TOWARDS A BALTIC SEA WITH ENVIRONMENTALLY FRIENDLY MARITIME ACTIVITIES

Draft HELCOM Overview 2007

2nd Stakeholder Conference on the HELCOM Baltic Sea Action Plan

Helsinki, Finland, 6 March 2007

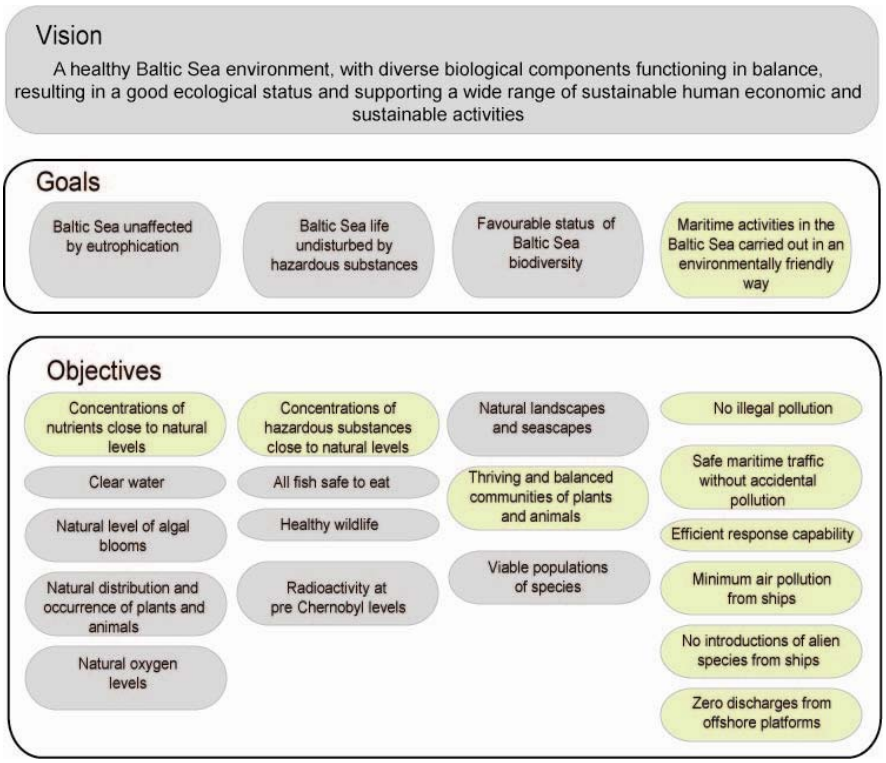
Towards the Baltic Sea with environmentally friendly maritime activities

PREFACE

The aim of this topic-oriented overview is to present concrete ideas for further actions that could be taken by the HELCOM Contracting Parties to bridge the gaps in the existing national, regional as well as international policies, practices and monitoring systems and by that to ensure good performance of shipping and other uses of the Baltic Sea. The ultimate goal is to contribute to achieving a good ecological status of the Baltic Sea environment.

The measures proposed in this report are currently under discussion and development by the HELCOM Contracting Parties. A finally agreed set of actions will be included in the HELCOM Baltic Sea Action Plan (BSAP).

For the implementation of the ecosystem approach, HELCOM has adopted a system of vision, strategic goals and ecological and management objectives. Even if the Baltic Sea Action Plan focuses on four separate thematic areas, including nature conservation, the protection of biodiversity, which determines the resilience of the whole Baltic ecosystem, is central to all themes.



The HELCOM system of vision, strategic goals and ecological objectives

The **strategic goal** of *Maritime activities in the Baltic Sea carried out in an environmentally friendly way* has been agreed by HELCOM and served as a point of departure for deliberations on main areas for which actions are needed to ensure that the impact of maritime activities on the marine environment of the Baltic Sea is minimized.

As a result, six topics of major importance for all Baltic Sea riparian countries have been addressed and converted into **management objectives**:

- No illegal pollution
- Safe maritime traffic without accidental pollution
- Efficient response capability
- No introductions of alien species from ships
- Minimum air pollution from ships
- Zero discharges from offshore platforms

These management objectives do not directly describe the good ecological status of the Baltic Sea, but they rather indicate the main areas of concern as to the human activity at sea and its possible negative impact.

Failure in reaching these objectives will impair the achievement of a good ecological status of the Baltic Sea unaffected by eutrophication, with its life undisturbed by hazardous substances and with favourable status of biodiversity.

EXECUTIVE SUMMARY

The Baltic Sea is one of the most intensely trafficked areas in the world. Both the number and the size of the ships, especially oil tankers, have been growing during last years, and this trend is expected to continue.

This heavy traffic is being carried out within narrow straits and shallow waters, covered with ice for a long period, which makes the Baltic a difficult area to navigate and leads to traffic junctions and an increased risk of shipping incidents.

The share of the pollution from maritime activities in total loads reaching the sea is growing bigger and bigger, partly due to the strict control of the land-based sources.

The main environmental effects of shipping and other activities at sea include pollution to the air, illegal and accidental discharge of oil, hazardous substances and other wastes, and introduction of alien organisms via ships' ballast water and hulls. Emission of nitrogen oxides from ships contributes to the eutrophication of the sea, oil spilled during accidents may destroy important marine and coastal habitats, and alien species may cause economic loss and pose the risk to human health.

The safety of navigation and protection of the environment from shipping are of global importance and scope. The HELCOM Contracting Parties have developed a wide range of recommendations in this field and the actions are taken at all levels: national, regional, European and global. By undertaking joint initiatives in the International Maritime Organization the recognition of the sensitivity of the Baltic Sea and its heavy sea traffic have been obtained. When possible, international regulations are implemented by HELCOM countries with the strictest demand. Last but not least, regional actions are being initiated to respond to specific needs of the Baltic Sea.

The strategic goal of *Maritime activities in the Baltic Sea carried out in an environmentally friendly way* has been agreed by HELCOM. To reach this goal, further actions are needed in six areas indicating topics of major importance for all Baltic Sea riparian countries, called **management objectives**:

- *No illegal pollution*
- *Safe maritime traffic without accidental pollution*
- *Efficient response capability*
- *No introductions of alien species from ships*
- *Minimum air pollution from ships*
- *Zero discharges from offshore platforms*

These management objectives do not directly describe the good ecological status of the Baltic Sea, but they rather indicate the main areas of concern as to the human activity at sea and its possible negative impact.

A first set of possible actions is under discussion by the Contracting Parties to ensure that agreed objectives will be met. A point of departure for deliberations is drawbacks and gaps in existing policies, control and enforcement frames as well as monitoring programmes.

No illegal pollution

In spite of the decreasing number of annually detected oil spillages in the Baltic Sea, any single breaching of anti-discharge regulations cannot be accepted. Therefore, further strengthening of the countries' ability to survey the Baltic Sea to detected illegal oil discharges, also at night or during poor visibility when deliberate discharges are more likely to occur, is of crucial importance.

The problem of illegal deliberate discharges concerns not only oil. Plastic and synthetic materials, which are durable and slow to degrade, have become the most abundant material of marine litter. Only few pieces of information are available on the amount and type of marine litter in the Baltic, and the actual scale of the problem has not been investigated yet in a comprehensive and systematic manner.

HELCOM policy addresses all major pollutants to the sea and their significant sources. However, in some areas stricter legislation has recently been introduced on European and global level, like International Convention on the Control of Harmful Anti-fouling Systems on Ships. The Baltic community should follow these international legal developments to ensure that best available solutions are applied to protect the Baltic.

Safe maritime traffic without accidental pollution

The statistics on shipping accidents in the Baltic shows increasing numbers of groundings and collisions. In very few areas a positive trend can be observed. This is mainly due to the growing density of shipping, which requires the Contracting Parties to put even more emphasis on ensuring safety of navigation. One of the possible ways to do so is making full use of the new tools available to control traffic, like Automatic Identification System. Having in mind the increasing transportation of oil products in the Baltic as well as difficulties in responding to oil spills on ice, further measures should also be taken to increase safety of navigation during winter time.

Efficient response capability

The risk for a ship accident will never be totally eliminated, so there is a need to ensure sufficient emergency and response resources in the Contracting States. The most efficient way of establishing an adequate response capability, also in terms of financial means involved, is to base it on sub-regional basis. Thus, the "three-tier" approach is applied by HELCOM reflecting three levels at which countries should be ready to act: national, sub-regional and regional.

Much has been done to build up an adequate emergency capacity and response capability. Around 30 emergency tugs with the bollard pull of 50 or more tons and around 40 sea-going response vessels are located around the Baltic, including vessels chartered by EMSA. However, creating efficient resources is a costly and timely process. That is why a step-wise approach should be applied, in which the work starts by assessing risk of accidents in individual sub-regions. Such assessments have been started in most of the areas of the Baltic, however, none of them have been finalized to the stage that missing capacities would be identified and a decision on common actions to fill in the identified gaps in the most efficient way would be made.

No introductions of alien species from ships

An increasing number of non-indigenous species is observed all around the world, including the Baltic Sea. Shipping, via ballast water and hull fouling, is the most important vector of unintentional species introductions into aquatic environments. The entry into force of the IMO International Convention for Control and Management of Ships' Ballast Water and

Sediments, 2004, would be the most important step forward to tackle this problem. Ratification of the Convention by the HELCOM countries is a very challenging goal, but would provide an effective and - for the time being – the best available legislative tool to reduce the risk of introductions of alien species into the Baltic. Additionally, inland corridors connecting the Baltic Sea and the Ponto-Caspian regions should also be addressed.

Minimum air pollution from ships

Emission from shipping is significant and is projected to grow. There are feasible and cost-effective methods of substantially reducing air emission from ships. The HELCOM Contracting Parties should continue working out common positions and providing joint inputs to ongoing global legislative processes to ensure that the best solutions are promoted and up-to-date technology is applied.

Additionally, good environmental performance of shipping should be promoted by introducing non-discriminatory economic incentives to further necessary reduction of pollution from ships.

Zero discharges from offshore platforms

The Best Environmental Practice and Best Available Technology is a subject to continuous review and updating. Drawing on BEP and BAT HELCOM is considering a concept of “zero discharge” from offshore platforms to be implemented in the Baltic Sea area.

The directions of work listed above aim at indicating further possible actions that would bring us closer to the goal of environmentally friendly maritime activities. Failure in reaching the agreed management objectives mentioned above will impair the achievement of a good ecological status of the Baltic Sea unaffected by eutrophication, with its life undisturbed by hazardous substances and with favourable status of biodiversity.

OVERVIEW OF SHIP TRAFFIC IN THE BALTIC SEA

The Baltic Sea is one of the most intensely trafficked areas in the world. Both the number and the size of the ships, especially oil tankers, have been growing in recent years, and now ships carrying up to 150 thousands tons of oil can be seen in the Baltic. There are around 2000 ships at sea at any time (figure 2), accounting for 15% of the world's cargo transportation.

Shipping intensity in the Baltic in 2006 can be approximately illustrated by these numbers (based on HELCOM AIS data):

- 52 thousand AIS equipped vessels entering/leaving the Baltic via the Skaw;
- 50 thousand vessels passing the island of Gotland;
- 37 thousand entering/leaving the Gulf of Finland.

Fact box: What is AIS?
The Automatic Identification System is a VHF radio-based system which enables the identification of the name, position, course, speed, draught and cargo of every ship of more than 300 gross tonnes sailing on the Baltic Sea, and displays all available data over a common background map. The system facilitates exchange of information between ships and between ships and shore stations. The whole Baltic Sea area has been covered by land-based AIS stations since mid-2005.
AIS information is stored in a dedicated server and can be used for generation of shipping statistics and analysis of shipping patterns.

Forecasts indicate that due to the economic growth, especially in the eastern part of the region, the amount of cargo shipped in the Baltic will double by 2015. In particular outbound transport and oil shipment is expected to show the strongest growth.

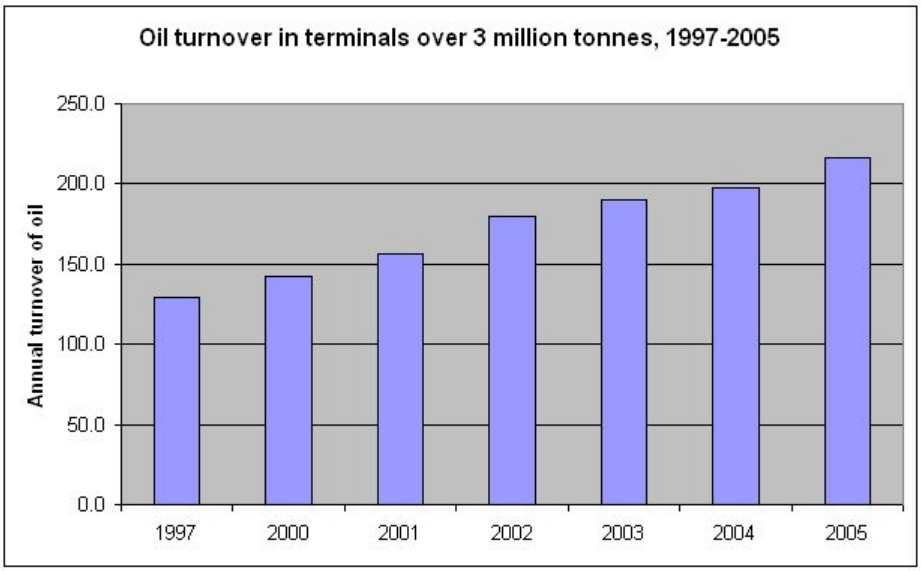


***Figure 1**. Amount of oil transported via largest oil terminals in the Baltic Sea (in millions tons), 1997-2005.*

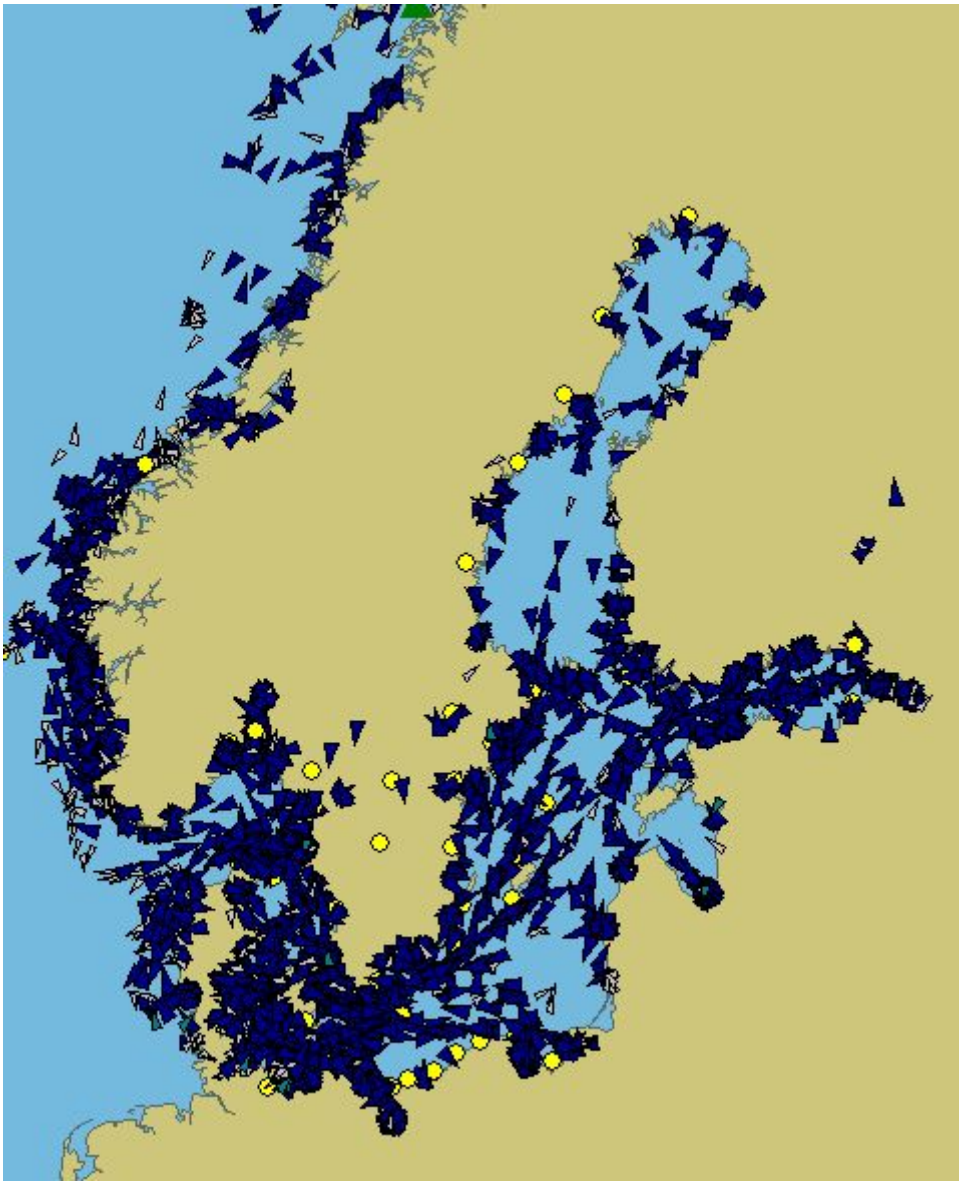


***Figure 2**. Snapshot of ships' traffic in the Baltic Sea illustrating the major shipping routes, 27 February 2007 (HELCOM AIS).*

RECOMMENDED ACTIONS TO ACHIEVE OBJECTIVES

This section of the report provides a concise overview of measures which have been taken so far by the Contracting Parties in the six HELCOM priority areas addressing maritime activities. Based on the identified gaps in existing policies and practices the recommendations for further actions are made.

1. NO ILLEGAL POLLUTION

The unique character and sensitivity of the Baltic Sea, on one hand, and the growing pressure from maritime transportation on the other, call for special regulations to be applied within our region. Much has already been done to properly address shipping as a source of pollution to the marine environment and to put in place the demanding and comprehensive anti-discharge regulations.

What has been achieved so far?

Adequate reception facilities in ports, mandatory delivery of ship-generated wastes and "no-special-fee" system for waste delivery are the main components of the Strategy for Port Reception Facilities for Ship-generated Wastes and Associated Issues, also known as the Baltic Strategy, initiated by HELCOM in the late 1990s. To a great extent this policy has been implemented by the Contracting States. The outstanding issues are addressed by HELCOM on regular basis, and include, *inter alia*, full unification of application of the established exemption regime and ensuring that any amount of waste provided for in the strategy can be delivered to all ports under the no-special-fee system.

Has the main aim of the Baltic Strategy, which is to eliminate illegal discharges into the sea of all wastes from all ships, been achieved?

Fact box: Anti-discharge regulations

According to the International Convention for the Prevention of Pollution from Ships, 1973, modified by Protocol of 1978 (MARPOL 73/78) the Baltic Sea has been internationally designated as a special area where far-reaching prohibitions and restrictions have to be followed as regards any discharges into the sea of oil or oily mixtures, noxious liquid substances and garbage.
Additionally, the Helsinki Convention requires strict rules to be applied for discharge of sewage from ships as well as incineration of wastes on board ships.

All ship-generated wastes which are not allowed to be discharged into the sea have to be delivered by ships to a port reception facility, and it is a responsibility of the Contracting States to provide such facilities. To encourage ships to deliver waste ashore no special fee is charged for the delivery, with few exceptions.

The positive effects of implementing this set of measures can be proved by comparing the number of detected illegal oil spills in the Baltic ten years ago and now (figure 3). At the same time one has to remember that during this period the density of shipping has rapidly grown and the aerial surveillance activity in the countries has been substantially improved, e.g. the number of flight hours has increased and remote sensing equipment on board aircrafts, like Side Looking Airborne Radar, has been more widely used.

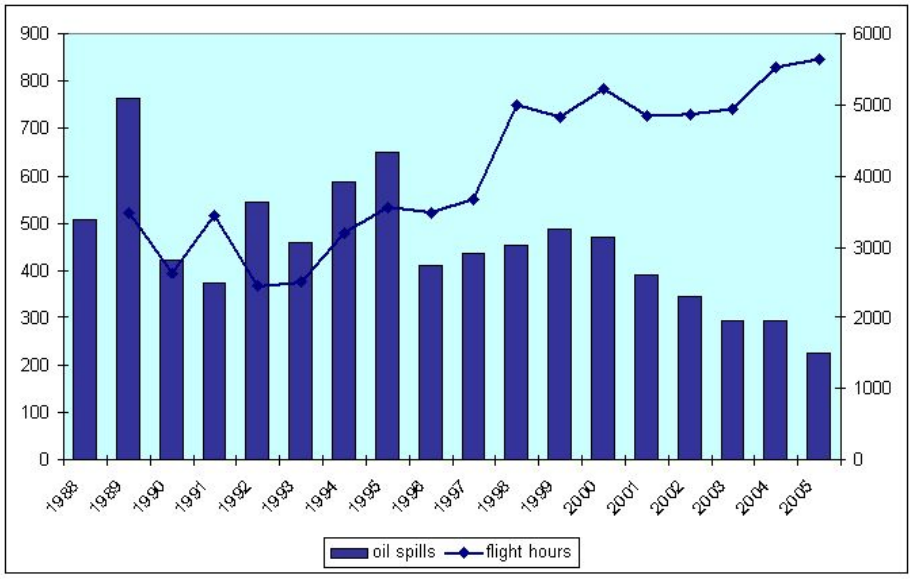


Figure 3. *Number of flight hours and observed illegal oil discharges in the Baltic Sea, 1988-2005.*

Unfortunately, in a vast majority of cases of detected illegal discharges the aircraft or vessel surveying the area arrives on scene too late and most of the polluters remain unknown. In 2005, 224 illegal discharges were detected in the Baltic and only in ten cases the polluters were identified.

However, the situation is expected to improve in the coming years, thanks to the new tool developed by HELCOM, so called Seatrack Web/AIS, which is an oil drift forecasting system integrated with information from AIS. The system will not only increase possibility to identify the source ship of illegal oil spills, but also in a significant way will improve the evidence to court.

In 2005-2006 training in using the latest version of the STW/AIS system has been performed in the Contracting States. Additionally, the system is going to be regularly improved and its use widely promoted.

Fact box: STW/AIS - how does it work?

After an oil spill has been detected, a backtracking simulation is performed. Based on a time window and area of interest, a database query is sent to an AIS database server. Ships' tracks that match the query are extracted from the database, and subsequently plotted together with the oil spill backtracking trajectory in the Seatrack Web application, leading to the narrowing of the number of ships suspected of discharging the oil.

What are the gaps and recommended actions?

In spite of the decreasing number of detected oil spillages in the Baltic Sea, there is a common understanding that even single breaching of anti-discharge regulations cannot be accepted. Even though most of the detected discharges are smaller than 1 m^3 (figure 4), the total volume of oil is substantial (figure 5) and much bigger than amount of oil spilled accidentally during most years. Additionally, the actual number of illegal discharges is probably much higher than 200/300 detected every year by the countries.

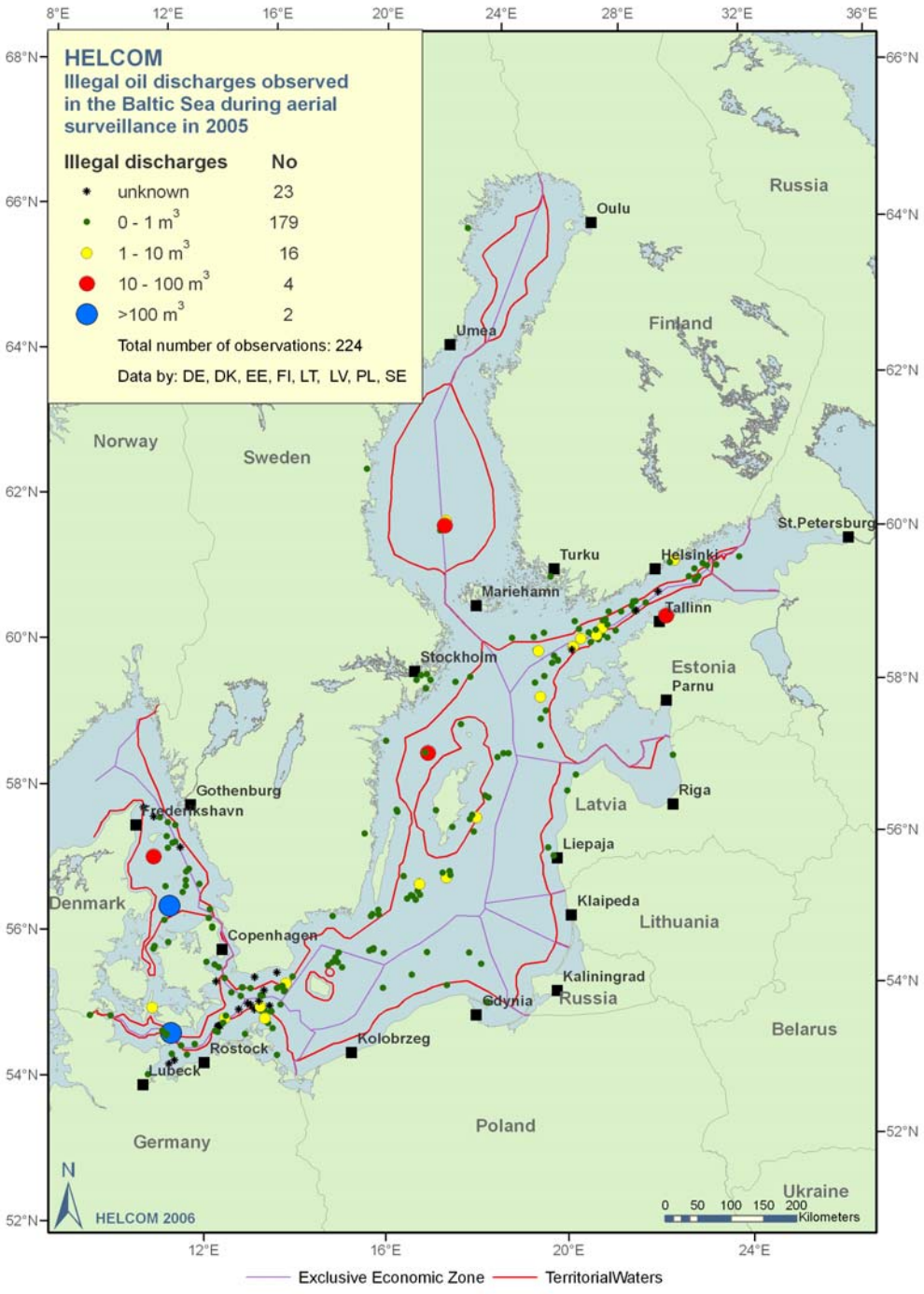


***Figure 4**. Location and size of detected oil spillages in the Baltic Sea, 2005.*

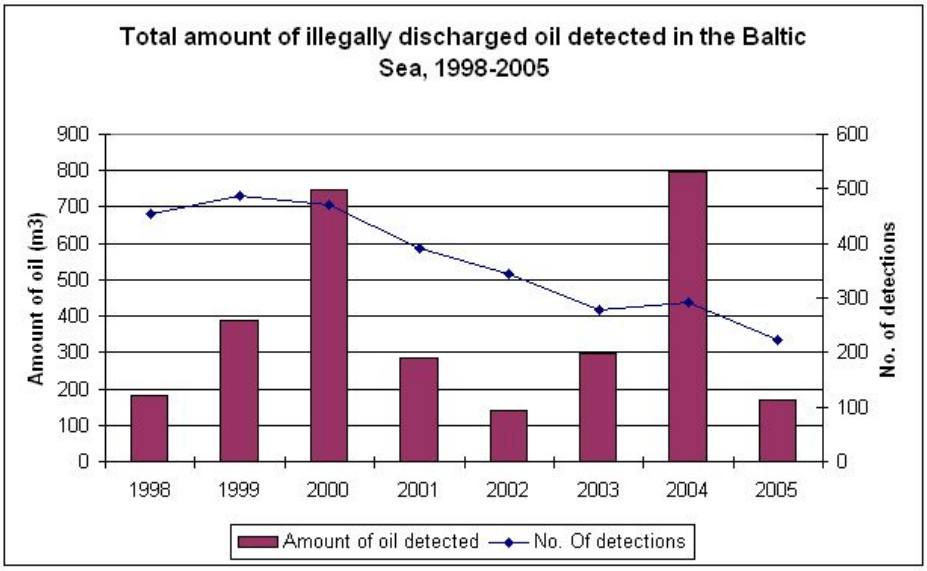


Figure 5. *Total amount of oil illegally discharged in the Baltic Sea detected by the Contracting States, 1998-2005.*

Most parts of the Baltic with regular traffic zones are covered by national aerial surveillance, but still some Contracting States do not carry out surveillance flights in accordance with the HELCOM Response Manual and Recommendations (figure 6). There is also a need to ensure a certain flight proportion for detection of polluters in darkness, when deliberate discharges are more likely to occur, which means that the aircrafts should be properly equipped to detect oil at night or during poor visibility (figure 7).

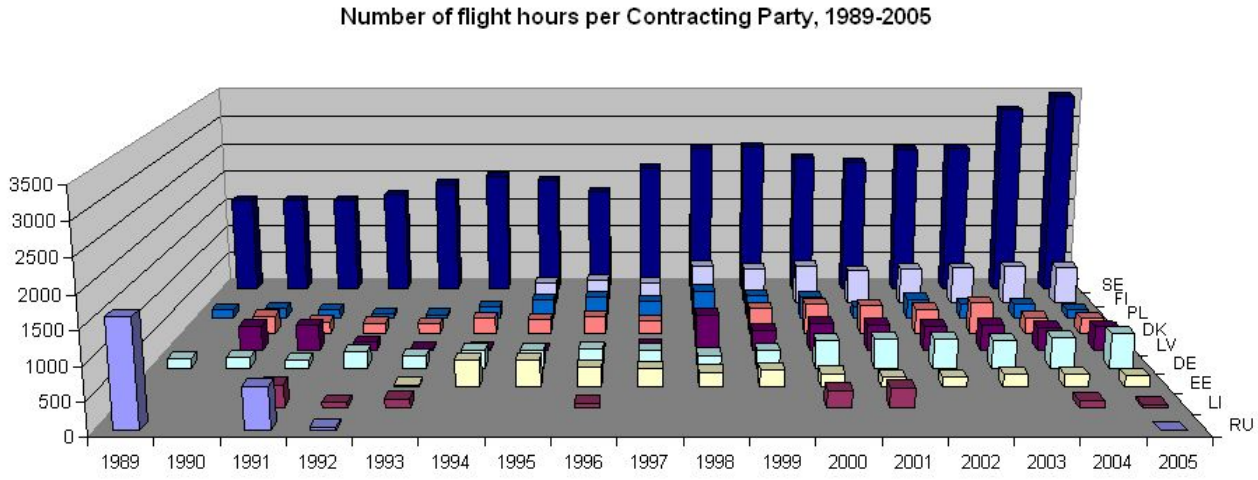


Figure 6. *Number of aerial surveillance flight hours per Baltic Sea country, 1989-2005.*

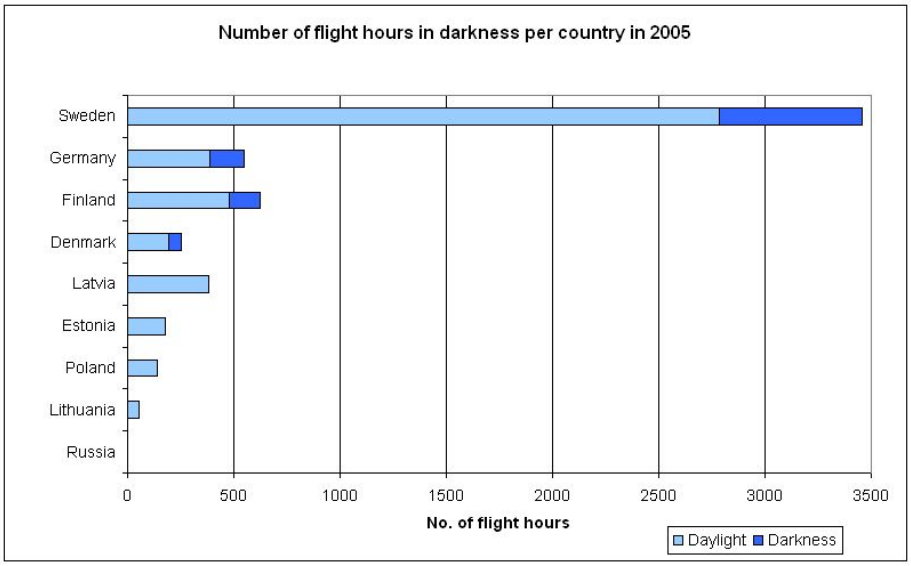


Figure 7. *Proportion of aerial surveillance flight hours in darkness per Baltic Sea country, 2005.*

The problem of illegal deliberate discharges concerns not only oil. Plastic and synthetic materials, which are durable and slow to degrade, have become the most abundant material of marine litter. Only little information is available on the amount and type of marine litter in the Baltic, and the actual scale of the problem has not been investigated yet in a comprehensive and systematic manner.

The HELCOM policy addresses in a comprehensive way all major pollutants of the Baltic Sea and their significant sources, including toxic organotin compounds. However, recently some stricter legislation has been introduced on European and global level concerning organotin compounds. International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001, totally bans the use of these substances in anti-fouling paints since TBT-free substitutes are available. The HELCOM community should follow this development to ensure that the best available solutions are applied to protect the Baltic.

The objective of *No illegal pollution* reflects a common agreement on a need for further actions to deter ships and other users of the sea from violating updated anti-discharge rules. To achieve the objective a set of actions is under consideration by the Contracting Parties.

If you are a polluter, be aware of being caught red-handed!

The Contracting Parties are planning to strengthen the control and enforcement of existing anti-discharge regulations by utilizing the regular satellite surveillance. Satellite images can indicate “the candidates” for oil spills at sea, which can be further on confirmed at spot by a vessel or an aircraft. The arrangements for satellite surveillance service have already been initiated by the European Maritime Safety Agency and the HELCOM countries. The ambition is to have sufficient and harmonized satellite and aerial surveillance covering the whole Baltic Sea area to improve the detection of illegal oil spills.

Filling in the gaps

Currently HELCOM in co-operation with UNEP is running a Project aiming at the regional assessment and evaluation of sources, magnitude and effects of the marine litter problem in the Baltic Sea. Based on the results of this activity some recommendations to fill in the gaps in existing policies and monitoring programmes will be formulated. Public awareness on environmental and economic effects of litter in the marine environment will also be addressed.

The same rules for all

The International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001, provides for a global prohibition on the new application of organotin compounds which act as biocides in anti-fouling systems on ships by 1 January 2003, and a complete prohibition by 1 January 2008. The Convention has not come into force yet. Five HELCOM countries have ratified it so far: Denmark, Latvia, Lithuania, Poland and Sweden. Ratification of the Convention by the remaining Baltic Sea countries would speed up its entry into force and allow its provisions to be applied in the whole Baltic Sea region.

Guardians of the clean sea

The importance of public awareness in protecting the Baltic Sea has been recognized on a large number of occasions and a special programme aiming at involving the public in the detection of illegal discharges from ships is being considered by the Contracting States. Following the Danish experience, such a programme could compose of organizing campaigns to involve yachtsmen, merchant shipping and shipping boats in observations of the sea and reporting observed spills to the responsible authorities.

2. SAFE MARITIME TRAFFIC WITHOUT ACCIDENTAL POLLUTION

The rising density of ship traffic in the Baltic is putting more and more pressure on the marine environment. As a result, one of the major risks the Baltic nations are facing is the risk of considerable accidental pollution of oil or other hazardous substances due to possible grounding or collision of a ship.

A non-exhaustive list of environmental effects of shipping accidents includes pollution of sea water and seabed, killing of sea birds and mammals, pollution of the shores in recreational areas and wildlife habitats, economic losses.

Every year around 150 shipping accidents take place in the Baltic. Fortunately, most of them do not cause pollution of the marine environment. According to 2000-2005 data, 8-9 % of the reported accidents end up with some kind of pollution. Nevertheless, recent major accidents around Europe indicate very clearly that even one accident can cause immense damage to the marine ecosystem.

Fact box: Recent major shipping accidents in the Baltic Sea

The 1990 "Volgoneft" incident:
- 700-800 tonnes of waste oil spilled,
- joint response operation with participation of 5 countries and more than 20 ships,
- nearly all oil recovered at sea.

The 2001 "Baltic Carrier" collides with "Tern"
- 2700 tones of oil spilled,
- joint response operation with 3 participating countries,
- around 50% of oil recovered from the sea.

The 2003 "Fu Shan Hai" incident
- around 1200 tonnes of fuel oil spilled,
- 3 countries respond jointly and recover around 1100 tonnes of oil at sea.

Note that HELCOM accidents statistics presented in this report covers tankers over 150 GT and/or other ships over 400 GT.

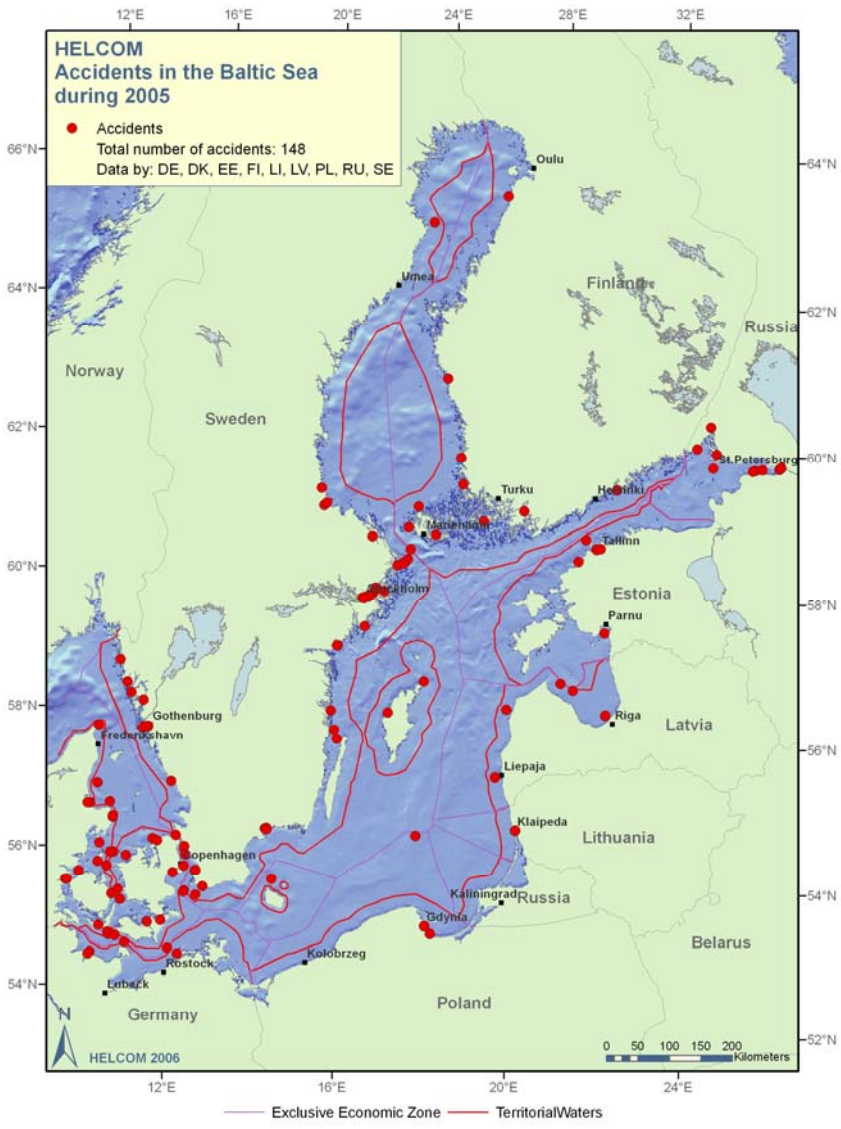


Figure 8. *The spatial distribution of shipping accidents in the Baltic Sea, 2005.*

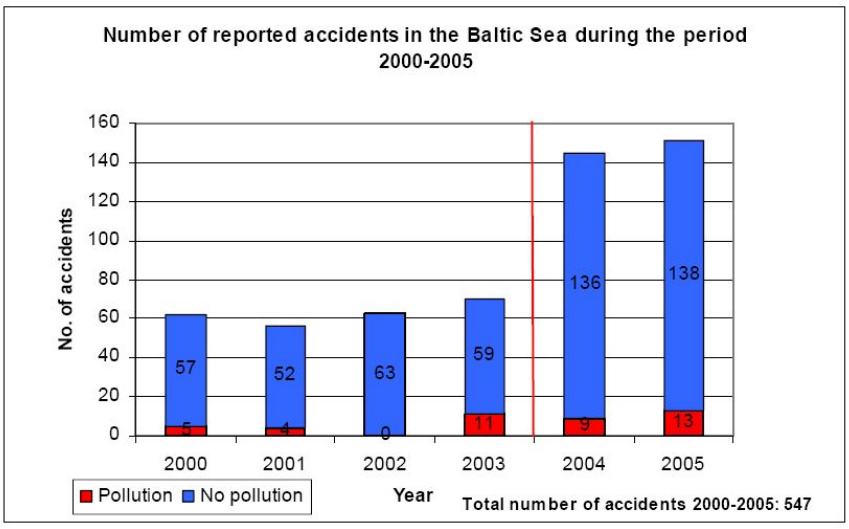


Figure 9. *The number of shipping accidents in the Baltic Sea, 2000-2005.*

Most of the accidents in 2005, in the same way as in previous years, took place in the Danish straits and at the Swedish coast of the Baltic Proper as well as in the area of Åland Archipelago (figure 8).

What has been achieved so far?

One of the milestones in improving the safety of navigation in the Baltic Sea was the adoption of the Declaration on the Safety of Navigation and Emergency Capacity in the Baltic Sea Area (HELCOM Copenhagen Declaration), 2001. The Declaration contains a number of important measures, which to a great extent have already been implemented by the Contracting Parties. These include:

- increased use of pilots for ships posing a risk to the environment;
- provision of up-to-date information on water depths through co-operation with the Baltic Hydrographic Commission and a Joint Re-surveys Plan under implementation;
- promotion of the use of Electronic Chart Display and Information Systems, whereby a ship is able to display in real time its own position;
- covering the major and secondary shipping routes with Electronic Nautical Charts;
- introduction of new routeing measures, which, e.g., have led to a much clearer traffic pattern for deep-draught ships;
- phasing out the use of single-hull oil tankers;
- establishing of the AIS system, which improved the communication between ships and shore stations;
- establishing of the Baltic Sea as a Particularly Sensitive Sea Area, except for the Russian waters, which requires ships to take special care when navigating through areas of ecological, economic, cultural or scientific significance, and for which Associated Protective Measures have already been approved by IMO.

Furthermore, following the HELCOM Copenhagen Declaration, a great deal of additional work has been undertaken to improve the safety of navigation during winter in the Baltic. The HELCOM countries have agreed on a joint policy when traffic restrictions shall be issued and have determined an equivalence of the ice classes of different Classification Societies with the Finnish-Swedish Ice Class Rules.

What are the gaps and recommended actions?

The statistics on shipping accidents in the Baltic provides a good basis for analysing the existing situation and identifying high risk areas. When doing so, one has to take into account the growing density of shipping in the Baltic.

Total number of shipping accidents

The difference in the number of shipping accidents between 2003 and 2004 can be partly explained by the improved reporting within HELCOM (which is marked with red line). However, in 2004 and 2005 the number of accidents remains almost at the same level showing no improvement (figure 9).

The main reason for an accident to happen is a human factor (42 %) followed by a technical failure (23 %) (figure 10).

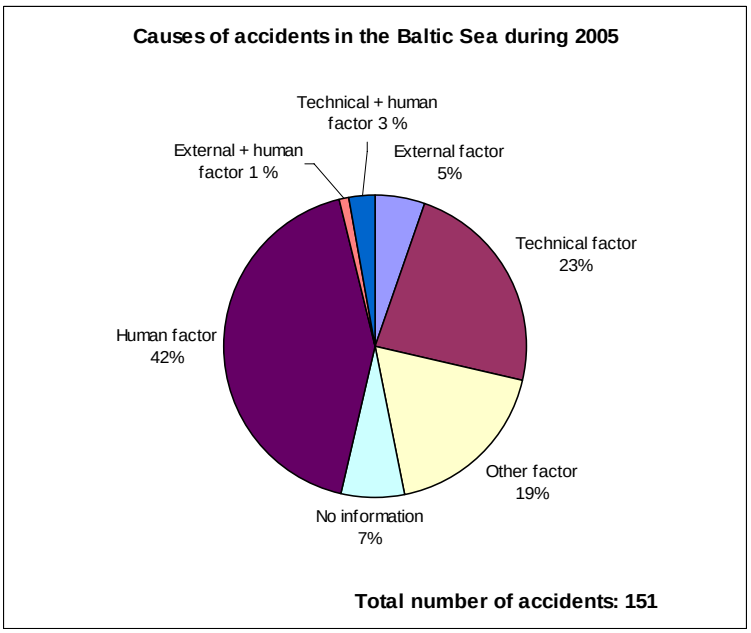


***Figure 10**. Causes of accidents in the Baltic Sea, 2005.*

Groundings

Groundings constitute a substantial part of the accidents in the Baltic. In 2005, 54 groundings took place, which is 5 less than in 2004.

During 2000-2005 around 50 % of the groundings took place in the Danish straits and the statistics does not show any decrease in recent years (figure 11). Other areas of concern are the Gulf of Finland, especially the Estonian coast, the Åland Archipelago area, the Swedish coast of the Baltic Proper and approaches to ports (figure 12).

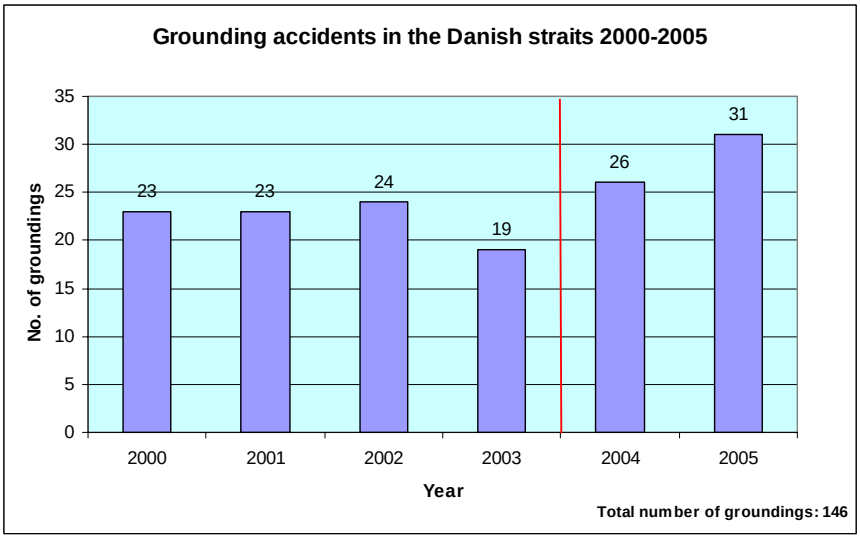


***Figure 11**. Grounding accidents in the Danish straits, 2000-2005.*

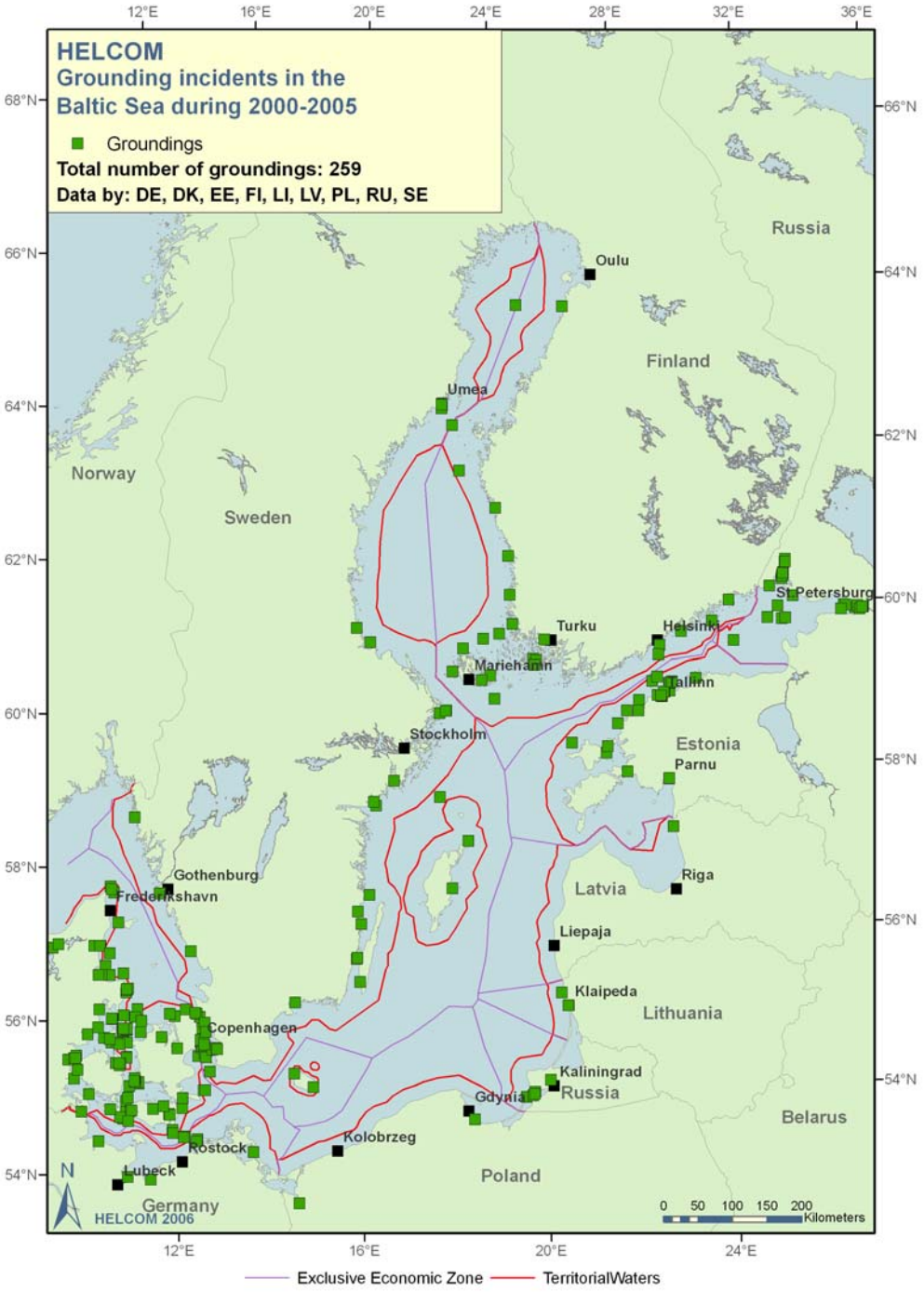


***Figure 12**. Grounding accidents in the Baltic Sea, 2000-2005.*

There is a clear link between absence of pilot onboard and a grounding risk. Last year, out of the total number of 54 groundings, only in 13 cases a pilot onboard was present.

Collisions

Spatially collisions are not so clearly accumulated in a few areas as groundings, but the map of collisions for the period of 2000-2005 is pointing to the Danish straits and approaches to ports as the most risky areas for ships to collide (figure 13). Some trend of growth in the number of collisions in these areas can be identified as well as for the whole Baltic Sea.

There were 43 collisions during 2004, and already 57 in 2005, which number constituted 38% of all accidents and for the first time surpassed the number of groundings (36%).

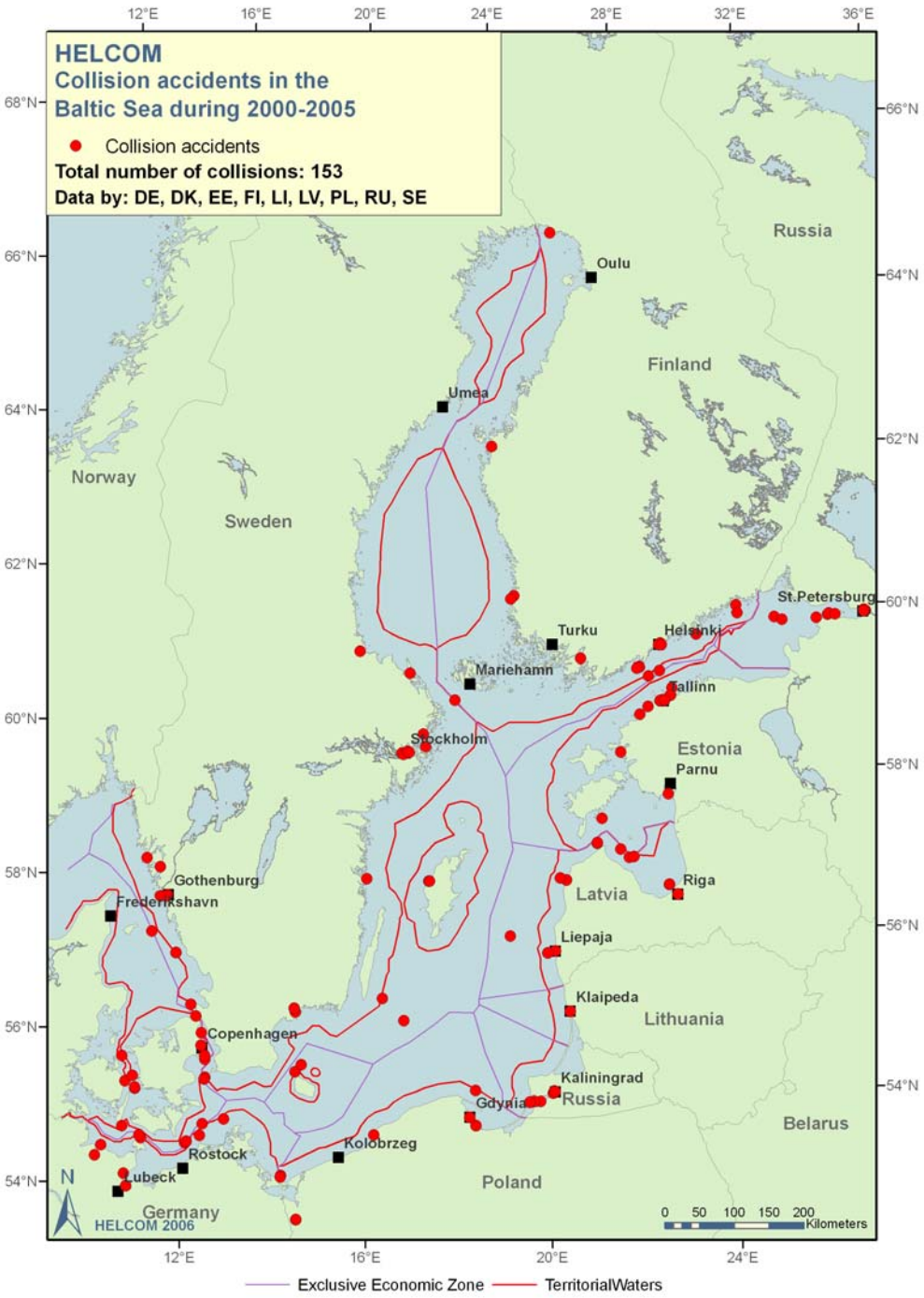


***Figure 13**. Number of collisions in the Baltic Sea, 2000-2005.*

The objective *Safe maritime traffic without accidental pollution* indicates the importance of further improvement of the safety of navigation in the Baltic. The actions under consideration by the Contracting Parties include:

Let's join the forces!

Some areas of the Baltic Sea are ice-covered for several winter months, which places some limitation on maritime transportation and entail greater risks of accidents and pollution. Main accidents during winter time include collisions, groundings and hull damages. Having in mind the increasing transportation of oil products in the Baltic as well as difficulties in responding to oil spills on ice, further measures to increase the safety of navigation during winter time are needed. Co-operation with Baltic Icebreaking Management, an organisation consisting of icebreaking authorities from all Baltic Sea countries, should be enhanced. Among needed actions are: more effective use of icebreaking resources by managing the service on sub-regional level, training on ice navigation as well as ensuring timely information on ice conditions, traffic restrictions and icebreaking services.

Make the best use of technical solutions

Since July 2005 HELCOM AIS has been able to provide additional information for the analyses of each individual grounding and collision case by the respective Contracting Parties and findings of such investigations will form a basis for identifying possible measures to further improve the safety of navigation, especially in high risk areas.

3. EFFICIENT RESPONSE CAPABILITY

The risk for a ship accident will never be totally eliminated so there is a need to ensure efficient emergency and response capabilities.

The idea behind emergency assistance is to ensure assistance to a vessel at a very early stage of the accident and in that way to avoid or reduce the scale of the pollution.

Early and well organized response operations can be a very effective tool in reducing the environmental effect of pollution accidents.

Clear procedures for requesting and providing assistance, easy border crossing and financial aspects of assistance are crucial for a coordinated response to pollution incidents, also in case when oil comes ashore and municipalities take a lead in response actions.

What has been achieved so far?

The most efficient way of establishing an adequate response capability, also in terms of financial means involved, is to base it on sub-regional level. The "three-tier" approach applied by HELCOM means that minor oil spills should be tackled efficiently by single Contracting Parties and it should be possible to address spills of medium size by well organized and timely action by several neighbouring Contracting Parties, and in case of larger oil spills all Contracting Parties are involved.

Much has been done to build up adequate emergency capacity and to prevent pollution by addressing incidents at a very early stage. Around 30 emergency tugs with the bollard pull of 50 or more tons are located around the Baltic. Moreover, several emergency assistance vessels are to be built in coming years. Most of the Contracting Parties have mechanisms to involve commercial emergency resources in case of an urgent need.

When it comes to actual spills, quite often the first task for a responder is to prevent oil from going ashore or to sensitive coastal areas and to recover as much oil as possible in the open sea. Around 40 sea-going response vessels are located around the Baltic (figure 14). They have necessary equipment, capacity, trained crew and in principle are able to reach any place in the Baltic within six hours after an incident.

Additional response capacity has been provided by EMSA to “top-up” the existing resources in case of a big accident.

Exercising is a key to efficient response operations at sea. Several kinds of exercises are conducted under the HELCOM flag. The most famous one is the BALEX DELTA, which tests the alarm procedures and response capability of the Contracting Parties in case of a major accident and an international response operation. BALEX DELTA exercises take place each year and are hosted by the Contracting Parties according to an agreed schedule.

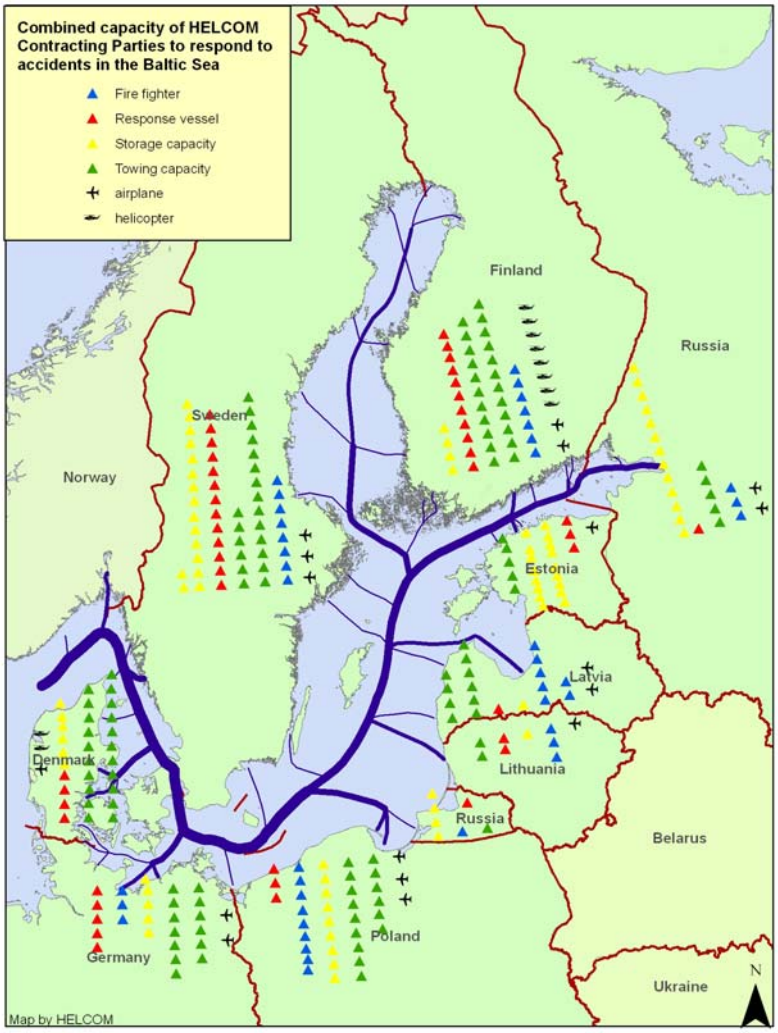


Figure 14. *Emergency towing and sea-going response vessels located in the Baltic Sea area (MARIS).*

What are the gaps and recommended actions?

In spite of the fact that sub-regional risk assessments have been started in most areas of the Baltic, none of them have been finalized to the stage that missing emergency capacities would be identified and a decision on common actions to fill in the identified gaps in the most efficient way would be made.

There are still only few vessels with the bollard pull of 72 t or more in the Baltic and the emergency towing capacity can be assessed as insufficient at least in several sub-regions of the Baltic.

Additionally, most of the Contracting Parties report lack of capacity to respond to heavy oils and especially chemicals. Only two countries have some equipment suitable for response to oil spills in ice conditions available and therefore, response to oil in ice remains among the problematic areas.

The objective *Efficient response capability* reflects that emergency assistance and effective response to pollution incidents are crucial components in reducing the environmental impact of accidental pollution from ships. The actions under consideration by the Contracting Parties include:

New regulation

New HELCOM Recommendation "Strengthening of sub-regional co-operation in response field" has been proposed by the HELCOM Response Group, which provides for a step-wise approach in achieving efficient response capability by the Contracting States:

1. By agreed deadline development and agreement upon common methodology for the assessment of risk and sufficiency of response capacity, to be used as a support tool for elaboration of "Guidance for the sub-regional plans to quantify needed emergency/response resources";
2. By agreed deadline finalization of the national assessments of the risks of oil and chemical pollution and the quantification of the emergency and response resources at the sub-regional level (emergency towing, fire-fighting and emergency lightering, hardware, human resources) needed to meet these risks;
3. Based upon risk assessments identification by agreed deadline of the gaps and preparation of concrete plans/programs for fulfilling them.

New tool to support decision-making

It has been decided within HELCOM that response to oil should take place by the use of mechanical means as far as possible. However, the use of dispersants is not prohibited, only recommended to be limited. There is a need to improve knowledge about the properties of oils being transported in the Baltic as well as the effectiveness and environmental impact of using dispersants to combat an oil spill in the Baltic Sea.

Looking forward to new technical solutions

There is a clear need to promote the development and to enhance the use of technology to respond to accidents at night and in bad visibility, in bad weather, oil on ice, accidents involving heavy oil, chemical accidents, and to continue research work and information exchange to close the gaps in knowledge in this field.

4. NO INTRODUCTIONS OF ALIEN SPECIES FROM SHIPS

The increasing number of non-indigenous species is observed all around the world, including the Baltic Sea. Shipping, via ballast water and hull fouling, is the most important vector of unintentional species introductions into aquatic environments. The Baltic Sea, where a big portion of global shipping is accumulated, is especially exposed to invasions. Additionally, our region is connected to the Ponto-Caspian brackish seas by rivers and canals, by which invasive and alien species can also be introduced. The ability to live and reproduce at the low salinity of the Baltic Sea is a key factor to determine the invasion success. [1]

What has been achieved so far?

The entry into force of the IMO International Convention for Control and Management of Ships' Ballast Water and Sediments in the Baltic Sea area, 2004, would be the most important step towards the reduction of spreading of invasive and alien species.

Important work has already been done within HELCOM that brings the countries closer to the ratification of the new Convention, including many years of scientific co-operation on alien species in the Baltic, which provide a sound basis for addressing the problem at a more decisive level.

Additionally, two HELCOM workshops on invasive and alien species introduction via shipping have been recently organized and a HELCOM Project to assess the risk of ballast water mediated introductions to the Baltic has been carried out (2005-2006). As a result of these activities relevant information has been compiled and a set of actions has been recommended.

What are the gaps and recommended actions?

The Ballast Water Convention foresees two management options aiming at reducing the risk of alien species introductions: ballast water exchange and technological solutions, like treatment of ballast water on board. The Convention provides for limiting the ballast water exchange starting from 2009, with its final substitution for the remaining option in 2016. However, the Convention doesn't make any particular reference to the semi-enclosed seas and coastal seas, different from oceans.

For the time being, no effective measures have been put in place to minimize the risk of alien species introductions to the Baltic Sea. There is a need for a unified, common interpretation of the requirements of the Ballast Water Convention and working out Baltic tailor-made solutions to its implementation.

The management objective of *No introductions of alien species from ships* is consistent with the main goal of the Ballast Water Convention, which is to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments. What are the possible actions?

[1] More information about non-indigenous aquatic species is available in the Overview "Towards a Favourable Status of Baltic Sea Biodiversity".

Towards ratification of BWC…

A road map towards harmonized implementation and ratification of the IMO International Convention for Control and Management of Ships' Ballast Water and Sediments in the Baltic Sea area is under development, which will indicate how and when this international Convention could be implemented in the Baltic Sea area.

… but what before that?

There is a need for evaluation and selection of the most cost-efficient measures to reduce the risk of introductions of alien species into the Baltic before the entry into force of the Convention. Among specific measures that could be taken are risk assessments, mandatory reporting system and designation of ballast water exchange zones.

Co-operation with the North Sea and the Ponto-Caspian regions

An important part of the work should be co-operation with the North Sea countries and the Ponto-Caspian region in order to identify issues of common interests and work out solutions which would serve the needs of protection of all the marine regions concerned.

5. MINIMUM AIR POLLUTION FROM SHIPS

Apart from accidental and deliberate discharges of oil and other wastes to the sea, the normal operation of a ship also contributes to the pollution of marine and coastal ecosystems. The main pollutants concerned are nitrogen oxides (NOx) and sulphur oxides (SOx), where NOx is emitted to the air mainly from the operation of diesel engines and SOx emission results from combustion of marine fuels and directly depends on the sulphur content of the fuel.

While SOx causes acidification of terrestrial and freshwater ecosystems, damages materials and has a negative impact on human health in coastal areas, NOx emission contributes considerably to the most severe environmental problem of the Baltic Sea which is eutrophication.

According to recent estimates (EEB, 2004), the nitrogen oxide emission from international shipping traffic on the European seas increased by more than 28 % between 1990 and 2000.

In 2004 the emission from this source was estimated to account for approximately 8% of the total nitrogen deposition entering the Baltic Sea (figure 15).

Furthermore, the present estimates indicate a systematic annual increase of this contribution to the deposited nitrogen in the range 2-3%, which trend is due to growing shipping density in the Baltic and in European waters (EMEP 2006).

Fact box: Eutrophication

Eutrophication is caused by excessive inputs of nutrients leading to intense algal growth, decreased water clarity, oxygen depletion in bottom areas as well as death of benthic organisms.

The Baltic Sea has been severely affected by eutrophication and related negative symptoms have already been observed.

The biggest source of nitrogen and phosphorus entering the Baltic Sea is riverine load. However, as for nitrogen, another major pathway is emission of NOx and ammonia (NH_3) to the air and subsequent deposition of nitrogen to the sea.

In 2004, as much as 25 % of nitrogen reaching the sea came from the air. While in case of ammonia, roughly 90% of the emission originated from agriculture, the main sources of nitrogen oxides were road transportation, energy combustion and shipping.[2]

[2] More information about input of nutrients and eutrophication of the Baltic Sea is available in the Overview "Towards a Baltic Sea unaffected by eutrophication".

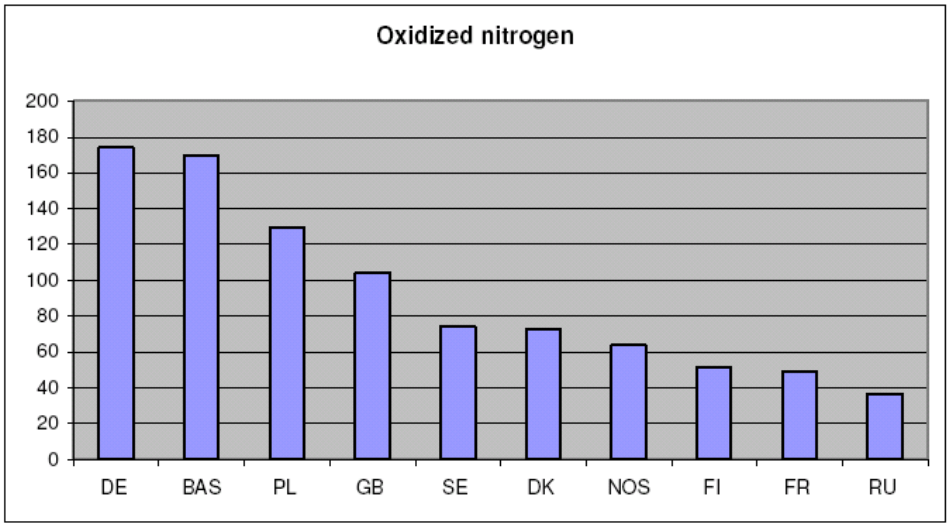


***Figure 15**. Top ten contributors of nitrogen emissions to annual deposition of oxidized nitrogen into the Baltic Sea [unit: 100 tons N], 2003. **BAS** and **NOS** denote ship emissions from the Baltic Sea and the North Sea, respectively (EMEP 2006).*

What has been achieved so far?

Several Recommendations have been adopted by HELCOM in order to reduce air pollution from ships. They mainly address incineration, fuel quality and usage of best available technologies on board. On 19 May 2005, Annex VI to the MARPOL 73/78 Convention entered into force, becoming the main global legislation regulating air pollution from ships. Eight out of nine HELCOM Contracting States have already ratified the Annex. The ratification process has also been started in the remaining country.

The HELCOM Contracting States have been jointly contributing to the relevant global legislative developments and policy making processes to ensure that the highest practicable standards to control and prevent pollution from ships, also to the air, are applied. For example, as a result of such a joint proposal to the IMO, the Baltic Sea was designated as a SO_x emission control area in Annex VI. On and after 19 May 2006 the sulphur content of fuel oil used on board ships in the Baltic Sea SECA shall not exceed 1.5% m/m or alternative methods has to be used to ensure the same level of efficiency.

What are the gaps and recommended actions?

According to some estimates (EEB, 2004) the emission of NOx from international shipping is expected to increase by two thirds by the year 2020, and this of SOx by nearly a half, even after the implementation of Annex VI of MARPOL 73/78.
A share of this emission in total emissions will grow larger since the environmental impact of the shipping sector is not regulated as extensively as many land-based sources. There are predictions that the emission of NOx and SOx from shipping through Europe will surpass emissions from all land-based sources in the 25 EU member states (Entec, 2002). Thus, maritime transportation is as a sector where further cost-efficient reductions are possible and should be sought.

Thanks to fast developing shipping technology, new feasible and cost-effective methods for further substantial reduction of emission from ships have been made available. All Baltic Sea States must jointly take active part in global actions initiated within IMO to promote the world wide use of those most up-to-date and efficient solutions.

The objective of *Minimum air pollution from ships* indicates the existing potential for reduction of emission from maritime transportation and recognises the need for further actions. The following measures are under consideration by the Contracting Parties:

Economic incentives to further reduce air emission

Economic incentives are one of the best means of promoting good environmental performance of ships, providing incentives for industry to go beyond regulatory requirements towards the use of best available technology. Economic incentives include differentiated taxation of marine fuels, differentiated port and fairway dues and differentiated tonnage taxes. Environmental Differentiated Fairway Dues have been successfully implemented in Sweden, which resulted in the reduction of SO_2 by 50 000 tons and NOx by 41 243 tons in 2004. The socio-economic value of this reduction was calculated to be 2.5 billion SEK (277.8 million EUR).
Such systems should be applied in all countries around the Baltic Sea, which could be facilitated by the guidance to be developed and common principles to be agreed by HELCOM.

Joint input to global legislative processes

Annex VI to the MARPOL 73/78 Convention is currently under revision process within the International Maritime Organization. The possibility of a common position of the Contracting States towards tightening the existing requirements, e.g. on sulphur content in marine fuel oil, to be promoted within IMO is being investigated. What has to be taken into account is cost and feasibility of a possible new standard and environmental benefit which could be derived from it.

Integrated approach to choose the most cost-effective measures

When considering which are the most cost-effective measures to reduce air emission from shipping many factors need to be taken into account, e.g. possible negative impact on other compartments of the environment, cost and efficiency of corresponding measures in sectors located on land. One has to be sure that chosen solutions to protect the environment of the Baltic Sea do not create problems elsewhere, by contributing to the climate change or deteriorating the environment in coastal areas and further inland. To ensure this the existing emission reduction policies and technologies should be reviewed in a comprehensive manner in order to identify information gaps and propose the most cost-efficient reduction schemes of ships' emission.

6. ZERO DISCHARGES FROM OFFSHORE PLATFORMS

Offshore exploration and exploitation of oil and gas are the activities likely to result in discharges of oil and noxious substances and in emission to the atmosphere of substances or groups of substances such as PAHs, NOx.

What has been achieved so far?

Prevention of pollution from offshore platforms is addressed in Annex IV to the Helsinki Convention. Additionally, environmental performance of offshore activities should be handled in accordance with HELCOM Guidelines and Recommendation 18/2. The Recommendation requires that Best Environmental Practice and Best Available Technology are applied and that no exploration and exploitation activities are carried out in the Baltic Sea Protected Areas. Moreover, it sets specific limits for content of hazardous substances,

like cadmium and mercury, in mud and oil content in discharged production water from offshore platforms.

What are the gaps and recommended actions?

The Best Environmental Practice and Best Available Technology are a subject to continuous review and updating as new knowledge is gained and up-to-date solutions are available. On this basis the HELCOM countries have come up with a concept of “zero discharge” to be applied to the whole production process on offshore platforms.

There is an increasing interest in offshore activities in the Baltic Sea and the objective of *Zero discharges from offshore platforms* aims at ensuring that high anti-pollution standards are implemented.

Offshore Action Plan

The objective of the Offshore Action Plan would be to make sure that environmental impacts from production and the preceding exploration for oil and natural gas remain within the limits set out in international and national regulations and correspond to principles of the Best Available Technology and Best Environmental Practice. The Plan would be based on “zero discharge” principle, which is currently under consideration by the Contracting States, and which has been successfully implemented at Russian offshore platform in the Baltic Sea. Taking into account specific conditions related to the location and type of the platform, the combination of different technological solutions could applied aiming at achieving comparable high standard.