

# Safety of Navigation and Spatial Planning at Sea

**J. Hajduk**

*Maritime University of Szczecin, Szczecin, Poland*

**ABSTRACT:** Until recently the concept of spatial planning concerned only land areas, chaos prevailing at sea in this scope. Vessel routes were selected by the Master on the principle of “freedom of navigation”. It was similar with the submarine routes of pipelines and cables, wind farm construction zones, excavation of aggregates, or the conduct of any human activity at sea.

A systemic approach is introduced and preferred currently, which is to take into consideration the natural conditions and human achievements on one hand, and look ahead on the other, systematising procedural activities and minimising possible conflicts of interests among potential users of the sea.

## 1 INTRODUCTION

Marine navigation has been practised by man for ages. In particular phases of civilisation’s development more and more new forms of human activity at sea have appeared. Fishery, the conduct of submarine cables and pipelines, excavation of natural resources from under the sea bottom, last but not least the construction of artificial islands and wind farms are only the chief activities conducted currently by man at sea.

The undertaking of new initiatives at sea by man and increasing their scope makes it necessary to order them in long-term perspective lest their mutual interaction should cause conflicts. This pertains both to marine shipping and to other forms of man’s economic activity on a micro-scale understood as a coastal state and on a macro scale understood as influence on neighbouring states and transit shipping. The priority is safety and marine environment protection.

Recently, as part of working out a marine policy, the European Union has, among other things, laid stress on spatial planning at sea. According to Blue Book (EU 2007) „increasing competition for marine space and the cumulative impact of human activities on marine ecosystems render the current fragmented decision-making in maritime affairs inadequate, and demand a more collaborative and integrated approach. For too long policies on, for instance, maritime transport, fisheries, energy, surveillance and policing of the seas, tourism, the marine environment, and marine research have developed on sepa-

rate tracks, at times leading to inefficiencies, incoherencies and conflicts of use.

Based on this recognition, the Commission's vision is for an integrated maritime policy that covers all aspects of our relationship with the oceans and seas. This innovative and holistic approach will provide a coherent policy framework that will allow for the optimal development of all sea-related activities in a sustainable manner”.

An integrated governance framework for maritime affairs requires horizontal planning tools that cut across sea-related sectoral policies and support joined up policy making. The following three are of major importance: maritime surveillance which is critical for the safe and secure use of marine space; maritime spatial planning which is a key planning tool for sustainable decision-making; and a comprehensive and accessible source of data and information.

According to the Blue Book (EU 2007) a Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU has recently been accepted (EU 2008). According to the records of this plan: Maritime Spatial Planning is a key instrument for the Integrated Maritime Policy for the EU. It helps public authorities and stakeholders to coordinate their action and optimises the use of marine space to benefit economic development and the marine environment. This Communication aims to facilitate the development of Maritime Spatial Planning by Member States and encourage its implementation at national and EU level. It sets out key principles for Maritime Spatial Planning and

seeks, by way of debate, to encourage the development of a common approach among Member States.

Particular European countries have so far reached different degrees of progress in the scope of spatial planning at sea. New organisational solutions are implemented and the related documents are temporarily of “proposition” status and are passing through the stage of domestic and international agreements (EU 2008).

## 2 DRAFT SPATIAL PLANNING IN THE GERMAN EXCLUSIVE ECONOMIC ZONE (EEZ)

The proposal put forward by Germany in June 2008 (BSH 2008) takes account of the following forms of human activity at sea:

- shipping,
- exploitation of non-living resources,
- pipelines and submarine cables,
- marine scientific research,
- energy production, wind energy in particular,
- fisheries and mariculture,
- protection of the marine environment

For shipping, on the other hand, the following chief objectives and principles have been set down (BSH 2008):

- 1 Shipping is granted priority over the other spatially significant uses in the priority areas for shipping as indicated in the map (Figures 1&2). To the extent spatially significant planning, measures and projects are not compatible with the function of the shipping priority area in these areas they are not permitted.
- 2 Special consideration is given to shipping in the reservation areas for shipping as indicated in the map. This needs to be taken into account in a comparative evaluation with other spatially significant planning tasks, measures and projects.
- 3 Pollution of the marine environment by shipping shall be reduced.

Besides applicable regulations of IMO, the "best environmental practice" according to the OSPAR (The Convention for the Protection of the Marine Environment of the North-East Atlantic) and HELCOM (The Convention on the Protection of the Marine Environment of the Baltic Sea Area) Conventions and the respective state-of-the-art technology shall be taken into account.

Generally, the objectives pertaining to shipping have been set down correctly in the proposal. In Figure 1 the presented main and reserve shipping routes in the North Sea do not arouse controversies. The planned main shipping routes and reserve shipping areas overlap with the main routes of vessel traffic flow and take account of the increased num-

ber and size of ships, including difficult hydrometeorologic conditions and emergency situations.

The problem of EEZ zone in the Baltic Sea has been tackled in a completely different way, on the other hand (Fig. 2). Only the vessel traffic from the Kiel Canal and the Great Belt to the north-east in the direction of the Bornholmsgat has been considered. No vessel traffic to and from the ports of Swinoujscie and Szczecin has been taken account of, which may pose a threat to navigational safety in future and cause sea accidents. At present there are two shipping routes leading up to the ports of Swinouj- scie/Szczecin. The first and basic one is located eastward off the coasts of Rügen on Germany's territorial waters.



Figure 1. Spatial Plan for the German Exclusive Economic Zone (Draft) - Regulations- North Sea ([http://www.bsh.de/en/The\\_BSH/Notifications/Draft\\_map\\_North\\_Sea.pdf](http://www.bsh.de/en/The_BSH/Notifications/Draft_map_North_Sea.pdf))

The other, an alternative one, runs outside of Germany's territorial waters. There is also a shipping route linking by the shortest distance the ports of Swinoujscie and Ystad in Sweden.

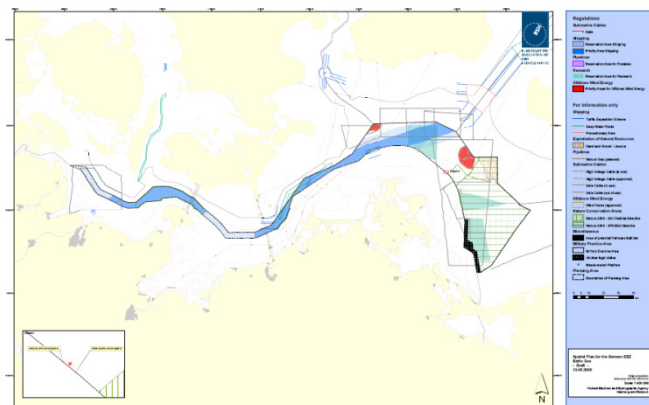


Figure 2. Spatial Plan for the German Exclusive Economic Zone (Draft) - Regulations- Baltic Sea.

([http://www.bsh.de/en/The\\_BSH/Notifications/Draft\\_map\\_baltic\\_sea.pdf](http://www.bsh.de/en/The_BSH/Notifications/Draft_map_baltic_sea.pdf))

What is more, when planning the future no account has been taken of the shipping route southwards of Bornholm Island, an outline of which was presented in the form of a traffic separation schemas (TSS) in a common Polish-German document at a meeting of IMO NAV Subcommittee (Fig. 3.)

The shipping route planned is of high importance for vessels in transit towards the ports of the Gulf of Gdansk and ports in the Kaliningrad District, in Lithuania, Latvia and Estonia. The key location limiting the vessel traffic to the south of Bornholm Island is designation of the vessel traffic separation zone between the Adlergrund and Odrzana Bank. The wreck of Jan Heweliusz ferry is an additional obstacle to navigation in the rather narrow deep-water strip.

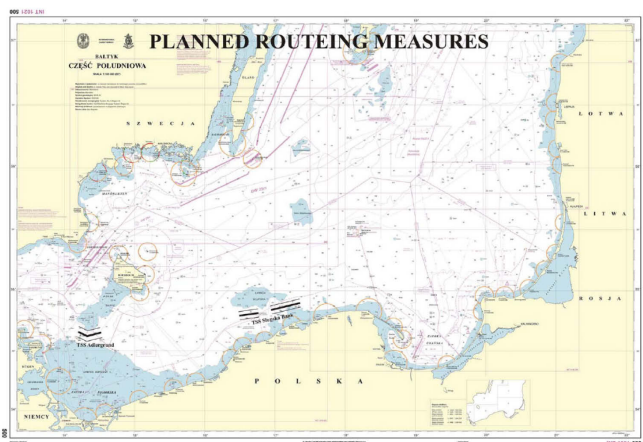


Figure 3. Planned Routeing Measures for the Southern Baltic. (IMO 2008)

Another problem in the proposed plan of spatial development is the marking of the northern approach fairway and anchorages of Swinoujscie port as politically disputable area. According to the Polish party's knowledge the problem was solved by a bilateral agreement with the German Democratic Republic in 1989 and confirmed by the Federal Republic of Germany (Dz.U. 1989).

### 3 VESSEL TRAFFIC IN THE GERMAN EEZ IN THE BALTIC

As presented in Figure 4, vessel traffic in the western part of the Baltic runs in many directions. The basic flow of vessel traffic falls into line NE-SW on the route from Gedser towards Bornholm. Additional routes run to/from the port of Swinoujscie by two ways, one along the island of Rügen and another by vessels plying to Ystad. Vessel traffic can also be observed below the island of Bornholm on an inter-shoal inlet, where a vessels TSS is planned (Fig. 3).

Traffic of vessels with smaller draft also runs to the north of the planned TSS.

When planning vessel traffic the prevailing trends and planned investments should be taken into account. Among the latter in the region there is the LNG terminal, to be started about 2012 in the external port of Swinoujscie.

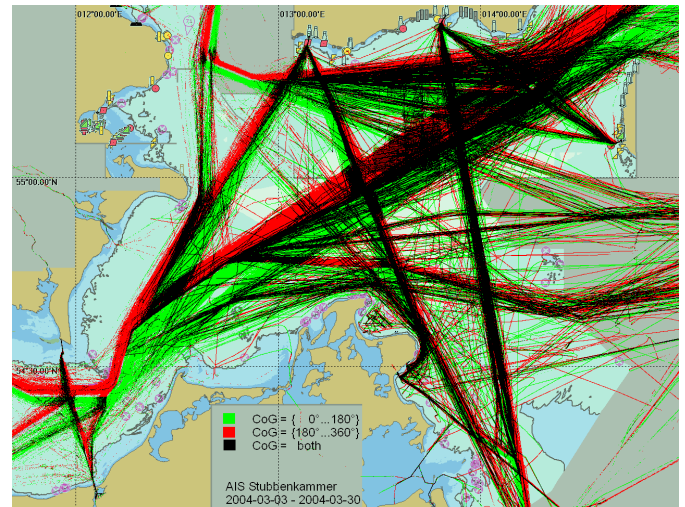


Figure 4. Traffic on the west part of the Baltic Sea (example)

The traffic of gas carriers with draft of the order of 12.5 m and about 300 m length is planned alternatively on two basic routes (Fig. 5):

- basic route C skirting the coast of Rügen Island,
- alternative route running along the northern approach fairway outside of Germany's territorial sea waters, indicated in the north as alternative, with inclusion in the traffic of North Rügen separation zone or at Arkona buoy.

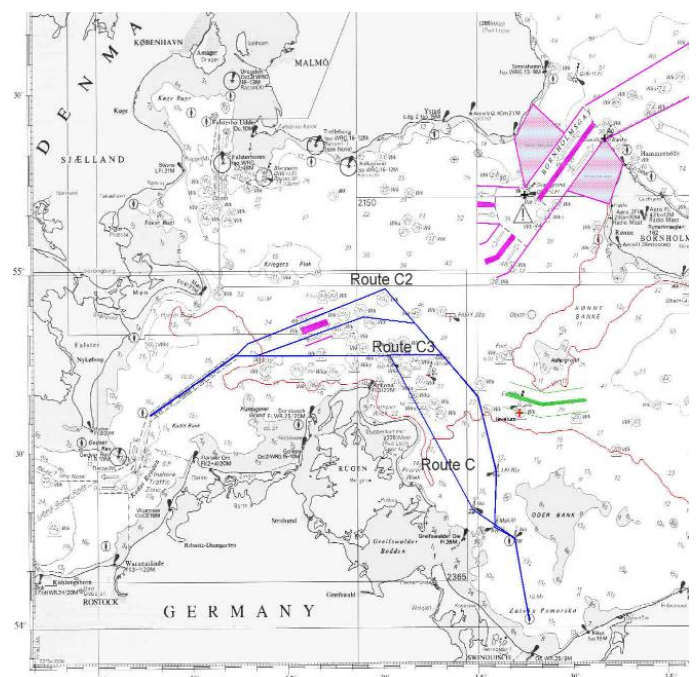


Figure 5. Routes to Swinoujscie from/to West. (Hajduk J. & Montewka J. 2007)

The existing vessel traffic and traffic generated by the planned investment in the form of LNG terminal should be taken into account in the spatial planning of this water area; otherwise, a menacing situation may needlessly be created in future caused by using traditional and basic shipping routes for other forms of human activity at sea.

#### 4 REMARKS FOR THE PRESENTED PROPOSAL OF SPATIAL PLANNING OF THE GERMAN EEZ

Figure 6 presents a suggestion for correcting the spatial planning of the German EEZ, out of concern for navigational safety in future. The remarks amount to the following (Fig. 6):

- taking account of and plotting of shipping routes planned as alternative for LNG gas carriers calling in future at the Swinoujscie terminal,
- plotting shipping routes traditionally used by sea ferries plying between Swinoujscie - Ystad,
- taking account of the shipping route southwards of Bornholm Island with consideration to the planned vessels TSS,
- independently of the political status, which should be solved on another plane, the approach fairways and anchorages of Swinoujscie port must be marked as areas reserved for shipping.

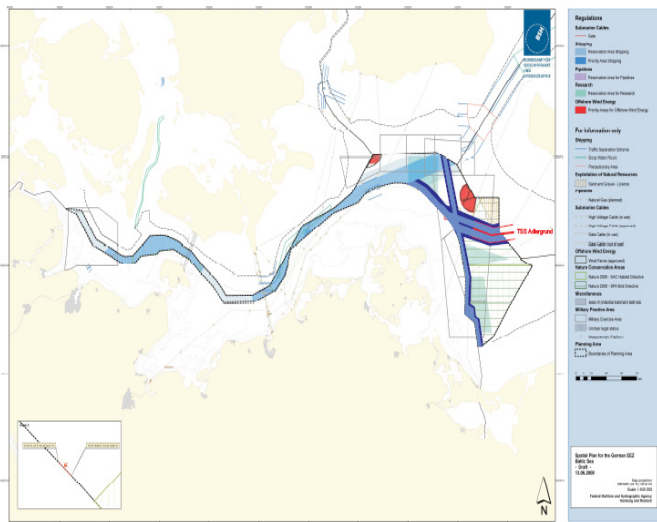


Figure 6. Proposal for correction of the Spatial Plan for the German Exclusive Economic Zone (Draft) - Regulations- Baltic Sea

#### 5 SPATIAL PLANNING IN POLISH SEA AREAS

At present, spatial planning of sea areas is provided for in Polish legislature (Dz. U. 2003 a, b).

Currently, in accordance with delegation of art. 37b par. 4 of Act of 21st March 1991 r. on sea areas of the Polish Republic and maritime administration,

quote “the minister proper for construction, spatial and housing economy shall determine by way of ordinance the required planning scope of spatial development of interior sea waters, territorial sea and exclusive economic zone in the textual and graphic parts, taking particular consideration of requirements pertaining to planning materials, kind of cartographic studies, applied markings, terminology, standards and way of documenting planning work”.

The above-mentioned authorisation was put into effect on 11<sup>th</sup> July 2003 in connection with the Act of 27<sup>th</sup> March 2003 on spatial planning and development (Dz. U. 2003 a), which was introduced into the Act on sea areas of the Polish Republic and maritime administration in part II, chapter 9, granting the minister proper for construction, spatial and housing economy competences to accept plans of spatial development of interior sea waters, territorial sea and exclusive economic zone. (According to art. 37a par. 1 and art. 37b par. 1 of Act of 21st March 1991 r. on sea areas of the Polish Republic and maritime administration, quote “Art.37a par.1.-The minister proper for matters of construction, spatial and housing economy in cooperation with the ministers proper for matters of sea economy, agriculture, the environment, internal affairs and national defence may accept and order a plan of spatial development of sea internal waters, territorial sea and exclusive economic zone, taking consideration of establishments determined in Pass. 2 and issued valid permissions mentioned in Art. 23 and Art. 23a. – Art. 37b. par.1. - The draft of a plan for spatial development of sea internal waters, territorial sea and exclusive economic zone is prepared by the director of the maritime board proper for the area covered by the plan”).

Due to lack of practice in the scope of making similar plans in sea areas, it was necessary to solve a number of problems pertaining to planning materials, graphic and letter markings concerning the intended use of the areas (in particular the economic zone constituting a part of international waters), requirements related to the content records of plans and many others.

Work undertaken for solving those problems continued until September 2005. In October 2005 the order draft was submitted for social and interdepartmental coordination. In November 2005 the department had remarks reported by the Society of Polish Town-Planners, the National Town-Planners’ Chamber and the Architects’ Chamber of the Polish Republic, remarks reported by the departments, and also the opinion of the Governmental Legislature Centre. In conclusion of the GLC’s opinion, part of the records related to procedures of preparation, passing and accepting plans of sea areas’ spatial de-

velopment should have been legally regulated (Grabarczyk C. 2008).

After change of government and calling of independent Ministries, of Construction and of Sea Economy, work was suspended for two years. Legislative work was resumed late in 2007. In June 2008 an act draft was submitted for public agreement, related to amending building regulations, act on planning and spatial development and some other acts, where in Chapter 4a "Spatial Planning in Sea Areas" the requirement was fulfilled pertaining to the regulation of procedures of accepting sea areas' spatial development plans (Grabarczyk C. 2008).

In article 49g of the above-mentioned act draft an amended authorisation was included concerning the scope of subject plans: "The minister proper for matters of sea economy, in cooperation with the minister proper for matters of construction, spatial and housing economy, shall determine by way of order the required planning scope for spatial development of sea areas in the textual and graphic parts, with particular consideration of planning materials, source data and other applied data created in the process of planning, the standard of metadata for spatial data, used and created in the process of planning patterns, applied markings, symbols and terminology and the way of documenting planning work".

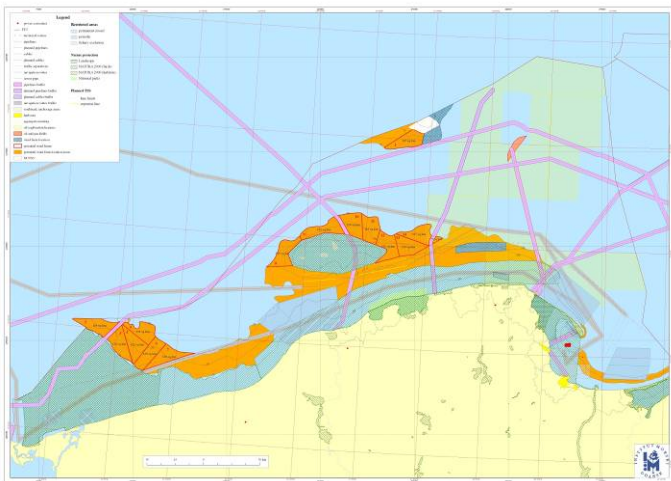


Figure 7. Instance of spatial planning in Polish sea areas (Cieślak A. 2008).

In connection with the above, after the parliament passes the above-mentioned act draft, the order draft determining the planning scope of sea areas' spatial development, in accordance with delegation of article 49g, after conducting the legislative process will be submitted for signing by respective ministers (Grabarczyk C. 2008).

## 6 CONCLUSIONS

The experience so far in the scope of spatial planning indicates a general need for preparing such plans on sea areas in an identical way as for land areas. Priorities should be established and planning scope determined. Considering the state of marine shipping and its development trends towards increasing the size of vessels and the frequency of their callings, it is a priority in the range of safety to ensure a transparent system of basic shipping routes.

The securing of water areas with shipping routes should be based on an analysis of vessel traffic so far, the planned development of ports and assumptions concerning the size of ships handled. The effect of hydrometeorologic conditions and emergency situations should also be taken into consideration. Insufficient planning of shipping routes now may cause potentially dangerous situations in future or simply increase the accident rate.

The process of agreeing and consulting initial proposals of spatial development planning should take its course inside the structures of the coastal state and with neighbouring states. An example of negotiating such a plan between Germany and Poland does not make one optimistic. Purely political reasons not related to the subject matter are stressed and the interests of the neighbouring country are not taken into consideration.

In accordance with the trend prevalent in EU countries, serious thought should be given in Poland concerning structural changes in maritime administration, aiming at separation of public and legal functions from economic activity, which might bring out and clear the matters connected with the spatial management of sea areas. An example of maritime administration structure has been presented in study (Hajduk J. & Rajewski P. 2004).

## REFERENCES

- BSH. 2008. Plan for the German Exclusive Economic Zone (Draft). Bundesamt für Seeschifffahrt und Hydrographie. June, 2008.
- Cieślak A. 2008. Strategia zagospodarowania obszarów morskich. Ministerstwo Rozwoju Regionalnego. Seminarium „Zagospodarowanie obszarów morskich Polski”. Warszawa, kwiecień 2008. (Development Strategy for Sea Areas. Seminar “Development of Poland’s Sea Areas”. Warsaw, April, 2008).
- Dz. U. 2003 a. Ustawa z dnia 27 marca 2003 r. o planowaniu i zagospodarowaniu przestrzennym (Dz. U. z 2003 r. Nr 80, poz. 717, z późn. zm.). (Act of 27<sup>th</sup> March 2003 on Spatial Planning and Development. Law Gazette of 2003 No. 80 Pos. 717 with later amendments).
- Dz. U. 2003 b. Ustawa z dnia 21 marca 1991 r. o obszarach morskich Rzeczypospolitej Polskiej i administracji morskiej,(Dz.U. z 2003 r. Nr 153 poz.1502 z późn. zm.). (Act of 21<sup>st</sup> March 1991 on the Polish Republic’s Sea Areas and

- Maritime Administration. Law Gazette of 2003 No. 153 Pos. 1502 with later amendments).
- Dz. U. 1989. UMOWA między Polską Rzeczpospolitą Ludową a Niemiecką Republiką Demokratyczną w sprawie rozgraniczenia obszarów morskich w Zatoce Pomorskiej, podpisana w Berlinie dnia 22 maja 1989 r. (Dz. U. z dnia 20 lipca 1989 r.). (Law Gazette 1989. AGREEMENT between the Polish Peoples' Republic and the German Democratic Republic Concerning the Separation of Sea Areas in the Pomeranian Bay, signed in Berlin on 22<sup>nd</sup> May 1989. Law Gazette of 20<sup>th</sup> July 1989).
- EU. 2008. Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU. Communication from the Commission. Brussels, 25.11.2008. COM(2008) 791 final.
- EU. 2007. An Integrated Maritime Policy for the European Union. Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions. Brussels, 10.10.2007 COM(2007) 575 final
- Furmańczyk K. & Szeffler K. 2007. Zagospodarowanie i przestrzenne aspekty rozwoju strefy przybrzeżnej Bałtyku, zarówno strefy wód terytorialnych (12 milowej) jak i wyłącznej strefy ekonomicznej (EEZ). Ekspertyza. (Spatial Development Aspects of the Baltic's Coastal Area, both the Territorial Waters (12-mile) Zone and the Exclusive Economic Zone (EEZ). An Expert Evaluation).
- Grabarczyk C. 2008. Pismo GB2b-0701/3/08/839746. Odpowiedź na interpelację poselską nr SPS-023-3860/08. 14.07.2008. (Letter GB2b-0701/3/08/839746. A Reply to Parliamentary Question No. SPS-023-3860/08 of 14<sup>th</sup> July 2008. Pismo GB2b-0701/3/08/839746).
- Hajduk J. & Rajewski P. 2004. Model strukturalny administracji morskiej Rzeczypospolitej Polskiej z uwzględnieniem uwarunkowań i aspektów ekonomicznych, merytorycznych, społecznych i politycznych. Praca naukowo-badawcza na zlecenie Ministerstwa Infrastruktury. AM Szczecin 2004. (A Structural Model of the Polish Republic's Maritime Administration with Consideration to Economic, Factual, Social and Political Conditions and Aspects. Scientific Research Work ordered by the Ministry of Infrastructure. Maritime University of Szczecin 2004).
- Hajduk J. & Montewka J. 2007. Safety of vessels' traffic, bound for Polish ports. 7th International Symposium on Navigation, June 20-22, 2007 MU, Gdynia, PL
- IMO. 2005. Assessment of the traffic in the Baltic Sea West. Submitted by Denmark and Sweden. NAV 51/INF.3.
- IMO. 2008. Information about planned new routeing measures in the southern part of the Baltic Sea. Submitted by Germany and Poland. NAV 54/INF.5.