The Wadden Sea: Maritime Safety and Pollution Prevention of Shipping

Analysis of the existing measures and the implementation of agreements regarding maritime safety and prevention of pollution from ships

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Report prepared for:

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1 Introduction

At its 48th session on October 11, 2002, the Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO) designated major parts of the Wadden Sea as the world's fifth and Europe's first Particularly Sensitive Sea Area (PSSA Wadden Sea) [MEPC 2002]. The designation marked an important step in the joint Danish, Dutch and German efforts[1] to protect the Wadden Sea in respect of impacts from shipping.

The southern North Sea and the Wadden Sea is characterized by partly competing utilisation such as international merchant shipping, coastal and high seas fishing, recreational yachting, regular ferry traffic and in future offshore wind energy parks. Vessel traffic lanes (e.g. TSS Terschelling-German Bight, TSS German Bight Western Approach) are directly adjacent to the Dutch and German Wadden Sea sectors whereas off the Danish sector no such designated shipping traffic lanes exist. The vessel traffic lanes were designated in the eighties by the IMO to ensure an orderly and safe regulation off the Wadden Sea coast in one of the world's most busiest shipping areas.

The PSSA submission did not include further additional protective measures to the already existing regime of protective measures with regard to shipping safety and prevention of pollution from ships in the area since these were considered sufficient in terms of the designation.

In the aftermath of the *PRESTIGE* disaster off the Galician coast and other calamities[2], the Wadden Sea Forum (WSF) has expressed its concern about the significant socio-economic and ecological effects that shipping in general could have on the Wadden Sea and the southern North Sea area. Given the urgency of the situation, the WSF underlines the need for adequate protective measures and wishes that issues such as trilateral co-ordination and co-operation protocols both for exchange of information and immediate action with regard to:

- cases of accidents
- the improvement of Port State control inspections
- liability as agreed on an international level
- and safe havens for ships in danger

should be improved.

The current discussion is determined by the conflict between global and regional (and unilateral[3]) regulation setting. Freedom of navigation, trade and globalization is con-

[1] *Inter alia* Trilateral Governmental Wadden Sea Conferences since 1978, adopting e.g. the Joint Declaration on the Protection of the Wadden Sea, Copenhagen, 1982; the Ministerial Declaration of the 9th Trilateral Governmental Conference on the Protection of the Wadden Sea, Esbjerg October 2001

[2] To name only the capsize of bulk carrier MV *ROCKNES* off Bergen (19 January 04), the collision of ferry MV *STENA NAUTICA* and general cargo MV *JOANA* in the Kattegat (16 February 04), or the incident caused by MV *ANDINET* in December 2003

[3] Compare the unilateral arrangement of the U.S.A. with the Oil Pollution Act 1990 (OPA 90); and the action of the Spanish and Portuguese Governments after the *PRESTIGE* accident in breach of UNCLOS

fronted with the genuine interests of the coastal States in environmental protection and in control of shipping in their wider coastal areas.

Whereas the IMO continues to pursue the global approach in accordance with UNCLOS, the European Community[4] (EC) succeeds in promoting and implementing regional protection measures and regimes, also at level of the IMO[5].

However, the progress comes to a halt wherever the right of innocent passage acc. to UNCLOS article 17, and design, construction, manning or equipment standards acc. to UNCLOS article 211 para 6. (c) are concerned.

It is well-known that the EC intents to initiate a thorough study of the extent to which international law, in particular UNCLOS dating from 1982 and in force since 1994, is suited to deal with the growing risks inherent in the carriage of pollutant substances by ships that are considered to be sub-standard [EC 2003a].

In addition, a Committee on Safe Seas and the Prevention of Pollution from Ships (COSS) has been established to centralise the tasks of the committees set up under the Community legislation on maritime safety, the prevention of pollution from ships and the protection of shipboard living and working conditions and to assist and advise the Commission on all matters of maritime safety and prevention or reduction of pollution of the environment by shipping activities [EC 2002d].

The PSSA designation offers a good basis for the further development and implementation of measures to enhance safety of shipping and prevention of pollution from ships. In addition to the initiatives on international and European level, a trilateral approach to improve shipping safety is justified, adequately recognizing the hierarchy

- agree on rules and standards globally through IMO
- implement, enforce and control regionally without discrimination
- act and intervene locally in case of necessity.

In view of the 10th Governmental Wadden Sea Conference in 2005 the WSF will develop proposals for sustainable development in the Wadden Sea region and agreed in October 2003 to initiate a gap analysis concerning shipping safety measures. The results of this analysis shall be presented at the next WSF meeting in April 2004 for further consideration.

1.1 Aims of the study

The Terms of Reference (ToR) define the focal purpose of the study as follows (Annex 1):

> *The contractor shall review the current measures and the implementation of agreements regarding maritime safety and prevention of pollution from ships*

[ICS 2003].

[4] Throughout the report "EC" is used as the acronym for the European Community

[5] It is noted that the Commission makes the point of changing the current observer status to the full member status in the IMO

in the Wadden Sea area and the southern North Sea with a view to identify gaps and shall give on the basis of this gap analysis recommendations on indispensable additional measures.

The investigation into the state of implementation and enforcement of international, EC and uni-, bi- or trilateral rules and regulations makes it possible to identify deficiencies and gaps. Such deficiencies do not necessarily generate recommendations or indispensable additional measures, but may highlight options or proposals for activities on different levels, preferably on trilateral level.

A cost-benefit analysis is not subject of the contracted study. It is referred to chapter 4 on considerations for cost-benefit analyses as a follow-up of the implementation of recommendations from the study.

1.2 Structure of the analysis

Explanatory notes on the methodology of the analysis are given in chapter 2.

The identified deficiencies and gaps, options and recommendations are given in chapter 3, where appropriate, together with a complementary evaluation.

Detailed background information on the individual subjects is entailed in Annex 3, each corresponding with the numerical sequence of the chapters and sub-chapters.

In chapter 4 the options and recommendations are compiled and assessed, and the findings represent the basis for the conclusions.

2 Methods

The work contract for the analysis between the Secretariat of the Wadden Sea Forum, represented by the Common Wadden Sea Secretariat (CWSS), the Inter-regional Wadden Sea Cooperation, and GAUSS mbH was signed mid of December 2003 with the time schedule to conclude the study by March 1, 2004.

The analysis uses as basis information beside others relevant existing reports and documents provided by the WSF secretariat.

To accomplish the aims of the study it was decided to analyse the sources particularly with regard to the list of items anticipated to be of significance for potential recommendations. In subchapters these items have been assigned to

- shipping safety
- emergency management
- illegal discharges of waste and
- port State control.

The identified items and the regulations in themselves have not been analysed, but taken as outcome of serious considerations and decisions of national and international competent decision-making bodies[6] and as a starting point for the analysis. The gaps and deficiencies are assessed and evaluated with expert knowledge in the study.

The project has been carried out as a desk study without any on-site survey. Besides the documents and additional reference literature mentioned in the ToR, the internet, email questions and answers, and telephone interviews have been sources of information.

A list of persons who have been contacted and interviewed is in Annex 1. It has to be stated that these contacts have not focused necessarily on individual items and due to time limits and other constraints not each and every item has been cross-checked by the contacted and/or interviewed persons. Therefore the statements in the study do not inevitably reflect opinions of the listed persons.

2.1 Area to be considered

The PSSA falls entirely within the boundaries of the territorial sea of Denmark, Germany and the Netherlands (see Annex 2).

[6] The accelerated phasing-out of single-hull tankers may serve as an example. With reference to this issue the Oil Companies International Marine Forum states [OCIMF 2003]:

[…] Double hulled vessels are regarded by some as the answer to all the problems of transportation of oil at sea without pollution. Whilst it is acknowledged that double hulled vessels have some advantage over single hulled vessels, indeed they will provide added security in low impact collisions and groundings, both designs will be inadequate if poorly maintained and operated. Double Hulled tankers because of their complex design and structure are potentially more susceptible to problems of poor maintenance and operation. Double Hulled tankers may only be the answer if combined with high quality operation, maintenance, classification surveys, and proper policing by flag state and port state.

The vital economic importance of the regional maritime industry in general, of the adjacent, internationally significant seaports and the Scandinavia and Baltic Sea transit traffic has made the sea area off the Dutch-German-Danish coast one of the regions with the highest traffic densities in the world. In the German sector in 2002 more than 65,000 movements of ships longer than 50 m were recorded [WSDNW 2003].

The agglomeration of uses in this area has brought about a comprehensive regime of protection measures covering the territorial waters and affecting shipping in the 200-miles Exclusive Economic Zones as well (compare Annex 2).

The area to be considered in this study is much larger than the Wadden Sea Area (see Annex 2) and the PSSA Wadden Sea. The regarded area does not only include the area of the traffic separation schemes (TSS) but also large offshore areas of the continental shelf of the three Wadden Sea States with ship traffic which is considered relevant in analysing potential impacts from shipping and shipping safety of the Wadden Sea.

3 Current measures, implementation and recommendations

Shipping in the southern North Sea and the Wadden Sea area is governed by a comprehensive regime of protection measures set up by the IMO, the European Community, or at the trilateral or the national level. This regime includes, but is not limited to Vessel Traffic Management System (VTMS), TSS, pilotage, mutual emergency management or the prohibition of single-hull oil tankers to enter adjacent ports.

Different driving forces determine the implementation and enforcement of the measures, inter alia State budgetary limits, politics, desired economical or social activities, or regional aspects[7]. The rapidly growing ports in the eastern Baltic Sea[8] and associated transit traffic in the southern North Sea and off the PSSA area appears to be an additional challenge.

Detailed background information on the following subjects is given in Annex 3, each with the corresponding reference number.

3.1 Shipping safety and ship's safety

Shipping safety in the area is determined by the offshore and coastal safety infrastructure[9] provided by the coastal States. In the region the safety infrastructure covers the territorial sea, reaches partly beyond the 12-miles zone and affects shipping in the Exclusive Economic Zones.

The following items result from the Terms of Reference (ToR) and further discussions with the client. Depending on future developments additional items may have to be considered with regard to shipping safety in the area, e.g. offshore wind parks or high speed crafts. The latter is subject to ongoing research[10], and the installation of wind turbines in the German Bight may start in 2005 or 2006. Whether or not offshore wind parks will have a significant effect on shipping safety is subject to risk analyses and safety assessments currently carried out. At the same time and to minimise identified risks, safety plans and concepts on emergency preparedness and response are under development at the investing companies and the relevant administrations.

In contrast to shipping safety, ship's safety is determined among other things by the design, construction, equipment or manning of the individual vessel and depends on the rules and regulations of the flag State and the international IMO standards, respectively.

[7] With rank 7 in the world port traffic league, Rotterdam is of outstanding importance for the Netherlands and Europe, and in the focus of Dutch maritime policy; Esbjerg is the only relevant port at the Danish west coast.

[8] E.g. St. Petersburg, Riga, Tallinn with yearly growth rates above 15 % in period 1998-02

[9] Including for example buoys, lighthouses, pilot services, SAR services, ETV, VTMS etc.

[10] For example a research project is under preparation at the German Federal Environment Agency and will be launched in 2004.

3.1.1 Collision avoidance

Denmark, Germany and the Netherlands have fully implemented the COLREGs and have additionally established national rules and regulations for their territorial waterways. These measures are regarded as ample and sufficient.

3.1.2 Navigation

Denmark, Germany and the Netherlands have fully implemented the relevant IMO measures and comply with the International Association of Lighthouse Authorities (IALA) maritime buoyage system.

In the Netherlands there are still three manned lighthouses, two of them (e.g. Terschelling) are permanently manned. Plans to discontinue the manning of the lighthouses are currently discussed in the Netherlands since this measure is partly regarded as a reduction in maritime safety. In Germany all lighthouses are operated automatically with redundant systems. Provided that the lighthouses are equipped with appropriate systems the automatic operation is not considered a deficiency or gap in terms of shipping safety.

Further, the Dutch authorities have started to reduce the number of buoys in the shipping lanes as part of a long term aids to navigation plan for the North Sea. In the traffic separation scheme (TSS) Terschelling-German Bight a string of RACON-buoys separating the two lanes has been put into operation (change from lateral to central buoy system). It is considered to be a threat to maritime safety, if only the RACON-buoys mark the shipping lanes as this might lead to a convergence of traffic along this "centre-line", thus increasing the probability of incidents[11]. This study recommends that the reduction should be stopped and reversed to the former level.

Recommendations

National: RN1. Positioning of buoys on both sides of the shipping lanes to be continued (lateral buoy system) (NL) [S4]

3.1.3 Traffic Separation Schemes (TSS)

Germany and the Netherlands have fully implemented the traffic separation schemes established by the IMO. The TSS from North Hinder to the German Bight (Deep-Water Route) is mandatory for certain classes of ships carrying oil, noxious liquid substances or liquefied gases in bulk (for details see Annex 3.1.3) approaching or leaving the inner German Bight from westerly directions. Such vessels are not allowed to use the southern TSS. Other ships are not obliged to use a TSS, although the majority of ships keep to the lanes of the TSS provided. All ships using the TSS have to navigate according to COLREG rule 10 “vessels in or near TSS”.

[11] Pers. communication Wadden Sea Society, the Netherlands

However, a deficiency might be the fact that tankers smaller than 10,000 gross tons (gt), respectively 5,000 gt, are not obliged to use the northern TSS (Deep-Water Route). It is argued that also the possible loss of cargo by these smaller tankers would have serious consequences for the Wadden Sea. On the other hand, it has to be considered that for example large containerships of 5,000 TEU and larger using regularly the southern TSS, carry some thousand tons of heavy fuel oil (HFO) in their bunker tanks. Bunker tanks on these ships are mostly not protected by a double shell, thus the loss of heavy fuel oil as a consequence of an accident would have a severe impact on the Wadden Sea, too.

Though it seems to be an option to make the northern TSS mandatory for more types of ships, it should be borne in mind that the Deep-Water Route is mainly provided for deep draft ships which navigate in shallow water depths with a critical under keel clearance. Besides, the emergency response times for accidents in the northern TSS are longer compared to those in the southern TSS due to geographical reasons. Therefore, this study cannot recommend changes of the current mandatory scheme.

3.1.4 AIS land based traffic monitoring system

According to SOLAS the equipment of ships with Automatic Identification Systems (AIS) will be completed by 31 December 2004, except for ships smaller than 500 gt in national trade, which have a time schedule until 2008. The AIS shall be in operation at all times, i.e. 24 hours a day.

The EC-Council-Directive 2002/59/EC requires the member States to set up appropriate shore based infrastructure by the end of 2007 and to interconnect their national communication systems by 2004.

On a trilateral basis and following the Esbjerg Decision § 60, Denmark, Germany and the Netherlands are developing plans to setting up a coast-wide network with AIS onshore receiving stations and appropriate AIS infrastructure not later than 1 July 2005. It is estimated that Denmark will comply with these requirements having established a land-based station covering the Danish part of the Wadden Sea by July 2005. Further, Denmark and Germany take part in setting up a common land-based AIS-network for the Baltic Sea (based on the decision from the HELCOM Ministerial Conference in Sept. 2001). However, it remains unclear whether Germany and the Netherlands will meet the stipulations of Esbjerg § 60 by 2005.

It is doubtful whether Germany and the Netherlands will have established the land-based AIS stations in the Wadden Sea by 2005. In Germany, financial and political priority is given to the Baltic Sea. (GER, NL).

Recommendations

Trilateral: RT1. Land-based AIS stations in the Wadden Sea to be established as soon as possible, at least the deadline of 2005 is to be met.

3.1.5 Vessel traffic services and radar surveillance

Denmark, Germany and the Netherlands have fully implemented the IMO Guidelines for Vessel Traffic Services (VTS), although Denmark has not established a VTS in the area of the Wadden Sea. The obvious reason is the significantly lower traffic density along the Danish coast as compared to the busy traffic in the southern German Bight and along the Dutch coast. However, depending on further development of offshore wind farms off the North Friesian and Danish coast it might be advisable to establish a routeing system and a VTS in the area.

The *ERIKA* II-package, aiming to set up a common monitoring and information system for maritime traffic, states

> *[…] that there is not enough contact between the parties, which have information on maritime traffic. Frequently, VTS, coastguards, port authorities, etc. have very detailed information on traffic, but this information is not usable because it has not been pooled or circulated efficiently…* [EC 2000]

Therefore, the EC requires ships to comply with the IMO-approved instruments and to use vessel traffic services, but also points out that

> *[…] only in maritime areas located within the territorial waters of the Member State concerned may participation in a vessel traffic service be made compulsory for ships flying the flag of a third country…* [EC 2000]

Germany has established VTS with permanent radar surveillance on the rivers Elbe, Weser, Jade and Ems as well as in the German Bight. The VTS in the Netherlands cover the main approaches to the main ports but not the TSS Off Vlieland which is a risk area because of the traffic density and the junction between the Deep-Water Route and the TSS Terschelling German Bight.

At the end of February 2004 the European Commission has started infringement process against 12 Member States (except Denmark, Germany and Spain), for failure to respect EC-legislation on vessel traffic monitoring and information systems acc. to the concerned EC Directive [EC 2002] adopted in the wake of the *ERIKA* accident [EC 2004].

There is hence an absence of radar monitoring of the TSS Off Vlieland, which is an area of risk due to traffic density and junction (NL).

The *ERIKA* II-package concerning vessel traffic monitoring and information systems is disregarded by the Netherlands (NL)

Options	
National:	ON1. Depending on further development of offshore wind farms off the North Friesian and Danish coast it might be advisable to establish a routeing system and a VTS in the area (DK, GER)

Recommendations	
National:	RN2. VTS similar to the VTS German Bight to be provided (NL)
National:	RN3. Immediate implementation of the *ERIKA* II-package in respect of vessel traffic monitoring and information systems (NL)

Trilateral: RT2. Introduction of a vessel traffic management system (VTMS) as a supra-regional system for the Wadden Sea (e.g. Rotterdam to German Bight) creating better linked coverage throughout the area.

3.1.6 Pilotage

3.1.6.1 Deep-Sea Pilotage

It is acknowledged that compulsory pilotage outside territorial waters is not in conformance with the international law of the sea, and no ship using the Deep-Water Route is obliged to take a deep-sea pilot on board.

With the PSC ship classification "risk", "high risk" and "very high risk" there is a strong indicator at hand to identify ships which are posing a threat to the southern North Sea and the Wadden Sea area. For those vessels the mandatory use of pilotage in the Deep-Water Route is recommended to decrease the risk of accidents and impacts on the Wadden Sea.

A trilateral approach to legally implement compulsory pilotage for ships posing a risk, a high risk or a very high risk using the Deep-Water Route off the PSSA Wadden Sea is justified by the protection requirements of the area. The issue is a medium-term target, which can be initiated either via the EC[12] or directly at the IMO.

Recommendations

Trilateral: RT3. Compulsory deep-sea pilotage for ships identified to pose a risk, a high risk or a very high risk

3.1.6.2 Coastal and Harbour Pilotage

The designated national pilotage waters are not part of the PSSA Wadden Sea but shipping lanes crossing the Wadden Sea. The pilotage services offered in these waters are ample and sufficient. Traffic to the islands and passing through the Wadden Sea is mainly limited to ferries and excursion boats. However, there are also smaller merchant ships passing through the Wadden Sea to call at ports, e.g. on the north Friesian coast. Many of these ships are engaged in liner services and call these ports regularly.

Compulsory pilotage in those areas might be an option, although this option would only apply to a defined number of ships, for example smaller merchant vessels not employed in regular regional trade. Further, good seamanship requires the assistance of a pilot if the ship’s command is not familiar with the port of call and its approaches.

Options

Trilateral: OT1. Compulsory pilotage in the PSSA area for a limited number of ships

[12] A group of experts within the HELCOM is dealing with this issue also [Jenisch 2004].

3.1.7 Ship standards

As mentioned earlier the implementation of *generally accepted international rules and standards on design, construction, manning or equipment* (UNCLOS article 211, para 6 (c)) rests with the flag State and is determined by standard setting at the IMO. Classification societies conduct structural safety checks on behalf of the flag State, and the flag State administration is, amongst others, responsible for the issuing and control of accurate certificates, e.g. the *safety manning certificate* and others.

Neither legislation on national, bi- or trilateral level nor on European level regarding the above mentioned rules and standards will affect other ships than the ships flying the respective flags, and no legal instruments are available to force foreign flagged vessels to comply with such regional legislation. Successful initiatives put forward on national, bi- or trilateral or on European level to raise the standards concerned at the IMO, however, do affect all ships flying the flag of IMO member States.

3.1.7.1 Accelerated phase-out for single-hull oil tankers

Even though the phasing-out of single-hull tankers in 2005 and 2010, respectively, does not solve all problems of transportation of oil at sea [OCIMPF 2003], the decisions of both the EC and the IMO mark an important step towards improving shipping standards and maritime safety.

In combination with the prohibition of 21 October 2003 for single-hull tankers carrying heavy grades of oil, irrespective of their flag, on entering or leaving ports or offshore terminals or on anchoring in areas under the jurisdiction of a EC Member State, the protection of the Wadden Sea and southern North Sea has been enhanced. The reinforcement of the condition assessment scheme (CAS) is an additional factor[13].

However, within the given phasing-out scheme single-hull tankers in transit are still permitted to sail off the trilateral coast and may pose a threat to the Wadden Sea region.

A trilateral accelerated phasing-out of single-hull oil tankers flying the Danish, Dutch or German flag prior to the EC and IMO limits would affect about 1,4% of the world oil tanker fleet only [ISL 2003], and such ships do not necessarily steam in the Wadden Sea region. In addition, it is assumed that the decision-making process would extend the 2005, and probably the 2010 time limit.

Breach of UNCLOS is an issue of international law and determined by political considerations. A review and possible modification of UNCLOS is subject of a European initiative and has to be dealt with in the appropriate UN-fora.

Options	
Trilateral:	OT2. Earlier implementation of the phasing-out scheme for vessels flying their flag

[13] All single hull tankers, including the smallest, which were formerly excluded, will now have to comply with the Condition Assessment Scheme as from 15 years of age. The CAS is an additional reinforced inspection scheme specifically developed to detect structural weaknesses of single-hull tankers.

Trilateral: OT3. Trilateral initiative to ban single-hull tankers in their EEZ, resulting in breach of UNCLOS[14]

3.1.7.2 Additional items and measures

.1 Design and construction

Redundant propulsion and steering gear: As announced recently the construction of a double-hull 25,000-tdw chemical/product tanker has been ordered with Shanghai-Edwards Shipbuilding for delivery in 2006. The vessel will be equipped with two propulsion systems in separate engine rooms, two propeller and two steering engines, resulting in class sign 50 % (RP 50 %). Additional new-buildings are contracted as an option [THB 2004]. Earlier, in December 2002, the Wappen-Reederei, Hamburg, has launched the first double-hull Safety Chemical Oil Tanker (SCOT 8000) of a series of six 8,000-tdw tankers with complete redundancy in propulsion and steering gear, RP 50 % [Hansa 2003].

Improved safety and environmental protection: Also in 2002, general cargo ship MV *CELLUS* of shipping company Braren, Germany, has been awarded the "Blue Angel environmental label for environment-conscious ship operation" by achieving the ambitious list of safety and environmental criteria the award is based upon. Meanwhile two more ships of Braren have been awarded [BE 2002] and further applications are under examination.

The above examples clearly demonstrate that it would need further award initiatives which promote high safety and environmental standards.

Options

Trilateral: OT4. Initiative for an award scheme on EC and IMO level for ships, which demonstrably fulfil ambitious safety and environmental standards.

.2 Manning

Refresher courses for seafarers: The international standards of training, certification and watchkeeping only address the optional revalidation for master's and officer's certificates, whereas the implementation of such revalidation is up to the flag State [STCW, regulation I/11 and section A-I/11].

No refresher courses at all are provided for seafarers on mandatory minimum requirements for familiarization and basic safety training covering personal survival techniques, fire prevention and fire fighting, elementary first aid and personal safety

[14] In the aftermath of the *PRESTIGE* disaster certain single-hull ships passing through the French and Spanish 200 mile Exclusive Economic Zone (EEZ) have been ordered out to sea, in clear contravention of the freedom of navigation under the UN Convention on the Law of the Sea (UNCLOS), and Portugal and Morocco have threatened similar action. The matter will be taken up with the International Tribunal for the Law of the Sea in Hamburg, Germany [ICS 2003]

and social responsibility[15]. Only for masters or designated officers onboard European ships a special training on medical care has to be updated periodically, at least every five years, acc. to 92/29/EEC, article 5 para 3 [EC 1992].

Such refresher courses should hence be made mandatory for all seafarers which include survival techniques, fire prevention and fire fighting, first aid, safety and social responsibility.

Options	
Trilateral:	OT5. Introduction of mandatory basic safety refresher courses
Trilateral:	OT6. Enhancement of basic safety courses by elements such as for instance emergency management, emergency towing, pollution response
	OT7. Initiative at IMO and EC level regarding OT5 and OT6 above

.3 Equipment

Emergency towing systems: In the aftermath of the *PALLAS* accident in 1998, a German submission is currently under discussion at the IMO whether emergency towing systems (ETS) for other ships than tankers of 20,000 tdw and above should become mandatory [MSC 2003]. This submission is backed up by a formal safety assessment (FSA). The result of this FSA shows that the mandatory equipment of all ships down to a size of 300 gt with ETS appears not only justified by the increased safety potential but also profitable in the long term. The FSA concludes:

> *It is recommended, in essence, to expand the mandatory equipment with an approved ETS to all merchant ships of 300 gt and above, except to certain ships with a reduced risk profile, like fishing vessels, offshore supply vessels and tug boats.*
>
> *The lay-out of the future mandatory ETS should exclude the present option for the forward system, which lacks the pick-up gear and the towing pennant. This recommendation has already been given in the "Donaldson Report" in 1994. Existing ETS-tankers should be refitted accordingly.* [GAUSS 2001].

Options	
Trilateral:	OT8. Support of the submission MSC 75/21 to equip all ships down to a size of 300 gt with ETS except certain ships with reduced risk profile

.4 Operation

.4.1 Ballast water: In February 2004 the IMO adopted the *International Convention for the Control and Management of Ships' Ballast Water and Sediments* [IMO 2004], entry into force 12 months after ratification by 30 States, representing 35 % of world merchant shipping tonnage. The convention intends to prevent the potentially devastating effects of the spread of harmful aquatic organisms carried by ships' ballast wa-

[15] STCW 95 chapter VI

ter and will require all ships to implement a ballast water and sediments management plan. All ships will have to carry a ballast water record book and will be required to carry out ballast water management procedures to a given standard. All ships using ballast water exchange should:

- whenever possible, conduct ballast water exchange at least 200 nautical miles from the nearest land and in water at least 200 metres in depth, taking into account guidelines developed by IMO;
- in cases where the ship is unable to conduct ballast water exchange as above, this should be as far from the nearest land as possible, and in all cases at least 50 nautical miles from the nearest land and in water at least 200 metres in depth.

When these requirements cannot be met, areas may be designated where ships can conduct ballast water exchange.

Contracting parties undertake to ensure that ports and terminals where cleaning or repair of ballast tanks occurs have adequate reception facilities for the reception of sediments.

It is therefore essential that the three countries designate areas for ballast water exchange outside the PSSA and ensure adequate reception facilities in the ports in line with other reception facilities.

Options

National: ON2. Designation of areas for ballast water exchange

National: ON3. Ensure adequate reception facilities for ballast water

.4.2. Anti-fouling paints: The International Convention on the Control of Harmful Anti-fouling Systems on Ships, AFS Convention [IMO 2001b], has been adopted on 5 October 2001, entry into force 12 months after 25 States representing 25 % of the world's merchant shipping tonnage have ratified it. Under the terms of the convention, parties to the convention are required to prohibit and/or restrict the use of harmful anti-fouling systems on ships flying their flag, as well as ships not entitled to fly their flag but which operate under their authority, and all ships that enter a port, shipyard or offshore terminal of a party.

The resolution called for a global prohibition on the application of organotin compounds, which act as biocides in anti-fouling systems on ships, by an effective date of 1 January 2003, and a complete prohibition by 1 January 2008.

So far, only Denmark plus 6 other contracting States representing 8.92 % of world's merchant shipping tonnage have ratified the ASF convention. The AFS Convention need also to be ratified by Germany and the Netherlands immediately.

Recommendations

National: RN4. Immediate ratification of the AFS Convention (GER, NL)

3.2 Emergency Management

3.2.1 National pollution response management

According to UNCLOS article 194 …

> *1. States shall take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavour to harmonize their policies in this connection.*
>
> *[…]*
>
> *3. … These measures shall include, inter alia, those designed to minimize to the fullest possible extent:*
>
> *[…]*
>
> *(b) pollution from vessels, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, preventing intentional and unintentional discharges, and regulating the design, construction, equipment, operation and manning of vessels;*
> *[…]*

All three countries have implemented the relevant decisions and regulations drawn up by the EC and IMO regarding pollution response management. One important exception is the OPRC-HNS[16] Protocol, which requires that parties establish measures for dealing with HNS-pollution incidents. It is signed but not ratified by Germany[17] and Denmark (status 31.01.2004). However, Germany states to fully comply with the Protocol in practise.

The already implemented Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) – signed and ratified by the three countries – requires the signatories to maintain a National Contingency Plan (NCP) for responding to oil pollution incidents.

Up to now the NCPs of DK and NL lack sufficient information on how to deal with HNS discharges or incidents, while oil is covered quite well.

However, the Dutch NCP is currently under revision as to adequate capacities. To date the Dutch target recovery capacity is limited to 30.000 cbm of oil in three days [ITOPF 2003], based on former risk analysis. At the moment a new risk analysis for the Dutch part of the North Sea is going on and heavy oil will play a major role, due to the fact that the transport of heavy oil originating from Baltic States and Russia is increasing [J. Huisman, pers. com].

[16] This Protocol aims at providing a global framework for international co-operation in combating major incidents or threats of marine pollution from ships carrying Hazardous and Noxious Substances (HNS), such as chemicals.

[17] Ratification in Germany depends on decision making processes of the Federal States concerned

Regarding the availability of adequate pollution combating vessels, fire-extinguishing equipment and pumping equipment Germany has financed extensive research projects in the middle of the eighties. *Inter alia*, this research has led to the development of fully gas-protected multi-purpose combat vessels, of which two are in service in the area. However, some voices fear that since that time the government provided only poor means, so the leading position in this regard may get lost [BUND 2003] [18].

Denmark still fails in deploying an adequate pollution response vessel and spill response equipment that would enable a spill absorption of more than 1,600 cbm/day in the North Sea.

Regarding deployment of pollution combating vessels – currently most of them with multipurpose functions – consideration should be given to the possibility of these vessels being employed on other duties. It may therefore be advisable to ensure the availability of a replacement vessel at the shortest possible notice, should the combating vessel become unserviceable for any reason [S6]. In Germany availability is assured by the two mentioned multi-purpose combat vessels as well as an additional ETV in the area.

Regarding co-ordination of national emergency measures it can be said that every State is prepared and organised adequately from a communication and information point of view and that an efficient command structure is in place.

Options	
Trilateral:	OT9. Further application of best available pollution combating technology and financing of research

Recommendations	
National:	RN5. Immediate ratification of the OPRC-HNS Convention. (GER, DK)
National:	RN6. The Directorate General for Public Works and Water Management should gear its pollution combating organization to a larger discharge of oil than the 30,000 cbm/3 day (NL) [S4].
National:	RN7. Denmark should deploy a pollution response vessel and spill response equipment with a volumetric capacity of more than 1,600 cbm/day (DK)
Trilateral:	RT4. Ensure 24-h-availability of adequate pollution response vessel, irrespective of other multipurpose tasks.

3.2.2 Places of refuge

A system of places of refuge for ships in distress with a clear chain of command and clear provisions for compensation is considered the most important element within the

[18] The research and development work done by the Dutch TNO from January 2002 to December 2002 has resulted in the design of a new mechanical oil recovery system [TNO 2002].

emergency management system. International guidelines like those elaborated within IMO or within the Bonn Agreement, resulted in the preparation of checklists, both for authorities and shipmasters in need of such a place.

To establish places of refuge in accordance with the IMO guidelines, specific plans have to be prepared for each designated area. The plans will have to contain all relevant information regarding possibilities for tugboats and towing assistance, availability of fire-extinguishing equipment and pumping equipment, reaction times for environmental facilities, including pollution combating vessels, as well as other relevant information.

According to the EC directive 2002/59/EC, by February 2004 all States must designate a number of places of refuge to ensure that ships in distress may have better access to assistance, and oil pollution at sea can be avoided.

Germany hopes to implement the EC-directive by the middle of this year. A not-published list of selected places of refuge has already been handed out to the Central Command for Maritime Emergencies (Havariekommando).

In the Netherlands the competent authority has actually decided not to appoint places of refuge on forehand. Due to the assumption that any incident is unique in its appearance a place of refuge will be appointed as the case arises and based on the circumstances, the type of incident and the possibilities to handle the incident at the closest possible harbour [J. Huisman, pers. com.].

Despite of the danger that the designation and use of places of refuge could encounter local opposition, it is considered imperative to inform the local authorities and the public concerned about the consideration/designation. It should therefore be made clear that a well defined place of refuge can limit the extent of coastline threatened by the scale of dangers related to the casualty.

Only Denmark meets the requirements of the EC-Directive to the full extent and in addition published their appointed places of refuge in the Internet [MST-DK 2004] Germany and the Netherlands should immediately fulfil their duties under the EC-Directive. Potential designations within the Wadden Sea should take account of the areas status as a PSSA.

Options

National: ON4. At least the local authorities and the public concerned should be informed about the consideration/designation of places of refuges (GER, NL)

Recommendations

National: RN8. Immediate notification of places of refuge to the EC acc. to article 20 of the Directive 2002/59/EC especially taking into account the vulnerability and sensitivity of the PSSA Wadden Sea (GER, NL)

3.2.3 Emergency towing

In addition to two multi-purpose combat vessels with ETV-capacities the German chartered a deep-sea salvage tug BMS *OCEANIC* operates between the German-Dutch borderline in the sea area south-west of Helgoland and the Dutch ETV *WAKER* operates between Den Helder and the Dutch-German borderline.

So far Denmark refrains from the deployment of an ETV at its western coast for competitiveness reasons. Instead, private tugs, offshore supply vessels and anchor handling tugs shall perform tasks of an ETV. Even though there is no general tradition for establishing State competitors to private companies in Denmark, and the working group in charge to write up a national vulnerability study does not consider a reason to propose establishing further tug boat and towing capacity under the auspices of the State, it should be reconsidered on the basis of the designation of the PSSA Wadden Sea.

Risk assessment may be beneficial as an aid to decisions about the positioning of ETVs. Individual needs and policies will define ETV availability; consideration should be given to the possibility of ETVs being employed on other duties, e.g.

- Fire fighting
- Evacuation of personnel
- Rapid response to an oil spill, including capability to deploy oil spill containment booms, application of dispersants and operation of skimmers.

The ETVs should be fitted with sufficient bollard pull to control the direction of a drifting and fully laden tanker or other large vessel and with sufficient power and manoeuvrability to keep station close to a ship in bad weather[19].

Serious considerations should be made on a trilateral level about the effectiveness of the deployed – or planned deployment of – ETVs in the view of future utilisation and changing circumstances through e.g. growing sizes of vessels, offshore wind farms, harbour development, traffic increase etc. in the southern North Sea.

Options	
Trilateral:	OT10. Ensure 24-h-availability of adequate ETV capacities in the trilateral area, irrespective of other multi-purpose tasks
Trilateral:	OT11. When deploying a new/additional ETV ensure a bollard pull of more than 120 t

Recommendations	
National:	RN9. It should be reassessed whether the State emergency services should deploy an ETV with an adequate bollard pull at its westerly coast (DK)

[19] Compare call for tender of BMVBW [BMVBW 2001]

3.2.4 Mutual assistance in emergencies

Depending on the Dutch parliamentary procedure the DENGERNETH-Plan will replace the two bilateral agreements (DENGER, NETHGER) presumably this year with the following main contents:

1. improved efforts and co-ordinated aerial surveillance in the North Sea, whereby no preliminary permissions are needed to enter into EEZ's of neighbouring countries;
2. improved mutual assistance in case of ship casualties;
3. improved mutual assistance in case of pollution.

The DENGERNETH-Plan aims to let national procedures become more effective and flexible than today and gives reason to hope that it will enable the contracting parties to act more promptly and with less bureaucracy.

> *"Combined efforts, integrated national arrangements are the only option to deal with catastrophic volumes of oil discharged into any marine environment threatening national but also international interest. National contingency planning is no longer sufficient, international concentration or coordination of response capacity will strengthen the individual and international preparedness."* [J. Huisman]

Recommendations

National: RN9 applies.

3.2.5 (Common) Coast guard

Without doubt the at sea and air-borne execution of control functions carried out by coast guard units is an effective approach to prevent deliberate infringements in the territorial waters and beyond. Such coast guard activities, covering safety at sea, pollution prevention, customs and border control, defence of criminal action, or fishery survey, have to be of comprehensive and robust nature to be successful. The tighter the net of surveillance, the smaller the space for illegal discharges and other offences. A high level of competency and adequate financial, personal, operational and technical resources are needed.

Ten years ago, in 1994, a study has been carried out on behalf of the EC DG Research by the Scientific and Technological Options Assessment Unit (STOA), to assess the options of a European Environmental Coast Guard. The study recommended to create a strategic and coordinating central body with regional implementation and enforcement centres, supported by a central task-force [STOA 1994]. In 1998, and on the basis of the study, a workshop "Towards a European Coast Guard" took place in Brussels. Inter alia the workshop concluded:

> *To add value to current arrangements any proposed movement towards a European Environmental Coast Guard would have to be gradual, pragmatic and well-justified before it could be allowed to displace existing arrangements for efficient and effective, if disparate, co-operation. […] to be successful and*

to enjoy wide support, the requirements of any development towards an EECG must be

- *of sustained, and hopefully improved, quality*
- *technical feasible*
- *organisationally practicable*
- *politically acceptable*
- *financially viable.* [STOA 1998]

Since then several proposals have been suggested, and only recently members of the European Parliament's new MARE Temporary Committee on Improving Safety at Sea called for a European Coast Guard (ECG) to be set up. It is debatable whether an ECG is possible or even desirable, but if there is a EC-wide agreement in this matter, EMSA could be the nucleus of a future ECG. The Commission would tackle this problem in due course, the director of the EMSA, Mr. Willem de Ruiter, has announced [Marin-elog 2003].

For the southern North Sea and Wadden Sea area the close cooperation, exchange of information and mutual assistance between the Nederlandse Kustwacht, the German Küstenwache and the Royal Danish Navy may find an improved non-bureaucratic form of organisation in a joint trilateral coast guard working group.

Options

Trilateral: OT12. Establish a joint coast guard working group to investigate the option for a trilateral common coast guard

3.3 Illegal discharge

Discharges of waste and cargo residues from ships at sea are unacceptably common[20]. In 2001, aerial surveillance detected 390 oil slicks in the Baltic Sea and 596 oil slicks in the North Sea. The main part of the discharges are illegal, that is, in contravention to the internationally accepted rules on ships' discharges as laid down in the MAR-POL 73/78 Convention.

Only a fraction of the offenders is actually caught red-handed and only a handful is eventually prosecuted with often negligible fines. The existing liability regulations do not urge ship owners to responsible acting.

[20] Compare results of research projects "Identification, qualification and evaluation of oil input in the North Sea oil" (UBA R&D-Project 297 25 310) [Fleet 2001], and "Investigation into litter pollution on beaches on the German Nor Sea coast" (UBA R&D-Project 202 96 183) [Fleet 2003], funded by the Federal Environmental Agency Germany (UBA)

3.3.1 Port reception facilities

The aim of the Directive 2000/59/EC on Port Reception Facilities for ship generated waste and cargo residues is to reduce the incentive to discharge ship-generated waste and cargo residue into the sea by means of a differentiated No-Special-Fee system (NSF) [21].

In terms of providing appropriate reception facilities and implementing an adequate waste handling plan, the methods of implementation of the directive within Denmark, Germany and the Netherlands as well as in the harbours are very diverse.

However, more than two years after the entry into force of the Directive, in October 2003 the EC decided to request the Court of Justice to rule against the Netherlands for failing to communicate the national measures transposing the Directive [EC 2003b].

Until now deficits in implementation of Directive 2000/59/EC in the Netherlands can be stated. Furthermore there are limitation of quantities of waste (DK, NL) and not full application of the NSF system (NL).

Options

Trilateral: OT13. Harmonization in interpretation of the EC Directive 2000/59/EC regarding:

i) principles of fees (e.g. No Special Fee System)
ii) parameters for fee calculation (not or not only gt related)
iii) no limitations in quantities and types of waste
iv) develop of clear definitions for exemptions (e.g. frequent callers)

Recommendations

National: RN10. Immediate implementation of Directive 2000/59/EC (NL)

3.3.2 Aerial Surveillance

Aerial surveillance is carried out on a high level in terms of intensity and applied monitoring system within the respective area, and the quality of the existing data is on a high level, as well. Merely a regional/European database is missing and subject to ongoing research[22].

The technology used should be harmonized in order to guarantee that e.g. the spilled substance can be roughly classified from the aircraft. Otherwise it is necessary to send a ship to the suspected spill to take a sample and analyse it before a thoughtful com-

[21] The Directive represents the outcome of a extremely long-lasting discussion process within the Member States and allows for a non-hundred-percent NSF system, but for an differentiated implementation with minimum 30 % NSF and 70 % SF etc.

[22] For example EC DG RTD project OCEANIDES aims to identify and assemble the knowledge required to establish a more harmonised and effective monitoring of European waters of illicit marine oil pollution.

bating strategy can be developed. This is very time consuming, probably maximises the damage, and limits the possible actions that can be taken [Viebahn 2001].

Also, the statistics presently used should be harmonized in order to warrant that a profound database and verifiable statistical products are available for decision makers. Therefore the application of recent spatial and other statistical methods like geostatistic tools is essential. National authorities should provide the raw data as a precondition for detailed statistical analyses like oil density mapping.

The observation technique with LFS and MWR[23] sensors allows to detect oil spills with detailed information regarding type, quantity and quality. A harmonised observation technology is considered to be the most effective approach to improve safety of the environment and to a quick response in case of an emergency[24].

Options

Trilateral: OT14. Introduction of EC maritime pollution database regarding aerial surveillance

Trilateral: OT15. Additional to basic statistics, introduction of harmonized geostatistical analysis and tools regarding aerial surveillance

Recommendations

National: RN11. Application of state-of-the-art aerial surveillance technology (for example LFS, MWR) (NL,DK)

National: RN12. National authorities should provide aerial surveillance raw data for detailed analyses

3.3.3 Compensation, liability

Compensation for pollution damage caused by spills from oil tankers is governed by CLC 1992 and IOPC Fund 1992, both in force and with the same scope of damages. If a pollution incident occurs involving a tanker, compensation is available for clean-up operations or preventive measures and for damage as a result of the pollution. This is independent of the flag the tanker flies, the ownership of the oil or the place where the incident occurred.

In the present liability scheme of these both conventions the compensation for the victims is the main target and the individual liability of the polluter is only second rate. Furthermore, the ship owners are allowed to limit their liability. In practice and according to Ringbom [Ringbom 2001] this option is obviously often taken [SRU 2004].

In 2001 the Bunker Convention addressing liability and compensation for spills caused by ships' bunkers was adopted by the IMO. The convention is not yet in force and neither signed by Germany nor by the Netherlands. It will cover claims for clean up of

[23] LSF: Laserfluorosensor, MWR: Microwave Radiometer

[24] In 2002 a new technique utilizing a sample buoy to be thrown into the water from an aircraft has been presented. However, so far no experiences on the invention are at hand.

bunker oil pollution as well as for property damage and consequential economic losses. The maximum amount of compensation available would be 3.6 million SDR.[25]

None of the three countries have signed the HNS Convention, which is not yet in force and covers any damage caused by hazardous and noxious substances in the territorial sea of a State party to the convention. The HNS Convention excludes pollution damage as defined in CLC and IOPC to avoid an overlap with these conventions.

The EC intends to provide rapid and comprehensive compensation for damage in proposing the establishment of an International Oil Pollution Compensation Supplementary Fund (COPE-Fund). So far the Council has not approved this proposal on the grounds that measures of this nature should be taken at IMO level. Bearing in mind how long it normally takes to make decisions on this level, it would potentially be worth setting up a temporary EC-Fund which could be cancelled as soon as an adequate measure can be put in place at IMO level [S4].

Options

Trilateral: OT16. Initiative at EC level to set up a temporary COPE-Fund that could be cancelled as soon as an adequate measure can be put in place at IMO level

Recommendations

National: RN13. Ratification of the Bunkers Convention (NL,GER)

Trilateral: RT5. Ratification of the HNS-Protocol

3.3.4 EC Directive on ship-source pollution and introduction of sanctions

The proposal for a European Parliament and Council *Directive on ship-source pollution and on the introduction of sanctions, including criminal sanctions, for pollution offences*, EC proposal COM (2003) 92 of 5 March 2003 [EC 2003c], has been discussed on 12 January 2004 and accepted on 13 January 2004 by the European Parliament [Doc A5-0388/2003; 2003/0037 COD].

The purpose of the proposed directive is to incorporate the international standards for ship-source pollution as defined in MARPOL 73/78 into Community law, and to ensure that persons responsible for illegal discharges are subject to adequate sanctions, including criminal sanctions.

The proposed directive applies to discharges of polluting substances of any sea-going ship, irrespective of its flag, in all coastal waters of the Community, but goes beyond it by addressing the high seas as well. The exclusive economic zone is covered to the extent that such a zone has been established, in accordance with international law, by a Member State. In serious cases the punishment can be a sentence of imprisonment and the arrest of the ship.

[25] The Special Drawing Rights is a monetary unit established by the International Monetary Fund (IMF); as on 31 December 2001, 1 SDR = £ 0.86558 or US$ 1.25976.

It is stressed that illegal pollution by ships must be made a punishable offence and that penalties should be imposed on whoever is deemed responsible: natural or legal persons e.g. the master, owner, operator or charterer of a ship or even a classification society and any other person involved.

The proposed Directive is remarkable with regard to its approach to enforce MARPOL 73/78 via an EC wide mechanism. Because MARPOL is globally accepted, the Directive provides a legal basis under EC law to achieve a harmonized enforcement of the rules for all ships and addressing the high seas also.

The present proposal would not be necessary if the Member States had implemented the Convention on the Protection of Environment through Criminal Law.

Recommendations

Trilateral: RT6. Fast implementation of the Directive 2003/0037 COD

3.4 Port State Control

The consistent demand on enhanced Port State Control (PSC) inspections is well known, especially with regard to the PSSA Wadden Sea. However, it has to be recalled that

> *[…] PSC is not meant to be a substitute for flag State obligations, but rather a complementary instrument. […] it is commonly recognized that the coastal State has full authority to determine the conditions of, and prescribe the policy for access to and use of, its port. In fact, a number of modern international instruments recognize not only the power but also the duties of port States to undertake inspections of vessels to ensure compliance with international rules and regulations*. [Behnam 2003]

Facing the fact that PSC is partly abused as substitute for regular flag State duties[26] and the lack of flag State responsibility is leading to inspections by coastal States to protect their coasts and ports from risks of substandard ships including the financial burden involved, the harmonized execution of the PSC scheme is considered to be the most effective approach to improve safety in shipping and protection of the environment.

Due to the particular protection requirements of the designated PSSA and adjacent area it is recommended to enhance and intensify PSC activities on a trilateral basis, and to solve national deficiencies and gaps on short notice, both requiring the provision of appropriate financial and human resources. In addition, such recommended action should address the Paris MoU [Paris MoU 1982] and the EMSA.

It is well recognized that the lack of adequately qualified PSC Officers (PSCO), i.e. the shortage of experienced nautical and technical officers with seafaring career[27], presents a serious problem to PSC administrations.

[26] Compare UNCLOS article 91 to 97

[27] This shortage results from the abnegation of strategic European recruitment policies in the last 30

For this reason most likely in the Netherlands PSC duties are partly outsourced to private classification offices. Since shipping companies are often clients of these offices, obviously such arrangement may lead to conflict-of-interests situations and should be strictly avoided.

To overcome these deficiencies and to improve PSC performance in general, already existing harmonization efforts should be intensified with regard to procedures, exchange of personnel on operative and administration level, and training and qualification measures. Such recommended action should address the Paris MoU and the EMSA, as well.

To reduce inappropriate burden to the ship crews information about results of executed inspections should be exchanged between the regional MoU[28].

Options	
National:	ON5. Expansion of human resources for PSC tasks (NL)
Trilateral:	OT17. Pilots to inform PSC in case of apparent deficiencies

Recommendations	
National:	RN14. Immediate implementation of 2001/106/EC [EC 2001b] on PSC (NL)
National:	RN15. Elimination of conflict-of-interests situation with PSC Officers (PSCO) (NL)
Trilateral:	RT7. Intensify harmonization of PSC procedures (e.g. checklists, interviews, internal quality standards etc.)
Trilateral:	RT8. Intensify exchange of PSCO to ensure harmonization and consistence of information
Trilateral:	RT9. Intensify development of joint PSCO training and qualification measures in general, and on special issues in particular (e.g. cargo securing, security, forged certificates, etc.)
Trilateral:	RT10. Throughout compliance with the "at least 25 %-inspection" target[29]

years in favour of the employment of foreign marine officers and crew.

[28] A ship coming from Asia via the Mediterranean Sea to Europe with the destination Latin America might be inspected under the Tokyo-, the Mediterranean-, the Paris- and the Vina del Mar-MoUs.

[29] In the EC by now the 25 %-inspection target results in a ship's inspection density of about 90 % [pers. communication German See-BG]

4 Conclusion and assessment

The southern North Sea and the Wadden Sea area is to a major extend influenced by international shipping, thus safety in shipping and ship's safety play an outstanding role in the protection of this sensitive sea area.

Denmark, Germany and the Netherlands have implemented IMO- and EC-legislation and have established several trilateral and national measures to enhance shipping safety and the protection of the marine environment.

However, during the investigation for this study is was realised that measures and instruments could be improved to a certain extent on a national as well as on a trilateral level and that even the implementation of IMO- and EC-legislation fails in particular respects.

In this chapter the options and recommendations as described in chapter 3 as well as in Annex 3 are classified into three categories:

Priority recommendations: These recommendations are defined as obligatory measures, which have to be implemented immediately to overcome the lack of compliance with binding legislation adopted on international, European or national level, i.e. the recommendations address the implementation of exiting commitments.

Six such recommendations are pointed out disregarding present IMO- or EC-legislation on maritime safety and environmental protection. There is a compelling need for the States concerned to implement this legislation as soon as possible.

Recommendations are defined as measures and/or instruments to ensure the effective implementation of agreed standards, rules and regulations on the appropriate level. Further, these recommendations reflect the special protective requirements of the area, as acknowledged through the designation of the PSSA Wadden Sea.

19 recommendations resulting from identified deficiencies – trilateral as well as national – are listed in this report. Following these recommendations will lead to improved safety standards in the area.

Recommendable options are defined as additional measures and/or instruments, which qualify to accomplish the intended objectives.

22 identified recommendable options are suitable to raise safety and pollution prevention issues to a level appropriate for the special protection requirements of the PSSA Wadden Sea and adjacent area.

The recommendations and options assigned to one of the three categories are identified as national or trilateral tasks and listed in the following tables without any further explanatory comments. Cross reference to chapter 3 is given by the numerical sequence.

Priority Recommendations		
National	RN3	Immediate implementation of the *ERIKA* II-package in respect of vessel traffic monitoring and information systems (NL)
	RN4	Immediate ratification of the AFS Convention (GER, NL)
	RN5	Immediate ratification of the OPRC-HNS Convention (GER, DK)
	RN8	Immediate notification of places of refuge to the EC acc. to article 20 of the Directive 2002/59/EC, especially taking into account the vulnerability and sensitivity of the PSSA Wadden Sea (GER, NL)
	RN10	Immediate implementation of Directive 2000/59/EC on port reception facilities (NL)
	RN14	Immediate implementation of 2001/106/EC on PSC (NL)

Recommendations		
National	RN1	Positioning of buoys on both sides of the shipping lanes to be continued (lateral buoy system) (NL)
	RN2	VTS similar to the VTS German Bight to be provided (NL)
	RN6	The Directorate General for Public Works and Water Management should gear its pollution combating organization to a larger discharge of oil than the 30,000 cbm/ 3 days (NL) [S4]
	RN7	Denmark should deploy a pollution response vessel and spill response equipment with a volumetric capacity of more than 1,600 cbm/day (DK)
	RN9	It should be reassessed whether the State emergency services should deploy an ETV with an adequate bollard pull at its western coast (DK)
	RN11	Application of state-of-the-art aerial surveillance technology (LFS, MWR) (NL, DK)
	RN12	National authorities should provide aerial surveillance raw data for detailed analysis
	RN13	Ratification of the Bunker Convention (NL, GER)
	RN15	Elimination of conflict-of-interests situation with PSC Officers (PSCO) (NL)
Trilateral	RT1	Land-based AIS stations in the Wadden Sea to be established as soon as possible, at least the deadline of 2005 to be met.
	RT2	Introduction of a vessel traffic management system (VTMS) as a supra-regional system for the Wadden Sea (e.g. Rotterdam to German Bight) creating better linked coverage throughout the area.
	RT3	Compulsory deep-sea pilotage for ships identified to pose a risk, a high risk or a very high risk

	RT4	Ensure 24-h-availability of adequate pollution response vessel, irrespective of other multipurpose tasks.
	RT5	Ratification of the HNS-Protocol
	RT6	Fast implementation of the Directive 2003/0037 COD
	RT7	Intensify harmonization of PSC procedures (e.g. checklists, interviews, internal quality standards etc.)
	RT8	Intensify exchange of PSCO to ensure harmonization and consistence of information
	RT9	Intensify Development of joint PSCO training and qualification measures in general, and on special issues in particular (e.g. cargo securing, security, forged certificates, etc.)
	RT10	Throughout compliance with the "at least 25 %-inspection" target

Recommendable Options		
National	ON1	Depending on further development of offshore wind farms off the North Frisian and Danish coast it might be advisable to establish a routeing system and a VTS in the area (DK, GER)
	ON2	Designation of areas for ballast water exchange
	ON3	Ensure adequate reception facilities for ballast water
	ON4	At least the local authorities and the public concerned should be informed about the consideration/designation of places refuges (GER, NL)
	ON5	Expansion of human resources for PSC tasks (NL)
Trilateral	OT1	Compulsory coastal pilotage in the PSSA area for a limited number of ships
	OT2	Earlier implementation of the phasing-out scheme for vessels flying their flag
	OT3	Trilateral initiative to ban single-hull tankers in their EEZ, resulting in breach of UNCLOS
	OT4	Initiative for an award scheme on EC and IMO level for ships, which demonstrable fulfil ambitious safety and environmental standards
	OT5	Introduction of mandatory basic safety refresher courses
	OT6	Enhancement of basic safety courses by elements e.g. emergency management, emergency towing, pollution response
	OT7	Initiative at IMO and EC level regarding OT5 and OT 6
	OT8	Support of the submission MSC 75/21 to equip all ships with ETS down to a size of 300 gt except certain ships with reduced risk profile

	OT9	Application of best available pollution combating technology and financing of research
	OT10	Ensure 24-h-availability of adequate ETV capacities in the trilateral area, irrespective of other multipurpose tasks
	OT11	Deploying a new /additional ETV ensure a bollard pull of more than 120 t
	OT12	Establish a joint coast guard working group to investigate the option for a trilateral common coast guard
	OT13	Harmonization in interpretation of the EC Directive 2000/59/EC on port reception facilities
	OT14	Introduction of EC maritime pollution database regarding aerial surveillance
	OT15	Additional to basic statistics, introduction of harmonized geo-statistical analysis and tools regarding aerial surveillance
	OT16	Initiative at EC level to set up a temporary COPE-Fund that could be cancelled as soon as an adequate measure can be put in place at IMO level
	OT17	Pilots to inform PSC in case of apparent deficiencies

4.1 Further considerations and Follow-up

According to the Terms of Reference, the report *reviews the current measures and the implementation of agreements regarding maritime safety and prevention of pollution from ships in the Wadden Sea area and the southern North Sea with a view to identify gaps and gives recommendations on the basis of this gap analysis.*

In total 47 recommendations and recommended options have been identified which are considered to be down-to-the-ground rather than generated from wishful thinking. Although there is the justified saying "if you think safety is expensive – try an accident", a balanced adjustment between recommendations and the desired, partly competing economic and social activities has to be achieved to enhance maritime safety and pollution prevention.

However, whether or not specific recommendations are accepted and adopted, and initiatives are taken to implement the suggested action may require further considerations. Such further considerations may particularly focus on cost-benefit-analysis, on risk analysis and on Formal Safety Assessment (FSA) and should address general follow-up measures.

4.1.1 Cost-benefit analysis, risk analysis and FSA

.1 Cost-benefit analyses intent to evaluate whether the estimated costs for the development, implementation, enforcement and control of recommended action appears to be justified in comparison to retain the situation unchanged. The latter so called zero-

option could possibly be accepted if the anticipated damage values less than the costs for the action. A cost-benefit analysis would probably apply to recommendations addressing e.g. technical improvements and equipment, inter alia

- RN7. Denmark should deploy a pollution response vessel and spill response equipment with a volumetric capacity of more than 1,600 cbm/day (DK); or
- OT9. Application of best available pollution combating technology and financing of research.

.2 Risk analyses aim to investigate in detail causes and consequences of given or expected scenarios. This can be achieved by the use of suitable techniques that model the risk, and allows to identify and evaluate the factors which influence the level of risk. A risk analysis would apply for example to

- RN1. Positioning of buoys on both sides of the shipping lanes to be continued (lateral buoy system) (NL); or
- RN6. The Directorate General for Public Works and Water Management should gear its pollution combating organization to a larger discharge of oil than the 10,000 cbm/day (NL); or
- ON1. Depending on further development of offshore wind farms off the North Friesian and Danish coast it might be advisable to establish a routeing system and a VTS in the area (DK, GER).

.3 The FSA approach has been adopted by the IMO to back future decisions on safety regulations and is

> *[…] based on the principles of identifying hazards, evaluating risks and cost benefit assessments, and has as its objective the development of a framework of safety requirements for shipping in which risks are addressed in a comprehensive and cost effective manner.* [HSE 2000]

The FSA methodology shall consist of the five interrelated steps:

- identification of hazards;
- risk assessment;
- risk control options;
- cost-benefit assessment;
- recommendations for decision making. [IMO 2002]

The FSA approach may be applied to e.g.

- RN9. It should be reassessed whether the State emergency services should deploy an ETV with an adequate bollard pull at its western coast (DK); or
- RT2. Introduction of a vessel traffic management system (VTMS) as a supra-regional system for the Wadden Sea (e.g. Rotterdam to German Bight) creating better linked coverage throughout the area; or

- RT3. Compulsory deep-sea pilotage for ships identified to pose a risk, a high risk or a very high risk.

4.1.2 Follow-up

One finding of the study is non-compliance with adopted legal responsibilities in particular respects. To overcome these gaps is taken for granted. However, since it is foreseeable that legislation regarding maritime safety and pollution prevention will increase within the next years, especially on EC level, monitoring of implementation and enforcement progress will become even more important.

Furthermore, 41 recommendations are derived from the specific conditions as to traffic density, routeing etc. in the southern North Sea area, and from the acknowledged protective requirements of the PSSA Wadden Sea in particular. The recommendations call for national, bi- and trilateral action, and partly for trilateral initiatives on EC or international level. Therefore the follow-up of these recommendations or parts of them is considered to be of significance to meet the required level in safety and pollution prevention.

This tasks might be realised within the framework of the Trilateral Wadden Sea Cooperation by the establishment of working groups or groups of experts, respectively, under the given headings

- shipping safety and ship's safety;
- emergency management;
- illegal discharges of waste; and
- port State control;

whereas the coordination may rest with the Common Wadden Sea Secretariat. In addition, it might be advisable to aim at a further status quo report/gap analysis in e.g. three years time.

Finally, a mandate should be assigned to an appropriate body within the framework of the Trilateral Wadden Sea Cooperation to support and monitor the EC approach to investigate adequacy of UNCLOS, keeping in mind that

> *[…] Civil society quite rightly appears to be increasingly less willing to accept the enormous economic and environmental costs of pollution on the scale caused be the ERIKA and PRESTIGE in the name of freedom of the sea, and the principles in question should therefore be re-examined with a view to better protecting the legitimate interests of coastal States.* [EC 2003a]

In summary, this study recommends that the measures and initiatives outlined above should be implemented nationally and trilaterally by or on the initiative of the Trilateral Wadden Sea Cooperation.

The Common Wadden Sea Secretariat could have a leading coordinating role in this and could be involved in all aspects related to shipping safety and impacts from shipping on the Wadden Sea PSSA.

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6 Abbreviations

AIS	Automatic Identification System
CCME	Central Command on Maritime Emergencies (Havariekommando)
CAS	Condition Assessment Scheme
cbm	Cubic meters
COLREG	International Regulations for Preventing Collisions at Sea (Collision regulations)
COSS	Committee on Safe Seas and Prevention of Pollution from Ships
CWSS	Common Wadden Sea Secretariat
DENGER	Denmark-Germany Joint Maritime Contingency Plan on Combating Oil and other Harmful Substances
DENGERNETH	Joint Denmark-Germany-Netherlands Response Plan to maritime incidents involving Oil and other Harmful Substances and Co-operation in Aerial Surveillance (Draft)
DG	Direction General
DK	The Kingdom of Denmark
EC	European Community
E(E)CG	European (Environment) Coast Guard
EEZ	Exclusive Economic Zone
EMSA	European Maritime Safety Agency
ETS	Emergency Towing System
ETV	Emergency Towing Vessel
FSA	Formal Safety Assessment
GER	The Federal Republic of Germany
gt	Gross tons
HELCOM	Helsinki Commission
HFO	Heavy Fuel Oil
HNS	Hazardous and Noxious Substances
IALA	International Association of Lighthouse Authorities
ICS	International Chamber of Shipping
IMO	International Maritime Organization
IOPC Fund	International Oil Pollution Compensation Fund
ITOPF	International Tanker Owners Pollution Federation Ltd.
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto
MEPC	Marine Environment Protection Committee
MSC	Maritime Safety Committee
MV	Merchant vessel
NCP	National Contingency Plan

NETHGER	Netherlands-Germany Joint Maritime Contingency Plan on Combating Oil and other Harmful Substances
NL	The Kingdom of the Netherlands
NSF	No Special Fee System
OCIMF	Oil Companies International Marine Forum
OPA	Oil Pollution Act, U.S.A.
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation
PSSA	Particular Sensitive Sea Area
RACON	Radar beacon
SAR	Search and Rescue (Services)
SCOT	Safety Chemical Oil Tanker
SOLAS	International Convention for the Safety of human Life at Sea (Safety of Life at Sea)
STCW	Standards on Training, Certification and Watchkeeping
STOA	Scientific and Technological Options Assessment Unit
ToR	Terms of Reference
TSS	Traffic Separation Scheme
UNCLOS	United Nations Convention on the Law of the Sea
VTMS	Vessel Traffic Management Systems
VTS	Vessel Traffic Services
WSF	Wadden Sea Forum

Annexes

Annex 1: List of interviewed persons

Terms of Reference

Annex 2: Charts

- Wadden Sea Area an Conservation Area
- PSSA Wadden Sea
- Traffic Separation Scheme, 200-miles-zone boundaries
- DENGERNETH quick response area

Annex 3: Compilation of existing measures, options and recommendations

3.1 Shipping safety and ship's safety

3.2 Emergency management

3.3 Illegal discharge of waste, oil and chemicals

3.4 Port State control

Annex 1

List of contacted and/or interviewed persons[1]

Name	Institution
Andersen, Ivan	Ministry of Environment, Head of Section, Danish EPA
Berghmans, Marc	Adviesbureau Artemis, Brasschaat, Belgium
Bossemeyer, Helmut	Chairman Nautical Association Bremen , Germany
Bustorff, Ulf	Central Command for Maritime Emergencies (CCME), Head Dep. 2, Germany
Callsen-Bracker, H.-H.	German Ministry of Transport, Building and Housing, Chairman of the IMO working group on Places of Refuge
Foeken, Jan	Ministry of Transport and Water Management, Directorate Water Management, The Netherlands
Geib, Thomas	German Ministry of Transport, Building and Housing, Referat LS-22
Huisman, J.	Ministry of Transport and Water Management, Directorate Water Management, Head Response Organisation, The Netherlands
Immens, Gerald	Chairman of German Association of Sea- and Harbour Pilots (BSHL), Hamburg
Irminger, Prof. Peter	University of Applied Sciences Bremen, Nautical Faculty, Germany
Juhl, Carsten Adler	Esbjerg Safety Consult A/S, Denmark
Keitsch, Werner	Standing Expert Committee of the German Nautical Association (StFA DNV), former Chairman
Lampe, Dr. Carola	Senator for Economics and Ports, Environment Dep., Bremen, Germany
Litmeyer, Bernhard	Waterways and Shipping Directorate, Aurich, Germany
Magner, Jorgen	Chairman of the Danish working group on Places of Refuge
Mehrkens, Hein	Chairman German Federal Chamber of Pilots, Hamburg
Mendelts, Peter	Staff member at the Secretariat of the Dutch Wadden Sea Council
Mygind, Niels	Admiral Danish fleet HQ, Maritime Environmental Section
Oberliesen, Dirk	NLWK Lower-Saxony, Coastal Pollution Response, Germany
Pape, Hinrich	District Government Weser-Ems, Dep. Shipping and Ports, Germany
Petersen, Olaf	Seamen's Accident Prevention and Insurance Association Hamburg, Dep. Ship Safety, Germany
Reichenbach, Dirk	Central Command for Maritime Emergencies (CCME), Dep. of Federal Unit for Marine Pollution Control Cuxhaven, Germany
Reininghaus, Frank	Central Command for Maritime Emergencies (CCME), Head Dep. 5 Cuxhaven, Germany
Ritterhof, Dr. Jürgen	Federal Conservation Agency, Vilm, Germany
Schmidt, Dieter	Central Command for Maritime Emergencies (CCME), Dep. 2 Cuxhaven, Germany
Spengler, Dirk-Uwe	Hamburg Authority for Environment and Health, Emergency Management , Germany
Verheij, Herman	Wadden Sea Society, The Netherlands
Viebahn, Dr. Christoph von	Geo-information Consultant, Bremen, Germany
Watermann, Dr. Burkhart	Institut LimnoMar, Hamburg, Germany
Wessels, Hermann	Head Vessel Traffic Centre EMS, Emden, Germany
Wöhrn, Roland	Lawyer's office Ahlers & Vogel, Hamburg, Germany

[1] It has to be stated that these contacts have not focused necessarily on individual items and due to time limits and other constraints not each and every item has been cross-checked by the contacted and/or interviewed persons. Therefore the statements in the study do not inevitably reflect opinions of the listed persons.

Annex 1

Terms of References

Terms of References for a study regarding shipping safety:

Analyse of the existing measures and the implementation of agreements regarding maritime safety and prevention of pollution from ships

The WSF is an independent platform of stakeholder groups in the trilateral Wadden Sea area which will develop proposals for sustainable development in the Wadden Sea Region, to be submitted to the 10th Governmental Wadden Sea Conference in 2005. At the third meeting of the trilateral Wadden Sea Forum (WSF) in October 2003, it was agreed to initiate a gap analysis concerning shipping safety measures before the next WSF meeting in April 2004.

At the Esbjerg Conference in 2001, several agreements were made regarding shore reception facilities and impacts of shipping (see Annex 1: ED §54 - 62).

In October 2002, on the request of the Denmark, Germany and the Netherlands the Wadden Sea was designated as a Particularly Sensitive Sea Area by the IMO.
In the framework of the Conference and the application to the IMO an inventory has been made of the existing shipping regulations and measures for the protection of the Marine environment and the safety of shipping in the Wadden Sea and the adjacent North Sea (Annex 3 of the Esbjerg Declaration 2001, Doc MEPC 48/7/2 PSSA Wadden Sea Application).

The WSF discussed the issue of shipping safety in the southern North Sea and the Wadden Sea in the light of the recent disaster with the tanker 'Prestige' and other accidents. The WSF is very much concerned about the significant effects, socio-economic, as well as, environmental, that shipping disasters could have on the Wadden Sea area. The Forum stated that the PSSA designation offers a good basis for the further development of measures to enhance shipping safety and to prevent pollution from ships. The Forum acknowledges that, at present, many initiatives are being undertaken at the international level (e.g. OSPAR,HELCOM, IMO, EU) and it supports those initiatives.

Given the urgency of the situation, the WSF would like to stress the need for adequate measures and wishes that issues such as trilateral co-ordination and co-operation protocols both for information exchange and immediate action in case of an accident, the improvement of port-state control inspections, liability as agreed at the international level and safe havens for ships in danger should be improved.

In order to implement the decision of the WSF an analyse of the existing measures and the implementation of agreements regarding maritime safety and prevention of pollution from ships shall be carried out by an independent expert/consultant on the basis of the already existing inventories and reports of regulations and measures (listed in Annex 2) with the following terms of references:

"The contractor shall review the current measures and the implementation of agreements regarding maritime safety and prevention of pollution from ships in the Wadden Sea area and the southern North Sea with a view to identify gaps and shall give on the basis of this gap analysis recommendations on indispensable additional measures. This includes the following steps:

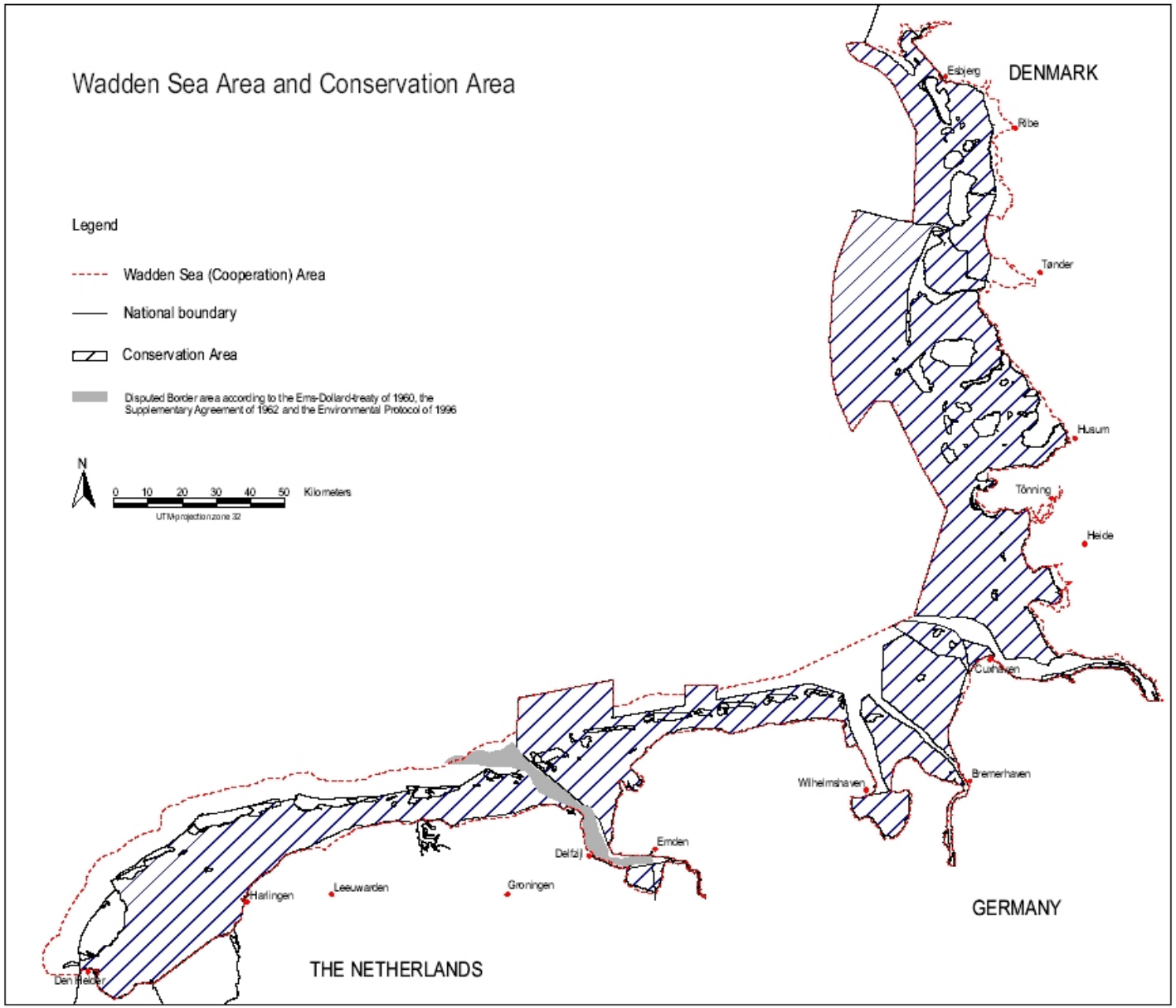
1. Taking into account of the already available information (existing documents and reports from 2001 and 2002) the current status regarding measures adopted by IMO and at the EC, national, bi- and trilateral levels in the Wadden Sea area and the southern North Sea shall be given and assessed in the gap analysis. The following items should be addressed in particular:

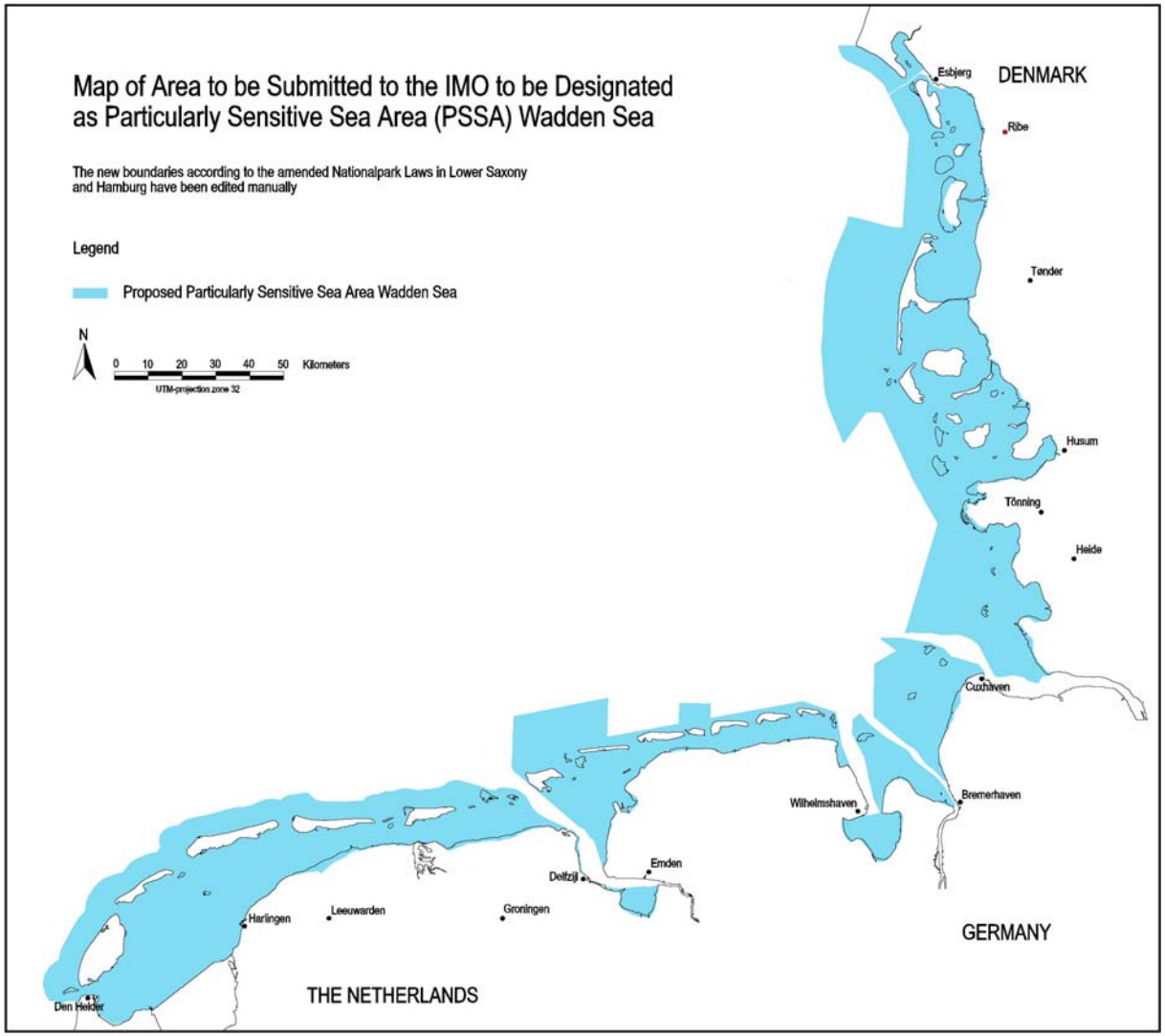
- Shipping safety
- collision avoidance
- ship standards (e.g. single hull tanker)
- land based monitoring system AIS
- community vessels traffic monitoring
- surveillances by plane
- port state control
- pilotage
- reception facilities
- illegal discharge of oil and chemicals - coordination of aerial surveillance, prosecution
- emergency management (contingency plan)
- mutual assistance in emergencies (emergency towing of vessels, emergency towing capacity)
- compensation - liability
- EU Directive on ship-source pollution and introduction of sanctions
- OSPAR/HELSINKI activities
- compulsory pilotage
- safe havens
- (common) coast guard

2. Based on the gap analysis in 1) possibilities and recommendations for improving the situation as e.g. necessary additional measures to be implemented in the near future shall be given.

3. The study shall be delivered by March 1, 2004.

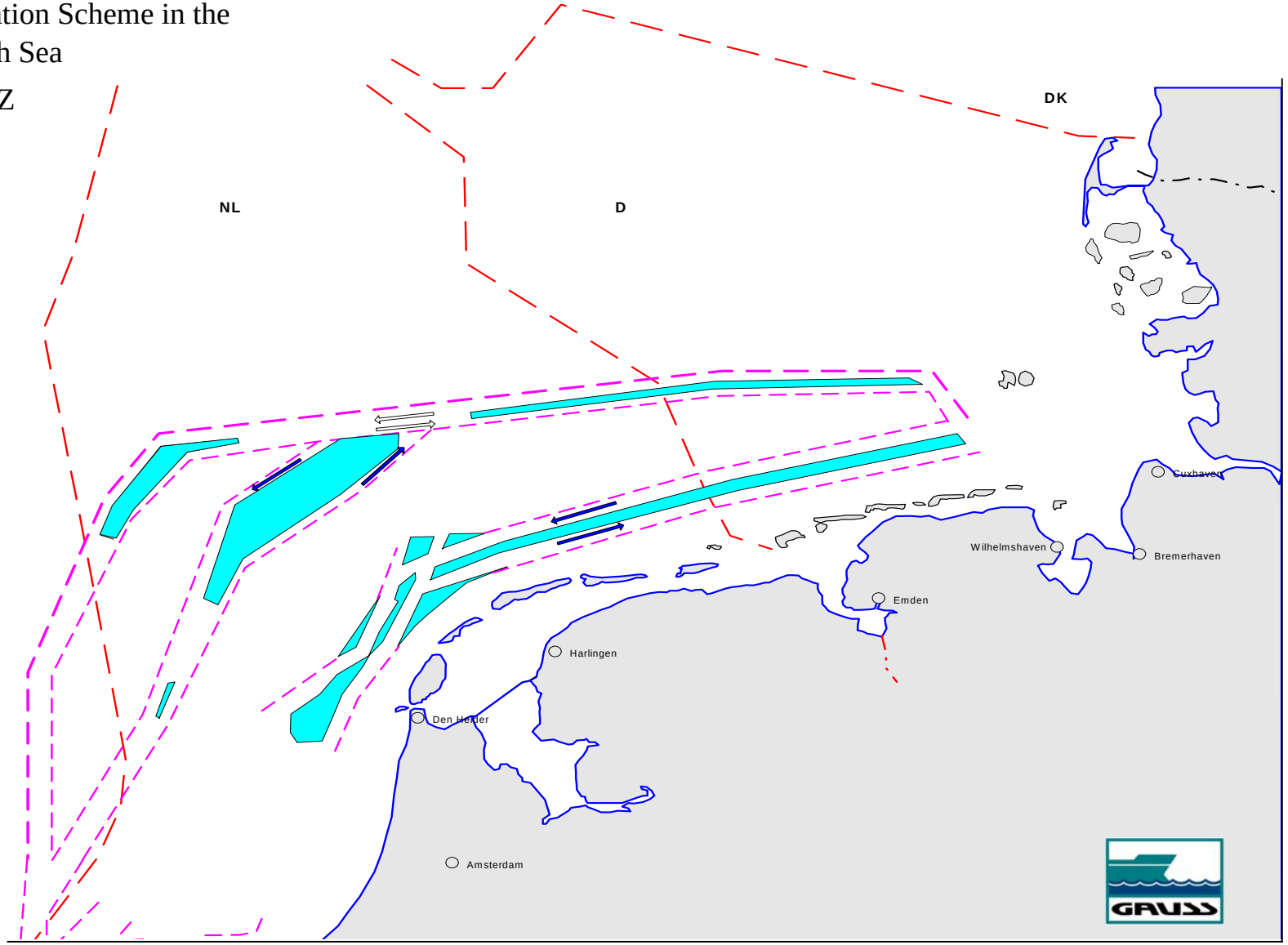
Charts


Wadden Sea Area and Conservation Area
Legend
Wadden Sea (Cooperation) Area
National boundary
Conservation Area
Disputed Border area according to the Ems-Dollard-treaty of 1960, the Supplementary Agreement of 1962 and the Environmental Protocol of 1996
N
0 10 20 30 40 50 Kilometers
UTM projection zone 32
DENMARK
Esbjerg
Ribe
Tønder
Husum
Tönning
Heide
Cuxhaven
Bremerhaven
Wilhelmshaven
Emden
Delfzijl
Groningen
Leeuwarden
Harlingen
Den Helder
THE NETHERLANDS
GERMANY

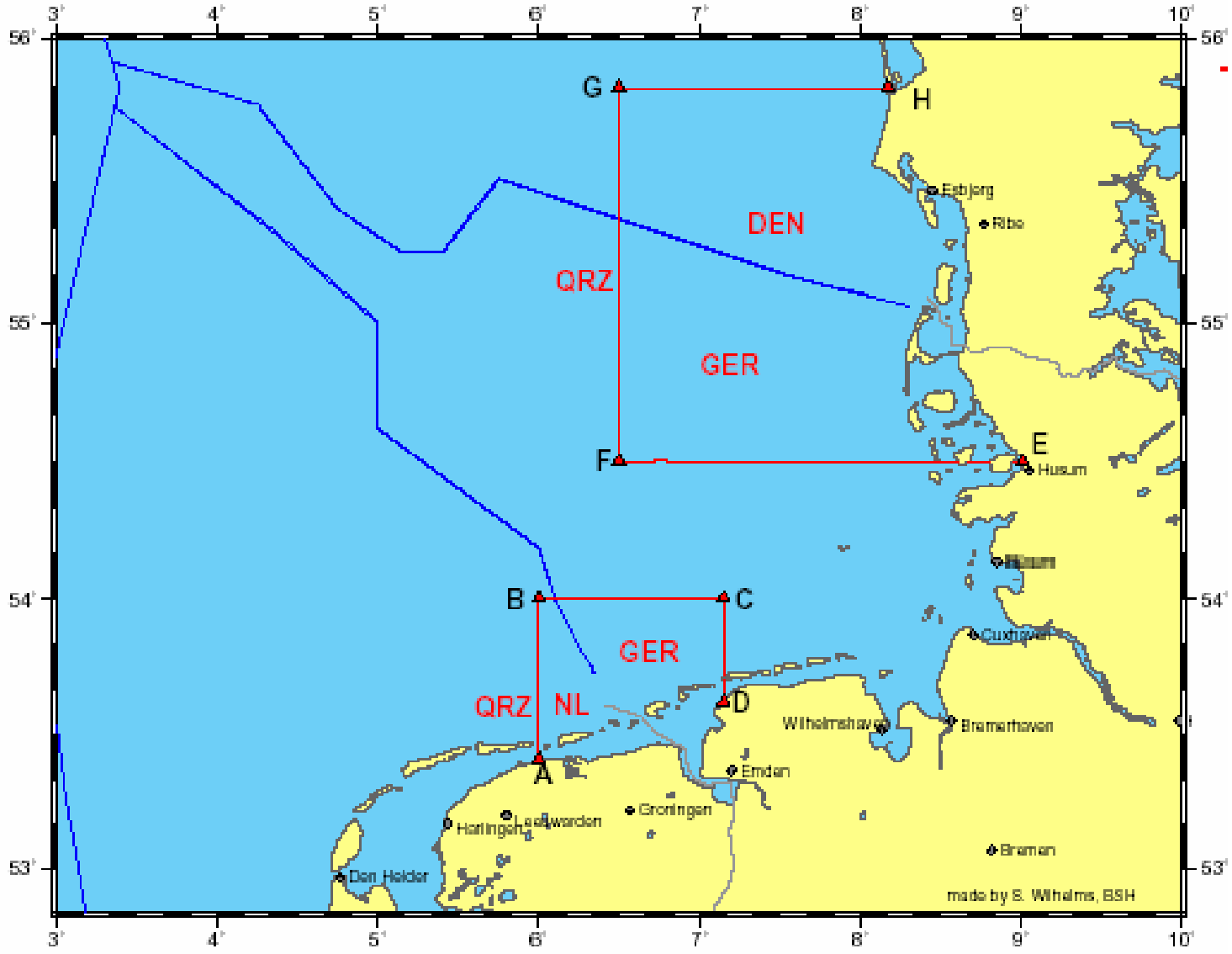

Map of Area to be Submitted to the IMO to be Designated as Particularly Sensitive Sea Area (PSSA) Wadden Sea
The new boundaries according to the amended Nationalpark Laws in Lower Saxony and Hamburg have been edited manually
Legend
Proposed Particularly Sensitive Sea Area Wadden Sea
N
0 10 20 30 40 50 Kilometers
UTM-projection zone 32
DENMARK
Esbjerg
Ribe
Tønder
Husum
Tönning
Heide
Cuxhaven
Bremerhaven
Wilhelmshaven
Emden
Delfzijl
Groningen
Leeuwarden
Harlingen
Den Helder
THE NETHERLANDS
GERMANY

Traffic Separation Scheme in the southern North Sea

200-miles-EEZ boundaries



Map of Quick Response Zones in the North Sea (DENGERNETH) Annex I -2



Compilation of existing measures, options and recommendations

The following tables compile and analyse detailed background information on the individual items, which are anticipated to be of significance for potential recommendations with regard to safety and pollution prevention. In subchapters these items have been assigned to

3.1 ship's safety and shipping safety;
3.2 emergency management;
3.3 illegal discharge;
3.4 port State control.

Official documents, e.g. conventions, standards, rules or regulations on international, European and regional/trilateral level form the framework for national or trilateral performance and are outlined under the headings "IMO measures", "EC measures", and "Other regional/trilateral measures".

In tabular form the adoption, implementation, enforcement and control of these conventions, standards, rules or regulations is described under the heading "National measures". Notes and comments are assigned to Denmark, Germany and the Netherlands in the lines "Implementation", "Other measures", "Deficiencies/Gaps", "Options" and "Recommendations".

The information outlined in this annex is summarized in chapter 3 of the report, each sub-chapter with the corresponding reference number.

3.1 Shipping safety and ship's safety

3.1.1 Collision avoidance

IMO measures
International regulations for preventing Collisions at Sea 1972 (as amended by Resolutions A.464 (XII), A.626 (15), A.678 (16) and A.736 (18)). (COLREGs).

EC measures
None

Other regional/trilateral measures
Bilateral (Netherlands & Germany) Local Rules and Traffic Regulations for the Ems estuary.

National measures

Denmark	Germany	The Netherlands	
Full implementation of COLREGs			**Implementation**
• Additional national rules and regulations (Særlige Regler for Sejlads m. m. i. visse danske Farvande).	• Regulations on the navigation of Federal waterways in national parks in the North Sea area. • Navigable Waterways Ordinance.	• Additional local rules and regulations (Scheepvaartreglement Territoriale Zee (STZ)).	**Other measures**
None			**Deficiencies/Gaps**
None			**Recommendations**

3.1.2 Navigation

IMO measures

Resolution A.529(13) Accuracy of Standards for Navigation (1983).
International Association of Lighthouse Authorities (IALA): IALA Maritime Buoyage system (1980).

EC measures

None

Other regional/trilateral measures

Radio navigational warnings contain information that directly affects safety and the protection of the environment. They are issued by NAVTEX, MRCC's, VTS centres or other services.
Priority in the establishment of electronic nautical charts of the Danish, Dutch and German coast and acceptance of ECDIS (Electronic Chart Display and Information System) as a substitute for paper charts. [Esbjerg Declaration 2001, Annex 2].

National measures

Denmark	Germany	The Netherlands	
Full implementation of IMO measures and IALA Maritime Buoyage system			**Implementation**
• Buoyage, RACON and lighthouses available.	• Aids to navigation (AIS, DGPS, buoyage, lighthouses). • Priority in the establishment of electronic nautical charts of the German coast and acceptance of ECDIS as a substitute for paper charts. [Esbjerg Declaration Annex 3].	• DGPS available. • Buoyage available in entire area. • Lighthouses available on all major islands and along the mainland coastline. • Numerous RACONs are available on (offshore) platforms and buoys.	**Other measures**
None		• Reduction of the number of buoys in the shipping lanes.	**Deficiencies/Gaps**
None		• Positioning of buoys on both sides of the shipping lanes to be continued (lateral buoy system).	**Recommendations**

3.1.3 Traffic Separation Schemes (TSS)

IMO measures

IMO routeing schemes are in place in the North Sea to simplify traffic flows, to reduce the collision hazard and to keep ships carrying certain dangerous or polluting goods away from the Wadden Sea coast. TSS in the concerned area adopted by the IMO are:

- At West Hinder
- Off Botney Ground
- East Friesland
- North Hinder
- Off Texel
- Off Brown Ridge
- West Friesland
- Off Friesland
- Off Vlieland, Vlieland North and Friesland Junction
- In the approaches to Hook of Holland
- In the approaches to river Elbe
- Jade Approach
- Terschelling-German Bight
- German Bight Western Approach

The Deep-Water Route and Traffic Separation Scheme from North Hinder to the German Bight via the Frisian Junction is mandatory for the following classes of ships:

- Tankers of ≥ 10,000 GT carrying oils as defined under Annex 1 of MARPOL 73/78;
- Ships of ≥ 5,000 GT carrying noxious liquid substances in bulk categories A or B of Annex II of MARPOL 73/78;
- Ships of ≥ 10,000 GT carrying noxious liquid substances in bulk categories C or D of Annex II of MARPOL 73/78; and
- Ships of ≥ 10,000 GT carrying liquefied gases in bulk.

EC measures

Council Directive 93/75/ECC of 13 September 1993 concerning minimum requirements for vessels bound for or leaving Community ports and carrying dangerous or polluting goods (known as the HAZMAT Directive) has been in force since 1995. It will be replaced in due course by the Directive 2002/59/EC.

Other regional/trilateral measures

None

National measures

Denmark	Germany	The Netherlands	
Not applicable, out of area	Full implementation of IMO TSS		**Implementation**
None	Change to the routeing in the German Bight by improving the crossing in the traffic separation scheme off Wilhelmshaven. [Esbjerg Declaration Annex 3].	None	**Other measures**
Tankers smaller than 10,000 GT, respectively 5,000 GT, are not obliged to take the northern TSS (Deep-Water-Route)			**Deficiencies/Gaps**
None			**Recommendations**

3.1.4 AIS land based traffic monitoring systems

IMO measures

Universal Ship-borne Automatic Identification System (AIS): The Maritime Safety Committee agreed at its 67th session in December 1996 that one universal AIS should be implemented on a long-term basis. The draft performance standards agreed by the Sub-Committee state that AIS should improve safety of navigation by assisting navigation of ships, protection of the environment and operation of Vessel Traffic Services (VTS), by satisfying the following requirements:

- in a ship-to-ship mode for collision avoidance;
- as a means for littoral states to obtain information about a ship and its cargo; and
- as a VTS tool, i.e. shore-to-ship (traffic management)

The draft performance standards note that the AIS "should be capable of providing to ships and to competent authorities, information from the ship, automatically and with the required accuracy and frequency, to facilitate accurate tracking. Transmission of the data should be with the minimum involvement of ship's personnel and with a high level of availability".

Conference of Contracting Governments to the International Convention for the Safety of Life at Sea, 1974: 9 - 13 December 2002: Modifications to Chapter V (Safety of Navigation) contain a new timetable for the fitting of Automatic Information Systems (AIS). Ships, other than passenger ships and tankers, of 300 gross tonnage and upwards but less than 50,000 gross tonnage, will be required to fit AIS not later than the first safety equipment survey after 1 July 2004 or by 31 December 2004, whichever occurs earlier. Ships fitted with AIS shall maintain AIS in operation at all times except where international agreements, rules or standards provide for the protection of navigational information."

EC measures

Setting up a common vessel traffic monitoring and information system based on the Directive 2002/59/EC (SafeSeaNet). It requires member states to set up appropriate shore based infrastructure by the end of 2007 and to interconnect their national communication systems as from 2004.

Other regional/trilateral measures

All three countries are developing plans to setting up a coast-wide radio network with AIS on-shore receiving stations and appropriate AIS infrastructure for not later than 1 July 2005 [Esbjerg Declaration 2001, § 60].

National measures

Denmark	Germany	The Netherlands	
Equipment of ships will be carried out according to IMO-schedule. Full coverage of IMO- and EC-measures.			**Implementation**
Denmark and Germany take part in setting up a common land-based AIS-network for the Baltic Sea (based on the decision from the HELCOM Ministerial Conference in Sept. 2001).		None	**Other measures**
A land-based station covering the Danish part of the Wadden Sea is planned to be established and	The establishment of land-based AIS-stations in the Wadden Sea is planned 2005/2006.	The establishment of land-based AIS-stations in the Wadden Sea is planned later than 2005.	

working by July 2005.			
None	It remains unclear whether the implementation of the establishment of the land-based AIS-stations in the Wadden Sea will be possible until 2005 as political and financial priority is given to the Baltic Sea.	It remains unclear whether the implementation of the establishment of the land-based AIS-stations in the Wadden Sea will be possible until 2005.	**Deficiencies/Gaps**
Land-based AIS-stations in the Wadden Sea to be established as soon as possible, at least the deadline of 2005 is to be met.			**Recommendations**

3.1.5 Vessel traffic services and radar surveillance

IMO measures

The Sub-Committee on Safety of Navigation - 43rd Session: 14-18 July, 1997 agreed a revision of SOLAS chapter V - Safety of Navigation:
The Sub-Committee agreed a number of amendments to a draft revised Chapter V of SOLAS including regulation 12 - Vessel Traffic Services (VTS).
The amendments also included a new Regulation 8.2 on Vessel Traffic Services (VTS) in Chapter V. VTS are traffic management systems, for example those used in busy straits. This Regulation sets out when VTS can be implemented. It says Vessel Traffic Services should be designed to contribute to the safety of life at sea, safety and efficiency of navigation and the protection of the marine environment, adjacent shore areas, worksites and offshore installations from possible adverse effects of maritime traffic.
Governments may establish VTS when, in their opinion, the volume of traffic or the degree of risk justifies such services. But no VTS should prejudice the "rights and duties of governments under international law" and a VTS may only be made mandatory in sea areas within a State's territorial waters.
Resolution A.857(20) – Guidelines for Vessel Traffic Services.

EC measures

“Erika II”-package: Setting up a common monitoring and information system for maritime traffic (Directive 2002/59/EC), which will in due course replace EC-directive 93/75/EEC.
It is regarded as a “limitation … that there is not enough contact between the parties which have information on maritime traffic. Frequently, VTS, coastguards, port authorities, etc. have very detailed information on traffic, but this information is not usable because it has not been pooled or circulated efficiently.”
Article 6 is commented as follows:
“This article is intended to increase traffic safety by requiring ships to comply with the existing IMO-approved instruments for the routing of shipping, which cover sensitive areas, areas with a high traffic density and areas which are dangerous for shipping, and to use vessel traffic services (VTS). Ships must comply with any instructions they may be given by the authorities responsible for the systems on grounds of safety.”
“Ships entering the area of competence of a vessel traffic service, or ships’ routing system approved by the IMO, placed under the responsibility of a Member State, must, in accordance with the applicable rules and procedures, use the services provided, where such exist, and comply with the measures applicable in the area and with any instructions they receive. Only in maritime areas located within the territorial waters of the Member State concerned may participation in a vessel traffic service be made compulsory for ships flying the flag of a third country.”
“Member States shall ensure that the vessel traffic services and ships’ routing systems placed under their responsibility dispose of sufficient properly qualified staff and appropriate means of communication and ship monitoring and that they are operated in accordance with the relevant IMO guidelines.”

Other regional/trilateral measures

None

Annex 3

National measures

Denmark	Germany	The Netherlands	
Full implementation of IMO VTS Guidelines		Full implementation of IMO VTS Guidelines Failed to implement ERIKA II package with regard to VTS and information systems resulting in legal proceeding by the EC [EC 2004].	**Implementation**
• No VTS arrangement in the area.	• VTS with permanent radar surveillance in following districts: - VTS German Bight - VTS Ems - VTS Jade - VTS Weser - VTS Elbe • Services offered: - Information Service - Navigational Assistance Service - Traffic Organisation Service • Mandatoy for all vessels exceeding 50 m of length (river Ems 40 m) and all vessels carrying certain dangerous goods. • Introduction of a maritime traffic safety system with traffic centres at the major shipping lanes which provide shipping with traffic information, and traffic support and monitor traffic. Where necessary, the maritime police regulate traffic from these centres. [Esbjerg Declaration Annex 3].	• Radar surveillance at Den Helder, Terschelling and Schiermonnikoog (for port entry and departure and Wadden Sea traffic only). • VTS Den Helder: All vessels equipped with VHF requested to participate in this system. Vessels within the area should report when entering and leaving the VTS area. Traffic surveillance is provided; • VTS Terschelling: Reporting is mandatory for all vessels entering or leaving the VTS area; • Wadden Sea Central Reporting Station: Is responsible for co-ordinating the relevant maritime authorities with regard to all incidents within the Wadden Sea area; • VTS Schiermannikoog: Provides radar surveillance services for the Terschelling-German Bight TSS with range up to 48 miles; and • VTS Delfzijl: VTS is mandatory for all vessels, which includes an information service.	**Other measures**
None		• Absence of radar monitoring of the TSS off Vlieland (area of risk because of junction and traffic density). • Disregard of ERIKA II-package concerning vessel traffic monitoring and information systems	**Deficiencies/Gaps**

Depending on further development of offshore wind farms off the North Friesian and Danish coast it might be advisable to establish a routeing system and a VTS in the area	None	**Options**
None	• A VTS system similar to VTS German Bight to be provided. • Implementation of the ERIKA II-package in respect of vessel traffic monitoring and information systems as soon as possible	**Recommendations**
Introduction of a vessel traffic management system (VTMS) as a supra-regional system for the Wadden Sea (e.g. Rotterdam to German Bight) creating better linked coverage throughout the area.		

3.1.6 Pilotage

3.1.6.1 Deep-Sea Pilotage

IMO measures
Ships using the mandatory route for tankers from the North Hinder to the German Bight (Deep-Water route) are recommended to use adequately qualified deep-sea pilots in the North Sea (IMO A.486 XII).

EC measures
None

Other regional/trilateral measures
None

National measures

Denmark	**Germany**	**The Netherlands**.	
• Not applicable, out of area	• Voluntary Deep sea pilotage available	• Voluntary deep-sea pilotage available for ships required to use the North Hinder-German Bight mandatory route for tankers.	**Implementation**
None			**Other measures**
None	No mandatory pilotage		**Deficiencies/Gaps**
None	Compulsory pilotage for ships identified to present a risk, a high risk or a very high risk [1]		**Recommendations**

3.1.6.2 Coastal and Harbour Pilotage

IMO measures
None

EC measures
None

Other regional/trilateral measures
None

[1] Risk, High risk and Very High Risk ships according to PSC classification

Annex 3

National measures

Denmark	**Germany**.	**The Netherlands**.	
National measures implemented as below:			**Implementation**
• Pilotage is compulsory for the following: - Loaded oil tankers >1500 DWT; - Loaded chemical tankers carrying dangerous liquid chemicals covered by the IMO Chemical Code; - Gas carriers; - Vessels carrying radioactive cargoes; - Towing vessels of 150GRT+ navigating in dredged channels or marked navigation channels, into or past harbours or pilot stations (excluding harbour manoeuvres); and - Tankers with uncleaned tanks not secured by inert gas. • Ships sailing to and from Danish ports shall comply with the rules laid down in the Danish Harbour Pilot book. • Tankers have to take a pilot when entering certain ports, terminals etc.	• Compulsory district pilotage for: - Vessels with a length of 90 m or a breath of 13 m and more - Tankers carrying gas/chemicals/ petroleum/petroleum products in bulk, or unloaded tankers if not cleaned, degassed or completely inerted • Additional shore based pilotage: - if visibility is reduced - if pilot cutter is in a sheltered position - if light buoys are withdrawn due to ice - if requested by the master - if ordered by the VTS- authority	• Harbour pilotage is compulsory for ships over 60m in length and for all vessels carrying oil, gas or chemicals. • Communications are normally carried out via VHF radio and ships are required to maintain a listening watch on VHF. Radar assistance is available on request in some ports. Pilotage is compulsory for Harlingen and other ports in the Wadden Sea.	**Other measures**
None			**Deficiencies/Gaps**
Compulsory pilotage in the PSSA area for a limited number of ships			**Options**
None			**Recommendations**

3.1.7 Ship standards

3.1.7.1 Accelerated phase-out for single-hull oil tankers

On 22 July 2003, the European Union adopted Regulation (EC) 1726/2003 with an accelerated phase out scheme for singe-hull oil tankers [EC 2003]. In parallel at its 50th session, 1 and 4 December 2003, the MEPC adopted a revised phase-out system [MEPC 2003].

IMO and EC single-hull tanker phase-out dates

Category of tankers	**Date or year** **IMO:** Irrespective of flag	**EC:** No oil tanker shall be allowed to operate under the flag of a Member State, nor shall any oil tanker, irrespective of its flag, be allowed to enter into ports or offshore terminals under the jurisdiction of a Member State after the anniversary of the date of delivery of the ship in the year specified hereafter, unless such tanker is a double-hull oil tanker:
Category 1		2003 for ships delivered in 1980 or earlier 2004 for ships delivered in 1981
	5 April 2005 for ships delivered on 5 April 1982 or earlier	
	2005 for ships delivered on 5 April 1982 or later	
Category 2 & Category 3		2003 for ships delivered in 1975 or earlier 2004 for ships delivered in 1976
	5 April 2005 for ships delivered on 5 April 1977 or earlier	
	2005 for ships delivered after 5 April 1977	2005 for ships delivered in 1977
	2006 for ships delivered in 1978 and 1979	2006 for ships delivered in 1978 and 1979
	2007 for ships delivered in 1980 and 1981	2007 for ships delivered in 1980 and 1981
	2008 for ships delivered in 1982	2008 for ships delivered in 1982
	2009 for ships delivered in 1983	2009 for ships delivered in 1983
	2010 for ships delivered in 1984 or later	
Category 1	Oil tankers ≥ 20,000 tdw carrying crude oil, fuel oil, heavy diesel oil or lubrication oil as cargo, and ≥ 30,000 tdw carrying other oils, which do not comply with the requirements for protectively located segregated ballast tanks (commonly known as Pre-MARPOL tankers)	
Category 2	Oil tankers ≥ 20,000 tdw carrying crude oil, fuel oil, heavy diesel oil or lubrication oil as cargo, and ≥ 30,000 tdw carrying other oils, which do comply with the protectively located segregated ballast tank requirements (MARPOL tankers)	
Category 3	Oil tankers ≥ 5,000 tdw but less than the tonnage specified for Category 1 and 2 tankers.	

IMO measures

- Category 1 oil tankers phased out 31 December 2005 latest, no detailed schedule but set date at 5 April 2005.

- Category 2 & cat. 3 oil tankers phased out 31 December 2010 latest according to a phase-out schedule starting at 5 April 2005.
- Exemptions for cat. 2 & 3 subject to flag states regulations but not beyond the date on which the ship reaches 25 years of age.

EC measures

EC Regulation No 1726/2003 [EC 2003] in force since 21 October 2003:

No oil tanker shall be allowed to operate under the flag of a Member State, nor shall any oil tanker, irrespective of its flag, be allowed to enter into ports or off-shore terminals under the jurisdiction of a Member State unless such tanker is a double-hull oil tanker:

- Category 1 oil tankers phased out 31 December 2005 latest according to a phase-out schedule starting in 2003.
- Category 2 and category 3 oil tankers phased out 31 December 2010 latest according to a phase-out schedule starting in 2003

No oil tanker carrying heavy grades of oil (i.e. heavy crude oils, heavy fuel oils, bitumen and tar and emulsions thereof), irrespective of its flag, shall be allowed to enter or leave ports or offshore terminals or to anchor in areas under the jurisdiction of a Member state, unless such tanker is a double-hull oil tanker.

Other regional/trilateral measures

None

National measures

Spain: Since 1 January 2003 and in accordance with sovereign rights under UNCLOS Art. 211 Para 3, Art. 25 Para 2 single-hull tanker, whatever flag they may be flying, carrying heavy fuel oil, coal tar, asphaltic bitumen or heavy crude oil are prohibited from entering Spanish ports, terminals or anchorage areas. [MEPC 2003 a]

Denmark	Germany	The Netherlands	
• No other than IMO and EC, respectively			**Implementation**
• No other than IMO and EC, respectively			**Other measures**
Single-hull tankers in transit			**Deficiencies/Gaps**
• Earlier implementation of the phasing-out scheme for vessel flying their flag • Trilateral initiative to ban single-hull tankers in the EEZ[2] resulting in breach of UNCLOS			**Options**
None			**Recommendations**

[2] In the aftermath of the *PRESTIGE* disaster certain single hull ships passing through the French and Spanish 200 mile Exclusive Economic Zone (EEZ) have been ordered out to sea, in clear contravention of the freedom of navigation under the UN Convention on the Law of the Sea (UNCLOS), and Portugal and Morocco have threatened similar action. The matter will be taken up with the International Tribunal for the Law of the Sea in Hamburg, Germany [ICS 2003]

3.2 Emergency management

3.2.1 National pollution response management

IMO measures

OPRC Convention – Adopted by IMO on 30 November 1990. The International Convention on Oil Pollution Preparedness, Response and Co-operation. The convention requires signatories to inspect ships, maintain a national contingency plan for responding to oil pollution incidents and provide technical assistance to other signatories in the event of such incidents .The convention was ratified by Denmark 1996, by Germany 1994 and by the Netherlands 1994.[IMO 1990]
OPRC-HNS Protocol – Adopted by IMO on 15 March 2000 – The OPRC-HNS Protocol was adopted during the IMO's Diplomatic Conference on 15 March 2000. Ratified by the Netherlands [IMO 2000]
Intervention Protocol 1973 – Adopted on 2 November 1973. The Intervention Convention affirms the right of a coastal State to take such measures on the high seas as may be necessary to prevent, mitigate or eliminate danger to its coastline or related interests from pollution by oil or the threat thereof, following upon a maritime casualty. The 1973 Protocol extended the Convention to cover substances other than oil. Ratified by Denmark, Germany and Netherlands.[IMO 1973]

EC measures

Decision 87/144/EEC of the Commission of 13 February 1987 setting up an Advisory Committee on the Control and Reduction of Pollution Caused by Hydrocarbons Discharged at Sea. [EC 1987]
Decision No 2850/2000/EC of the European Parliament and of the council of 20 December 2000 setting up a Community framework for co-operation in the field of accidental or deliberate marine pollution. [EC 2000a]
Regulation (EC) No 1406/2002 of the European Parliament and of the Council of 27 June 2002 – For establishing a European Maritime Safety Agency (EMSA). The Agency represents the technical body providing the Community with the necessary means to act effectively to enhance overall maritime safety and ship pollution prevention rules. [EC 2002b]
Council Decision 2001/792/EC – It establishes a mechanism to facilitate reinforced co-operation in civil protection (including marine pollution).[EC 2001]

Other regional/trilateral measures

Bonn Agreement- Emergency Towing Vessels Guideline – Current reference 2/26B/98 [Bonn Agreement 1983]

OTSOPA – Working group on operational, technical and scientific questions concerning counter pollution activities within the Bonn Agreement. DK, GER and NL are members.[OTSOPA 1995]

GER-NL-Memorandum of Understanding – on Mutual Support in the Field of North Sea Emergency Towing Capacity (March 2000): Mutual assistance by emergency towing vessels in an area between the outer limitation of the VTS-schemes and the coastline, incl. Approaches to the seaports.[GER-NL-MoU 2000]

National measures

Denmark	Germany.	The Netherlands	
Non-performance of the ratification of the OPRC-HNS Convention.			**Implementation**
No detailed information on the implementation of EC legislation available			
	Agreement with private companies on keeping helicopter capacity in reserve to permit action to be taken in the case of emergencies at sea.		**Other measures**
	In practice compliance with ORPC-HNS Convention, *inter alia* construction and employment of fully gas-protected multi-purpose combat vessel		
Approx. 1.600 m^3 entire absorption capability per day	Approx. 14.000m^3 entire absorption capability per day.	Approx 30.000m^3 entire absorption capability in three days	
Lack of deployment of an adequate pollution response vessel in the North Sea.	Lack of ongoing adequate financial means for research projects in the field of pollution combating pollution equipment	None of the located multipurpose vessels are featured with more than 120 t bollard pull.	**Deficiencies/Gaps**
Application of best available pollution combating technology and financing of research			**Options**
Quickest possible ratification of the OPRC-HNS convention.			**Recommendations**
Deployment of a pollution response vessel and equipment with a volumetric capacity of more than 1.600 m3		The Directorate General for Public works and water management must gear its pollution combating organization to a larger discharge than the 30.000m^3 of oil in three days, which currently form its starting point.[S4]	

3.2.2 Places of refuge

IMO measures

Res. A.852 (20) from 27.11.1997- Guidelines for a structure of an integrated system of contingency planning for shipboard emergencies.[IMO1997]
MSC 74/2/3 Add.1 from 22.01.01- Resolution a worldwide investigation of the question of ports of refuge.[MSC 2001]
Res. A.949(23)- 23rd IMO Assembly - Guidelines on places of refuge for ships in need of assistance. [IMO 2003]

EC measures

Directive 2002/59/EC - Community vessel traffic monitoring and information system, which entered into force on 5 August 2002 and has to be implemented by member States on 5 February 2004. The directive leads to the creation/nomination of places of refuge as havens for ships in distress, and permits a closer surveillance of ships in the coastal zones of the Union, especially of "at risk" vessels.[EC 2002]

Other regional/trilateral measures

Bonn Agreement - Rational approach for the designation and use of places of refuge, current reference 2/26/02. [Bonn Agreement 1983]

National measures

Denmark	Germany	The Netherlands	
Full coverage of IMO measures			**Implementation**
List of ports handed out to the EC in due-date time (5 February 2004).	No notification of the places of refuge to the EC		
	The competent authority (Ministry) has decided not to publish places of refuge on forehand[3]		
	The non-disclosure-agreement on EC-level to avoid controversy is accepted		
None	Considered or designated places of refuge are kept a secret		**Deficiencies/Gaps**
None	At least the local authorities and the public concerned should be informed about the designation		**Options**
None	Immediate notification of places of refuge to the EC acc. To article 20 of the Directive 2002/59/EC		**Recommendations**

[3] In Germany the list of ports is handed out to the Havariekommando (CCME)

3.2.3 Emergency towing

IMO measures

OPRC- The International Convention on Oil Pollution Preparedness, Response and Co-operation. Signed by DK, GER, NL. [IMO 1990]
International Convention on salvage 1989 – Entry into force: 14 July 1996. Signed by DK, GER, NL.[IMO 1989]

EC measures

None

Other regional/tri/bilateral measures

Bonn Agreement - Emergency Towing Vessels Guideline – Current reference 2/26B/98. [Bonn Agreement 1983]
GER-NL-Memorandum of Understanding – on Mutual Support in the Field of North Sea Emergency Towing Capacity (March 2000): Mutual assistance by emergency towing vessels in an area between the outer limitation of the VTS-schemes and the coastline, incl. Approaches to the seaports.[GER-NL-MoU 2000]
DENGERNETH-Plan. Joint Danish-German-Dutch response plan to maritime incidents involving oil and other harmful substances and co-operation. Originally scheduled to enter into force midyear 2003. In the meantime the enter into force is postponed to the middle of 2004.[DENGERNETH Plan 2002]

National measures

Denmark	**Germany**.	**The Netherlands**	
Full implementation of IMO measures			**Implementation**
With regard to (emergency) towing capacity for ships in need of assistance, a number of private firms operate in the Danish area. As there is no general tradition for establishing state competitors to private companies in Denmark, it is not considered that there is a reason to propose establishing further tug boat and towing capacity under the auspices of the state [MST-DK]	Emergency Towing capacity available: two state-owned multipurpose response vessels with a minimum bollard pull of 110 and 100 tons (*NEUWERK*, *MELLUM*), and the chartered deep sea salvage tug *OCEANIC* with a maximum bollard pull of 180 t.	Emergency Towing capacity available up to 120 tons bollard pull: several salvage tugs and the salvage tug *WAKER* chartered by the government.	**Other measures**
	Several investigations, simulations, studies etc. result in a calculated minimum bollard pull of 160 tons in the German Bight [4]		
No ETV deployed in the North Sea.	Only the deep sea salvage tug *OCEANIC* is equipped with more than 110 t bollard pull .	None of the salvage tugs is equipped with more than 120 t bollard pull.	**Deficiencies/Gaps**

[4] Compare call for tender of BMVBW [BMVBW 2001]

Ensure 24-h-availability of adequate ETV capacities, irrespective of other multi-purpose tasks		**Options**
When deploying a new/additional ETV attention has to be paid to fit it with a bollard pull of more than 120 t		
It should be reassessed whether the state emergency services should deploy an ETV with an adequate bollard pull in Esbjerg.	None	**Recommendations**

3.2.4 Mutual assistance in emergencies

IMO measures

OPRC Convention Adopted by IMO on 30 November 1990- The Convention is designed to facilitate international co-operation and mutual assistance in preparing for and responding to a major oil pollution incident and to encourage States to develop and maintain an adequate capability to deal with oil pollution emergencies. The convention was ratified by Denmark 1996, by Germany 1994 and by the Netherlands 1994.[IMO 1990]

EC measures

2850/2000/EC - Decision of the European Parliament and of the Council of 20 December 2000 setting up a Community framework for co-operation in the field of accidental or deliberate marine pollution.[EC 2000a]

Other regional/trilateral measures

Bonn Agreement - Agreement for co-operation in dealing with pollution of the North Sea by oil and other harmful substances, 1983 as amended. [Bonn Agreement 1983]

D-NL-Memorandum of Understanding on Mutual Support in the Field of North Sea Emergency Towing Capacity (March 2000): mutual assistance by Emergency-towing vessels in an area between the outer limitation of the VTS-schemes and the coastline, incl. approaches to the seaports.[GER-NL-MoU 2000]

NETHGER Agreement (Netherlands/ Germany 1991) covering the Wadden Sea and parts of the North Sea.[NETHGER-Plan 1991]

DENGER Agreement (Denmark/Germany 1993) covering the Wadden Sea, parts of the North Sea and the Western Baltic Sea. [DENGER-Plan 1993]

DENGERNETH-Plan. Joint Danish-German-Dutch response plan to maritime incidents involving oil and other harmful substances and co-operation in aerial surveillance. Originally scheduled to enter into force was midyear 2003. In the meantime enter into force is postponed to the middle of 2004 due to Dutch parliamentary procedures.[DENGERNETH Plan 2002]

National measures

<table>
<tr><th>Denmark</th><th>Germany</th><th>The Netherlands</th><th></th></tr>
<tr><td colspan="3">Full implementation of IMO- and EC-measures</td><td>Implementation</td></tr>
<tr><td colspan="2">Danish-German Joint Maritime Contingency Plan on Combating Oil and Other Harmful Substances (DENGER-Plan)..</td><td></td><td rowspan="3">Other measures</td></tr>
<tr><td></td><td colspan="2">Dutch-German Joint Maritime Contingency Plan on Combating Oil and Other Harmful Substances (NETHGER-Plan).</td></tr>
<tr><td></td><td colspan="2">GER-NL-Memorandum of Understanding on Mutual Support in the Field of North Sea Emergency Towing Capacity (March 2000)</td></tr>
</table>

Ongoing negotiations between the three countries in order to ratify the "Joint Danish-German-Dutch Response Plan to maritime incidents involving oil and other harmful substances and co-operation in aerial surveillance (DENGERNETH-Plan). This plan will replace the NETHGER-Plan and the DENGER-Plan and ensures a closer co-operation in the fields of combating marine pollution and aerial surveillance. The GER-NL memorandum of Understanding will remain unaffected.		
None		**Deficiencies/Gaps**
Reassessment regarding deployment of an ETV in the Danish part of the North Sea	None	**Recommendations**

3.3 Illegal discharge

3.3.1 Port reception facilities

IMO measures

MARPOL 73/78: contracting Governments to ensure the provision of facilities for the reception of residues etc. as defined in Annex I (oil), Annex II (noxious liquid substances in bulk), Annex IV entry into force 27 September 2003 (sewage), and Annex V (garbage).

EC measures

Directive 2000/59/EC [EC 2000b] on Port Reception Facilities for ship-generated waste and cargo residues
Entry into force: 27.11.2000, should be implemented by Member States by the end of 2002

Other regional/trilateral measures

Esbjerg Declaration 2001 Annex 3: § III: The EC Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues which entered into force in 2000, should be implemented by the concerned states by the end of 2002. It is the aim of the directive to reduce the discharges of ship-generated waste and cargo residue into the sea, especially discharges from ships using ports in the community by improving the availability and use of port reception facilities.

National measures

Denmark	**Germany**.	**The Netherlands**.	
			Implementation
Full implementation Limited quantities accepted (waste generated since last port) and minimal waste amount	Full implementation	Full implementation Limited quantities accepted (oily waste and garbage)	MARPOL
Deadline of implementation : Dec 2002	Deadline of implementation : Dec 2002	Deadline of implementation: Sep 2003 (Port of Rotterdam)	EC Directive 2000/59
		Failed to implement 2000/59 EC resulting in legal proceeding from the EC in October 2003	
Basic principles for fee system			

• 100 % indirect, No Special Fee System (NSF)[5], included in harbour dues	• 100 % indirect, NSF	Combined system: • NSF (100% indirect) with limitation of quantities of oil and garbage • Special Fee System for additional amounts	
Parameters for determination the (indirect) fee			
• No central legislation, port authority decision	• GT-related: GT in combination with ship type, prediction of waste production (on basis of engine specifications) and length of voyage	• BRZ/GT-related[6] • Oil: Engine power/ fuel consumption, length voyage • Garbage: number of crew	
Exemptions[7]			
• Restricted to ferry's and liner services with relatively short voyages and waste contract	• Ships that have a waste contract in EC country and are frequent callers (2 visits per month). Payment of fee by ship if exemption is granted on a yearly basis	• Every Ship that has a berth at least once every fortnight and has a contract or a proof of discharge in a EC port[8]	
		Until now deficits in implementation of Directive 2000/59/EC	**Deficiencies/Gaps**
Limitation of quantities of waste and sewage		Limitation of quantities of oil and garbage[9]	
Harmonization in interpretation of the EC Directive in: • principles of fees (e.g. No Special Fee System) • parameters for fee calculation (not GT related) • no limitations in quantities and types of garbage and waste • develop of uniform definitions (e.g. frequent callers) for exemptions			**Options**
		Immediately Implementation of Directive 2000/59/EC	**Recommendations**

[5] Basic parameters of fee system are defined in HELCOM recommendation 19/8

[6] The parameters listed in the table are the corrective data on which the eventual fee will be calculated upon

[7] In the EC Directive (art 9) , exemptions are defined as cases where ships do not have to comply with articles 6 (prior notification), 7 (1) (mandatory delivery to a PRF at every port call) and 8 (indirect fee). Here, exemptions are defined as cases where ships do not have to pay an indirect fee. In general, exemptions are granted to shipping companies and are given on a "ship by ship" basis.

[8] At this moment, a strict interpretation of all three parameters in article 9 of Directive (scheduled traffic with frequent and regular port calls) is envisioned. This will likely lead to a limitation of granted exemptions for ferry ships and comparable frequent callers.

[9] Limitations of oily waste: between 0 and 20 m^3 and garbage: between $3m^3$ and $6m^3$

3.3.2. Aerial Surveillance

IMO measures
Mentioned in OPRC (1990) Manual on Oil Pollution: Chapter 2 (Contingency plans), Chapter 6 (Oil sampling and identification of oil spills)

EC measures
Mentioned in 93/540/EEC: Council Decision of 18 October 1993 approving certain amendments to the Bonn Agreement for cooperation in dealing with pollution of the North Sea by oil and other harmful substances

Other regional/trilateral measures
In the policy assessment report of the **Esbjerg Declaration**, 31.10.2001, the state secretaries and minister of DK, D and NL emphasize, that illegal discharges of both oil and chemicals from ships still cause problems with pollution of the coastal area and that this problem needs continuous attention and to underline that *effective surveillance, including an intensified coordination of aerial surveillance* and strict prosecution are important to further reduce this problem.

The **Bonn Agreement** [Bonn Agreement 1983] entered into force on 1 September 1989 (as realization of the agreements made at the second "International Conference on the Protection of the North Sea" (INC) in London in November 1987), HELCOM Agreement: CEPRO flights

HELCOM Response Manual on Co-operation in Combating Marine Pollution within the framework of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, (Helsinki Convention): Chapter 7: Co-operation on Aerial Surveillance over the Baltic Sea Area (September 2001)

Administrative Agreements: NETHGER (1991) and DENGER (1993) bilateral programs, DENGERNETH trilateral program, 19 September 2002 (see Chapter 3.2.4. Mutual assistance in emergencies), co-operation in the field of aerial surveillance (coordination of flight times and corridors, joint flights, mutual assistance by aircraft of the other party).

National measures

Denmark	Germany	The Netherlands	
			Implementation
Implemented			Bonn Agreement
• The maritime surveillance and enforcement has been transferred to the Ministry of Defence as of 2000. • Danish Act for the Protection of the Marine Environment	• Agreement between the Federation and the federal states of 2002 on the introduction of the Central Command for Maritime Emergencies (CCME) • Agreement between the Federation and the federal states of 1995 (superseding the administrative agreement on the joint combat-	No information available	Details

	ing of oil pollution of 1975)		
• LFS[1] and MWR[2] *not applied* (see below "Technology") • 1 Aircraft Gulfstream, 1 Aircraft Challanger each equipped with SLAR, IR/UV Scanner, video system, camera system.	• LFS and MWR *operating* (see below "Technology") • 2 Aircraft Dornier 228-212 (LM1 and LM2) both equipped with SLAR, IR/UV Scanner, LFS Camera System (one additionally equipped with FLIR), located at Nordholz	• LFS and MWR *not applied* (see below "Technology") • 1 Aircraft Dornier 228-212 (Call-sign PH – MNZ) equipped with SLAR, IR-scanner and IR-camera. Photo- and video camera, located at Schiphol Amsterdam	Methodology
• Additional to basic statistics introduction of geostatistical analysis and tools, harmonized between partners, see OCEANIDES Report 2003. • Introduction of an EC maritime pollution data base (see below "Statistics")			**Options**
• National authorities do not provide raw data/detailed data sets of surveys			**Deficiencies/Gaps**
• No LFS and MWR as state-of-the-art available (see below "Technology")		• No LFS and MWR as state-of-the-art available (see below "Technology")	
• National authorities should provide aerial surveillance raw data for detailed analyses			**Recommendations**
• Application of state-of-the-art aerial surveillance technology (LFS, MWR)		• Application of state-of-the-art aerial surveillance technology (LFS, MWR)	

Remarks: Notations for available and valuable optical technique and statistics for aerial surveillance [Viebahn 2001]

Technology

[1]LFS (Laserfluorosensor): In Europe only Germany operates a LFS and is therefore able to discriminate out of the flying aircraft between different substances located on the water surface.

[2]MWR (Microwave Radiometer) is recommended for identifying the thickest parts of the spill in order to concentrate clean-up operations onto those areas (MWR is only operated by Germany).

SLAR (Side-Looking Airborne Radar): All other countries operate with SLAR and IR/UV (see below) systems which can detect a slick of something but cannot give any information on the spilled substance. Visual inspection by the operator can under certain circumstances help e.g. to identify the spill as probably oil but is higher limited by visibility and insolation as a sensor is. Furthermore the human eye can hardly identify other substances than oil.

IR/UV (Infrared/Ultraviolet Scanner): see above (SLAR)

Camera System or ULLL Video Camera (Ultra Low Light Level) is used to identify the ship and in order to produce court proof evidence.

FLIR (Forward-Looking InfraRed) is used to optimise the approach of the aircraft to a ship/polluter on a known position.

Statistics

Temporal analysis: As the data is related to time, a temporal analysis is necessary (e.g. in order to identify seasonal patterns/ patterns due to time of the day).

Data normalization: The data has to be normalized in respect of factors like spent flight time in certain areas/periods of time.

Database: In order to have a profound basis to make decisions for the desired area, one single database for the desired area has to be put up.

Statistical analysis: It is necessary to apply recent statistical methods on the collected data. The quality of the data, the sensor systems and the staff is so high that it is a pity that up to now only very basic methods are applied (a dozen bar charts and a map – no normalization, no advanced statistical methods as density estimation or other). As the data are spatial data, a spatial/geostatistical analysis with appropriate geostatistical programs is necessary (e.g. in order to identify hot spots of pollution, which seems to exist).

3.3.3 Compensation, liability

IMO measures

CLC - 1992 Civil Liability Convention (supersedes 1969 CLC)- This convention place an obligation on the owners of ships carrying more than 2000 tons of oil in bulk as cargo to maintain insurance to cover increased liability limits. Signed by GER, DK and NL.[IMO 1992a]

LLMC - Convention on Limitation of Liability for Maritime Claims, 1976, Entry into force: 1 December 1986. Signed by NL,GER and DK.[IMO 1986]

IOPC Funds 1992 - The International Oil Pollution Compensation Funds 1992: The IOPC Funds have particularly close links with IMO and co-operation agreements have been concluded between the Funds and IMO. Although the IOPC Funds were established under Conventions adopted under the auspices of IMO, they are independent legal entities. Unlike IMO, the IOPC Funds are not United Nations agencies and are not part of the UN system. They are intergovernmental organisations outside the United Nations, but follow procedures, which are similar to those of the United Nations. DK, GER, and NL have signed the Fund 1992. [IMO 1992]

Bunker Convention - International Convention on Civil Liability for Bunker Oil Pollution Damage, Adoption: 23 March 2001 - The Convention was adopted to ensure that adequate, prompt, and effective compensation is available for damage caused by spills of oil, when carried as fuel in ships' bunkers. GER and NL have not ratificated the convention yet (Status 2.February 2004).[IMO 2001a]

HNS Convention - HNS are defined by reference to lists of substances included in various IMO Conventions and Codes. The HNS Convention excludes pollution damage as defined in the International Convention on Civil Liability for Oil Pollution Damage and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, to avoid an overlap with these Conventions. HNS covers other damage (including death or personal injury) as well as damage caused by fire and/or explosion when oils are carried.
The Convention is ratificated by none of the three countries (Status 2. February 2004).[IMO 1996]

Third tier of compensation - In May 2003, IMO adopted a Protocol establishing an International Oil Pollution Compensation Supplementary Fund. The aim of the established Fund is to supplement the compensation available under the 1992 Civil Liability and Fund Conventions with an additional, third tier of compensation. The Protocol is optional and participation is open to all States Parties to the 1992 Fund Convention. The total amount of compensation payable for any one incident will be limited to a combined total of 750 million Special Drawing Rights (SDR) (US$1,067million) including the amount of compensation paid under the existing CLC and Fund Conventions. [IMO 2003a]

EC measures

COPE-Funds- Proposal for a regulation COM (2000) 802 – C5-0501/2000 – 2000/0326(COD) May 2001– Establishment of a fund for the compensation of oil pollution damage in European waters and related measures.[EC 2001a]

Council Decision 2002/971/EC - authorising the Member States, in the interest of the Community, to ratify or accede to the International Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 (the HNS Convention). [EC 2002c]

Decision No 2850/2000/EC of the European Parliament and of the council of 28 December 2000 setting up a Community framework for cooperation in the field of accidental or deliberate marine pollution and to promote co-operation among Member States in order to provide for compensation for damage in accordance with the polluter- pays principle. [EC 2000a]

Other regional/trilateral measures

None

National measures

Denmark	Germany	The Netherlands	
Ratification of the: - CLC 1992 Convention - IOPC 1992 - Bunker Convention.	Ratification of the: - CLC 1992 Convention - IOPC 1992	Ratification of the: - CLC 1992 Convention - IOPC 1992	**Implementation**
No ratification of the: - HNS- Convention	No ratification of the: - HNS- Convention - Bunker Convention	No ratification of the: - HNS- Convention - Bunker Convention	**Deficiencies/Gaps**
- Initiative at EC level to set up a temporary COPE-Fund that could be cancelled as soon as an adequate measure can be put in place at IMO level			**Option**
Ratification of the: - HNS- Convention	Ratification of the: - HNS- Convention - Bunkers Convention		**Recommendations**

3.4. Port State Control (PSC)

IMO measures

IMO Resolution A.787(19). SOLAS 74/78, Chapter I, "General Provisions", rule 19. Encouragement to establish regional Memoranda of Understanding on PSC, e.g. Paris MoU[10]. IMO Sub-Committee on Flag State Implementation (FSI) recommends the

- development of a common coding system for deficiencies
- suitability of the statistics and the information for evaluation purposes
- development of statistical analysis
- harmonizing of PSC procedures. [FSI 2003]

International measures

Paris Memorandum of Understanding on Port State Control (Paris MoU), signed in 1982, covers European coastal States and the North Atlantic basin from North America to Europe, with to date 20 participating Maritime Authorities, having agreed to implement a harmonized system of PSC. Denmark, Germany and the Netherlands are signatories to the Paris MoU [Paris MoU 1982].

Basically the signatories agree on the inspection by means of IMO standards on 25% of the ships entering their ports irrespective the flag, and on exchange of information[11]. A targeting system has been implemented and several amendments have been decided, inter alia:

- In the 1999 Annual Report the traditional "Black List" of flags was replaced by a "Black, Grey and White List"
- MoU 22.07.2003: new amendments enter into force, e.g. banning rules are extended
- Reward system for ships is in test phase and will be reported at next meeting in 2004 [Paris MoU 1982]

EC measures

ERIKA I package (March 2000):

- Directive 2001/106/EC amending Directive 95/21/EC, in force since 22 July 2003, concerning the enforcement in respect of shipping using Community ports and sailing in the waters under the jurisdiction of the Member States, of international standards for ship safety, pollution prevention and shipboard living and working conditions (PSC), e.g
    - Inspection of at least 25 % of ships, differentiated expended inspection scheme adopting the Paris MoU target system
    - 07/03: Publishing of a list of vessels which may be banned from EC ports should they be detained one more time after 22 July 2003.
    - 11/03: Publishing first list of ships that were refused access to Community ports between 22 July and 1 November 2003, and list of vessels which may be banned from the EC ports if they are detained one more time.

[10] Other regional PSC agreements are Tokyo MOU (Asia Pacific Region), Viña del Mar Agreement (Latin American Region), Indian Ocean MoU, Mediterranean MoU

[11] SIRENAC database, no public access

ERIKA II package (December 2002):

- Establishment of the European Maritime Safety Agency (EMSA) acc. to Regulation (EC) No 1406/2002 incl. PSC Monitoring Department

PRESTIGE follow-up (December 2002)

- Implementation of SafeSeaNet for maritime data exchange between maritime administrations of the Member States of information about movements of ships and their cargoes, and facilitates the identification of ships "at risk" once they enter EC waters. [EC 2003a]

Other regional/trilateral measures

European Quality Shipping Information System (EQUASIS):

- To overcome the lack of transparency in the information relating to the quality of ships and their operators the European Commission and the French Maritime Administration decided to co-operate in developing an information system collating existing safety-related information on ships from both public and private sources and making it available on the Internet[12] Equais is understood an additional tool for PSC and (financial) support organisations include the maritime administrations of Singapore, Spain, the United Kingdom, the US Coast Guard, Japan and the IMO.

National measures

Denmark	Germany	The Netherlands	
			Implementation
Support of IMO / FSI recommendations			IMO
- on the White List - 25,08 % inspections	- on the White List with a mentioned consistently low detention record - 26,11 % inspections	- new to the With List in the Annual Report 2002 - 24,69 % inspections	Paris MOU AR 2002
In-time implementation of 2001/106	Early implementation (1 January 02) of 2001/106	Failed to communicate in-time implementation of 2001/106 resulting in legal proceedings from the EC [EC 2003c]	EC legislation
Availability of berth sites for ships to be arrested[13]			**Deficiencies/Gaps**
		In 1999 and 2000 virtually no port inspections were carried out in Eemshaven and Delfzijl [S4]	

[12] http://www.equasis.org/

[13] pers. communication with harbour masters

		In many cases, the port authority inspections are not carried out by the Shipping Inspectorate itself, but are outsourced to private classification offices. The General Court of Auditors has expressed its concern about the fact that these offices often have the shipping companies as clients.	
		A considerable expansion of human resources is to be undertaken for realization within the next three years, in order to fulfil the requirements of the amended PSC directive as part of the *ERIKA* I package [S2]	**Options**
Pilots should inform the PSC Officers in case of apparent deficiencies[14]			
		Immediate implementation of 2001/106EC	**Recommendations**
		Elimination of conflict-of-interests situation	
Intensify harmonization of PSC procedures (e.g. checklists, interviews, etc.) Intensify exchange of PSCOs and designated personnel to ensure harmonization and consistence of information Intensify Development of joint PSCO training and qualification measures in general, and on special issues in particular (e.g. cargo securing, security, forged certificates, etc) Compliance with the "at least 25 %-inspection" target"			

[14] pers. communication with German SeeBG, January 2004