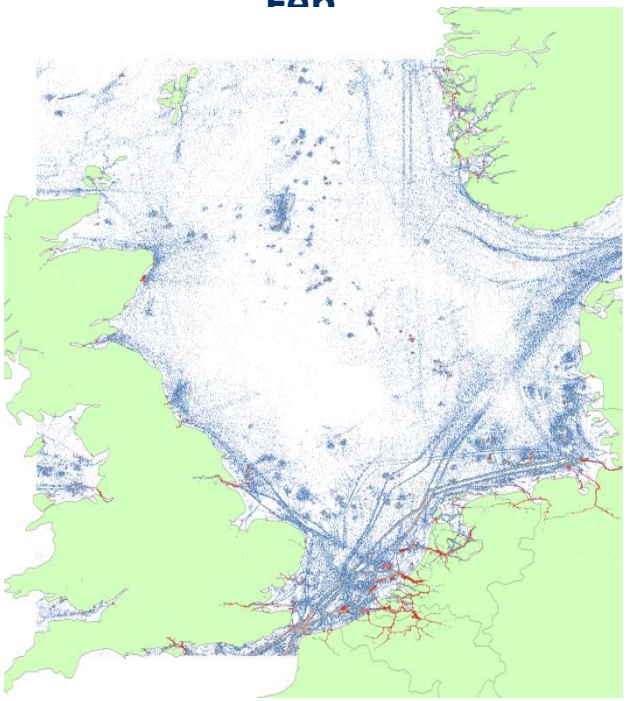
Interreg Baltic Sea Region EUROPEAN REGIONAL DEVELOPMENT FUND EUROPEAN UNION

Objective of the report

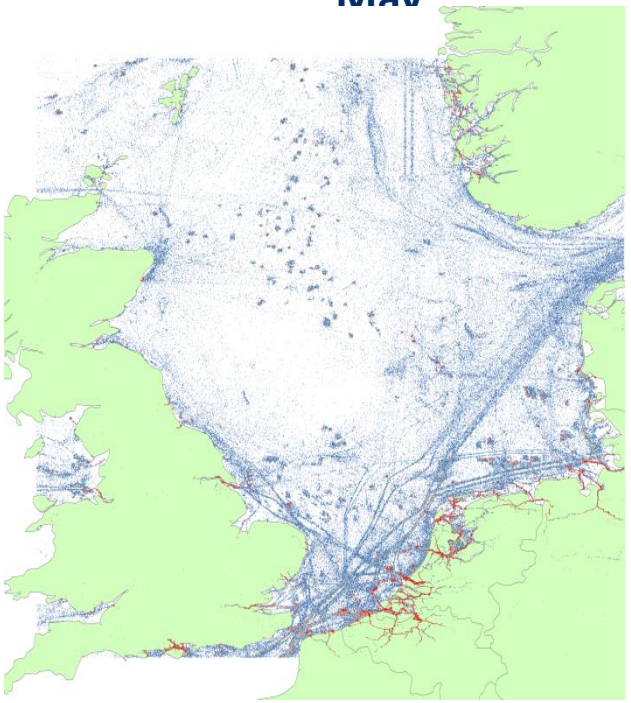
- Identify current shipping routes in the North Sea
- Compare it with routes as described in national MSP plans
- Analyze coherence in transnational planning
- Provide recommendations

Traffic density 2016 – Seasonal maps

Feb

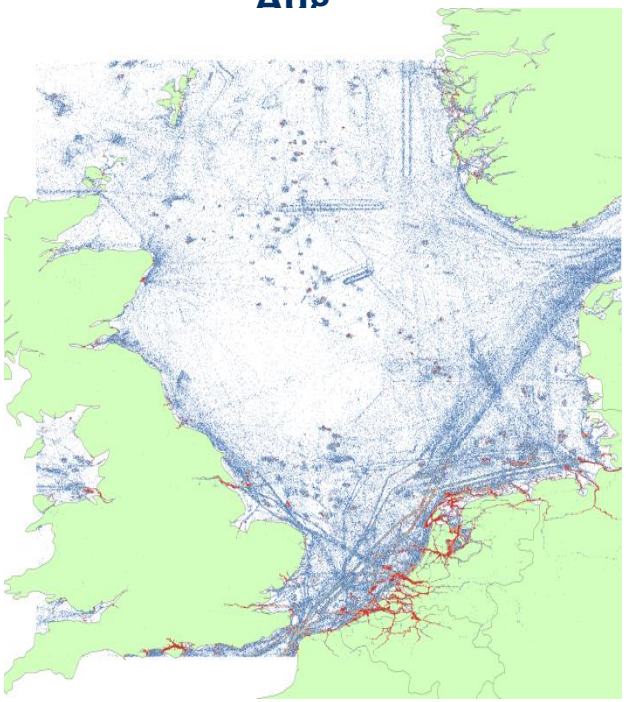


May

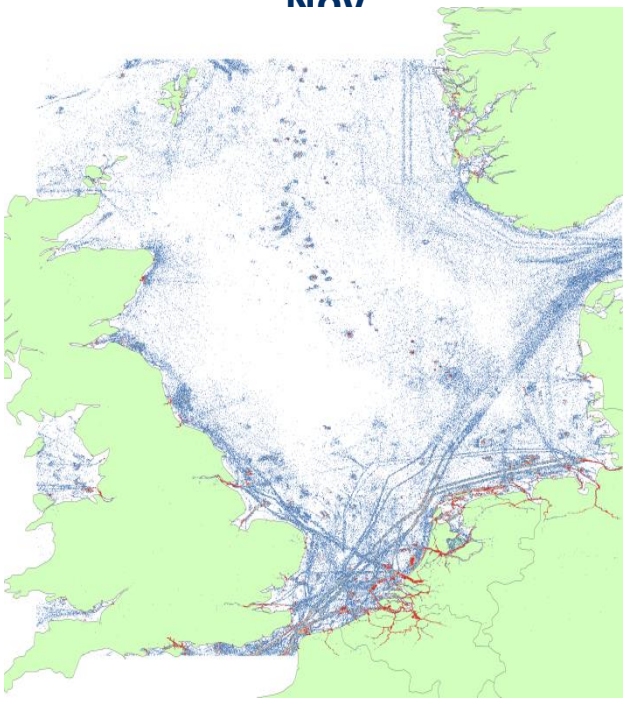


Traffic density 2016 – Seasonal maps

Aug

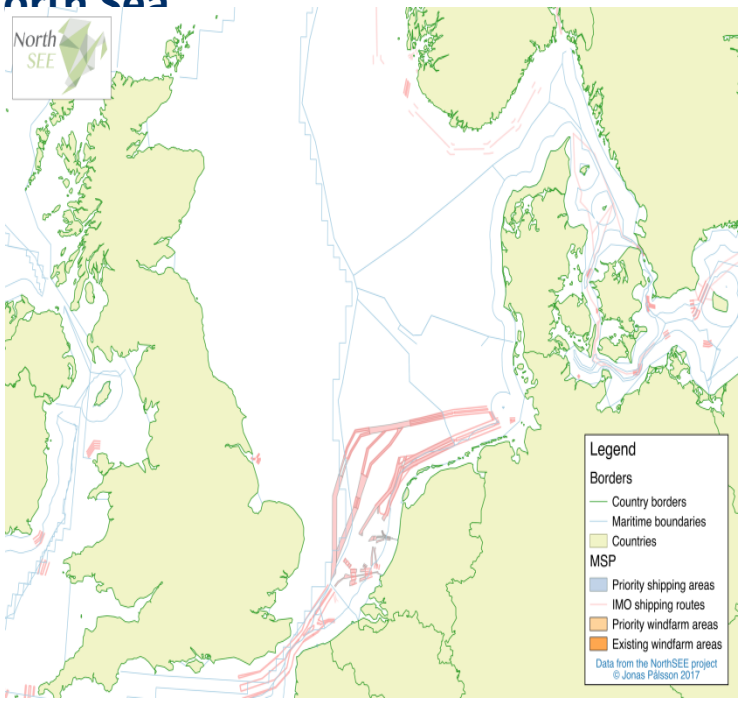


Nov

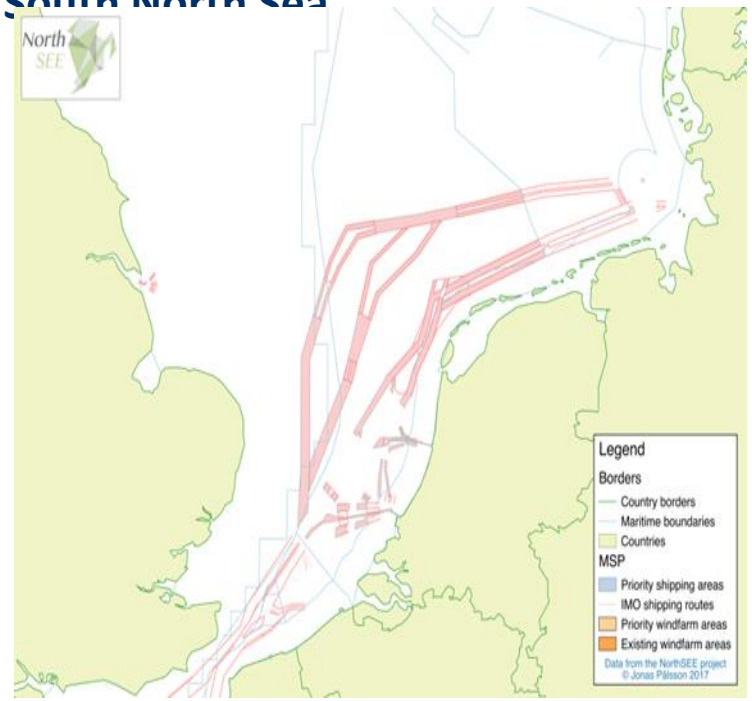


IMO routes North Sea

North Sea

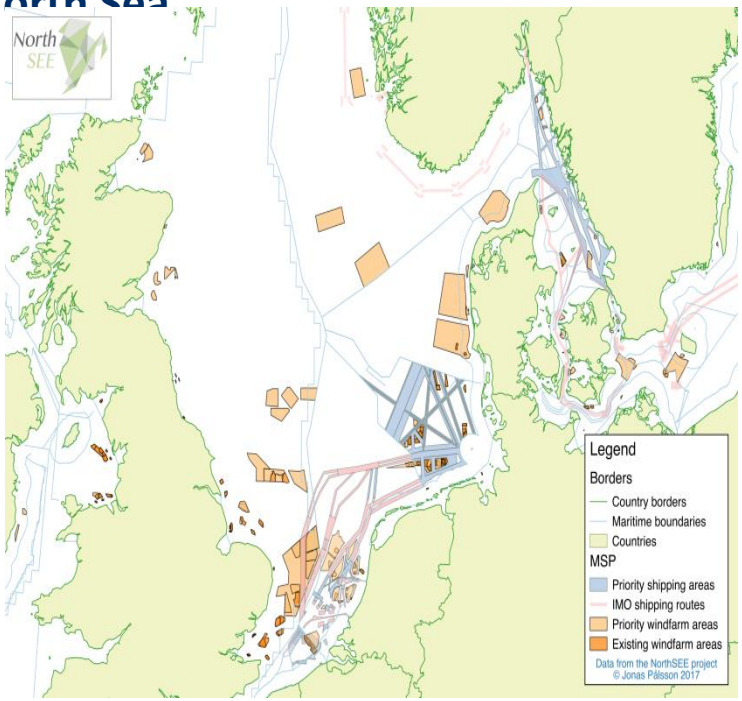


South North Sea

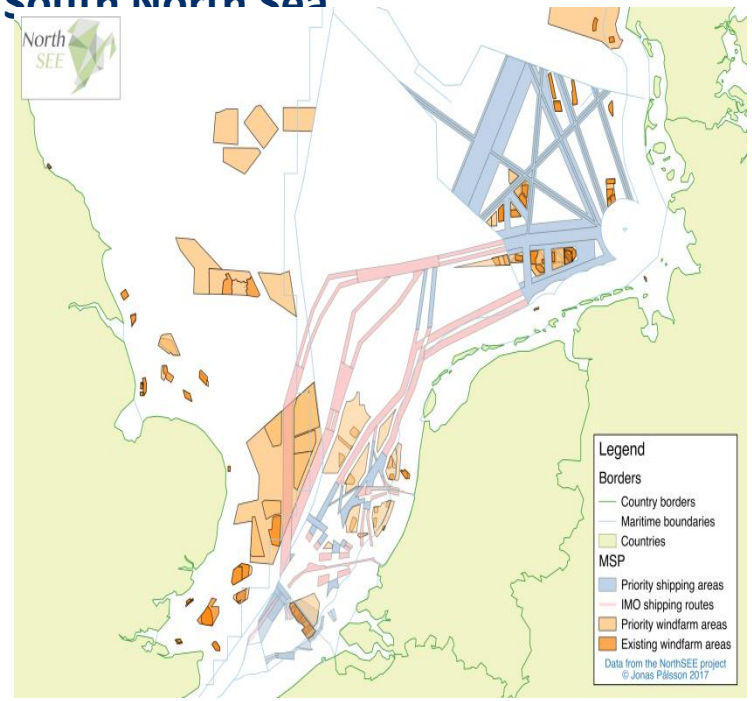


IMO routes and OWF

North Sea

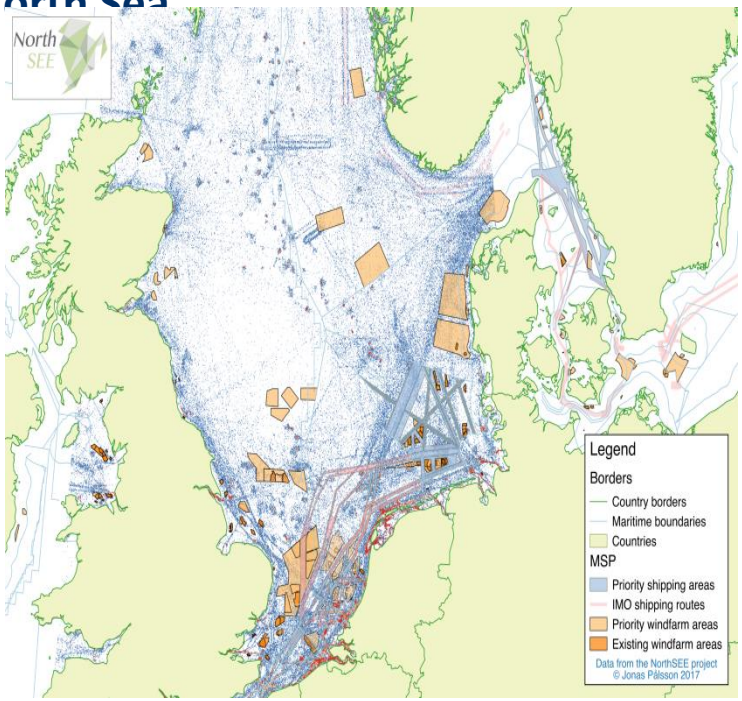


South North Sea

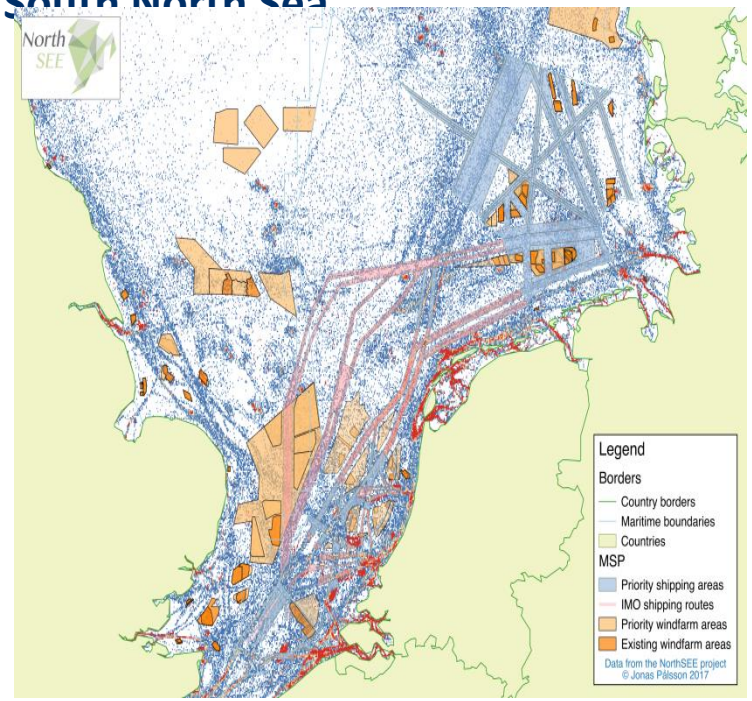


Traffic density (AIS)

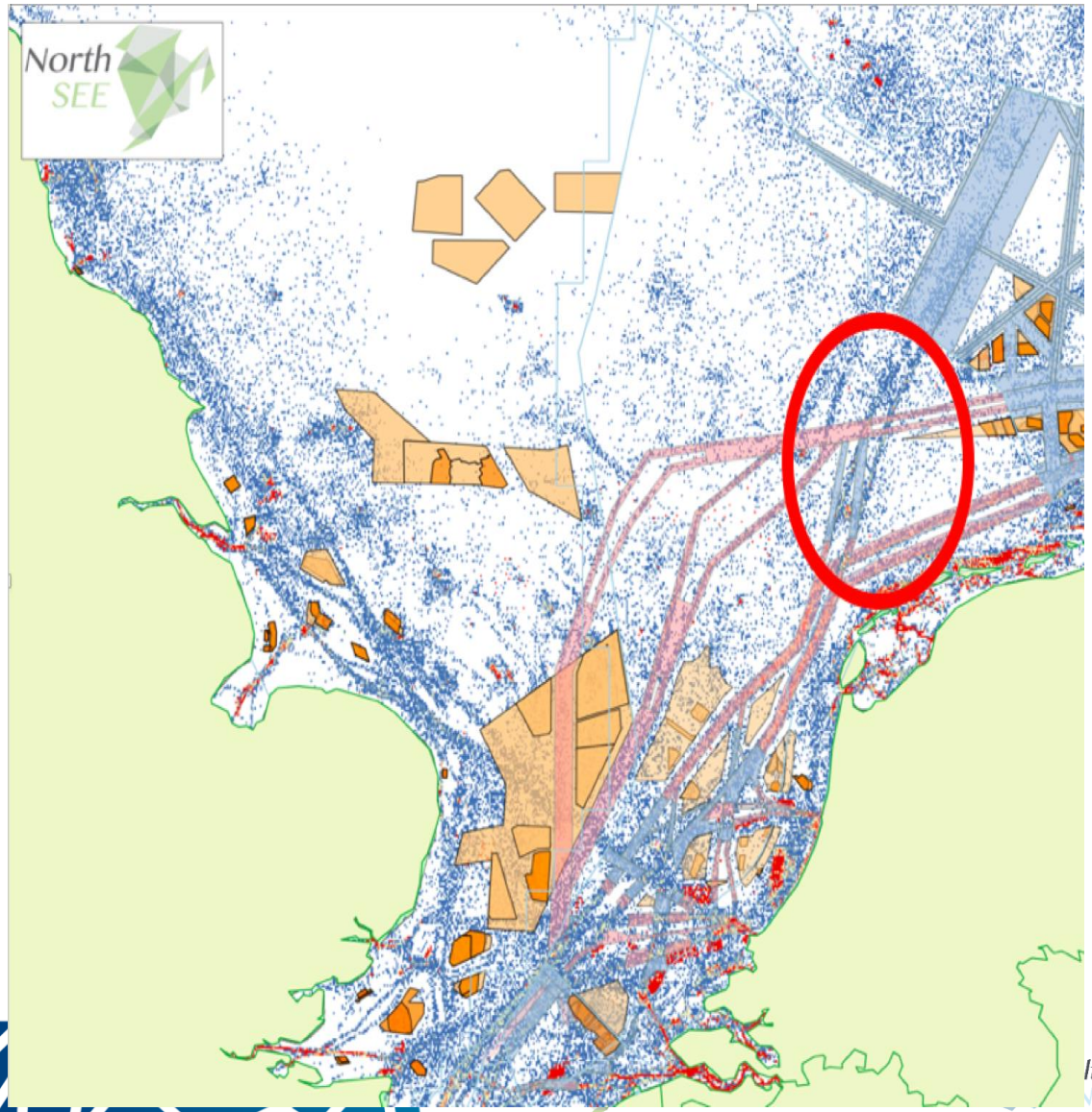
North Sea



South North Sea



Inconsistencies?



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Reflections

- Difficult to obtain historical data
- Importance of relying on the same data source in order to develop one coherent North Sea MSP plan
- Are identified inconsistencies reliable?
- How can seasonal variations in traffic be taken into account in MSP?

THANK YOU!

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Suggestion of a step-wise approach for the coherent planning of ship corridors in MSP

Dominic Plug, German Federal Maritime and Hydrographic Agency (BSH)

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Practical guide to the designation of ship corridors in MSP

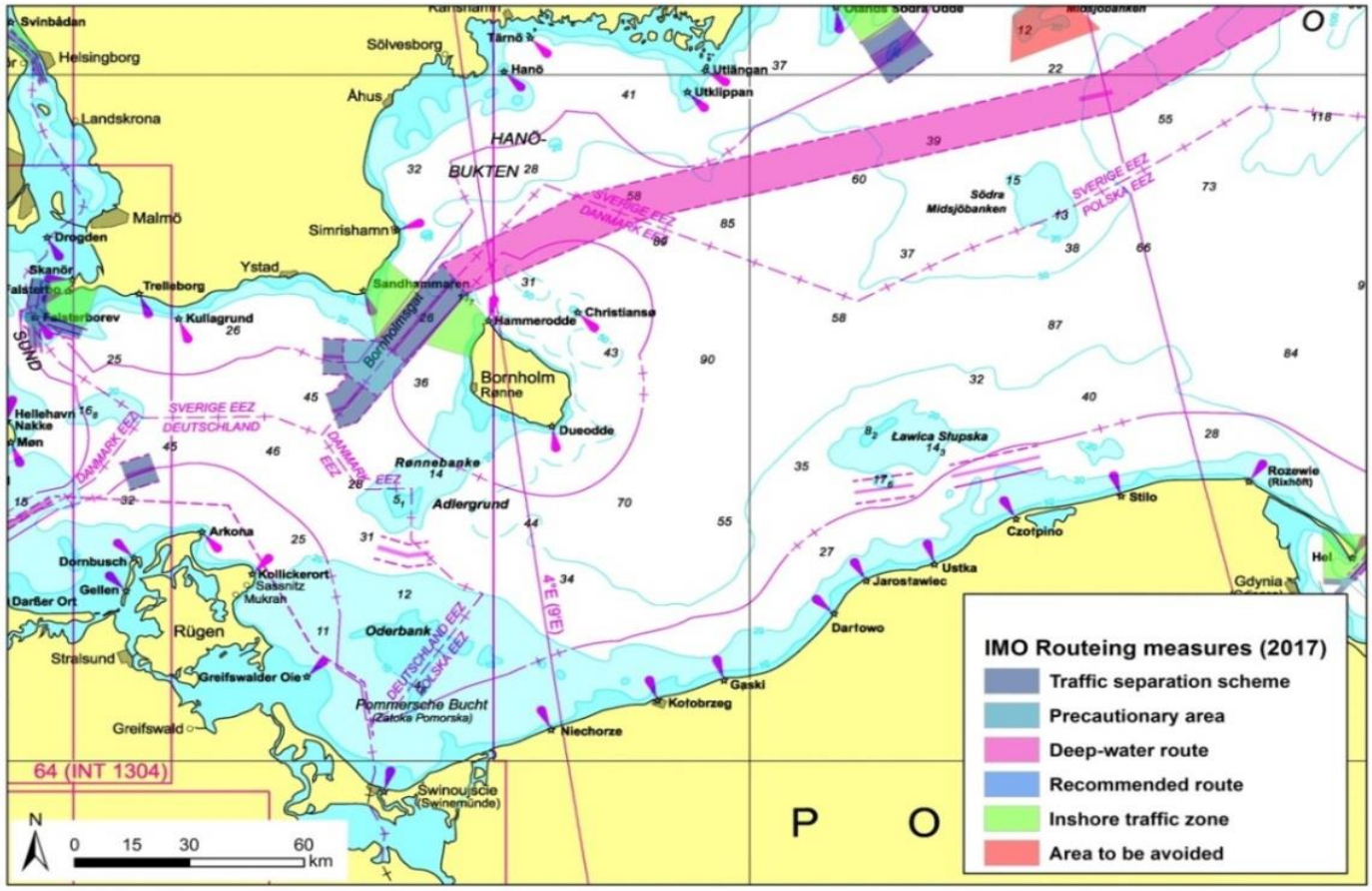
Why did we develop this practical guide?

- Avoidance of planning mismatches by using similar or at least comparable methods for the designation of ship corridors
- Coherency enhances safety at sea → contributes to better environmental conditions, lower economic costs and reduces risk for the loss of human life
- Common approach increases the comparability and mutual understanding of national decisions

What can the planning approach <u>not</u> provide?

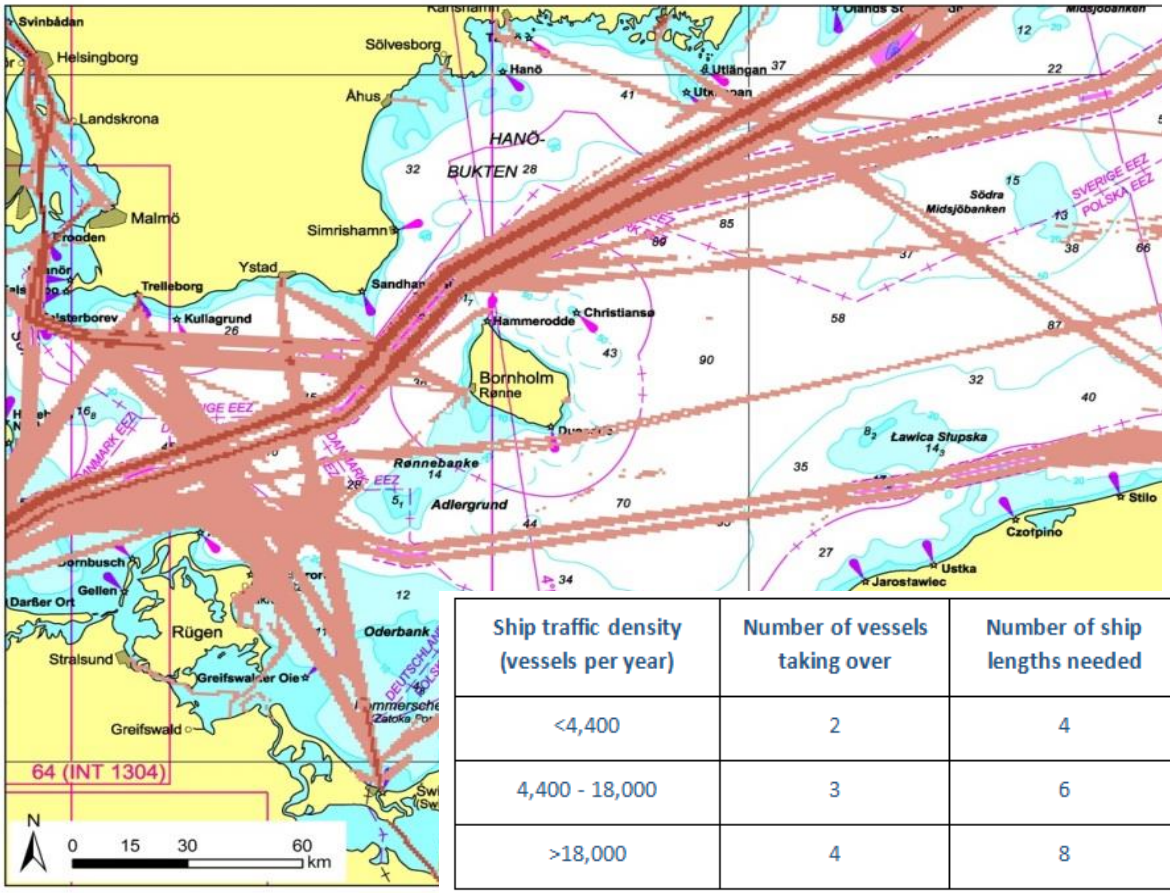
- Cannot present the one-and-only way to designate ship corridors → dependent on national context other methods may be preferable
- Cannot replace Formal Safety Assessments (FSA) → need to be accomplished on a case-by-case basis by experts
- Cannot substitute weighing process to balance between sectoral interests

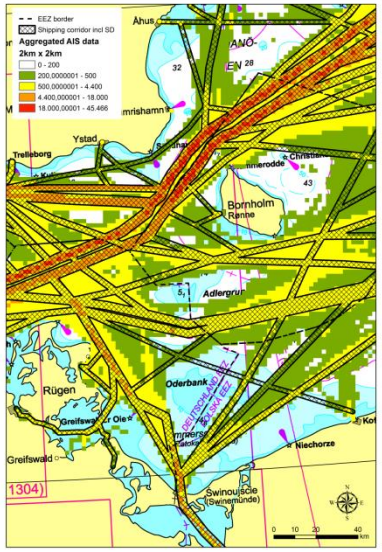
Suggestion of step-wise planning approach



Step 1: Transfer of different types of IMO routeing schemes to the MSP

Suggestion of step-wise planning approach





Ship traffic density (vessels per year)	Number of vessels taking over	Number of ship lengths needed	Path width for standard ship size of 400m
<4,400	2	4	4 x 400m = 1.6km (~0.9nm)
4,400 - 18,000	3	6	6 x 400m = 2.4km (~1.3nm)
>18,000	4	8	8 x 400m = 3.2km (~1.7nm)

**

*Step 2: Analysis of AIS data and draft of continuous ship corridors**

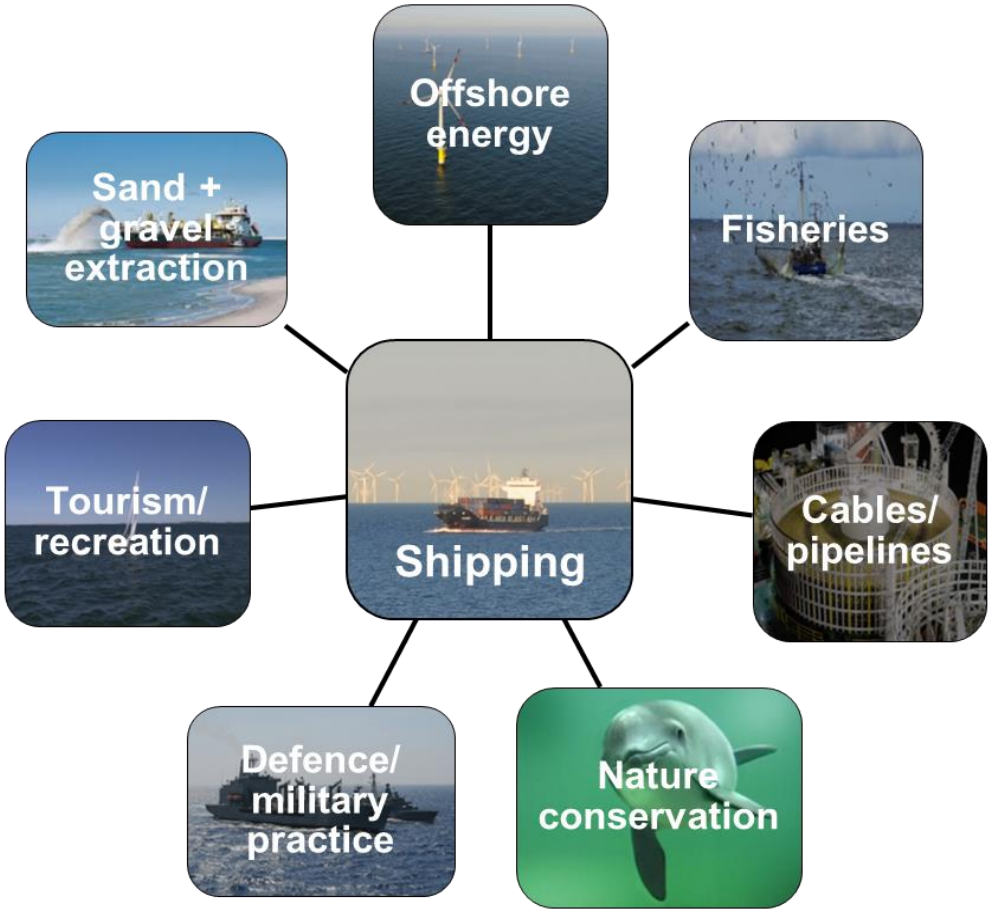
* HELCOM AIS Expert Working Group agreed on a methodology to produce density maps and statistics from AIS data (Annex I of the Maritime Assessment / codes: GitHub). This helps to use the same methodology and to be able to compare the AIS data products between countries.

** Method developed by Maritime Institute of the Netherlands (MARIN)

Suggestion of step-wise planning approach

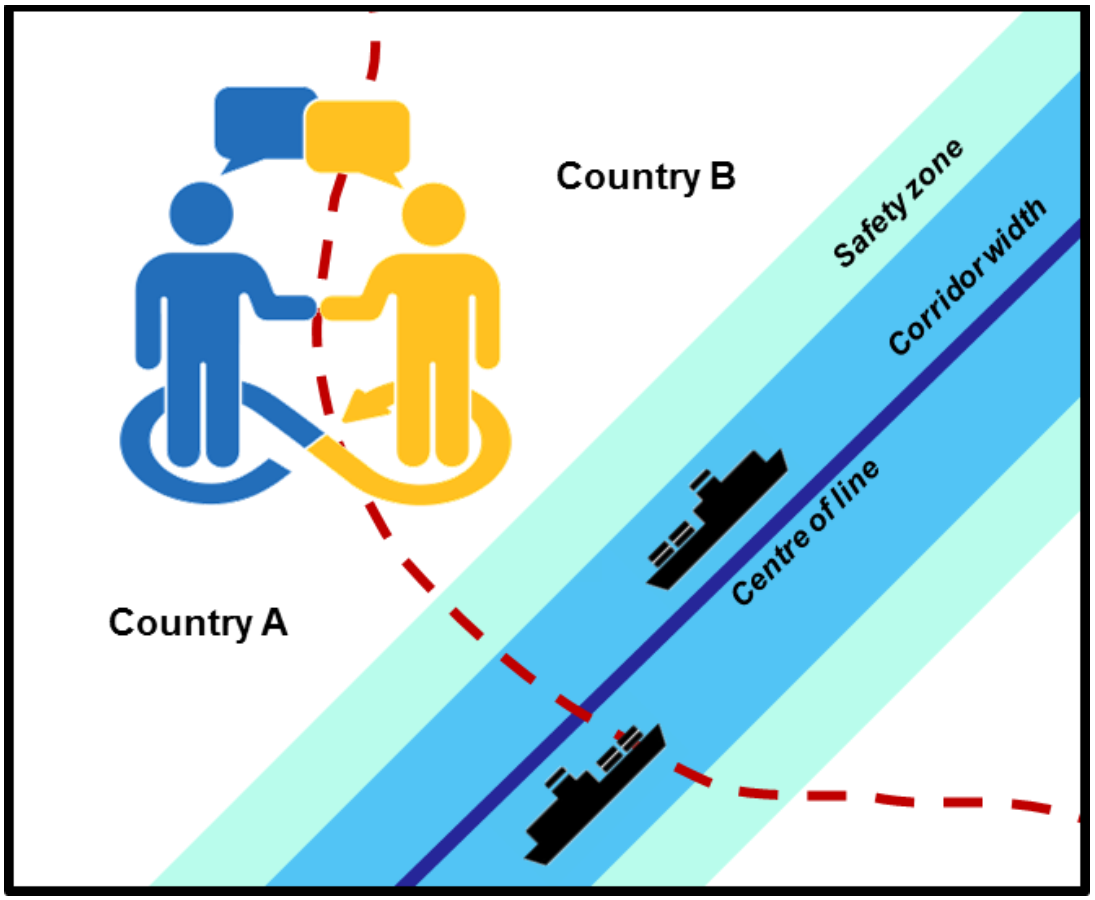
Step 3: Assessment of future developments and related spatial demands

Suggestion of step-wise planning approach



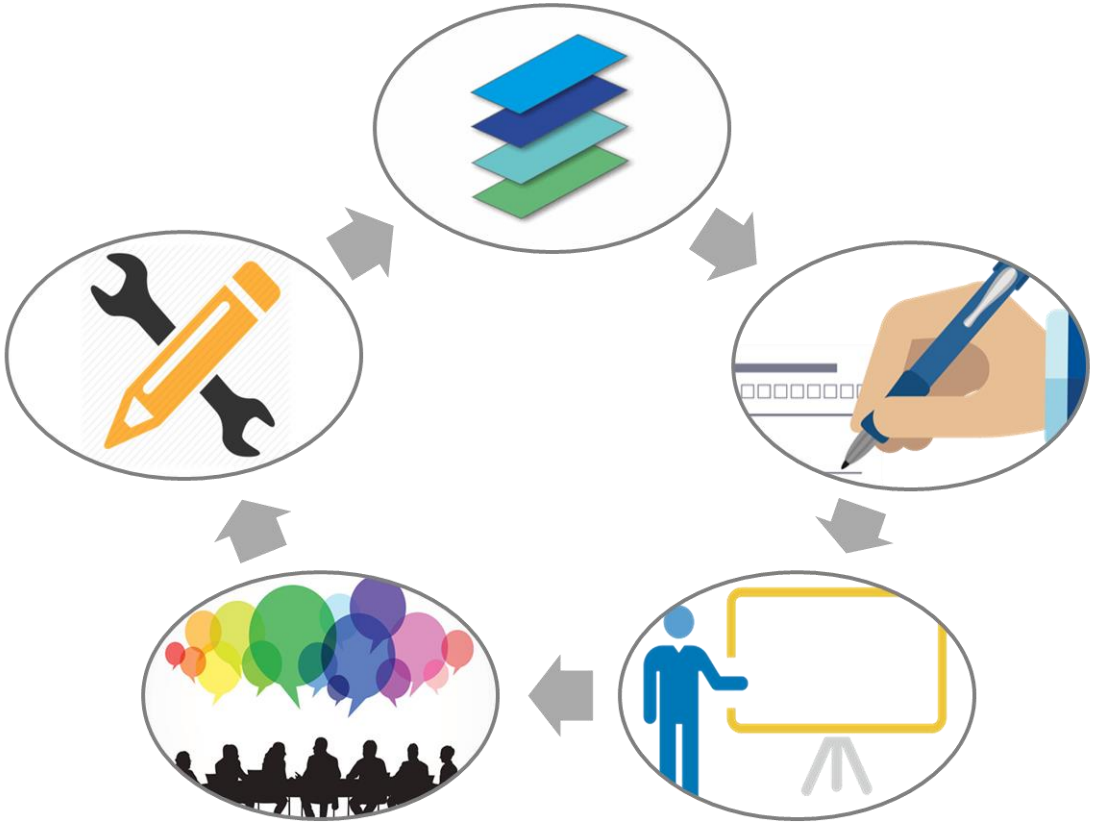
Step 4: Assessment of spatial demands across sectors

Suggestion of step-wise planning approach



Step 5: Transnational exchange between planners to increase coherency of designations

Suggestion of step-wise planning approach



Step 6: First draft including area categorization and related textual regulation open for consultation

Main messages

- ✓ MSP as central instrument for balancing between sectoral interests and sustainable sea management
- ✓ Transnational coherency of plans required by EU Directive (2014)
- ✓ In the MSP draft phase, still many cross-border mismatches can be found between designated ship corridors
- ✓ Mismatches often relate to different national approaches for MSP as well as different methods for ship corridor designation
- ✓ Baltic LINes developed methods to enhance coherence for the planning of ship corridors and energy infrastructure
- ✓ Agreement on common methodology for whole Baltic Sea would be ideal, but is not feasible
- ✓ Baltic LINes suggests a practical guide for ship corridor designation in MSP to increase transnational coherency

Questions?

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Future trends of Shipping

Jeroen van Overloop, FOD Mobiliteit en Vervoer

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Future scenarios

- Ship size
- Specialization
- Automatization
- Fuel

Ship size

- Containerization
- Large container vessels, plus 400 metres
- Limited by draught and manoeuvrability
- Smaller Short Sea Shipping Vessels

Specialization

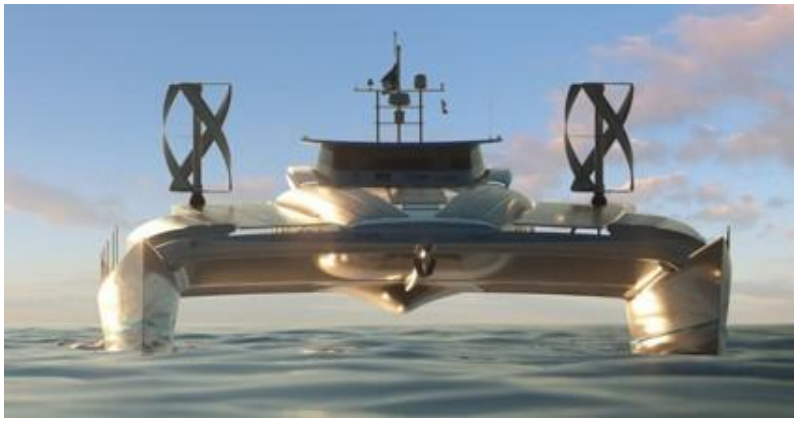
- Construction windfarms
- Development of other offshore activities
- Specialised Ships
- Heavy Lifting

Automatization

- Unmanned Vessels
- Platooning
- Unmanned Services

Fuel

future



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Recommendations for shipping

Jeroen van Overloop, FOD Mobiliteit en Vervoer

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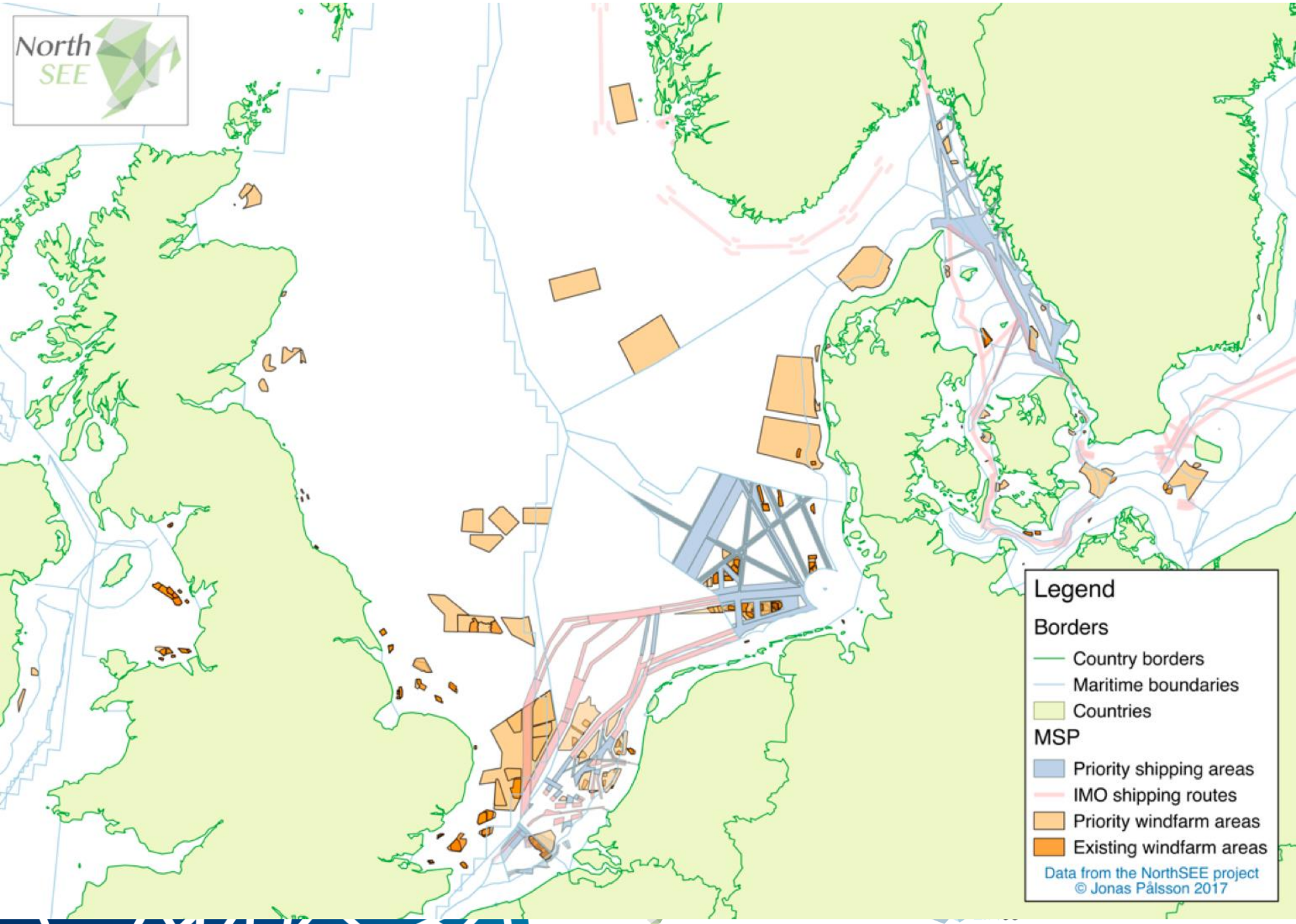
- Maps and map data
- Analysis of data
- Recommendation
- criteria

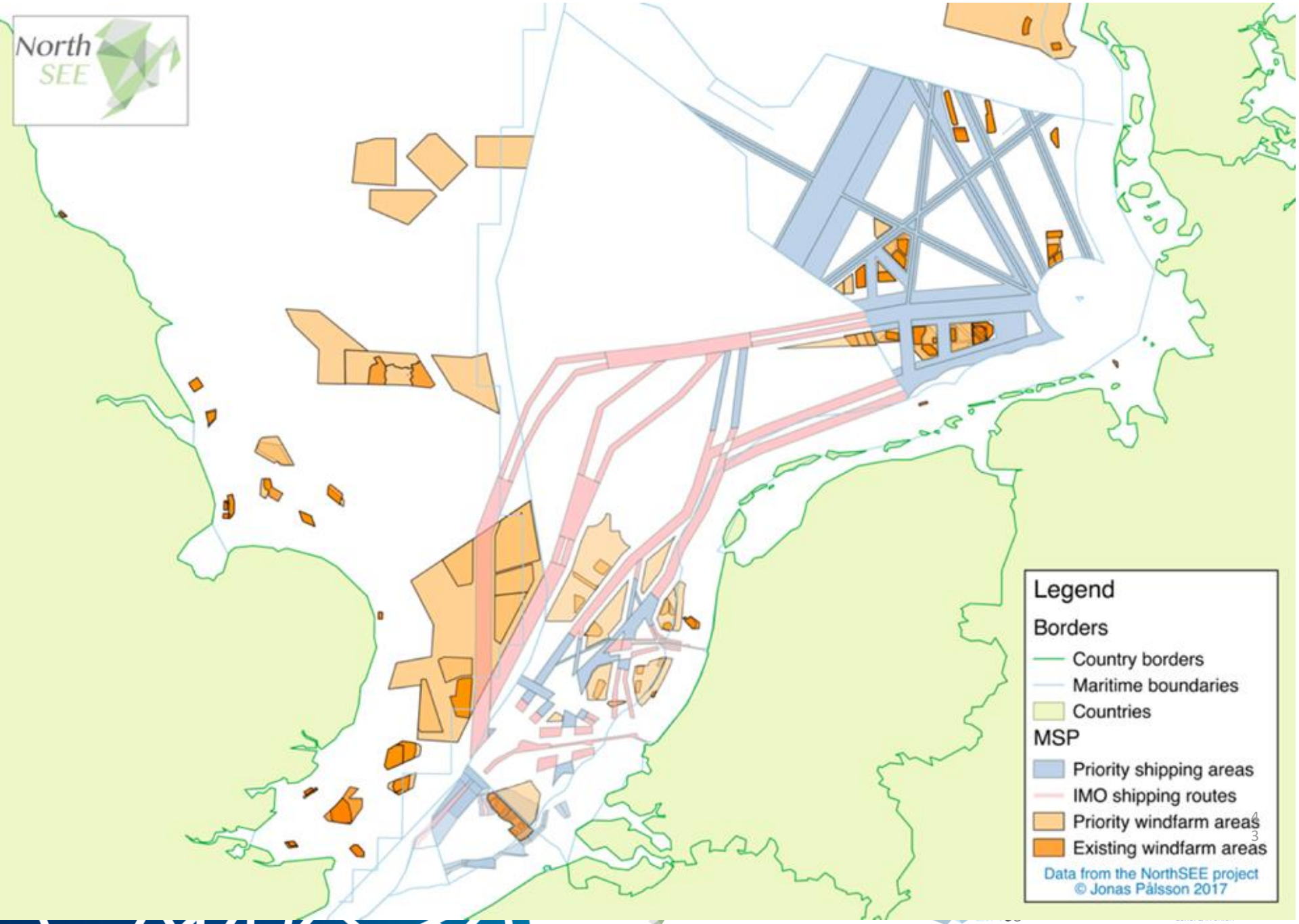
Shipping map

- IMO routes
- MSP's
- Priority routes for shipping
- …


North SEE
Legend
Borders
Country borders
Maritime boundaries
Countries
MSP
Priority shipping areas
IMO shipping routes
Priority windfarm areas
Existing windfarm areas
Data from the NorthSEE project
© Jonas Pålsson 2017

Conclusion

- No real mismatches
- No coherence in used techniques
  - IMO routes
  - National priority lanes
  - …
- Border situations
- Some gaps


North SEE
Legend
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Countries
MSP
Priority shipping areas
IMO shipping routes
Priority windfarm areas
Existing windfarm areas
Data from the NorthSEE project
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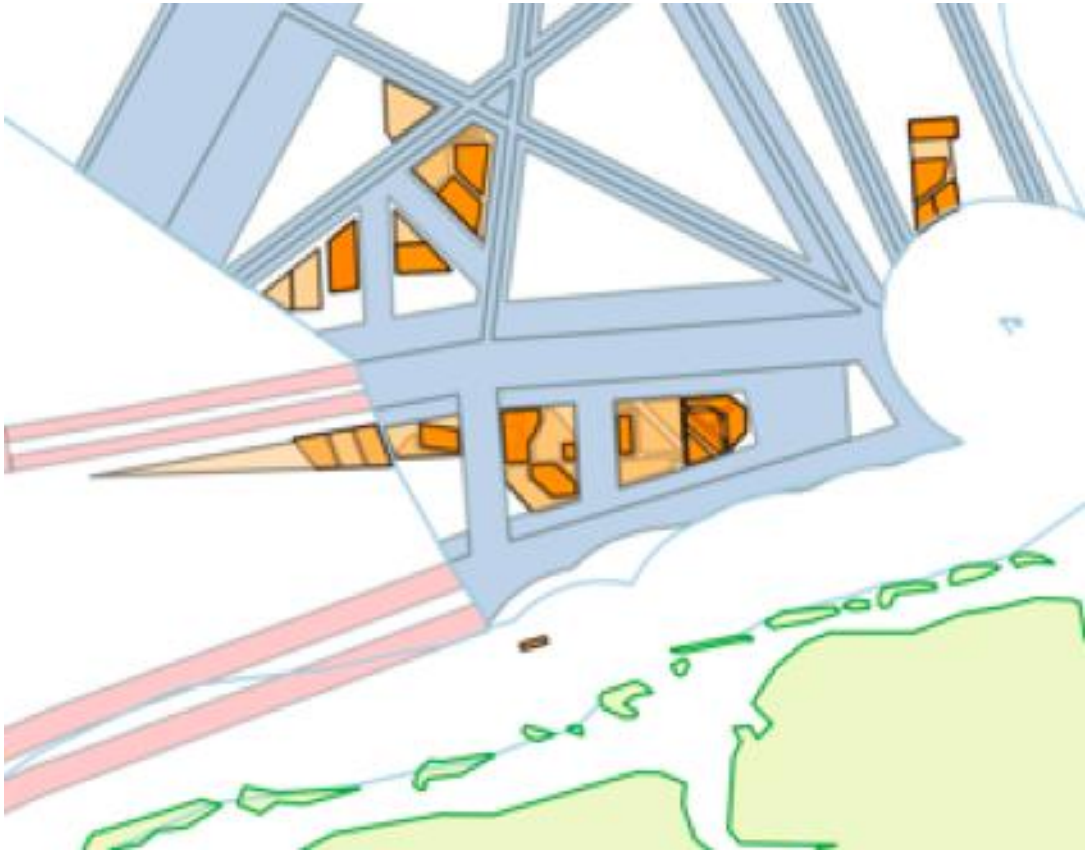
No coherence in technique

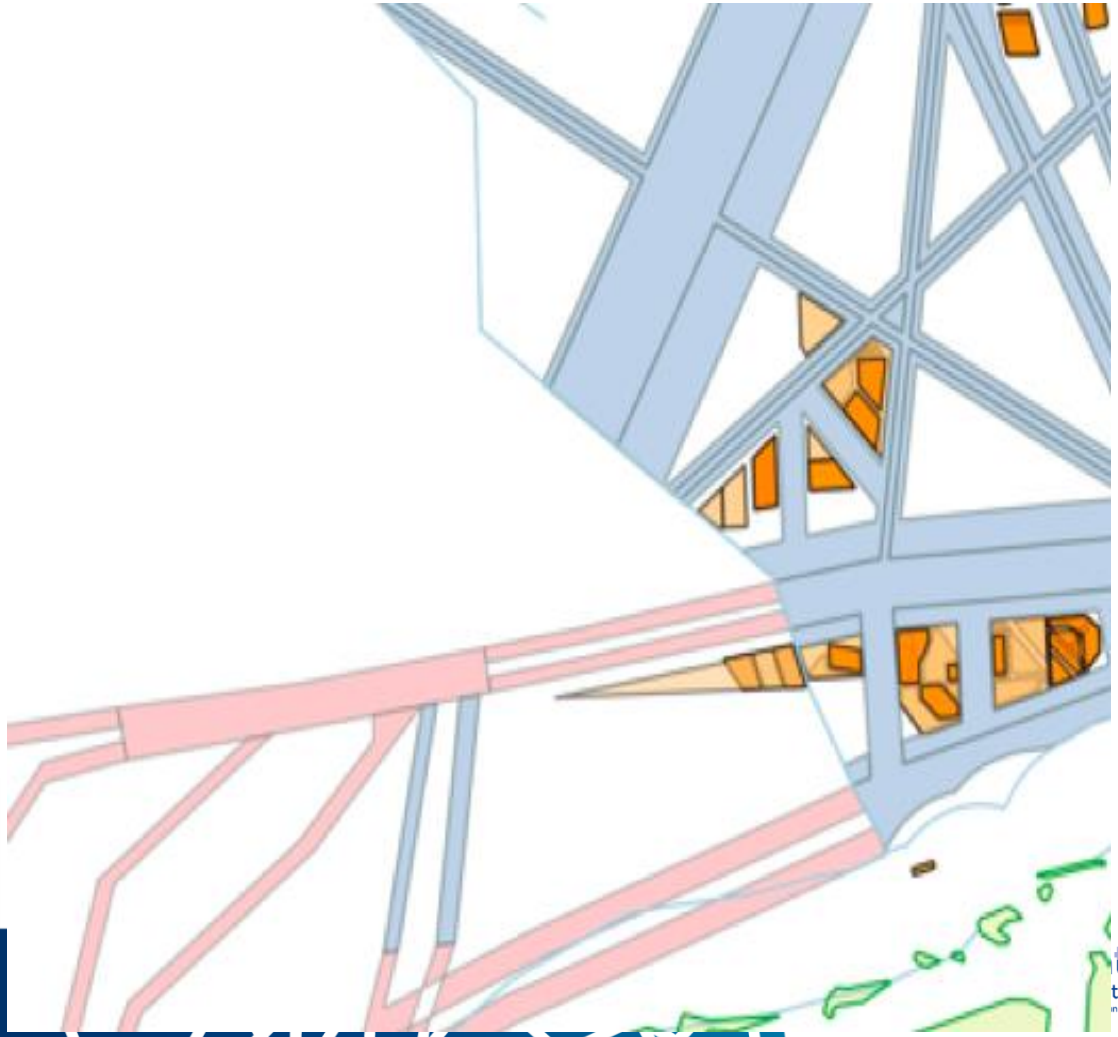
- IMO routes
  - Traffic separation
  - Two way route
  - Precautionary area
  - …
- National priority
  - No definition on type of route

Border situations

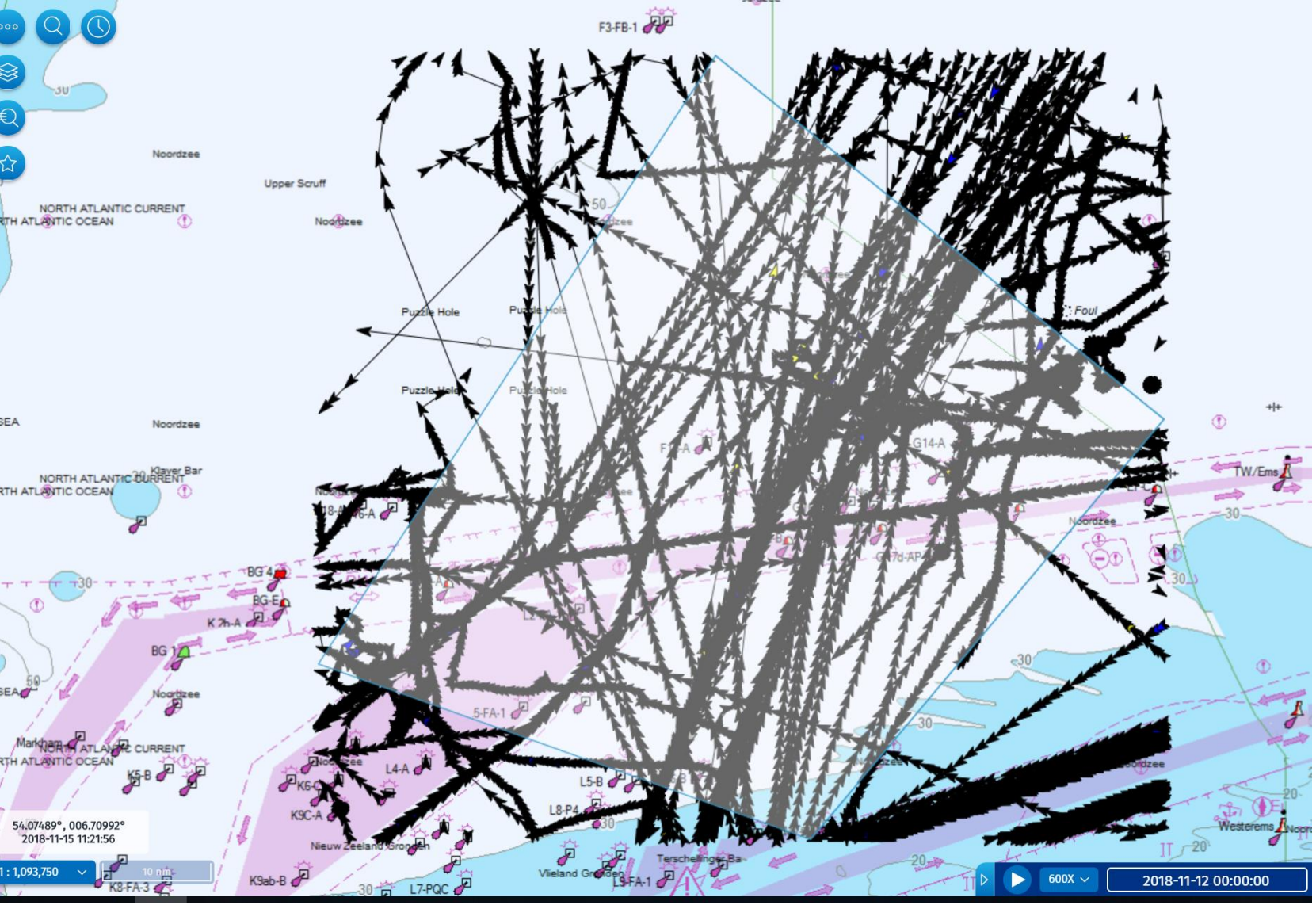
- Traffic separation on the Dutch site
- Priority on the German site
- Different size
- No gateways at the border



Gaps



- North – South Traffic
- Priority Germany
- Priority Netherlands
- Gap in between
- Possible other use for open space



- Ships do sail in gap area

First questions

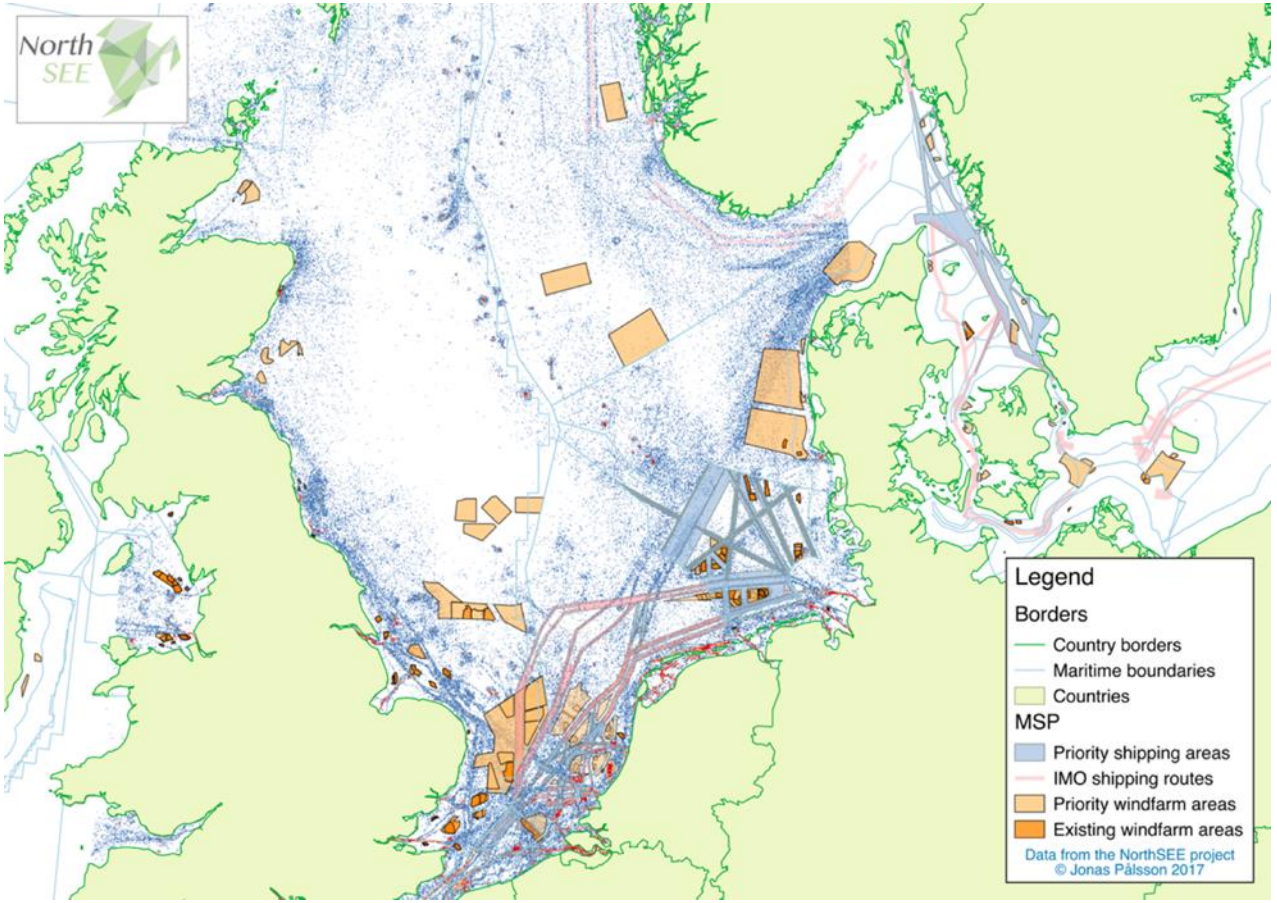
- Why one country priority for shipping and not the other?
- Why IMO and sometimes not?
- Why TSS, two-way route,…?

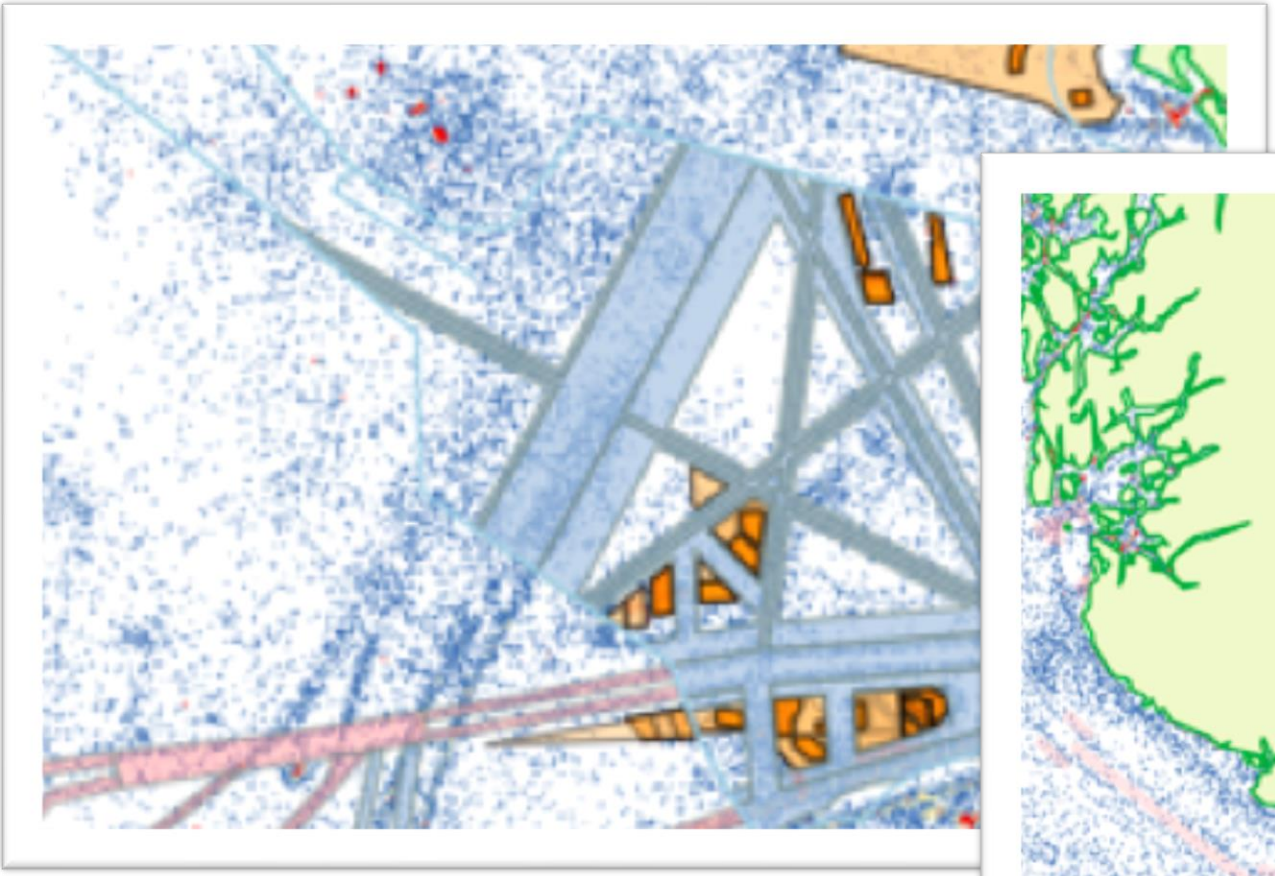
- No coherence between countries

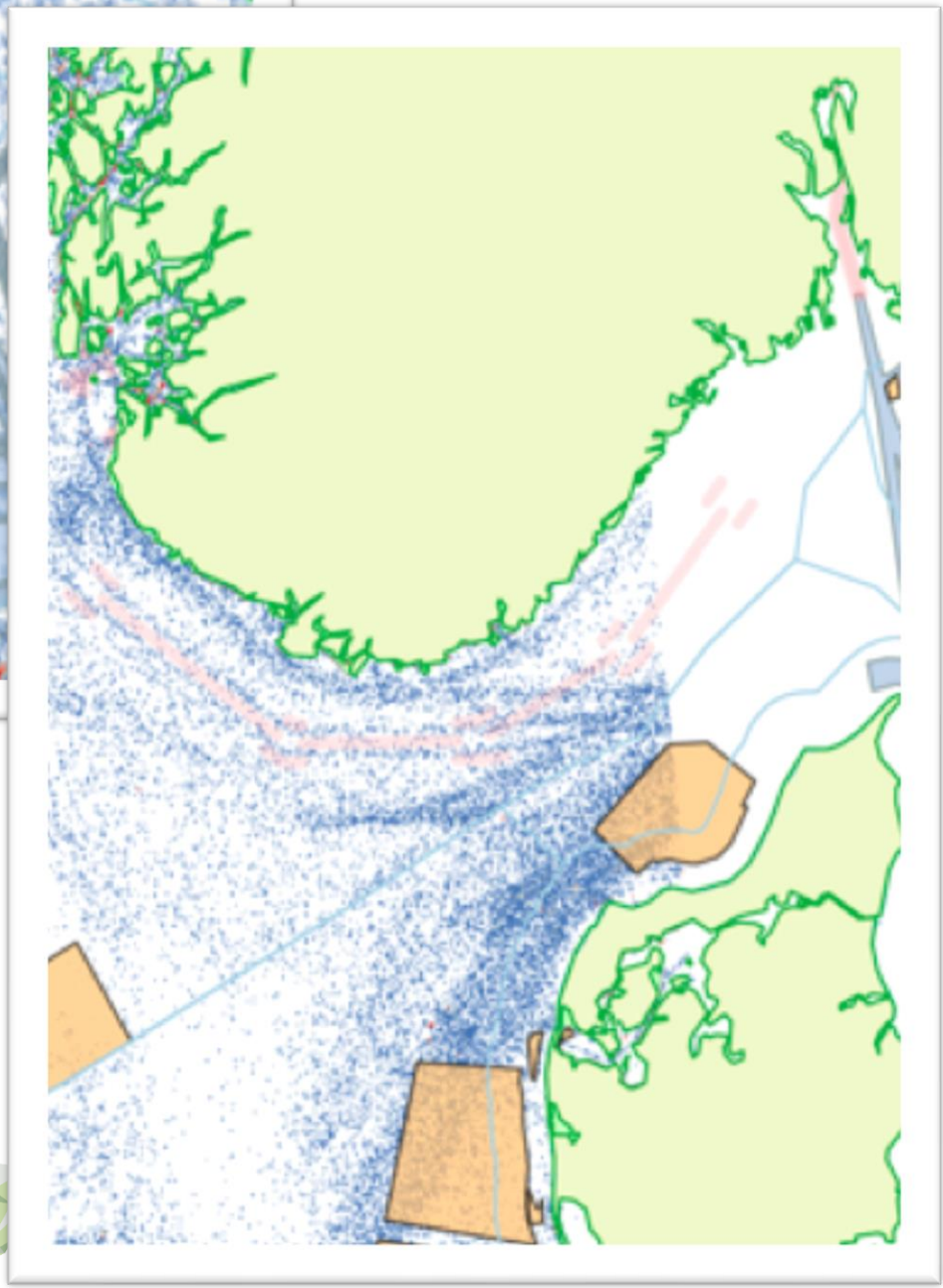
MAP vs AIS

- Is the map correct?
- Based on all information?
- Coherent with AIS?

Compare AIS density map with

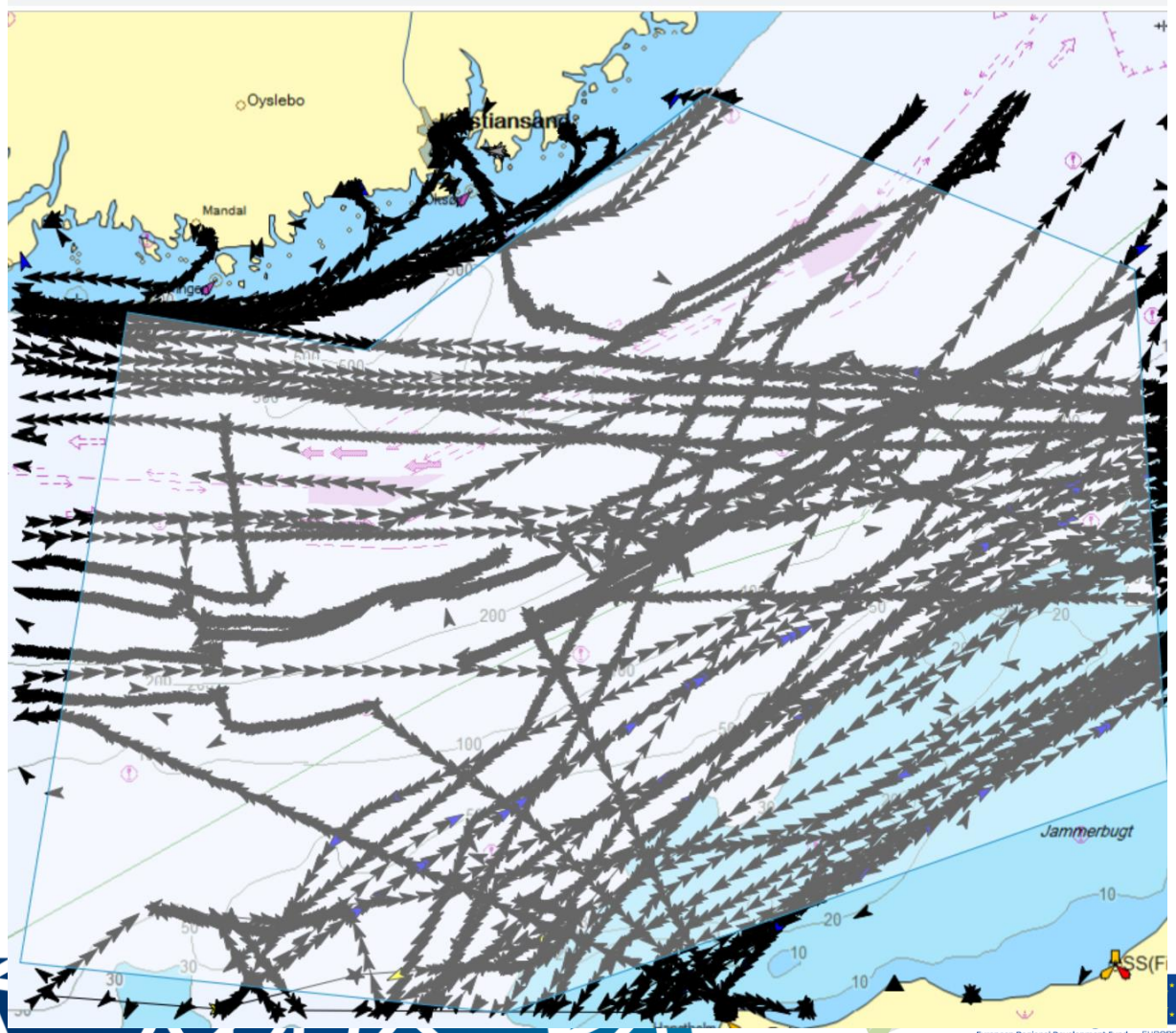






- Differences between AIS image and protected area

Closer look



- Traffic going all directions
- Is allowed to do this

European Regional Development Fund EUROPEAN UNION
Baltic LINes
Interreg Baltic Sea Region
EUROPEAN REGIONAL DEVELOPMENT FUND EUROPEAN UNION

Conclusion

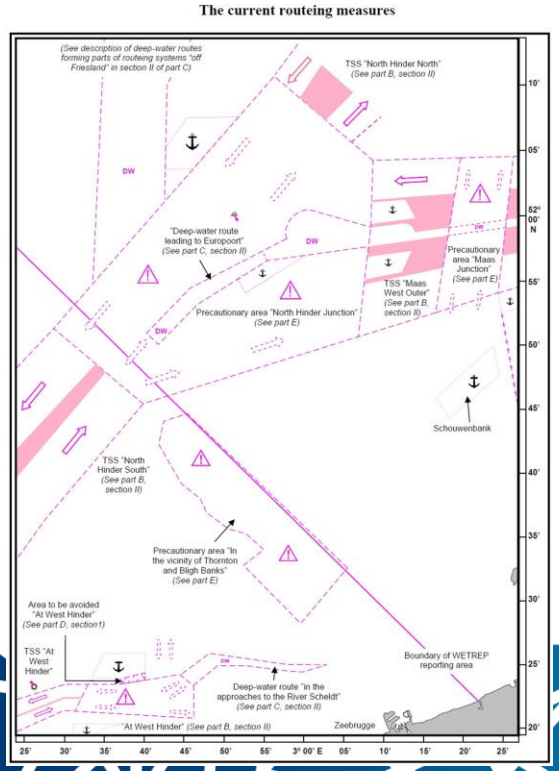
- Not all shipping routingmeasures are coherent with real situation
- Map might be wrong

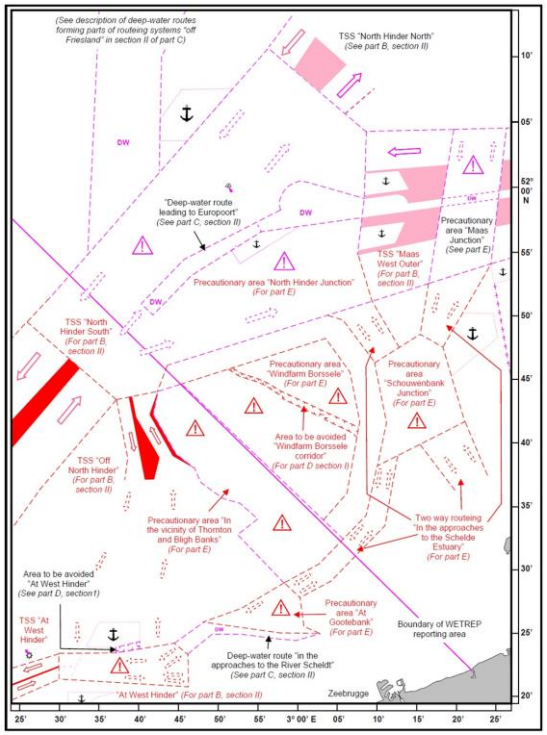
Sustainable sollutions

- Transnational cooperation
- Use same techniques/terminology
- Close the gaps
- Use same criteria

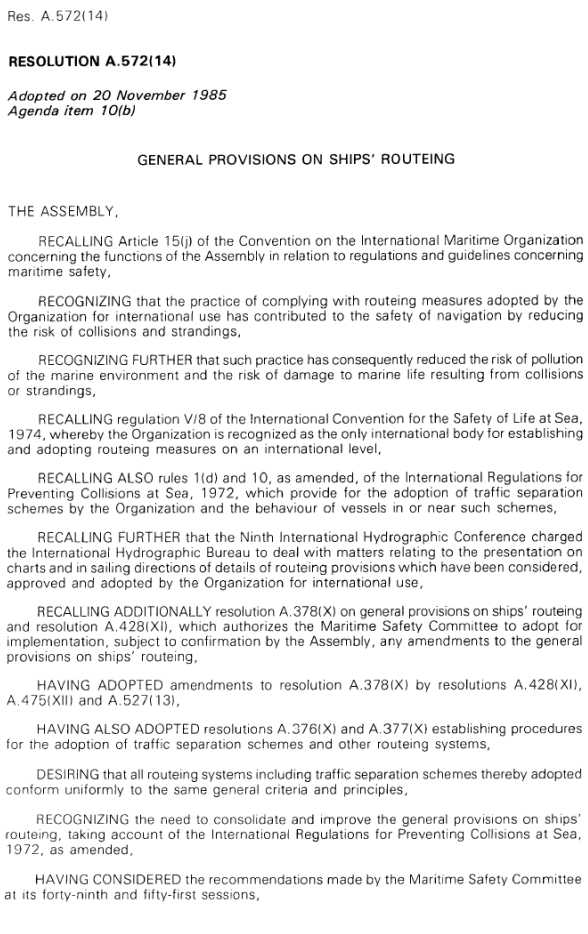
Transnational cooperation

- Shipping is international, don't tackle it nationally
- Good practice BE – NE cooperation windfarms





techniques/terminology



Res. A.572(14)

RESOLUTION A.572(14)

Adopted on 20 November 1985
Agenda item 10(b)

GENERAL PROVISIONS ON SHIPS' ROUTEING

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECOGNIZING that the practice of complying with routeing measures adopted by the Organization for international use has contributed to the safety of navigation by reducing the risk of collisions and strandings,

RECOGNIZING FURTHER that such practice has consequently reduced the risk of pollution of the marine environment and the risk of damage to marine life resulting from collisions or strandings,

RECALLING regulation V/8 of the International Convention for the Safety of Life at Sea, 1974, whereby the Organization is recognized as the only international body for establishing and adopting routeing measures on an international level,

RECALLING ALSO rules 1(d) and 10, as amended, of the International Regulations for Preventing Collisions at Sea, 1972, which provide for the adoption of traffic separation schemes by the Organization and the behaviour of vessels in or near such schemes,

RECALLING FURTHER that the Ninth International Hydrographic Conference charged the International Hydrographic Bureau to deal with matters relating to the presentation on charts and in sailing directions of details of routeing provisions which have been considered, approved and adopted by the Organization for international use,

RECALLING ADDITIONALLY resolution A.378(X) on general provisions on ships' routeing and resolution A.428(XI), which authorizes the Maritime Safety Committee to adopt for implementation, subject to confirmation by the Assembly, any amendments to the general provisions on ships' routeing,

HAVING ADOPTED amendments to resolution A.378(X) by resolutions A.428(XI), A.475(XII) and A.527(13),

HAVING ALSO ADOPTED resolutions A.376(X) and A.377(X) establishing procedures for the adoption of traffic separation schemes and other routeing systems,

DESIRING that all routeing systems including traffic separation schemes thereby adopted conform uniformly to the same general criteria and principles,

RECOGNIZING the need to consolidate and improve the general provisions on ships' routeing, taking account of the International Regulations for Preventing Collisions at Sea, 1972, as amended,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee at its forty-ninth and fifty-first sessions,

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- IMO Resolution A.572(14)
  - TSS
  - Traffic lane
  - Separation zone
  - … (14 different measures)
- International recognized
- IMO regulated
- Can be used on national level

Close the gaps

- Make one coherent priority shipping transit
- For the Northsea
- No gaps
- Designated North-South connection
- IMO or national priority

Criteria

- Same criteria for protective measures
  - Example:+25.000 ships/year in one lane

Traffic seperation

- Not always traffic routes
  - Also precautionary area for example

Conclusion

- One closed system for ships in all the North sea
- Same terminology, easy for international shipmasters
- Same criteria, coherent decisions