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Harbors and Shipping

Nickie Butt

Paul Wright

Natalie Vigar

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Editors

Harald Marencic, Common Wadden Sea Secretariat (CWSS)
Virchowstr. 1, D - 26382 Wilhelmshaven, Germany

Jaap de Vlas, Rijkswaterstaat, Waterdienst
NL - Lelystad, The Netherlands

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3.2 Harbors and Shipping

3.2.1 Introduction

The Wadden Sea is adjacent to several of the busiest shipping routes in the world, additionally both within and close to the Wadden Sea are some of Northern Europe's largest ports which have both an international significance and are of great economic importance for the region. Major ports within the Wadden Sea area are the ports of Hamburg and Bremen/Bremerhaven, both of which were listed in the top twenty of the world's busiest container ports in 2008 (UNCTAD, 2009), as well as the major oil refinery and port of Wilhelmshaven and the port of Esbjerg in Denmark. Furthermore the Wadden Sea has many smaller ports operating short sea shipping and ferry services to the fringing islands, as well as supplying the needs of the fast growing offshore energy industry in the region. Routes through and in the vicinity of the Wadden Sea are also used as an access point to the Baltic Sea, by vessels transiting coastwise or by those using the Kiel Canal.

Shipping is considered as one of the most beneficial and environmentally friendly forms of international transport when compared on a tonne/mile shipped basis with air, rail and road. However shipping still has impacts on the marine environment due to operational factors which include oil, sewage, garbage and air pollution, and potential risks from incidents such as collisions and grounding. Measures have been put in place by both the IMO and the European Union (EU) to

limit the impact of pollution threats, for example by capping the levels of oxides of Sulphur (SO_x) and Nitrogen (NO_x) released within ships exhaust gases, to improve air quality through the adoption of Annex VI of the MARPOL 73/78 Convention.

3.2.2 Traffic density

Due to the high density of traffic in the German Bight the International Maritime Organisation (IMO) established, in cooperation with the German government, a traffic separation scheme in order to control the flow and direction of the transiting vessels. Furthermore a deep water route was established for vessels with deep draughts and vessels carrying dangerous goods, located approximately 27 nautical miles from the German coast, allowing for greater coastal protection in the event of an accident or incident. Over the past few years the number of commercial vessels within the area has increased, in line with the global trend where it can be said that "globalisation has caused maritime traffic to surge in the past years" (Hamburg Port Authority, 2008).

Figure 1 illustrates the density of shipping traffic in the North Sea, the highest volumes of traffic being depicted by the thicker red lines. From this can be seen that the Wadden Sea is adjacent to one of the most heavily transited areas of the North Sea, with high volumes of traffic also evident in the estuaries of the major rivers that flow into the Wadden Sea as well as the Kiel Canal

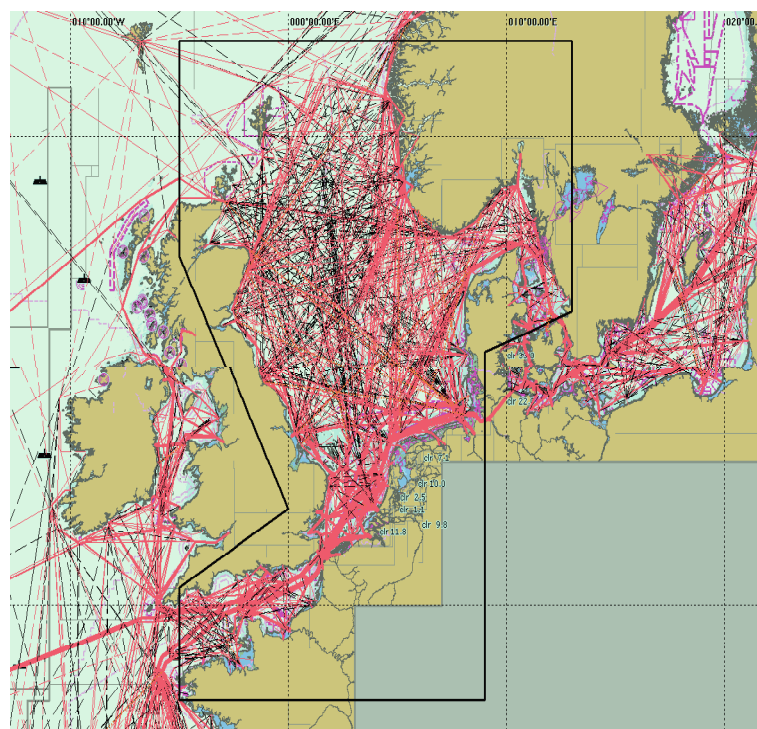


Figure 1:
Shipping Traffic in the
North Sea (OSPAR, 2010).

which links the North and Baltic Seas.

It is estimated that the North Sea has around 260,000 ship movements per year, which makes it one of the busiest sea basins in the world. Furthermore it is estimated that this figure will grow by between 14–31% over the coming years (North Sea Commission, 2009). Since the *Pallas* incident of 1998, shipping incident data for the Wadden Sea countries show no major pollution incidents within and immediately adjacent to Wadden Sea area. However, whilst not causing major pollution, several accidents and collisions have been reported in the area adjacent to the Wadden Sea, both within and adjacent to the Traffic Separation Schemes adjacent to the Wadden Sea.

3.2.3 The Wadden Sea PSSA

"A PSSA is an area that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific attributes where such attributes may be vulnerable to damage by international shipping activities" (Resolution A.982 (24)).

The International Maritime Organisation's (IMO) Marine Environment Protection Committee (MEPC) designated major parts of the Dutch, German and Danish Wadden Sea as a Particularly Sensitive Sea Area (PSSA) in October 2002 (MEPC, 2002). The PSSA consists of the marine area of the Wadden Sea Conservation Area, being the Wadden

Sea National Parks in Germany and the Wadden Sea Nature Protection areas in Denmark and the Netherlands (Figure 2), which covers an area of approximately 12,000 km². The designation of the Wadden Sea PSSA was formally recognised at the Schiermonnikoog Conference in 2005, in which Ministers declared their determination to protect the Wadden Sea from negative impacts from shipping (§14 Schiermonnikoog Declaration).

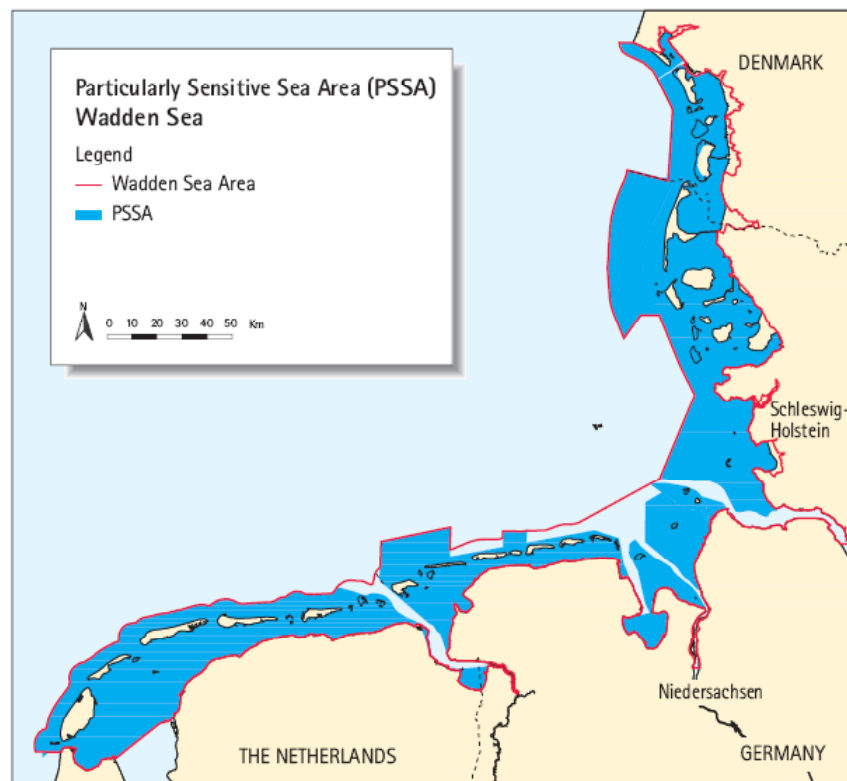
The purpose of a PSSA is to protect an area which has *significance for recognized ecological, socio-economic, or scientific attributes* and which may be vulnerable to damage by international shipping. Protection for the area is through adoption of IMO recognised Associated Protective Measures (APMs), which should address the vulnerability in such a way as to protect, reduce or eliminate the risk posed by international shipping (IMO Resolution A.982 (24)).

The application for the Wadden Sea PSSA included two Associated Protective Measures (APMs), which were the German Bight Traffic Separation Scheme and the Deep Water Route, these are located outside but adjacent to the boundaries of the PSSA.

The PSSA concept is not supposed to limit international shipping but to increase awareness of the areas sensitivity and hence reduce the impact international shipping has on the area.

Since the Wadden Sea PSSA designation in

Figure 2:
Boundaries of the Wadden
Sea PSSA (Marencic & Es-
sink, 2004).



2002, the International and European communities have introduced several important pieces of legislation aimed at protecting the environment from shipping activities. These policies have and will continue to improve both the standard and safety of shipping, thereby reducing their potential negative impact on the marine environment. For the Wadden Sea, amendments to existing legislation and the introduction of new legislation should also improve the quality of the marine environment. Furthermore the development of the EU Integrated Maritime Policy will assist with bringing countries coastal policies in line with each other, thus encouraging and enabling them to develop further policies together specifically aimed at protecting vulnerable areas such as the Wadden Sea.

Integrated Maritime Policy

In 2007 the EU Commission presented its vision for an Integrated Maritime Policy for Member States, two years on they have made progress with several projects under way. "In its strategic objectives for 2005–2009 the Commission declared the particular need for an all-embracing maritime policy aimed at developing a thriving maritime economy, in an environmental sustainable manner. Such a policy should be supported by excellence in marine scientific research, technology and innovation" (Van Houdt, 2008).

The Integrated Maritime Policy "will encompass all aspects of the oceans and seas in a holistic, integrated approach," where the Commission "will no longer look only at compartmentalised maritime activities, but... will tackle all economic and sustainable development aspects of the oceans and seas, including the marine environment, in an overarching fashion" (Commission of the European Communities, 2007). There is a further aim to "develop policies and legislative proposals that are coherent and mutually compatible" (Com-

mission of the European Communities, 2007, p6), which would bring all Member States in line with one another. The establishment of united policies and inter-linking between industry (economic) and environment will strengthen the sustainability of Europe's maritime sector.

The European Commission have also established a European Maritime Day, which will inform and update stakeholders of progress that has been made amongst the maritime community, the first of these annual events to be held in 2010.

3.2.4 Ports in the Wadden Sea Region

The ports in the Wadden Sea area specialise in specific cargoes as well as having multi functional ports which have the capacity for all types of goods. The three major ports are Hamburg, Bremen/Bremerhaven and Wilhelmshaven including the new deep-water port project at the Jade Bay. Hamburg and Bremen/Bremerhaven are both in the top twenty for container transition amongst container ports worldwide and in 2008 were ranked 11th and 19th, there are only four European ports in the top twenty with the other two being Rotterdam ranked 9th and Antwerp ranked 13th (UNCTAD, 2009). Wilhelmshaven is one of the largest oil terminals importing crude oil into Europe. Smaller ports which are more specialised include Emden, Eemshaven, Delzijl, Harlingen and Brunsbüttel. Esbjerg is the only Danish port in the Wadden Sea. In 2007 it was recorded in the port of Hamburg that there were 40,000 shipping movements, (Hamburg Port Authority, 2007) this figure does not include any recreational or inland vessels.

The Northern Range ports, which include the main Wadden Sea ports, have generally seen the volumes of cargo handled increasing year on year, however the first three quarters of 2009 have seen a slight decrease in the amount of cargo handled,

Port	2004	2005	2006	2007	2008	2009 1 st , 2 nd & 3 rd Quarters	Specialization Categories of Cargo
Hamburg ¹	114,484	125,743	134,861	140,381	140,375	82,774	Containers, food, ore, coal, chemical
Bremen / Bremerhaven ²	52,319	54,190	64,556	69,095	74,525	45,462	Containers, cars, food/fish, steel
Wilhelmshaven ³			44,470	41,590	40,512	18,373	Oil, coal, chemical
Esbjerg ⁴	3,997	4,007	4,339	4,589			Containers, fish
Defzijl ⁵	5,991	5,958	6,137	6,062	5,781		Coal, salt, food
Eemshaven ⁵	617	1,143	1,584	1,743	2,187		Coal, salt, food
Harlingen ⁶				3298	2582		Salt, potatoes, sand, gravel

Table 1:
Total Cargo Handled
2004–2009 (in 1000 tons).
Data from Hamburg Port
Authority¹, Die Bremische
Häfen², ISL Shipping Statistics
Reports between 2007
–2009³ (ISL, 2007a, ISL,
2009a, ISL, 2009b), Port of
Esbjerg⁴ (n.d.), Groningen
Seaports⁵ (n.d.), and Har-
lingen Seaport⁶ (n.d.).

Table 2:
Total TEUs Handled 2004–
2009. Data from Hamburg
Port Authority 2008 report,
ISL Shipping Statistics
2007 –2009 and Harlingen
Seaport (n.d.).

Year	2004	2005	2006	2007	2008	2009 1 st & 2 nd Quarter
Port						
Hamburg	7,003,479	8,087,545	8,861,804	9,889,792	9,737,110	3,550,000
Bremen / Bremerhaven	3,469,253	3,735,574	4,444,389	4,444,389	5,529,159	2151000
Wilhelmshaven	43,032	2,681	--	--	--	--
Cuxhaven	32,000	37,660	68,354	63,808	63,271	--
Emden	1,000	426	204	51	--	--
Harlingen				14388	13864	

due to the economic downturn and reduced imports from the Far East. This decrease in cargo turnover started in the 4th quarter of 2008 as the "world economy experienced a sharp downward lurch in the course of the second half of 2008, caused in particular by the global financial crisis which also had a negative impact on turnover rates, in particular in the 4th quarter of 2008" (Hamburg Port Authority, 2008).

Table 1 shows a dramatic increase for cargo handled in Hamburg between 2006 and 2007, however all three ports have significantly reduced cargo handling figures for the first three quarters of 2009. Since 2006 there has been a small but steady decrease in volumes transported through Wilhelmshaven, which may be associated with operational changes at the refinery.

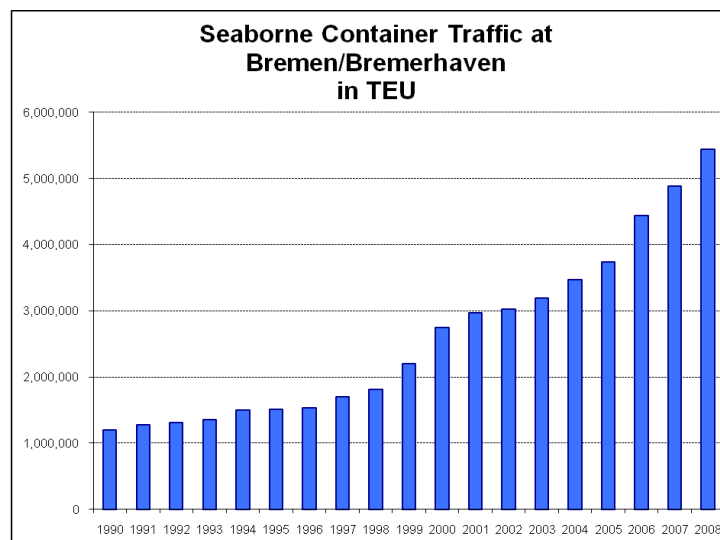
Table 2 shows a dramatic increase between 2006 and 2007 in the number of TEU's handled in the port of Hamburg, however in 2008 the number of TEU handled at Bremen/Bremerhaven ports increased whilst those in Hamburg decreased.

The port of Hamburg has achieved high container handling figures in the past due to a high level of trade with Asia, however in the second half of 2008 this turned out to be a disadvantage, "as Hamburg was hit worse by Asia's economic weakness than the competing ports along the northern range" (Hamburg Port Authority, 2008). If 2009 follows the pattern of the first two quarters there will a decrease in the amount of cargo handled by both Hamburg and the Bremen ports.

Over recent years container ports across the global have seen an increase in the number of containers handled, this trend is reflected in the Wadden Sea container ports, figure 3 demonstrates the increase in container traffic experienced by the ports of Bremen over the past 19 years. This trend is set to increase with future developments of both ports within the area and the development of new container vessels.

The Dutch ports of Delfzijl and Eemshaven are located on the estuary of the River Ems and cater for both sea going and inland waterway traffic and

Figure 3:
Seaborne Container Traffic
at Bremen/Bremerhaven in
TEUs (The Ports of Bremen/
Bremerhaven, 2008).



a variety of cargos which includes bulk, ConRo and RoRo. In 2008 cargo throughput for the Groningen Seaports (Eemshaven and Delfzijl) reached over 7.9 million tons (Groningen Seaports, n.d.). The port of Eemshaven saw a major increase in amount of cargo handled between 2004 and 2005 and since then total volume of cargo has increased year on year; however there has been a slight decrease in cargo handled through Delfzijl since 2006.

Esbjerg is the only large Danish port located in the Wadden Sea area; this is a multi functional port, handling a wide variety of cargoes. Since 2004 there has been a steady yearly increase in the total amount of cargo handled. The two areas which have seen the most growth since 2004 are Fossil fuels and Container goods.

The maritime industry has a significant economic importance for the Wadden Sea area and Germany as a whole, in terms of both revenue and employment figures. The 2008 Hamburg Port Authority annual report shows that across the whole of Germany 267,000 jobs are either directly or indirectly dependent on the port, of which 167,000 jobs are in the Hamburg metropolitan region (Hamburg Port Authority Annual Report 2008).

3.2.5 Trends and developments of the Wadden Sea ports

In 2007 a maritime transport forecast carried out for the German Government states that the overall quantity of cargo handled is expected to rise from its 2004 figures of 793 million tonnes to 1,658 million tonnes in 2025; furthermore the highest growth rates are expected to be seen at Bremerhaven with an annual increase of 5.8% and Hamburg with an annual increase of 5.3% (PLANCO, 2007). This growth at Bremerhaven port will make it "Germany's second largest seaport by 2025" (PLANCO, 2007) with Hamburg remaining the largest, disregarding unforeseen peaks at the new Jade-Weser Port container port. Additionally, Hamburg is expected to grow at a faster rate than Rotterdam and it is suggested that by 2025 Hamburg will handle around 50% of Rotterdam's annual handling figures. Container handling is also set to increase and will see a higher rate of growth than total volume of cargo handled, with Hamburg and Bremerhaven having growth rates of 6.7% and 6.0% respectively (PLANCO,

2007). Evidence would suggest that the trend of an overall increase in cargo throughput across all the major ports in the Wadden Sea area will continue particularly when taking account of major development projects.

The Jade-Weser container port at **Wilhelms-**haven is well under construction and set to be commissioned in the autumn of 2011. When completed this will be one of the three ports in Germany that are capable of handling the **Ma-**ersk 'E' class container vessels. The port and its approaches have been dredged to 18m, making it one of the deepest ports in the North-Range. The Jade-Weser Container port "will have at its first level of completion a capacity of 2.7 million TEU" (ISL, 2007b) and its 1.7 kilometre quay will be able to accommodate the largest of vessels at its four berths.

The Port of Hamburg has also planned several extensions to cope with its increased traffic, some of which are due for completion in 2010, these will increase Hamburg Port capacity to about 13 million TEUs (ISL, 2007b), according to the Hamburg Port Authority the handling capacity is expected to increase to 18 million TEU by 2015 (Hurtenne, n.d.). There is also a further terminal planned within the Port of Hamburg called Container Terminal Moorburg which will be located close to the existing Altenwerder terminal, "however this is envisaged as a long-term project to be realised after 2015" (ISL, 2007b). The Ports of Bremen and Bremerhaven have no planned extensions, primarily due to geographical location, as the last extension brought the port to the border of the Federal State of Bremen.

Recent developments for the Groningen seaports include the extension of the deep sea bulk quay and the completion of Beatrixhaven in Eemshaven which was built to serve the increase in short sea trade (Groningen Seaports 2010). In 2008 the port of Esbjerg received funding from the EU under the Trans European Transport Network Executive Agency (TEN-T) Motorway of the Seas programme to provide an intermodal alternative to truck transport between Esbjerg and the Benelux countries. The project is expected to double the capacity of the RoRo connection between Zeebrugge and Esbjerg. A further aim of the project is to further develop the Benelux-Scandinavia short sea bridge. (Esbjerg Ten-T, 2008). The project is due for completion by the end of 2012.

References

- Commission of the European Communities, 2007. *COMMISSION STAFF WORKING DOCUMENT: An Integrated Maritime Policy for the European Union* [online]. Available: http://ec.europa.eu/maritimeaffairs/pdf/ActionPaper/action_plan_en.pdf [accessed 7th December 2009].
- Die Bremische Häfen, 2009. Hafenspiegel 2008. Editor: Der Senator für Wirtschaft und Häfen der Freien Hansestadt Bremen, 27pp.
- Esbjerg Ten-T, 2008. Motorways of the Sea Esbjerg-Zeebrugge. 2008-EU-21020-P. [online] Available from: http://tentea.ec.europa.eu/download/project_fiches/multi_country/ficheneu_2008eu21020p_final1.pdf [Accessed 4th March 2010].
- Groningen Seaports, n.d. *Business Square - Cargo throughput* [online]. Available: http://www.groningen-seaports.com/cargo_throughput.php [accessed February 2010].
- Groningen Seaports, 2010. News and archive. [online]. Available from: <http://www.groningen-seaports.com/actual.php> [accessed 4th March 2010].
- Hamburg Port Authority, 2007. *Annual Report 2007 Hamburg Port Authority* [online]. Hamburg: Hamburg Port Authority. Available: <http://www.hamburg-port-authority.de/en/> [accessed 30th September 2009].
- Hamburg Port Authority, 2008. *Annual Report 2008 Hamburg Port Authority* [online]. Hamburg: Hamburg Port Authority. Available: <http://www.hamburg-port-authority.de/en/> [accessed 30th September 2009].
- Hamburg Port Authority, 2010. Zahlen, Daten und Fakten [online]. Available: <http://www.hamburg-port-authority.de/presse-und-aktuelles/zahlen-daten-und-fakten.html> [accessed 29th April 2010].
- Harlingen Seaport, n.d. *Jaarverslag Haven Harlingen 2008* [online]. Available: <http://www.harlingen.nl/sjablonen/1/in-fotype/webpage/view.asp?objectID=7123> [accessed 23th February 2010].
- Hurtienne, W., n.d. *Port Logistics- Challenges of the Future* [online]. Hamburg: Hamburg Port Authority. Available: <http://www.ship-efficiency.org/onTEAM/pdf/HURTIENNE.pdf> [accessed 28th January 2010].
- ISL, 2007a. Shipping Statistics and Market Review Volume 51 No 12-2007. Bremen: Institute of Shipping Economics and Logistics.
- ISL, 2007b. *Survey of the Container Port Development in Germany* [online]. Available: http://209.85.229.132/search?q=cache:A_I7QEgkpywJ:www.sutranet.org/pub/wp1%2520publications/1.2.5_Container%2520Port%2520Development%2520in%2520Germany.pdf+ISL+2007+Survey+of+the+Container+Port+Development+in+Germany&cd=1&hl=en&ct=clnk&gl=uk [accessed 16th December 2009].
- ISL, 2009a. Shipping Statistics and Market Review Volume 53 No 1/2-2009. Bremen: Institute of Shipping Economics and Logistics.
- ISL, 2009b. Shipping Statistics and Market Review Volume 53 No 11-2009. Bremen: Institute of Shipping Economics and Logistics.
- Marencic H., and K. Essink, 2004. Protection and Management. In: Essink, K., C. Dettmann, H. Farke, K. Laursen, G. Lüer en, H. Marencic and W. Wiersinga (Eds), 2005. *Quality Status Report 2004. WaddenSea Ecosystem No. 19*. Wilhelmshaven, Germany: Common Wadden Sea Secretariat, Trilateral Monitoring and Assessment Group.
- MEPC, 2002. Identification and Protection of Special Areas and Particularly Sensitive Sea Areas. Designation of the Wadden Sea as a Particularly Sensitive Sea Area. MEPC 48/7/2, 2002. Submitted by Denmark, Germany and the Netherlands: 13 pp. and 3 Annexes.
- North Sea Commission, 2009. *North Sea Strategy Draft Paper of 011009* [online]. Available: <http://www.northseacommission.info/north-sea-strategy.html> [accessed 5th November 2009]
- PLANCO, 2007. *Forecast of Germany-Wide Transport Interconnectivity Maritime Transport Forecast Executive Summary Commissioned by: Federal Ministry of Transport, Building and Urban Affairs* [online]. Available: http://www.bmvbs.de/Anlage/original_1046545/Maritime-Transport-Forecast-Executive-Summary.pdf [accessed 5th November 2009].
- Port of Esbjerg, n.d. *Statistics 2000-2007* [online]. Available: <http://www.portesbjerg.dk/en/port-of-esbjerg--statistics.aspx> [accessed February 2010].
- OSPAR Commission, 2010. *OSPAR draft QSR 2010: Chapter 9 Other human uses and impacts* [online]. Available: http://www.ospar.org/html_documents/ospar/html/09_other_human_uses_and_impacts.pdf [accessed 4th December 2009].
- The Ports of Bremen/Bremerhaven, 2008. *The Ports of Bremen/Bremerhaven - Facts and Figures 2008* [online]. Bremen: The Senator for Economic Affairs and Ports of the Free Hanseatic City of Bremen. Available: http://www.bremen-ports.de/637_2 [accessed 4th November 2009].
- UNCTAD, 2009. *Review of Maritime Transport* [online]. New York: United Nations. Available: http://www.unctad.org/en/docs/rmt2009_en.pdf [accessed 22nd December 2009].
- IMO Resolutions
- Resolution A.982 (24) adopted on 1.12.2005 - Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas.
- ZDS, 2010. Zentralverband der deutschen Seehäfenbetriebe - deutscher Seegüterumschlag [online]. Available: <http://www.zds-seehaefen.de/information/seegueter.html> [accessed 29th April 2010].