



Baltic SCOPE

Towards coherence and cross-border solutions in Baltic Maritime Spatial Plans

Shipping topic paper – Central Baltic

Version 5.0 May 2016

Madli Kopti, Linus Hammar, Kristine Kedo

Swedish Agency
for Marine and
Water Management



Contents

Introduction and recommendations	4
Recommendations	4
1 Background information.....	5
2 Analysis of the sector	7
2.1 Requirements for the shipping.....	7
2.2 Current use of shipping	7
2.2.1 Current status of shipping in Estonia (CBC area)	9
2.2.2 Current status of shipping in Latvia (CBC area)	11
2.2.3 Current status of shipping in Sweden (CBC area).....	14
3 Future developments of shipping	17
3.1 Trans-European transport network (TEN-T).....	17
3.2 Future needs and use of shipping in Estonia	18
3.2.1 Changes in vessel size	20
3.2.2 Planned water traffic areas and small craft routes	20
3.3 Future needs and use of shipping in Latvia	20
3.3.1 Changes in vessel size	20
3.3.2 Reserved zones for shipping.....	21
3.4 Future needs and use of shipping in Sweden.....	22
3.4.1 Changes in vessel size	23
3.4.2 Changes in line with shipping routes.....	23
3.4.3 Reserved zones for shipping/planned water traffic areas/small craft routes ...	24
3.5 Potential spatial development in the CBC area	24
4 Potential conflicts and synergies between various sea uses and the shipping	26
4.1 Environment vs. Shipping	27
4.2 Shipping vs. Fisheries.....	28
4.3 Energy vs. Shipping.....	28
5 Transboundary issues	30
6 Planning evidence.....	32
6.1 Spatial maps and data	32
6.1.1 Spatial data and map layers of other sectors.....	34

6.2	Research proposals	34
	Appendixes.....	36
	CBC and SWBC shipping intensity map and data layers by HELCOM Secretariat.....	36

Introduction and recommendations

Marine transport is a support system used to utilise space for economic purposes. For the sake of the competitiveness of national and international cooperation, it is vital to provide the best possible, frequent international connections. The requirements of the shipping industry need to be balanced nationally and internationally in relation to other interests in respect of safety requirements, accessibility and environmental impact. Effective planning of shipping channels and routes and supporting infrastructure on land would help to reduce the burden on the environment and increase the volumes of cargo and passenger traffic.

Maritime professionals should be engaged in the MSP process at all levels to ensure that potential spatial changes and their consequences are fully understood and are taken into account when finding a solution, **as unanticipated consequences may lead to accidents, environmental damage or commercial losses.**

Recommendations

- It is important to ensure that safety at sea and navigation requirements are adequately addressed during preparation and planning.
- Depending on the scale of potential rerouting in and/or adjacent to existing ship routes (Traffic Separation Schemes (TSSs), two way routes, recommended route etc) shipping consequence analyses should be carried out.
- The assessment of the risk of major hazards should follow recognised risk assessment methods and take into account the risk due to ice conditions, e.g. the IALA risk management toolbox or the IMO adopted Formal Safety Assessment methodology (FSA)¹.
- Potential changes of international main routes (Deep water route T, transit traffic flow in connection with TSSs through the area) are necessary to carry out through IMO.
 - Governments intending to establish a new routeing system, or amend an existing one, must submit proposed routeing measures to IMO's Sub-Committee on Navigation, Communication and Search and Rescue (NCSR), which will then evaluate the proposal and make a recommendation regarding its adoption. The recommendation is then passed to the MSC for adoption.²
 - Marine spatial plans may not necessarily conform with IMO regulations but governments should work for alignment over time.
- Latvian “reserved zones for shipping” and Estonian “future water traffic areas and planned route of small ships” centre lines should be logically connected by forming a coherent approach on linear shipping routes connection.

¹ IMO 2016. Formal Safety Assessment

<http://www.imo.org/en/OurWork/Safety/SafetyTopics/Pages/FormalSafetyAssessment.aspx>

² IMO 2016. Ships Routeing

<http://www.imo.org/en/OurWork/Safety/Navigation/Pages/ShipsRouteing.aspx>

1 Background information

Basically, the shipping is free in marine space taking into account agreed international and national rules. Shipping rules are agreed and set by International Maritime Organization (IMO) and most of the agreed regulations are ratified and integrated into national laws by the states around the Baltic Sea.

International shipping conventions that has the **most direct influence to the Maritime Spatial Planning is the Convention on the International Regulations for Preventing Collisions at Sea (COLREG)**, 1972; the **International Convention for the Safety of Life at Sea (SOLAS)**, 1974, as amended and the **United Nations Convention on the Law of the Sea (UNCLOS)**.

UNCLOS defines states' rights and responsibilities, both in zones subject to coastal state sovereignty (territorial sea) and jurisdiction (EEZ) and in areas beyond national jurisdiction (the high seas). UNCLOS provides that all states are free to use the high seas with due regard for other states' interests. These freedoms include navigation, fishing, marine scientific research, the laying of undersea cables and pipelines, and the construction of artificial islands. UNCLOS also contains a general obligation for States to protect and preserve the marine environment. According to UNCLOS Article 60 in the EEZ the coastal State shall have the exclusive right to construct and to authorize and regulate the construction of artificial islands, installations, structures and safety zones. Those constructions and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.

Additionally, IMO has highlighted the Baltic Sea as a particularly sensitive marine area within which certain specific measures are to be taken, including traffic management and the stricter application of requirements in respect of discharges and equipment.

Other conventions like the *International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto and by the Protocol of 1997 (MARPOL)* or *International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004* are more covering the management issues of shipping as such and have less impact in dividing the marine space between different users and newcomers.

In the EU transport policy, importance is attached to the improved merger of the formerly nationally centred networks into a single EU network and to the external connections of the EU to other nations. Despite of the development of EU single network it is necessary to take into account the needs of country specific solutions and development.

Shipping, as a whole, could be divided into two subgroups that are having different navigational characteristic in the marine space:

- Small crafts shipping
- Large scale shipping

During thematic groups meetings was also under discussion the following distribution: 1) cargo traffic; 2) passenger traffic; 3) recreational small craft traffic; 4) fishing vessels traffic; 5) ports and harbours.

Shipping is directly linked to land – through ports and harbours, different economic activities (industries) taking place on land and socioeconomic aspects (population intensity). The ports are important locations for the forwarding of goods and passengers. For the transport sector to function optimally, the various modes of transport need to cooperate with each other. In order to improve the efficiency of the transport system, the interplay between shipping, road and rail transportation needs to be improved. This also means efficient planning on land.

Shipping requires marine space in the form of shipping lanes and direct vessel routes in the coastal and open sea. During the MSP process the requirements of the shipping industry need to be balanced nationally and internationally in respect of safety requirements, accessibility and environmental impact.

2 Analysis of the sector

2.1 Requirements for the shipping

Shipping requires marine space in the form of shipping channels and direct vessel routes for different types of shipping such as cargo and passenger traffic for different size of vessels, recreational shipping for small crafts and leisure sports (wind surf, motosport), trawl and coastal fishing. Dredging of channels and harbours is required for safe navigation to the ports having an important role of being hub between land and sea.

2.2 Current use of shipping

Efficient utilisation of marine space and connecting ports to other infrastructure is one of the main factors in improving Baltic Sea Region's international competitiveness, enabling it to participate in trade between Russia, Asia and Europe. One of the drivers of any country's development around the Baltic Sea is international freight transport.

To give an overview about the use of shipping in the CBC area there was carried out shipping intensity analyses by HELCOM Secretariat based on the distribution showed in the Table 1. Classification of shipping intensity analyses was developed during the shipping theme groups meeting in the BalticSCOPE project.

Table 1. Classification of shipping intensity analyses

	First stage years	Trend	Notes	Distribution
Passenger vessels traffic	2014	2006; 2009; 2012; 2014	IMO	
Cargo vessels	2014	2006; 2009; 2012; 2014	IMO	
Tankers	2014	2006; 2009; 2012; 2014	IMO	
Ship length based analyses (all ship types together) >	2013		IMO and non-IMO	<100 101-150 151-200 >201
Shipping during ice cover period	Extreme ice cover years, 3 years	Extreme ice cover years, 3 years	IMO	

The most intensive shipping is in the Swedish waters passing the island Gotland and heading to the Gulf of Finland. Shipping to the port of Riga plays also an important role by having heavy traffic in a context of CBC area (Figure 1).

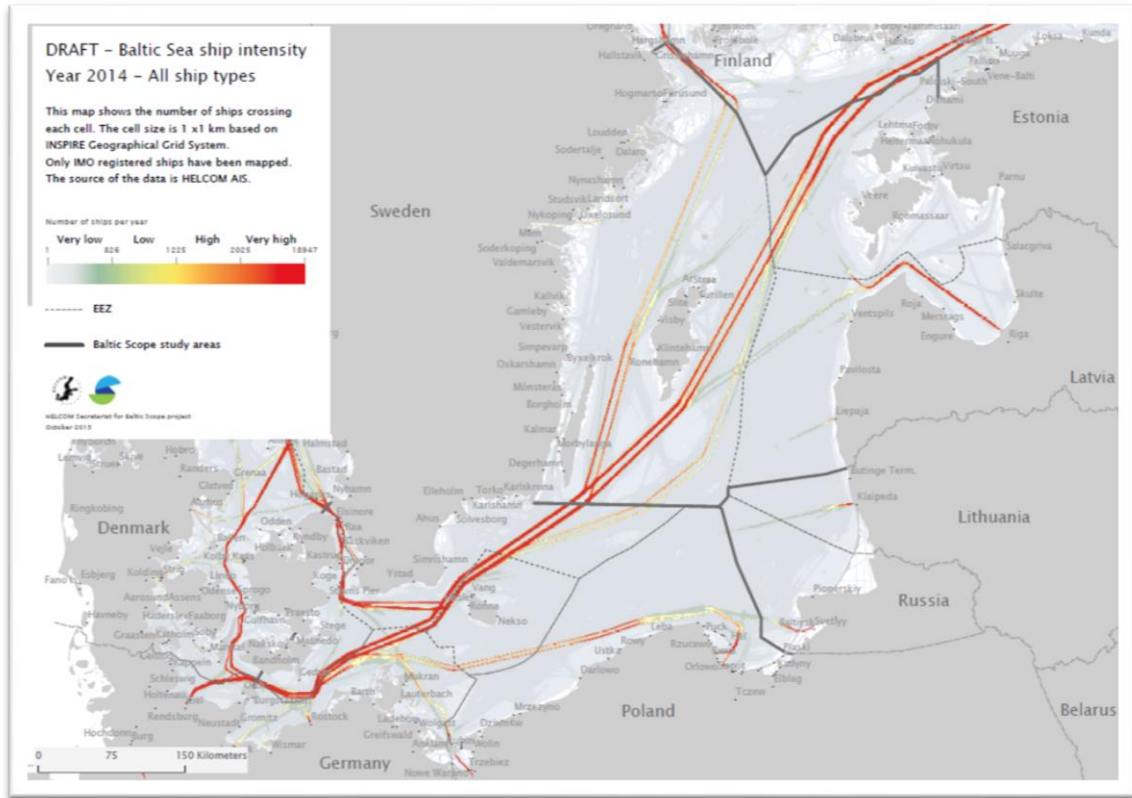


Figure 1. Current use of shipping in the SWB and CBC marine areas.³

Shipping use in the marine space is shown on the Figure 2 showing the most important aspects for shipping from the perspective of existing use and restrictions that may appear because of wrecks, dumping ground, military areas.

³ HELCOM Secretariat for Baltic Scope project. October 2015

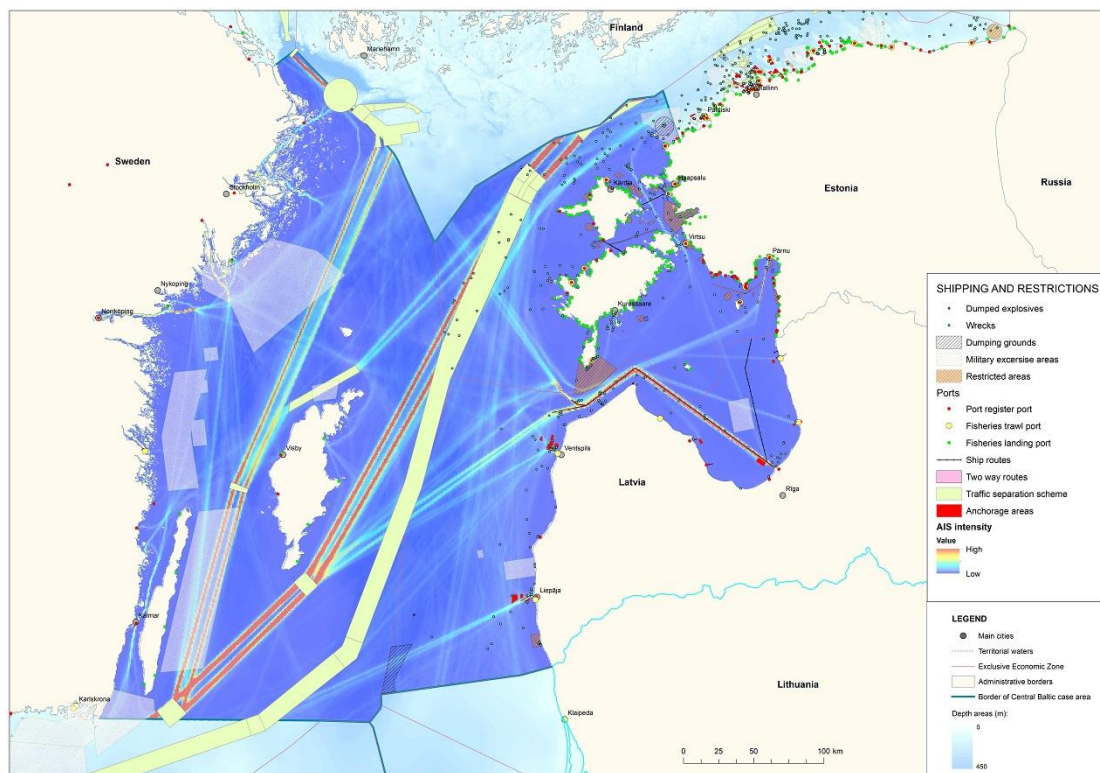


Figure 2. Shipping and restrictions of the CBC marine area. (Edited by Estonian Marine Institute, University of Tartu; Sources: SWE: SWAM and “© The Swedish Transport Agency; EST: Maritime Administration; LV: Ministry of Environmental protection and Regional Development and Maritime Administration of Latvia

2.2.1 Current status of shipping in Estonia (CBC area)

Two biggest ports of the CBC area are the Port of Pärnu and Saaremaa Harbour. In addition to international connections, regular and frequent ferry services between the islands and the mainland are extremely important.

Pärnu Port is located at the entrance of the River Pärnu and it is an important regional port in south-western and southern Estonia. The hinterland of Pärnu Port is comprised of the counties of Pärnu, Viljandi, Tartu, Põlva, Võru and Valga as well as Lääne and Järva counties. A significant part of the raw material resources (up to 45% of the forest resource and up to 65% of the peat resource) exported through the Estonian ports is located in the hinterland, along with the processing industry.⁴

The declared depth of the port is 6.0 metres and the smallest width 45 metres. The maximum length of the ship which is admitted in the port is 140 m and the width 45 m. The maximum

⁴ Hendrikson&Co, 2015. The county plan of the maritime area bordering Pärnu County, Volume II

draught of a ship in the basin of the port depends of the water level at the time and is determined by the port captain. Pärnu Port is visited by around 1,000 ships each year in addition to small crafts and the local small craft traffic. (Ibid.)

In winter Pärnu Bay usually freezes over. The average ice period is 2–3 months and an icebreaker is required to keep the port open. Ltd Pärnu Sadam is responsible for the ice-breaking in the port's basin. Ice-breaking on the public waterway is the responsibility of the Estonian Maritime Administration (<http://www.transcom.ee/>, 2013). The navigation season lasts year-round, but in winter limitations can be imposed on ships without a polar class. (Ibid.)

Saaremaa Harbour has 2 quays available for vessels accompanied by a quay for auxiliary vessels and a floating berth for small crafts. Saaremaa Harbour with the depth alongside the quay of 10 meters is capable of servicing ships with the length of up to 200 m. The natural depth of the harbour location is sufficient for receiving the biggest cruise ships sailing in the Baltic Sea. Due to its favourable geographical location on the north-western coast of the island, Saaremaa Harbour has the potential to host regional cruises and also to develop regular passenger lines between Scandinavia and Saaremaa Island.⁵ Saaremaa Harbour is stated as ice free harbour.

Additionally to the Saaremaa Harbour there are important ports that are providing regular connections to the mainland and surrounding island like the lines to Hiiumaa, Ruhnu, Abruca, Vilsandi.

The most important ports of Hiiumaa are the Heltermaa and Sõru that are offering regular connections to the mainland and Saaremaa. The most important ports serving fishing ships are Suursadam, Orjaku and Lehtma port. Ristna Yahting Pord, Ristna South Port and Sõru Port “Merekeskus” are in accordance of the rules of official small craft guest port.⁶

On the mainland there are also several important ports and lines that offer regular connections to the island, for example to Hiiumaa, Saaremaa, Vormsi, Kihnu, Manilaiu.

⁵ Port of Tallinn, 2015. Saaremaa Harbour. <http://www.portoftallinn.com/saaremaa-harbour> (04.12.2015)

⁶ OÜ Alkranel, Tallinna Tehnikaülikooli Meresüsteemide Instituut, OÜ Artes Terrae, 2012 – 2014 Hiiumaakonnaga piirneva mereala maakonnaplaneeringu keskkonnamõju strateegiline hindamine. Aruande eelnõu

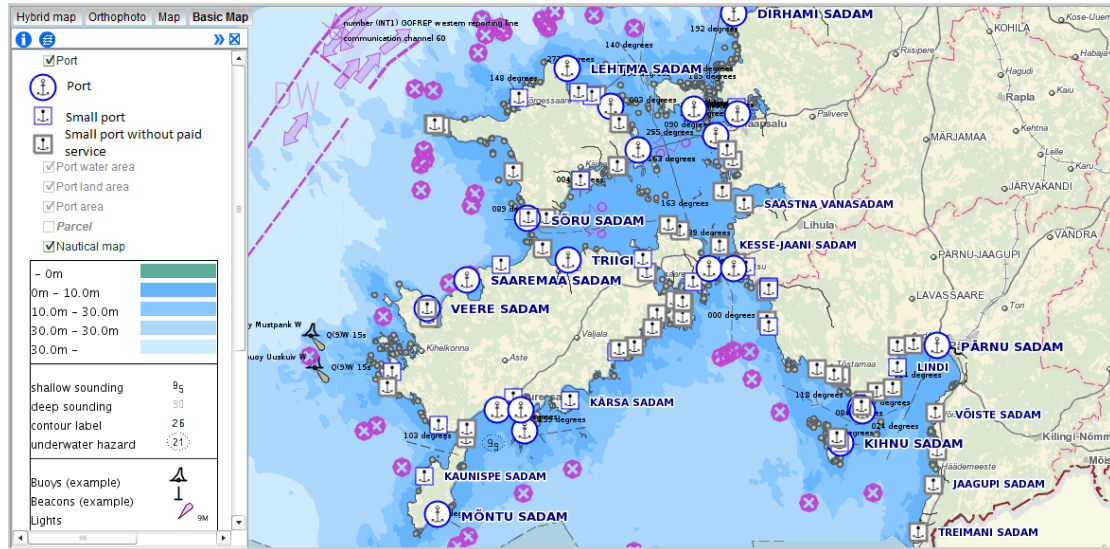


Figure 3. Estonian ports⁷

2.2.2 Current status of shipping in Latvia (CBC area)

There are three large (Riga, Ventspils, Liepaja) and seven small ports (Engure, Lielupe, Mērsrags, Pavilosta, Roja, Salacgrīva, Skulte) in Latvia (see fig.1). Large ports ensures services for ships and passengers, operations of cargo, transport and expeditions and other economic activities. Basic services in small port are fishing, fish processing, tourism, export and import of ecologically clean goods. In general cargo export is dominating over import in all ports of Latvia.

Commercial cargo is operated in Skulte, Mersrags, Salacgrīva and Roja ports, but ports of Engure, Pāvilosta and Lielupe are functioning only as a fishing and yacht ports.

⁷ Sadamaregister 2016. <http://www.sadamaregister.ee/SadamaKaart/DoGis>

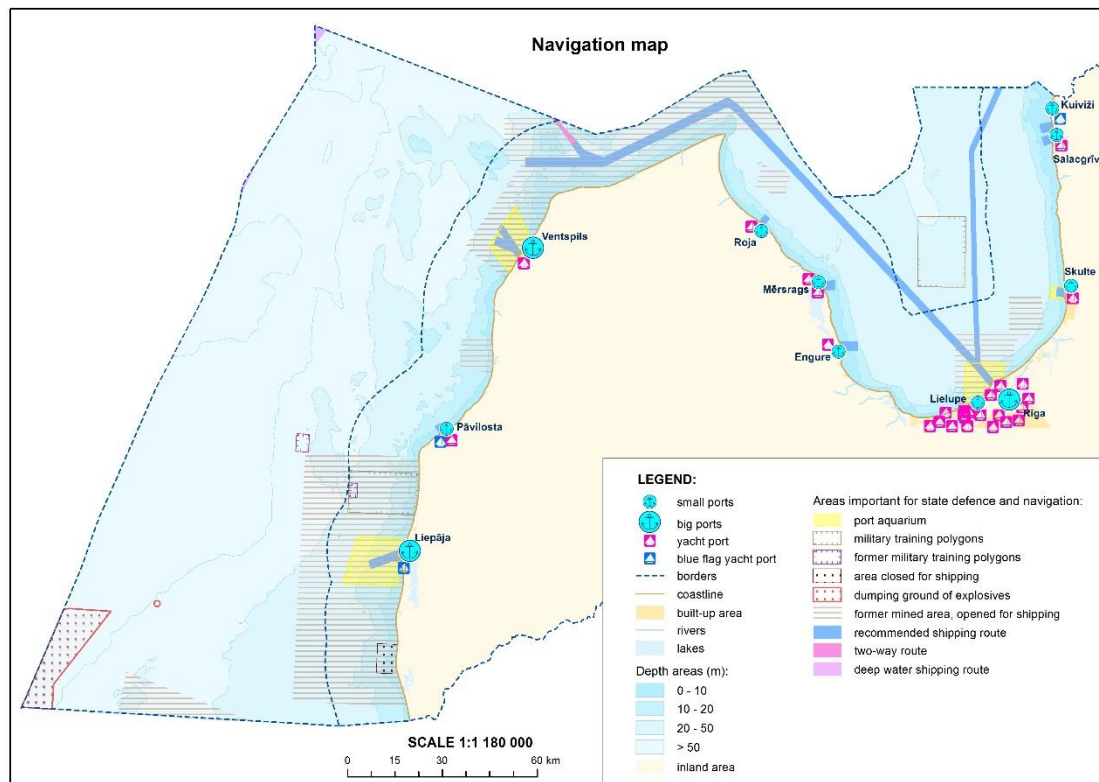


Figure 4. Ports and navigation in Latvia

Over the past twenty years, all ports in Latvia have shown growth, both in terms of sent and received cargo. The Port of Riga has shown the most stable growth in cargos. Stability is also showed by the total activity of small ports, whose contribution to the total cargo turnover in recent years has been around 2%. However cargo turnover has been more unstable in ports of Ventspils and Liepaja.

The total cargo turnover at Latvian ports increased by 5.2% in 2014 compared to 2013 (74,18 million tons instead of 70,48 million tons). More than half of the total Latvian ports cargos turnover – 41,08 million tons – were handled at the port of Riga, port of Ventspils followed with 26,21 million tons and port of Liepaja with 5,3 million tons.

The greatest turnover is composed by bulk cargos (35.85 million tons) of the followed by liquid cargo (26.53 million tons) and general cargo (11.79 million tons). Whereas, according to the types of cargos handled through Latvian ports in 2014, the largest volume is compiled of petroleum products (34.37%), followed by coal (28.9%) and other goods (including building materials, cement, crushed stone, etc.).

Latvian small ports together handled 2014 1,59 million tons of cargo that is by 12.8% more than in 2013, when it 1,41 million tons were handled.

However big ports vary in terms of handled types of cargo:

During the period from 2010 to 2014 **Port of Riga** reloaded cargo was dominated by the share of coal (~ 40%), followed by oil (~ 20%) and container cargo (~ 10%). Port of Riga is also operating in passenger traffic - since 2006, the ferry operator "Tallink" provides regular liner passenger traffic on the route Riga - Stockholm. However, amount of passengers in 2014 was almost 12% less than in 2013, resulting in almost 738 thousand passengers.

In **Port of Ventspils** dominant cargos are oil products and crude oil (~ 54%); carbon (~ 22%) and potassium (7%). Port of Ventspils is also running a number of cargo - passenger line, which offers passengers an opportunity to get a ferry to Germany (Travemunde) and Sweden (Nynashamn) - operated by the operator "Stena Line".

Turnover of cargos in **Liepaja Port** consist mainly of cereals and cereal products (~ 40%), timber (~ 12%), metals and metal products (~ 8%) and building materials (~ 8%). Liepaja Port also operates regular cargo - passenger ferry line operated by the ferry operator "Stena Line", providing regular links to Travemunde port in Germany.

Borders of ports are defined by Cabinet of Ministers under recommendation of the relevant municipality, the port authority and the national public railway infrastructure manager. They are also reflected in spatial plans of local municipalities.

Latvian port management system is designed by so called "landlord" principle. The land and water area of port are owned by the state and local government, which transfers it to the management to Port Authority. Main decision-making body of Port Authority is the Board of the port, and to ensure an equivalent interests of state and local governments board is composed of four representatives from the side of local municipality and four representatives of the side of government (sectoral ministries). Meanwhile, the Management Board of the small port shall establish by the council of respective municipality with composition of not more than 10 members, including four representatives of the Ministries.

In order to remain successful in international trade and transit business, ensure investment, industrial development and job creation, large ports have special arrangements with the status of tax incentives. Ports of Ventspils and Riga have free port status, but Liepaja port is part of the Liepaja Special Economic Zone. Until 31st December, 2035 that enables enterprises to conclude a contract for investment and to get tax incentives until they reach the aid intensity agreed.

Concerning shipping lanes – there are no shipping lines stipulated in national legislation. However, in order to ensure greater safety of navigation in the Baltic Sea, Latvia as HELCOM Member State have agreed on a systematic survey of the depth of the main shipping routes and port access roads. HELCOM ministers of environment approved the latest survey plan in 2013, committing to measure the Category I and II areas by 2030, with the most intensive movement of ships. Latvia has made a survey for the Category I area and is in the process of the measurement of Category II area (see Figure 5.). Survey is done by the Latvian Maritime Administration.

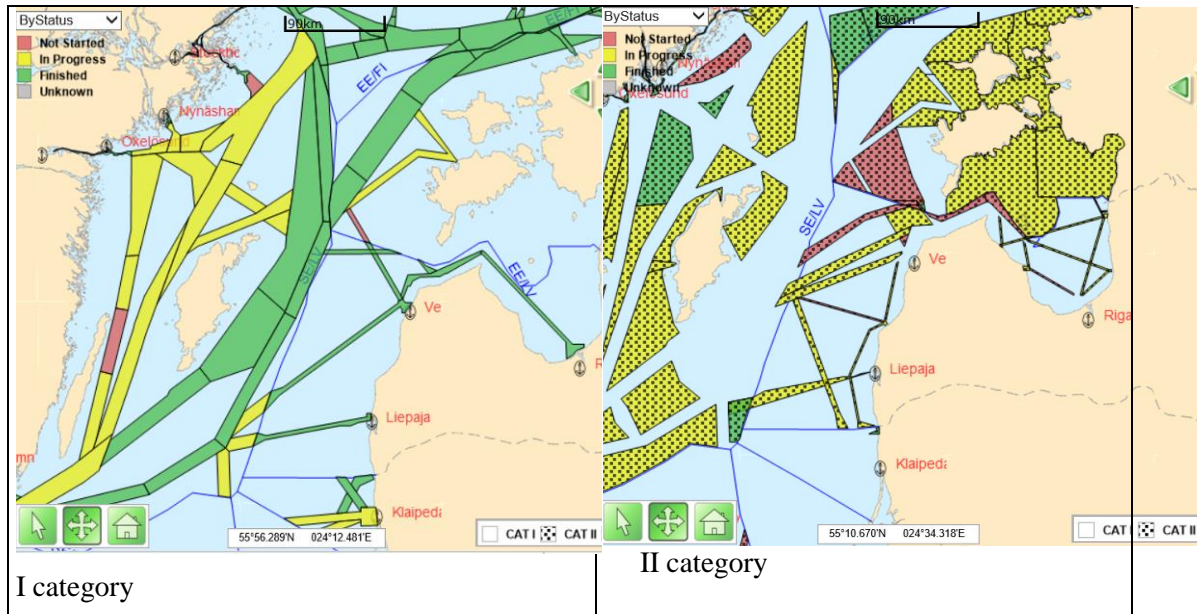


Figure 5. Current status of implementation of HELCOM measurement plan

2.2.3 Current status of shipping in Sweden (CBC area)

In the provision of external and internal connections, the role of harbours is important now and in the long term. The ports fulfil different functions within the transport system and this has affected their location and their specialisations in different types of goods. Swedish industry, for example, relies greatly on port operations and the location of the ports has been determined by the location of the industries that they serve.

Cargo transportation

Of cargo volumes, which in 2010 amounted to roughly 170 million tonnes, around four-fifths was transported by cargo ships; ferries accounted for the other one-fifth. Gothenburg is the only Swedish port of call for transoceanic container lines, while a significant proportion of the cargo is reloaded in any of the larger European ports onto or from smaller vessels. The flow of cargo to and from Sweden primarily concerns the major transoceanic ports in the North Sea and the English Channel, such as Antwerp, Rotterdam and Hamburg.

The shipping of goods overseas has increased in the last decade, while domestic transportation has remained relatively constant. In a normal year, domestic shipping only comprises about seven per cent of total shipping transports, calculated as a percentage of

goods. Petroleum products, minerals, and limestone and cement are the main goods transported.⁸

Passenger traffic

Passenger traffic is also of great importance, and there is a large number of international ferry links. A total of nearly 30 million passengers travel by sea every year. This is a couple of million more than travel by air in Sweden. Sweden has ferry links with Norway, Denmark, Germany, Poland, Lithuania, Latvia, Estonia, Russia and Finland. Cruise traffic in the Baltic Sea accounts for over two million passengers annually. (Ibid).

Ports

The ports in Sweden are important logistic hubs in the intermodal transport chains, both regionally, nationally and internationally. Major flows of goods are handled by ports in southern Sweden, western Sweden and the Stockholm area that are located near the major population centres. The ten largest ports account for about two-thirds of the goods turnover. The ports fulfil different functions within the transport system and this has affected their location and their specialisations in different types of goods. Swedish basic industry relies greatly on port operations; ports have been located close to industry, for example in Luleå. (Ibid.)

Major ports in the CBC area are following: Göteborgs Hamn, Stockholms Hamnar, Trelleborgs Hamn, Copenhagen Malmö Port, Luleå Hamn

Waterways and vessels

Sweden's waterway system is divided into four classes; it is primarily classes one and two that are used for commercial shipping. Classes three and four are used for smaller vessels and for recreational boat traffic. For all waterways there are restrictions regarding the size of vessels that may use them. They are marked in different ways and adapted to the type of traffic for which they are intended. Outside of the archipelagos, in addition to the shipping lanes, there are direct, unmarked routes connecting the lanes.

These direct routes change in the winter, since the vessels take the most accessible route with or without the assistance of icebreakers. In order to keep the sea routes open in the winter, commercial shipping is informed of the best routes based on satellite images, helicopter surveillance and information from other vessels. In extreme circumstances, traffic restrictions may have to be imposed due to thick ice and insufficient ice-breaking resources.

The number of vessels is nearing the limit that the shipping lanes can manage without being widened or deepened. Major investments have been made in recent years in the routes to Gothenburg, Malmö, Stockholm, Norrköping and Gävle. The sea routes to Luleå are being

⁸ The Swedish Agency for Marine and Water Management, 2014. Marine Spatial Planning – Current Status 2014. National planning in Sweden's territorial waters and exclusive economic zone (EEZ)

equipped for future needs with “Projekt Malmporten”. As part of the national infrastructure plan, preparations are under way to implement measures in the Södertälje canal and locks, as well as on the routes from Mälaren to Västerås and Köping. (Ibid)

3 Future developments of shipping

Developments within CBC shipping mean that vessels are getting longer and wider, but depth is limited by 17 meters by Danish straits. Under this paragraph will be given an overview about the trans-European transport network (TEN-T) because the spatial developments on mainland influence the spatial developments at sea. Secondly there will be given an overview about the future shipping needs and use by different countries aiming to find out common development directions and raised questions between pilot area countries.

3.1 Trans-European transport network (TEN-T)

The trans-European transport network (TEN-T) is a network which comprises roads, railway lines, inland waterways, inland and maritime ports, airports and rail-road terminals throughout the 28 Member States and therefore can be seen as main and strong functional implications to the Central Baltic Case study area.

The North Sea-Baltic Corridor (Figure 6) connects the ports of the Eastern shore of the Baltic Sea with the ports of the North Sea. The corridor will connect Finland with Estonia by ferry, provide modern road and rail transport links between the three Baltic States on the one hand and Poland, Germany, the Netherlands and Belgium on the other. Between the Odra River and German, Dutch and Flemish ports, it also includes inland waterways, such as the "Mittelland-Kanal". The most important project is "Rail Baltic", a European standard gauge railway between Tallinn, Riga, Kaunas and North-Eastern Poland.⁹

The Scandinavian-Mediterranean Corridor (Figure 6) is a crucial north-south axis for the European economy. Crossing the Baltic Sea from Finland to Sweden and passing through Germany, the Alps and Italy, it links the major urban centres and ports of Scandinavia and Northern Germany to continue to the industrialised high production centres of Southern Germany, Austria and Northern Italy further to the Italian ports and Valletta. The most important projects in this corridor are the fixed Fehmarnbelt crossing and Brenner base tunnel, including their access routes. It extends, across the sea, from Southern Italy and Sicily to Malta.¹⁰

⁹ European Commission, 2015. Mobility and Transport. Infrastructure - TEN-T - Connecting Europe. Corridors http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/index_en.htm (7.12.2015)

¹⁰ European Commission, 2015. Mobility and Transport. Infrastructure - TEN-T - Connecting Europe. Corridors http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/index_en.htm (7.12.2015)

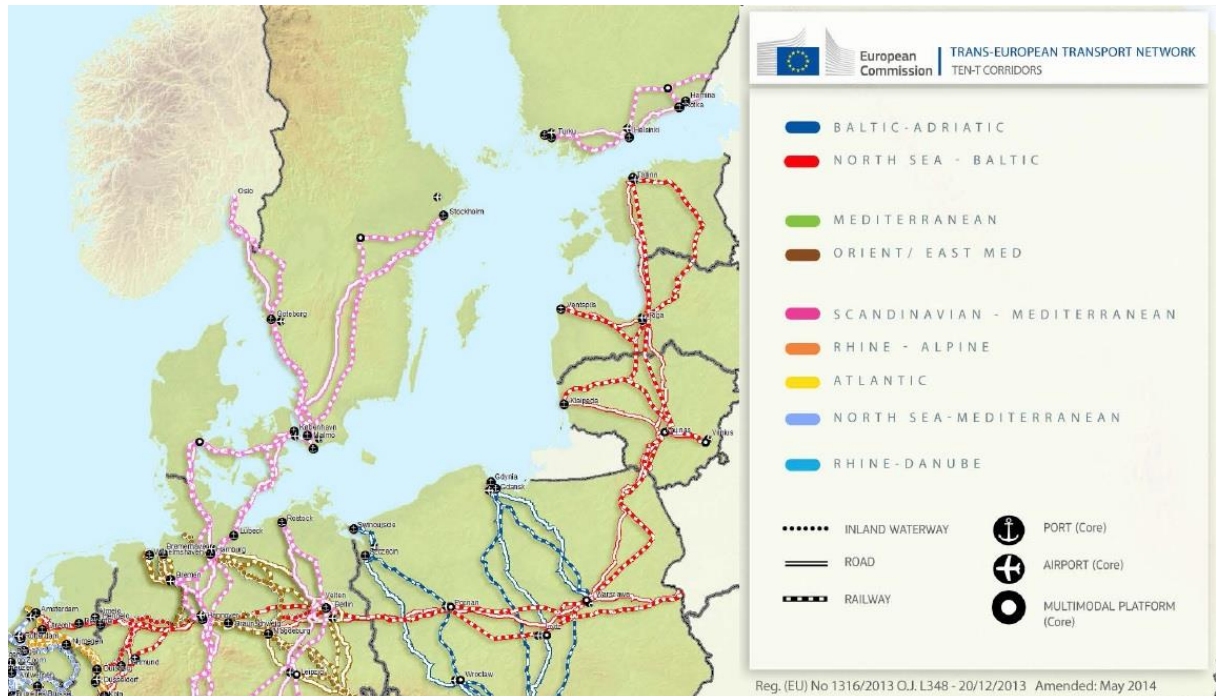


Figure 6. The overall TEN-T corridors¹¹

3.2 Future needs and use of shipping in Estonia

One of the main marine space related objectives of national spatial plan Estonia 2030+ is that “**Estonia is open to the sea**”. The network of passenger, freight and small ports – one of the key factors in terms of the international competitiveness of the nation – is operating productively and is well-linked to the rest of the infrastructure. The efficient and sustainable utilisation of marine areas is important for the nation. By means of appropriate plans, a reasonable balance has been struck between utilisation for leisure, tourism, the conservation of bodies of water, national defence and commercial activities.¹²

The backbone of Estonia’s transport network is provided by railway services of a significantly improved quality. In the provision of external and internal connections, the role of harbours and airfields is important as well (Ibid.)

¹¹ European Commission, 2015. Mobility and Transport. Infrastructure - TEN-T - Connecting Europe. Corridor maps. http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/maps_en.htm (7.12.2015)

¹² Estonian Ministry of Interior, 2012. National Spatial Plan “Estonia 2030+”

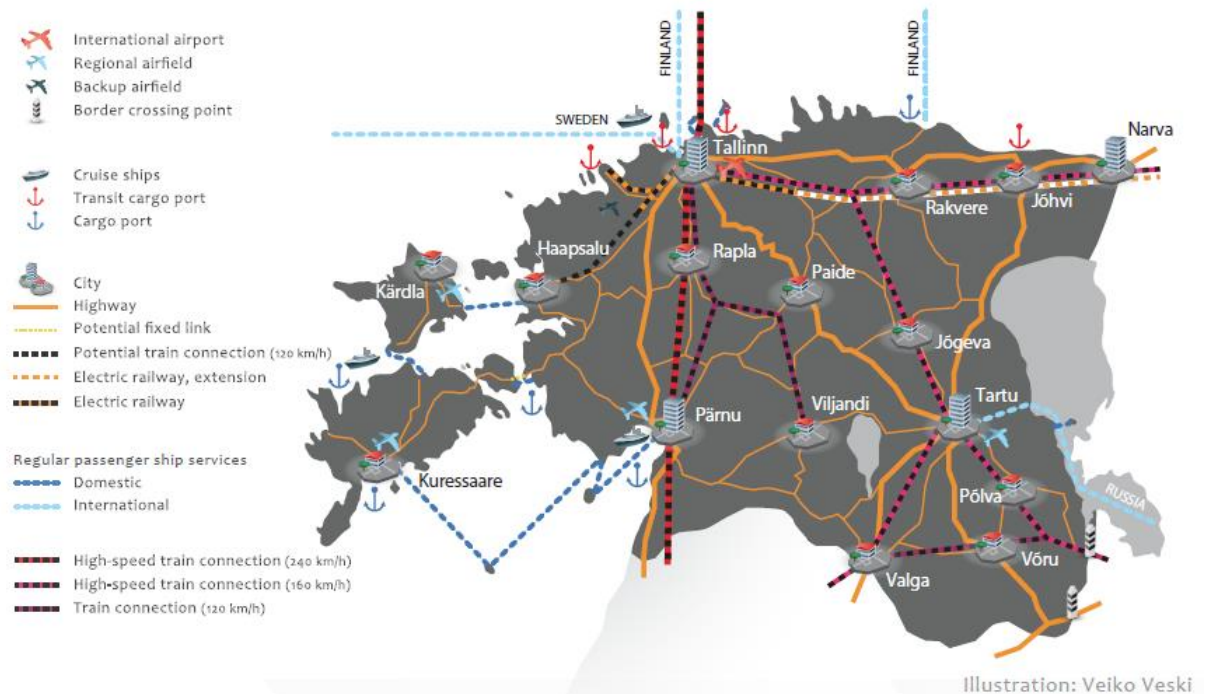


Figure 7. Basic structure of the transport network in Estonia in 2030. (Ibid.)

The development of international routes will improve the odds for the regions along them to receive investments, see economic growth and cooperate regionally. A number of harbours with a good export potential remain untouched by international transit flows. The harbours of Pärnu, Virtsu and Roomassaare could improve the competitiveness of the local economies and export or import goods important for those regions. Moreover, options could be considered for fully developing the freight transit potential of the Saaremaa harbour

On the example of Estonia – Saaremaa harbour and the port in Pärnu could become more of a start and/or ending point for sea cruises.

In addition to international connections, **national connections remain important as well.**

For example, regular, frequent ferry services between the islands and the mainland need to be preserved. It is important to continue to provide connections to small islands with permanent settlement.

On Estonia's coastline there is a **chain of small harbours** (including marinas) to link islands to the mainland and further direct links to foreign nations for tourism. According to the Conception of the Small Ports 2014 - 2020 the distance between small ports should be not more than 30 miles. Such a chain will help to ensure an economic base for the islands and coastal areas. Development of small harbours chain is important for the Estonian CBC study area and therefore chain of small harbours could also be explored cross-border issue.

3.2.1 Changes in vessel size

Due to the physical limitations of Estonian CBC area there isn't foreseen major changes in the vessel size.

3.2.2 Planned water traffic areas and small craft routes

Based on the Hiiu and Pärnu county maritime spatial planning process there has been planned two types of shipping routes:

- Planned water traffic areas focus to the large scale shipping (for example Pärnu port) and the width of planned water traffic area is 1 nm
- Small craft routes (up to 24 m length) planned width is 0.5 nm.

3.3 Future needs and use of shipping in Latvia

Forecasts of cargo turnover in Latvian ports is influenced by several external factors (such as legislation, difficult forecast of the economic and political factors, the increase in competition in the region, etc.), which may cause significant risks for growth of cargo volume.

However, ports of Riga and Liepaja forecasts attraction of new cargos, while the forecast of Port of Ventspils is more cautious and a significant increase in the cargos is not intended. Concerning small ports, growth of cargo turnover is predicted in all ports except Lielupe, where cargo handling there is not planned. In ports of Engure and Pāvilosta growth of transhipped cargos is planned by handling increase of caught fish.

Nevertheless – increase of shipping density is not expected, growth in cargos turnover is expected due to the increase of vessel capacity.

Latvian Maritime Administration will continue and finish survey on most frequently used ships routes in Latvian territorial waters (marked in HELCOM measurement plan as the first and second category of areas). These measurements are made because the existing bathymetry data are outdated in all Latvian marine waters (both EEA and territorial waters).

The most important are shipping routes, that are used for cargo and passenger ship fleets, those should be priority, as they do not have much options for manoeuvre and need a permanent depth. The same is with ships that carry dangerous goods – safe shipping conditions needs to be ensured. Small crafts and recreational ships are also important, but it is not so crucial to include in MSP, as their chances for manoeuvre are not so limited.

The main concern in the future is development of permanent buildings in the sea, such as offshore wind farms. To avoid conflicts between these two sectors, wide safety zone around intense and strategic shipping routes should be defined in MSP and conditions created, where any new building activity needs to be agreed with Maritime Administration of Latvia, to ensure that it is in line with shipping safety requirements.

3.3.1 Changes in vessel size

Nevertheless – increase of shipping density is not expected, growth in cargos turnover is expected due to the increase of vessel capacity. The limitation is maximum ship draught in

Danish straits– 17 meters and the maximum length of ship in 2030 is expected to be 400 meters.

3.3.2 Reserved zones for shipping

In the last meeting, draft criteria on **designation of reserved zones for shipping** were introduced. The criteria were prepared using knowledge from Germany and Netherlands and included two main groups – **intensity** (based on AIS data) and **strategic directions** (based on development plans of ports).

Proposed criteria for intensively used shipping routes on basis of AIS data was based on proposal from Marine Institute Netherlands (MARIN):

- If intensity is below 4400 ships per year, suggested width for a shipping route is 2 ship lengths (400m) x 2 (ships side to side). In case of Latvia this would be 1600 m.
- If intensity is above 4400 ships per year, suggested width for a shipping route is 2 ship lengths (400m) x 3 (ships side to side). In case of Latvia this would be 2400 m (1.296 nm).

If current intensity is taken into account, then suggested shipping route width within Latvian MSP is 1600 meters or aprox. 1 nm. Considering the time horizon for MSP - 2030 – and possible increase of shipping intensity, **proposed width of shipping route is 2400 m or aprox. 1.3 nm**. Whereas considering growing shipping intensity in strategic directions, where currently as low to medium intensity is stated, **proposed width for strategic directions is 1 nm**.

To avoid possible conflicts of shipping and permanent buildings in the sea, criteria for shipping safety zone was proposed:

- According to UNCLOS Art.60, **minimum distance of 500 meters** must be established to protect the artificial structure (e.g. wind farms). The 500 meter zone is for protection of the structure and is not meant as a safe distance for safe maneuvering according the COLREG.
- To ensure safe maneuvering, it was proposed¹³ to establish a safety zone between wind farms and shipping route **taking full round starboard as a basis** – 6 ship lengths (400m) + 0,3 nm + 500 m (safety zone mentioned above)= **2656 m or aprox. 1.44 nm**.
- **Minimum distance** between two wind parks, which are crossed by a shipping route **is 2 nm from both outer borders** of the shipping route¹⁴.

Nevertheless, the shipping sector did not wanted to agree on proposed criteria, in particularly mentioning the shipping freedom in EEZ stated by UNCLOS (and territorial waters, if not stated otherwise in national level) and recognizing themselves as most profitable sea use sector in Latvia. They also did not agree on using AIS data as one of most important criteria.

¹³ The Shipping Advisory Board North Sea and Ministry of Transport for the Netherlands

¹⁴ UK Safety of Navigation Committee and the Nautical and Offshore Renewables Energy Liaison (NOREL) Group

Maritime Administration of Latvia in collaboration with ports suggested following aspects for determination of zones reserved for shipping:

- Intense and strategically important shipping direction
- Safety of Shipping
- Shipping under ice conditions, when ships need to find route free from ice or to be able to perform maneuvers in order to avoid shipping in harsh ice conditions
- According to geographical condition – safe distance from sand banks
- According to MPA's – where neutral zones are established
- According to development programs and plans of ports – estimated growth on number of ships and cargo turnovers
- According to neighboring countries – width of corresponding lines match on border
- According to long-term observations on ship traffic and good maritime practice

As a compromise with the shipping sector, the main shipping zones are estimated to be **6 nautical miles wide (including safety zones of 2 nautical miles to both sides)**. Other shipping zones (including their safety zones) vary **from 4 nautical miles for strategic directions to 0.8 nautical miles for shipping directions of local significance**.

3.4 Future needs and use of shipping in Sweden

Vessel size and goods volume in Swedish ports have increased substantially in recent decades at the same time as the number of vessels has fallen. The shipping of goods overseas is expected to double by 2050.

The Swedish Transport Administration has produced a national plan regarding necessary means to meet with increased cargo volumes in shipping. The plan does not cover the full planning horizon and it does not contain any analyses of changes to maritime infrastructure. More strategic analyses are therefore needed in order to fully secure the sector's interests in the MSP. In general it is believed that ship traffic will increase with up to 400% globally and about 50% in the Baltic Sea until 2050. This could lead to the need for broader routes and more separation zones as condensed traffic leads to reduced safety. However, with increased automatizing it may also become easier and safer to navigate over time, which could lead to reduced distances between ships and lower spatial claims in the future. Moreover, global trade patterns could change until 2050 and long distance shipping may diminish. It is nonetheless agreed that it is the most reasonable to assume increased spatial requirements over time. From the Swedish perspective, the goal is to increase the proportion of goods transported on sea and to increase the number of ships in Swedish ports. **The basic assumption for Swedish marine spatial planning is that the shipping sector will require *at least as much* marine space in the future as now.**

The importance of different harbours may change over time. However, because Sweden export low value goods it is still likely that there will be need for multiple small ports along the coast, reducing the need for land transports of heavy low value goods. In the winter, northern parts of the Baltic Sea have ice coverage which significantly reduces the spatial options for ship movements. Wintertime the ice-free routes are few and will remain very important although their stretch can be slightly adjusted.

In Sweden, the government has expressed political will to increase coastal and inland shipping. International shipping will still be most important and Swedish waters are also by all means a transit route for foreign fleet shipping between other countries. Therefore, spatial regulation of shipping is difficult and may only place either through IMO (routes, areas to be avoided) or by the construction of obstacles such as energy installations. Today, there are no standards for safety distance to wind farms in place.

As a result of the Freedom of the Seas ships have no obligation to navigate according to routes. Routes are basically mirrors of the closest path between important harbors and it is important to consider that (a) ships may not follow routes or AIS patterns and (b) the optimal route may differ among different types of ships. However, shipping is also a very flexible sector that can adapt to spatial limitations although at the costs of economic efficiency, environmental performance and potentially safety. With Sea Traffic Management shipping may become much more efficient and possibly this trend can facilitate for future shipping to consider 'soft' regulations such as avoiding environmentally sensitive areas without IMO regulations.

3.4.1 Changes in vessel size

The average size of ships is believed to increase with time. But the maximum size is not believed to increase much. This is because the inlets in the Baltic are not deep enough for larger ships. This is unless heavy dredging takes place in Denmark, potentially co-funded by Baltic Sea states.

3.4.2 Changes in line with shipping routes

The three Baltic Sea offshore banks Södra midsjöbanken, Norra midsjöbanken and Hobourgs bank located south of Gotland and Öland have particularly high ecological values. The shallow banks are used as wintering grounds for the endangered populations of long-tailed duck and other water fowl. The banks and surrounding waters are also important reproduction areas for the severely endangered Baltic harbor porpoise.

The ship traffic is very intense in the area with several ships crossing per hour. The main container ship route passes Norra midsjöbanken and just north of the Hobourgs bank while the deep route passes by Södra midsjöbanken. Over the last decades it has been noted that the ship traffic causes small but frequent oil spills (propeller leakage as well as illegal spills). The oil attaches to bird feathers and causes thousands of mortalities per year. The bird carcasses are found on southern Gotland where they tend to fly after having been exposed, the observed birds may only be a fraction of the full mortality. The Swedish coast guard have intensified surveys in the area and the number of spills and bird casualties have declined over the last decade but are still in the number of thousands per year. Although illegal spills may be reduced through surveillance the continuous leaks are unlikely to reduce by other means than moving the traffic from the most sensitive areas until ship standards fully prohibit leakage of oil. Winter is far most sensitive time as the endangered birds only utilize the banks during winter time.

During summer, harbor porpoises may be disturbed by the intense ship traffic as they utilize the area for reproduction and nursing from May through September. However, the effects of

ship noise and sonar on marine mammals such as harbor porpoises are not yet well established and may therefore not be a strong reason to take action.

With regards to the bird fatalities it may be necessary to facilitate the reduction of ship passage through the most sensitive areas within the Swedish MSP. The MSP cannot prohibit ship movements but can guide ships to take a parallel or adjusted route. In the long term there are several approaches to be taken including to expand the existing small Area to be avoided at Hobourgs bank or to alter the TSS and move ships further from the banks. Such adjustments imply proposals within IMO. Any step taken requires thorough consequence analyses and collaboration among Baltic Sea countries, flag states frequenting the area as well as national authorities. The neighboring countries play a key role because much of the potentially affected ship traffic are destined for ports in the eastern Baltic Sea.

Within the Swedish MSP actions are now taken to further investigate the ecological impact of the ship routes and the potential consequences of action. In the first drafts of Swedish MSP the area around the banks will likely be treated as a case for further investigation (utredningsområde).

3.4.3 Reserved zones for shipping/planned water traffic areas/small craft routes

Sweden

There is currently no thorough standard for representing the shipping spatial interest in the MSP. Areas of national interest for shipping (riksintresse för sjöfart) are appointed by the Swedish Transport Administration based on vessel movements and strategic considerations. These national interests for shipping will be the major input to the Swedish MSP with regards to the shipping sector. In addition, the Swedish Transport Administration are currently developing complementing maps indicating additional spatial interests of the shipping sector. This work have the purpose of contribution to the MSP process and will be finalized during 2016.

3.5 Potential spatial development in the CBC area

In line with planning the marine space countries are having their national approach that differs by countries. Below is shown the potential spatial development of shipping routes. Estonia has the approach by having planned water traffic areas focusing to the large scale shipping (for example Pärnu port) and the width of planned water traffic area is 1 nm. Small craft routes (up to 24 m length) planned width is 0.5 nm.

Regarding to the developments in Latvia the main shipping zones are estimated to be **6 nautical miles wide (including safety zones of 2 nautical miles to both sides)**. Other shipping zones (including their safety zones) vary **from 4 nautical miles for strategic directions to 0.8 nautical miles for shipping directions of local significance**.

There is currently no thorough standard for representing the shipping spatial interest in the MSP. Areas of national interest for shipping (riksintresse för sjöfart) are appointed by the Swedish Transport Administration based on vessel movements and strategic considerations.

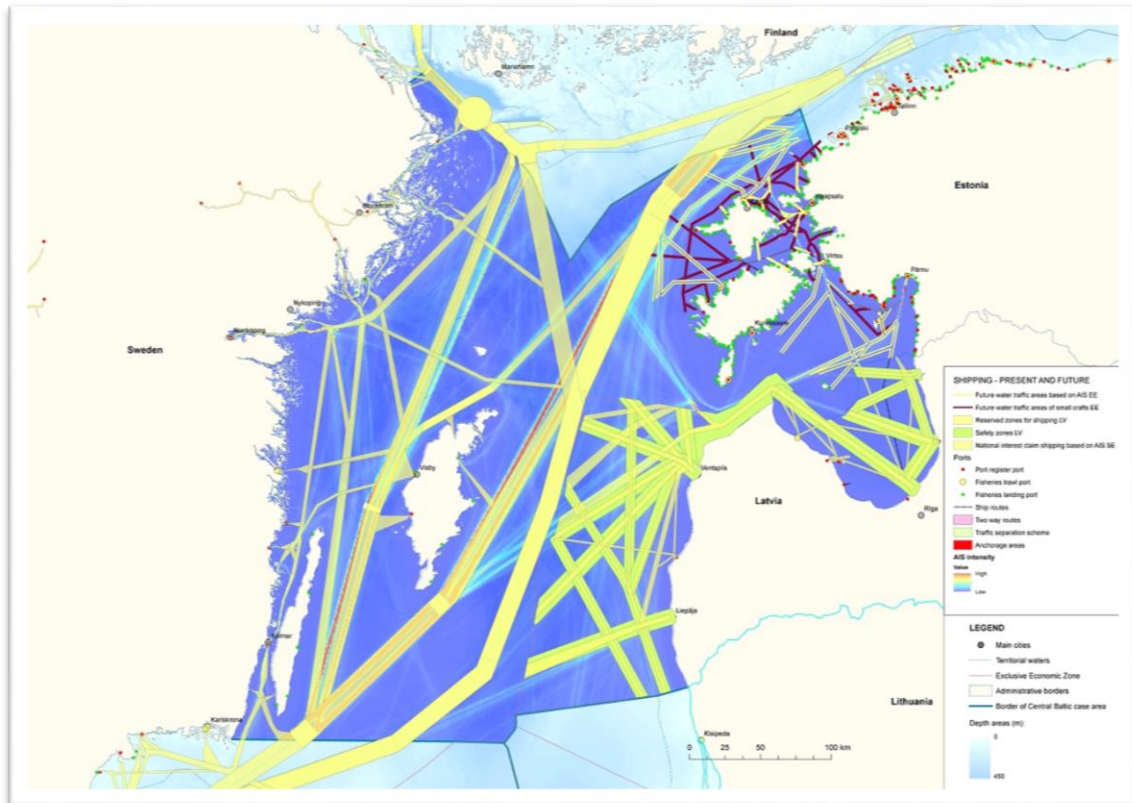


Figure 8. Future development of shipping in the CBC area. (Edited by Estonian Marine Institute, University of Tartu; Sources: SWE: SWAM and “© The Swedish Transport Agency; EST: Maritime Administration; LV: Ministry of Environmental Protection and Regional development and Maritime Administration of Latvia)

4 Potential conflicts and synergies between various sea uses and the shipping

Considering the planning context maritime sector has not experienced any spatial conflicts with other interests today. During the BalticSCOPE second thematic meeting were identified and mapped the potential synergies and conflicts between shipping and other uses (Table 2).

Table 2. Synergies & Conflicts between shipping and other sectors in the use of maritime space – CBC

	Synergies	Conflicts
Cross-border / cross-sector	Environment – Shipping	Environment – Shipping
	Maritime safety	Intensively used shipping routes have negative impacts (disturbance, oil spills) on marine ecosystems, especially on areas of high ecological value Rerouting of shipping (e.g. Midsjl banks) Spills of hazardous substances
	Shipping - Fisheries	Shipping –Fisheries
	Co-existence in marine space	Shipping noise Pollution / Damage of fish habitats Limitation of fishing with passive fishing gears on shipping routes
	Energy – Shipping	Energy – Shipping
	Common use of ports and services Use of service ships for Energy installations OWF as navigational signs Co-existence of ships and cables	OWF restrict space for shipping activities OS Wave can restrict additional space for shipping activities
National /	Energy –Shipping	Energy – Shipping

cross-sector	Multi-use port infrastructure Service vessels for energy Co-existence with the cables	Cables may restrict shipping routes in shore areas OWF can have negative impact on shipping safety and rescue operations
	Shipping- Fisheries	
	Multi-use of ports	

4.1 Environment vs. Shipping¹⁵

Synergies

The most clear-cut synergy identified between the environment and shipping sectors is maritime safety and maritime safety related developments. Insufficient space planned for the shipping operations comes along with high risks from the maritime safety perspective. Potential accidents caused for this reason, can have deep transboundary consequences to the environment (e.g. oil spills). Therefore it is a synergy for both environment and shipping sectors to elevate the priority of maritime safety during planning processes.

Conflicts

Intensively used shipping routes can have negative impacts (disturbance, oil spills etc.) on areas of high ecological value and this has emerged as a major concern in Sweden (e.g. midsjöbankarna Central Baltic banks). As a potential solution, alternation of shipping routes in ecologically sensitive areas will be considered. This further entails an environmental conflict related to fuel consumptions since rerouting involves an increase in the travel distances, and potentially higher costs and CO2 emissions (this cost can be partly reduced by using the deep water route which reduces friction).

If rerouting is not possible other managerial suggestions could be given by other means than planning.

Solutions

A common Baltic map on areas of high ecological value was argued as being essential for planning the shipping routes, which can in turn, minimise the impacts caused by shipping accidents and oil spills. Additionally, the contingency plans must take into account the

¹⁵ BalticSCOPE 2016. Alberto Giacometti (Nordregio) with contributions provided by project partners from Latvia, Estonia and Sweden. Synergies & conflicts identified during the bilateral discussions between the four sectors (environment, energy, fisheries and shipping) - Central Baltic Case

ecologically sensitive areas in targeting the actions and allocation of the technique for rescue operations .

A more concrete solution was the suggestion to reroute shipping around the (midsjöbankarna) Central Baltic banks. Larger changes to routes must be taken through IMO and several focus areas are of transboundary relevance. If routes need to be altered or adjusted this requires a long term strategic work together with both neighbouring countries and other flag states. Since rerouting and other restrictions for shipping activities are conflictive to the sector's interests, a cost-benefit analysis is to be done in order to find out what would be the actual environmental benefit achieved by the relocation as well as the possible consequences to other sectors.

4.2 Shipping vs. Fisheries¹⁶

Synergies

The main synergy among shipping and fisheries sectors is that they generally co-exist in marine space, except in some cases where trawl fishing is restricted for safety measures. Multiuse of ports is another synergy between these sectors; however this is rather a matter of national interest.

Conflicts

Negative impacts of shipping (noise, pollution) to the fisheries (Essential Fish Habitats, spawning and nursery areas) were the main conflicts spotted during the bilateral dialogue.

Solutions

Relocating shipping routes was one of the solutions suggested to minimise the impact of noise and pollution. Other possible measures such as speed limits and passage limitations were pointed out. Yet, some of these measures go beyond the mandate of MSP and thus require coordination with other management mechanisms.

4.3 Energy vs. Shipping¹⁷

Synergies

¹⁶ BalticSCOPE 2016. Alberto Giacometti (Nordregio) with contributions provided by project partners from Latvia, Estonia and Sweden. Synergies & conflicts identified during the bilateral discussions between the four sectors (environment, energy, fisheries and shipping) - Central Baltic Case

¹⁷ BalticSCOPE 2016. Alberto Giacometti (Nordregio) with contributions provided by project partners from Latvia, Estonia and Sweden. Synergies & conflicts identified during the bilateral discussions between the four sectors (environment, energy, fisheries and shipping) - Central Baltic Case

Some of the synergies identified between these two sectors are of transboundary interest and others of national interest only. Those of national interest are for instance, the use of common ports and service as well as the use of service vessels for the maintenance and regular control of OWF and other infrastructures of the energy sector. A synergy with a more transboundary focus is for instance, the use of OWF as navigational signs . Since that is a matter of shipping safety is also a synergy with all other sectors. Finally, another synergy is the co-existence between ships and power-cables, except for coastal regions.

Conflicts

The energy sector competes for maritime space with the shipping sector with the installation of permanent infrastructures, namely OWF, and potentially in the future with wave energy. OWF may restrict shipping operations. In case this affects international shipping routes, then this represents a conflict of transboundary interest. To find out which areas have a transboundary or national interest, location specific analyses are required. However, areas with no shipping interests do not represent a conflict. Moreover, power-cables may require additional restrictions for shipping in coastal areas, however this is mainly an issue of national relevance.

Solutions

Conflicts between these two sectors can be solved by a closer and timely exchange of information and plans. However, negotiations/trade-offs and political strategical decisions may also be necessary.

5 Transboundary issues

Shipping lines know no boundaries. Traffic on marine areas is almost always cross-border. In addition, transboundary shipping lines might have impacts with permanent structures built on the other side of the border and also with different environmental restrictions.

Intensive shipping areas, especially on cross-border areas, must be planned carefully, in order to avoid ship collisions (traffic separation schemes) and potential environmental impacts (competition with MPAs).

Based on countries national consultations there can be referred the following transboundary issues that would need further cross-border discussion during planning process:

- Reserved zones for shipping and agreement on the connection on the border. In Latvia there has made proposal for a compromise with the shipping sector, the main shipping zones are estimated to be **6 nautical miles wide (including safety zones of 2 nautical miles to both sides)**. Other shipping zones vary **from 4 nautical miles for strategic directions to 0.8 nautical miles for shipping directions of local significance**. Estonia has the approach by having planned water traffic areas focusing to the large scale shipping (for example Pärnu port) and the width of planned water traffic area is 1 nm. Small craft routes (up to 24 m length) planned width is 0.5 nm. Sweden has no standards for representing the spatial interest of the shipping sector but will propose zones based on existing national interests and additional analysis.
- Safe zoning to protect the artificial structure (e.g. windfarms) and the need for development/implementation of the risk assessment and risk management plans (important to take into account the ice conditions).
- During the planning process should be discussed shipping routes planning approach in different countries
- Recreational small craft traffic routes and their cross-border connection and planning – titled as well connected small craft routes in the CBC region
- The three Baltic Sea offshore banks Södra midsjöbanken, Norra midsjöbanken and Hobourgs bank located south of Gotland and Öland have particularly high ecological values. With regards to the bird fatalities it may be necessary to facilitate the reduction of ship passage through the most sensitive areas within the Swedish MSP. The MSP cannot prohibit ship movements but can guide ships to take a parallel or adjusted route. In the long term there are several approaches to be taken including to expand the existing small Area to be avoided at Hobourgs bank or to alter the TSS and move ships further from the banks. Such adjustments imply proposals within IMO. Any step taken requires thorough consequence analyses and collaboration among Baltic Sea countries, flag states frequenting the area as well as national authorities. The neighboring countries play a key role because much of the potentially affected ship traffic are destined for ports in the eastern Baltic Sea.

6 Planning evidence

Firstly it is important to clarify and agree the meaning of planning evidence. In the context of MSP the planning evidence could be seen in the available maps and data describing the present situation of shipping in marine space and its' functional connections to the land. Additionally, it should focus on the available or needed research and should point out the political and strategical objectives of shipping sector.

Planning evidence could be described as the facts, aggregated data, and other information necessary to make planning decisions. These must be scientifically or cognitively proved.

6.1 Spatial maps and data

Since autumn 2015 there has been collected the range of various spatial data focusing mainly on the present use of shipping and its restrictions. Additionally has been gathered spatial data of potential future developments in line with shipping. There has been carried out first attempts to analyse the availability and differences between spatial data of shipping

Table 3. List of shipping layers




Exists
 Don't exist/not specified
 Not available

Name of the layer	Estonia	Latvia	Sweden
HELCOM Secretariat AIS maps			
Existing ship routes (areas/polygon) based on navigational charts			
Traffic separation scheme			
Deep water route			
Two-way route			
Anchorage area		also anchorage point	
Yachting area			
Ports (during the planning process proposal to add pie chart on a map)			
Military exercise areas			
Dumping ground		also dumped explosives (point)	
Restricted areas			Probably don't exist

Protected areas where navigation is forbidden			
Wrecks			
Underwater cultural heritage	Data request sent		Not considered as relevant for shipping
Major road			necessary to include if available
Major railroads			necessary to include if available
Ice Road routes/areas			
Bridge			
Former mined area, open for shipping			

As different CBC countries are in different stage of planning there are also available map layers describing the indicative future developments (Table 4).

Table 4. Indicative map layers to describe the future use of transport that will be added to the existing use

 Exists
  Don't exist/not specified
  Not available

Name of the layer	Estonia	Latvia	Sweden
Planned water traffic areas/ reserved zones for shipping			
Shipping safety zones			
Planned route of small crafts		not specified	Missing
Planned ports – ports under development	NA	NA	NA

To mirror the existing use of shipping in the CBC area there was carried out shipping intensity analyse by HELCOM Secretariat based on the distribution showed in the Table 5. Classification of shipping intensity analyses was developed during the shipping theme groups meeting in the BalticSCOPE project.

Table 5. Classification of shipping intensity analyses

	First stage years	Trend	Notes	Distribution
Passenger vessels traffic	2014	2006; 2009; 2012; 2014	IMO	
Cargo vessels	2014	2006; 2009; 2012; 2014	IMO	
Tankers	2014	2006; 2009; 2012; 2014	IMO	
Ship length based analyses (all ship types together) >	2013		IMO and non-IMO	<100 101-150 151-200 >201
Shipping during ice cover period	Extreme ice cover years, 3 years	Extreme ice cover years, 3 years	IMO	

Based on the classification and spatial intensity analyses is possible to analyse spatial changes of shipping in time, in size, in ice conditions and also between different types of shipping. All files are provided as ArcGIS shp. format enabling further spatial analyses carried out by the planners (for example standard deviation, changes between normal and ice conditions etc). Views of the results are available in the appendices.

6.1.1 *Spatial data and map layers of other sectors*

During thematic meetings was discussed adding of other sectors map layers that could be integrated into solution phase. Potential list of layers is as following, but in co-operation with other expert groups will be decided on exact list of overlapping layers:

- Windmill parks;
- Fishfarms;
- Underwater energy installations;
- Protected areas;
- Ecologically sensitive areas;
- Military exercise areas

Last meeting have been discussed the need to add additional layers from the perspective of shipping and these layers could be the layers of main roads and railways and underwater cultural heritage if available.

6.2 Research proposals

During the national meetings have been mapped the ideas in line with necessary research for MSP as following:

- Socio-economic research that would mirror the shipping importance in the marine space
- Feasibility studies about the risk assessment and risk management plans based on the shipping safety and security and other new sea uses (for example windmill parks, underwater energy etc versus safe and secure shipping).
- Planned dredging regions and dredging recurrence
- Research about small crafts actual routes of the use to find out the most frequent small crafts sailing areas.
- Analyse of existing dumping grounds and their possible reallocation in Estonian waters
- Within the Swedish MSP actions are now taken to further investigate the ecological impact of the ship routes and the potential consequences of action in line with offshore banks Södra midsjöbanken, Norra midsjöbanken and Hobourgs bank located south of Gotland and Öland. In the first drafts of Swedish MSP the area around the banks will likely be treated as a case for further investigation (utredningsområde).

Appendixes

CBC and SWBC shipping intensity map and data layers by HELCOM Secretariat

