

Baltic Sea Environment Proceedings No. 112

# Activities 2006

## Overview



**Helsinki Commission**

Baltic Marine Environment Protection Commission

# Activities 2006 Overview

## Introduction

This report summarises the activities of the Helsinki Commission (HELCOM) related to the protection of the Baltic marine environment over the period March 2006 to March 2007.

It provides the latest HELCOM assessment of current trends in the Baltic marine environment, as well as an update on HELCOM's recent activities. HELCOM's work aims to curb eutrophication caused by excessive nutrient loads entering the sea, prevent pollution involving hazardous substances, improve maritime safety and accident response capacity, and halt habitat destruction and the decline of biodiversity.

More details of HELCOM's activities, projects and publications are available at [www.helcom.fi](http://www.helcom.fi), together with background information about environmental issues related to the Baltic Sea.

## Activities 2005 Overview

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# Contents

Foreword	4
<b>1. The working structure of HELCOM</b>	<b>7</b>
Organisation	7
The goals of the Helsinki Commission	7
The 1974 Convention	7
The 1992 Convention	7
Priorities	7
<b>2. The HELCOM Baltic Sea Action Plan – turning the concept into reality</b>	<b>9</b>
HELCOM unveils a blueprint for action in the Baltic	9
Defining the final shape of the Baltic recovery strategy	11
Charting the Baltic’s environmentally sound future – outline of the first draft	
HELCOM Baltic Sea Action Plan	13
1. Introduction	13
2. Towards a Baltic Sea unaffected by eutrophication	17
3. Reducing concentrations of hazardous substances to natural levels	20
4. Achieving a favourable status for biodiversity	22
5. Ensuring environmentally friendly maritime activities	25
HELCOM’s new strategy highlighted in major environmental forums	30
<b>3. Monitoring the marine environment</b>	<b>33</b>
HELCOM launches a new comprehensive assessment of the Baltic Sea	33
Serious oxygen depletion discovered in the Baltic Proper and the Gulf of Finland	34
Water transparency no longer declining in parts of the Baltic Sea	36
Latest assessment predicts dramatic warming in the Baltic Sea region	38
Catches of chemical munitions remain low	41
<b>4. Combating eutrophication and hazardous substances</b>	<b>43</b>
Modelling nutrient reduction scenarios	43
Scenario 1: Improved sewage treatment	44
Scenario 2: Phosphorus-free detergents	44
Scenario 3: Improved sewage treatment and P-free detergents	44
Scenario 4: Business as usual in agriculture	45
Scenario 5: Best possible agricultural practices	46
Scenario 6: Best case scenario combining all possible actions	46
Conclusions	47
HELCOM halves the number of Baltic Sea pollution hot spots	48
<b>5. Ensuring maritime safety and response capacity</b>	<b>51</b>
Latest report on shipping accidents in the Baltic	51
HELCOM achieves a 50% reduction in illegal oil discharges	53
Monitoring shipping traffic in the Baltic	55
Practising response to oil spills	56
Launch of a new system to help identify suspected illegal dischargers	57
<b>6. Baltic Sea Regional Project extended by one year</b>	<b>59</b>
Technical capacity building	59
Human capacity building and farm investments	60
<b>7. HELCOM Youth Forum: inspiring the next generation of environmental leaders</b>	<b>63</b>
<b>8. HELCOM’s new mariners’ routeing guide for the Baltic</b>	<b>65</b>
<b>9. Appendices</b>	<b>67</b>
Recommendations adopted by HELCOM 28	67
Press releases	67
Newsletters	68
Publications	69
1. Baltic Sea Environment Proceedings (BSEP)	69
2. Other publications	70

# Foreword



As Executive Secretary of the Baltic Marine Environment Protection Commission (Helsinki Commission), I am pleased to present our Annual Report for the 12 months ending in March 2007.

2006 has been a watershed year in

HELCOM's efforts to restore the health of the Baltic Sea. The Commission began drafting an ambitious Baltic Sea Action Plan to dramatically reduce pollution and reverse the degradation of the marine environment. The plan's ultimate objective is to obtain a good ecological status for the Baltic Sea – a sea with diverse biological components functioning in balance and supporting a wide-range of sustainable human economic and social activities. The underlying principle behind the action plan is the ecosystem approach, which was defined in the 1992 Rio Declaration and reiterated at the 2002 World Summit on Sustainable Development in Johannesburg.

In March 2006, we presented the concept of the action plan to major stakeholders, and also approved the first core elements of a new environmental strategy to restore the Baltic Sea - a common vision of a healthy sea, and a set of Ecological Objectives to work towards so as to fulfill this vision. HELCOM has subsequently been defining a comprehensive set of actions to achieve the agreed goal of a Baltic Sea unaffected by eutrophication, undisturbed by hazardous substances, with favourable biodiversity and environmentally friendly maritime activities.

I am happy to report that the initial work on the outline of the HELCOM Baltic Sea Action Plan has now been completed. Following

many months of hard work, including a long series of meetings and consultations, the first draft of a set of actions to be included in the Baltic Sea Action Plan was unveiled in March 2007, at the 2nd Stakeholder Conference on the development of the new HELCOM environmental strategy, where the proposals received overwhelming support and the backing of major international organisations.

HELCOM has now commenced the final stage in the development of the HELCOM Baltic Sea Action Plan. After a series of meetings to work out the details, the new environmental strategy will be adopted at the HELCOM Ministerial Meeting scheduled to take place on 15 November 2007 in Krakow, Poland.

The adoption of the ambitious but realistic action plan will be a critical landmark in our combined efforts to rescue the troubled Baltic Sea. There is still a lot left to do to finalise the plan by the Krakow Ministerial Meeting, but we are very committed and confident that in the end HELCOM will succeed in designing a pragmatic environmental policy with an effective set of measures that will ultimately make the Baltic Sea a more environmentally sound and healthier place.

HELCOM's innovative work to draw up an environmental strategy, based on a specially defined set of Ecological Objectives, has already been widely backed by the European Union, CBSS and other regional and international organisations, and highlighted as a model to be followed by the rest of the regional sea conventions. Having started the elaboration of the Baltic Sea Action Plan already, HELCOM is ahead of the proposed EU Marine Strategy Directive in terms of applying the ecosystem approach. The new HELCOM plan has been also recognised as a frontrunner within the framework of this Directive, which foresees a regional approach

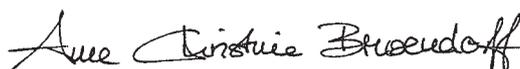
to the protection of the marine environment across European seas through the development of separate action plans for each marine convention around the continent.

The HELCOM action plan will also take into account the environmental provisions of the Maritime Doctrine of the Russian Federation, which is the only HELCOM country outside the EU. The plan will also be instrumental to the implementation of the renewed Northern Dimension policy, the Baltic Sea regional aspects of the EU-Russian Environmental Dialogue, and the Nordic Environmental Action Plan.

As the main environmental policy maker in the Baltic Sea region, HELCOM will make sure that the new strategy we are developing today will become a locomotive of regional environmental protection with common

objectives, common actions, common obligations, and, of course, common responsibility.

I hope that this annual report will provide you with plenty of useful information about the Baltic Sea Action Plan, as well as an overview of HELCOM's assessments of the current trends in the Baltic marine environment and all the other wide-ranging activities to protect the Baltic carried out by the Helsinki Commission during 2006.



*Anne Christine Brusendorff*

Executive Secretary of the Helsinki Commission



Photo: Visa Hietalahti



HELCOM Headquarters, Helsinki

# 1. The working structure of HELCOM



The Baltic Marine Environment Protection Commission, more usually known as the Helsinki Commission, or HELCOM, works to protect the marine environment of the Baltic Sea from all sources of pollution through intergovernmental co-operation between Denmark, Estonia, the European Community, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden.

HELCOM is the governing body of the "Convention on the Protection of the Marine Environment of the Baltic Sea Area" – more usually known as the Helsinki Convention.

## Organisation

The Helsinki Commission meets annually. Ministerial level meetings are also held occasionally. The Commission unanimously adopts Recommendations for the protection of the marine environment, which the governments of the Contracting Parties must act on in their respective national programmes and legislation.

The chairmanship of the Helsinki Commission rotates between the Contracting Parties every two years, according to their alphabetical order in English. HELCOM is currently chaired by Poland (1 July 2006 – 30 June 2008).

The working structure of HELCOM, supported by the Secretariat, consists of the meetings of the Helsinki Commission, the Heads of Delegation, and five main groups.

## The goals of the Helsinki Commission

HELCOM's main goal is to protect the marine environment of the Baltic Sea from all sources of pollution, and to restore and safeguard its ecological balance.

## The 1974 Convention

For the first time ever, all the sources of pollution around an entire sea were made subject to a single convention, signed in 1974 by the then seven Baltic coastal states. The 1974 Convention entered into force on 3 May 1980.

## The 1992 Convention

In the light of the political changes, and developments in international environmental and maritime law, a new Convention was signed in 1992 by all the states bordering on the Baltic Sea, and the European Community. After ratification the Convention entered into force on 17 January 2000. The Convention covers the whole of the Baltic Sea area, including inland waters as well as the waters of the sea itself, and the sea-bed. Measures are also taken in the whole catchment area of the Baltic Sea to reduce land-based pollution.

## Priorities

- Environmental monitoring and assessment
- Combating eutrophication caused by excessive nutrient loads coming from agriculture
- Preventing pollution by hazardous substances
- Improving navigational safety and accident response capacity
- Protecting and conserving marine and coastal biodiversity

## Structure of HELCOM





## 2. The HELCOM Baltic Sea Action Plan – turning concept into reality

### HELCOM unveils a blueprint for action in the Baltic

The initial outline of an ambitious Baltic Sea Action Plan which would drastically reduce the pollution of the Baltic Sea and restore its good ecological status was unveiled by the Helsinki Commission at an International Stakeholder Conference held on 6 March 2007 in Helsinki. The Helsinki meeting enabled around 200 delegates, representing governments, businesses and academia of the coastal countries, as well as the European Union, major regional organisations and NGO's to discuss the new strategy and provide input for its further development.

The major aim of the Conference was to review the plan's outline and the proposed set of actions for each of the four segments of the plan, dealing with eutrophication, pollution involving hazardous substances, maritime safety and accident response capacity, and habitat destruction and the decline in biodiversity.

The programme of the Stakeholder Conference consisted of four thematic sessions on the proposed actions, targets and objectives for the main environmental issues, as well as a session on the

economic analysis of the implementation of the strategy. The sessions were followed by a general roundtable discussion on the HELCOM Baltic Sea Action Plan with the participation of high-level government officials from the coastal countries, the European Union, and representatives of NGO's.

The draft plan received full support and endorsement from all major stakeholder groups. Participants welcomed the plan as a good framework for actions, but underlined that more detailed measures still need to be defined for the strategy. The Stakeholder Conference identified eutrophication as the major problem which will need more specific focus in the action plan, especially with regard to measures for agriculture. HELCOM assessments clearly show that agriculture is the main source of the nutrient pollution entering the Baltic Sea and resulting in its eutrophication.

The Conference also stressed the need to link the action plan to the ongoing programmes and processes at global, European and national levels. This will ensure the integrated management of human activities, and that environmental objectives are incorporated into all policies and programmes implemented in the Baltic Sea region.





During the discussions, participants agreed that the current strategy is not going to be the ultimate action plan, as the plan will need to be evaluated on regular basis to check the status of implementation of the actions. There will also be a need to periodically review the effectiveness of the actions, targets and ecological objectives, to make sure that the coastal countries will reach and maintain the good ecological status of the Baltic Sea. For this reason, the implementation mechanism and the review mechanism of the HELCOM Baltic Sea Action Plan were identified as two very important elements of the strategy to be further developed.

The Stakeholder Conference found that the costs and the sources of financing for implementation need to be addressed in the action plan. The need to select the most cost-efficient measures in different regions to achieve the necessary reduction targets was also emphasised. Conference participants backed the proposal that the action plan should contain an agreement on the necessary nutrient input reductions at sub-regional level, and a timetable for achieving these targets. Nutrient quotas should therefore be determined at sub-regional and country level, making up the foundation for a possible nutrient input trading system.

Participants also agreed that a Task Force could be established to evaluate the implementation of the plan and to consider by 2009 a possible trading scheme, including a decision on a trial period.

This was already the 2<sup>nd</sup> Stakeholder Conference on the HELCOM Baltic Sea Action Plan. A kick-off Conference, held in March 2006, discussed the general concept of the new strategy, and initiated the whole development process.

At the March 2007 Conference, HELCOM presented four draft thematic assessment reports on eutrophication, biodiversity, maritime activities, and hazardous substances, which will serve as background information to the action plan. They contained a concise overview on the status of the Baltic marine environment.

The Conference outcome document was considered at the 28<sup>th</sup> annual HELCOM Meeting, which agreed to feed it into the further process of the development of the strategy.





## Defining the final shape of the Baltic recovery strategy

The 28th annual Meeting of the Helsinki Commission, held on 7-8 March 2007, conducted an extensive review of the proposed draft Baltic Sea Action Plan, and resolved to intensify efforts to complete the outstanding details of the new environmental strategy in order to have it fully ready for adoption at the Meeting of the Ministers of the Environment of the HELCOM Member States and the EU, slated for November 2007.

The ambitious plan of actions currently being designed by the coastal countries to restore the troubled marine environment of the Baltic Sea was the topmost issue on the agenda of the annual Commission Meeting. Representatives of the coastal countries and the EU discussed the initial structure of the holistic plan, particularly focusing on the actions needed to achieve within a given timeframe the agreed goal of a Baltic Sea unaffected by eutrophication, undisturbed by hazardous substances, with favourable biodiversity and environmentally friendly maritime activities. Following the recommendations of the 2<sup>nd</sup> International Stakeholder Conference on the Baltic Sea Action Plan, the HELCOM Member

States agreed that the set of measures identified so far is a good starting point, since the measures encompass the necessary actions in general, but the meeting stressed that more concrete programmes and measures will have to be elaborated for the strategy to take its final shape.

Acknowledging that HELCOM has now entered the final and most crucial phase in the development of the Baltic Sea Action Plan, the coastal countries also stressed that the most critical ingredient for success now is the strong political commitment of all the HELCOM Member States to agree on purposeful and wide-ranging actions that will truly help to solve the major problems troubling the Baltic.

The coastal countries' officials emphasised the importance of linking the proposed set of actions to the existing funding mechanisms, and examining their cost-efficiency. It was agreed that cost-efficiency is a vital issue when the necessary measures are jointly identified. It was also pointed out that in addition to specifying the cost of achieving the targets, the value of a healthy Baltic Sea should also be highlighted, as well as the eventual cost of inaction. The Commission also agreed that it is necessary to develop a mecha-



nism for the implementation of the action plan, and to set up a clear timetable for the strategy. It was acknowledged that the plan needs to be evaluated on a regular basis to check the status of implementation of the actions.

Extensive discussion focused on the possible establishment of quotas for nutrient reductions for each country, which could be instrumental in reducing the eutrophication of the Baltic Sea. Delegations from the coastal countries agreed on the need to look further into the concept of a quota system and a possible trading scheme.

The Baltic Sea countries approved a new HELCOM Recommendation on the "Strengthening of sub-regional co-operation in response field", which will also form part of the HELCOM Baltic Sea Action Plan. This Recommendation will be supplemented by guidance on how to quantify the needed emergency and response capacity in all the sub-regions of the Baltic Sea. The new Recommendation and the related guidelines will be submitted for adoption by the HELCOM Ministerial Meeting.

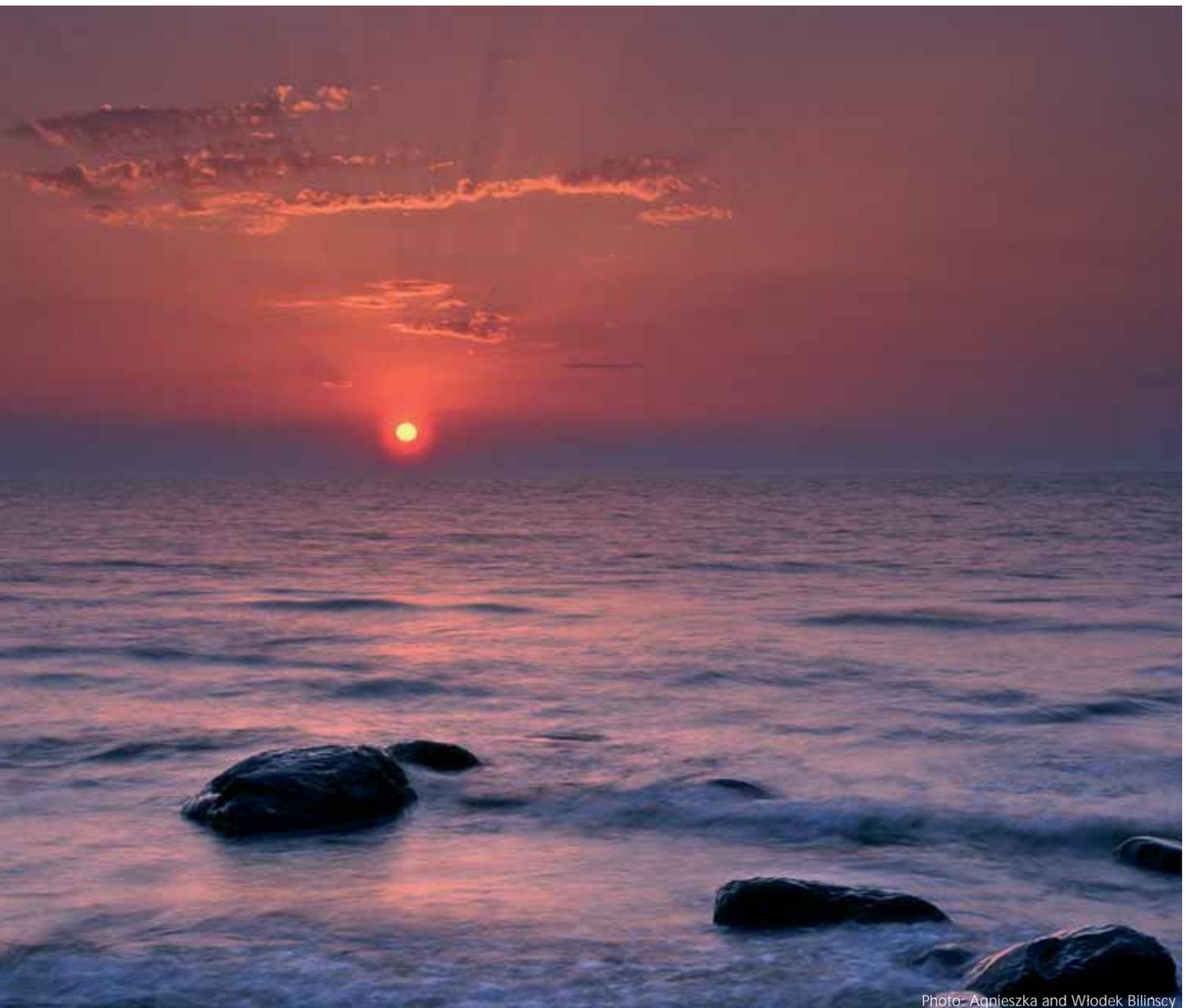


Photo: Agnieszka and Wlodek Bilinsey

## Charting the Baltic's environmentally sound future – outline of the first draft HELCOM Baltic Sea Action Plan

### 1. Introduction

The HELCOM Baltic Sea Action Plan is an ambitious strategy to restore the good ecological status of the Baltic marine environment. This new strategy will be a crucial stepping stone for wider and more efficient actions to combat the continued deterioration of the marine environment resulting from human activities. With the creation of the new environmental strategy, HELCOM will continue its long record of respected leadership in marine environmental protection, incorporating the latest scientific knowledge and innovative management approaches into strategic policy implementation, and stimulating even closer, goal-oriented multilateral co-operation around the Baltic Sea region. As one of the first schemes to implement the ecosystem approach to the management of human activities, which was defined in the 1992 Rio Declaration and reiterated at the 2002 World Summit on Sustainable Development in Johannesburg, the action plan will lead to profound, innovative changes in the ways we manage the environment in the Baltic Sea region.

The action plan will touch upon all the major environmental problems affecting the Baltic marine environment. The environmental situation in the Baltic Sea has drastically changed over recent decades. Human activities both on the sea and throughout its catchment area are placing rapidly increasing pressure on marine ecosystems. Of the many environmental challenges, the most serious and difficult to tackle with conventional approaches is the continuing eutrophication of the Baltic Sea. Inputs of hazardous substances

also affect the biodiversity of the Baltic Sea and the potential for its sustainable use. Clear indicators of this situation include problems with algal blooms, dead sea-beds and overfishing, particularly of cod. Such problems call for immediate wide-scale action to put an end to the further destruction of the Baltic Sea environment and to avoid an irreversible disaster.

Previous HELCOM efforts to reduce pollution and repair the damage to the marine environment have led to noticeable improvements in many areas, enabling people to bathe on beaches that were once polluted, and helping endangered wildlife populations to recover. But there is still left a lot to do, as many of the Baltic's environmental problems are proving difficult to solve, and it could take several decades for the marine environment to recover. For example, concerning inputs of nutrients which are responsible for eutrophication, HELCOM has already achieved a 40% reduction in nitrogen and phosphorus discharges (from sources in the catchment area) and likewise a 40% decrease as regards emissions of nitrogen to the air, as well as a 50% reduction in discharges of 46 hazardous substances. But in order to achieve "clear water" which is one of the main objectives of the HELCOM Baltic Sea Action Plan, phosphorous and nitrogen emissions must be further cut by about 35% and 10%, respectively.

But further progress cannot be achieved using only the old administrative measures of cutting different pollution loads to certain levels, which in some cases may not be enough to restore favourable conditions. A completely different approach and new tailor-made actions will be required to reach such objectives. Moreover, the remaining challenges are more difficult than earlier obstacles.

Reductions of nutrient inputs have so far mainly been achieved through improvements at major point sources, such as sewage treatment plants and industrial wastewater outlets. Achieving further reductions will be a tougher and more expensive task, and more efforts should be directed to address diffuse sources of nutrients including over-fertilised agricultural lands, taking also into account the rapidly developing economies in the eastern part of the region.

The HELCOM Baltic Sea Action Plan will provide a unique opportunity to take wide-scale and decisive actions to achieve HELCOM's vision of a healthy marine environment, with diverse biological components functioning in balance, resulting in a good

ecological status and supporting a wide range of sustainable human activities. This vision sets a very ambitious target of achieving a good ecological status for the Baltic Sea by 2021.

The new plan is radically different from any other plan or programme previously undertaken by HELCOM. The revolutionary aspect of the new plan is that it will be based on a clear set of Ecological Objectives defined to reflect a jointly agreed vision of a healthy Baltic Sea. Example objectives include clear water, an end to excessive algal blooms, and viable populations of species. Targets for 'good ecological status' will be based on the best available scientific knowledge. The timeframe for reaching the targets will be a political decision. With the ecosystem approach, the protection of the marine environment is no longer seen as an event-driven pollution reduction approach to be taken sector-by-sector. Instead, the starting point is the ecosystem itself, and a shared concept of a healthy sea with a good ecological status. This vision will determine the further needs for reductions in pollution loads, as well as the extents of various human activities.

The plan will identify the kinds of actions needed to achieve the targets within a given timeframe for the main environmental priorities: combating eutrophication, curbing inputs of hazardous substances, ensuring maritime safety, and halting habitat destruction and the ongoing decline in biodiversity. A number of indicators will be selected for each objective, so that progress towards the desired 'good ecological status' can be measured. These ecological objectives and their associated indicators will be used to evaluate the effectiveness of existing environmental measures, and to identify where more measures are needed.

This represents a considerable change in HELCOM's approach to the task of achieving a healthy Baltic Sea. HELCOM will no longer aim at "one-size-fits-all" solutions, but will seek tailor-made and cost-efficient solutions with the responsiveness of the marine environment as the starting point.

The Action Plan will distinguish between measures that can be implemented at regional or national level, and measures that can only be implemented at EU level (e.g. Common Fisheries Policy, Common



Photo: BioGeo project and Metsähallitus 2003



Photo: Rainer Varis

Agricultural Policy, controls over the marketing and use of chemicals) or globally (e.g. the shipping controls defined by the International Maritime Organisation). Actions that need to be taken at European or global level must be addressed by HELCOM through the related international forums.

The plan will have four main segments, according to the four main environmental priorities. It will also have a socio-economic component which will evaluate the benefit of the measures proposed and the socio-economic cost of not doing anything at all. The costs of implementing the plan, cost-effectiveness and cost-benefit analysis will all be properly reflected. Efforts will not be limited to the allocation of adequate resources during the development of actions, but will also focus on the implementation of the plan. Estimated costs have to be compared to the economic impacts of any further degradation of the marine environment which would stem from a "business-as-usual" approach. Factors include the economic impacts of inaction, cross medial benefits such as health impacts, economic benefits to other sectors such as tourism, and the value of the marine environment itself.

Another major highlight of the HELCOM Baltic Sea Action Plan has been its elaboration with the active participation of all major stakeholder groups in the region – from governments, through industry and NGOs, right down to individual citizens living on the shores of the Baltic Sea. Such participation ensures that the plan is relevant and can be effectively implemented in practice. The choices that we make have to reflect the choices of society as a whole. For this reason it is very important that we define a common vision of the future shared by all stakeholders, including older and younger generations, and organisations in both the private and the public sectors. In this way the plan can promote employ-

ment and other aspects of sustainable socio-economic development, as well as ecological sustainability and a healthy environment.

The concept of the HELCOM Baltic Sea Action Plan has already been widely supported by the Baltic Sea politicians at various forums, and heralded as a pilot project for European seas in the context of the proposed EU Marine Strategy Directive. The EU has described HELCOM's plan as the cornerstone for further action in the Baltic Sea region, emphasising that plan will be instrumental to the successful implementation of the new EU Marine Strategy in the region.

The proposed EU Marine Strategy Directive foresees such an action plan for each eco-region, including the Baltic. HELCOM is in a unique position to deliver this already, given its embracing of all the countries in the Baltic Sea catchment area. HELCOM is also in a unique position to ensure that the special characteristics of the Baltic Sea are fully accounted for in European policies. In this context, the new plan makes HELCOM a forerunner, and a model to be followed by other regional marine conventions around Europe.

As a leader in applying the ecosystem approach, the innovative HELCOM strategy will also serve as a good example to be followed by the Regional Seas Programmes established under the United Nations Environmental Programme.

In developing the action plan, HELCOM has also taken into account the environmental provisions of the Maritime Doctrine of the Russian Federation. Close co-operation with Russia, which is the only HELCOM country outside the EU in the Baltic Sea region, is crucial for any further progress to be made in rescuing the troubled Baltic marine environment. HELCOM's innovative strategy will also be instrumental to the implementation of the renewed

Northern Dimension policy, the Baltic Sea regional aspects of the EU-Russian Environmental Dialogue, and the Nordic Environmental Action Plan.

But first and foremost the HELCOM action plan is considered as a joint regional policy, with common objectives, common actions, and common obligations. The future success of the plan will largely depend on how all the coastal countries can co-operate to achieve the goal of a healthy Baltic marine environment.

Following the successful launch of the Baltic Sea Action Plan concept back in 2005, and building on the outcome of the initial preparatory period, the

elaboration of the plan was officially kick-started at the Stakeholder Conference on 7 March 2006 in Helsinki. After a series of meetings and consultations and the 2<sup>nd</sup> Stakeholder Conference in March 2007, which reviewed a preliminary draft of the plan, the finalised environmental strategy will be adopted at a HELCOM Ministerial Meeting scheduled to take place on 15 November 2007 in Krakow, Poland.

The following chapters in the annual report will provide an overview of the main segments of the HELCOM Baltic Sea Action Plan, detailing goals, objectives, and actions.

*Vision, strategic goals and objectives of HELCOM's Baltic Sea Action Plan*

#### VISION

A healthy Baltic Sea environment, with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable human economic and sustainable activities

#### GOALS

Baltic Sea unaffected by eutrophication

Baltic Sea undisturbed by hazardous substances

Favourable status of the Baltic Sea biodiversity

Maritime activities in the Baltic Sea carried out in an environmentally friendly way

#### OBJECTIVES

Concentrations of nutrients close to natural levels

Clear water

Natural level of algal blooms

Natural distribution and occurrence of plants and animals

Natural oxygen levels

Concentrations of hazardous substances close to natural levels

All fish safe to eat

Healthy wildlife

Radioactivity at pre-Chernobyl level

Natural landscapes and seascapes

Thriving and balanced communities of plants and animals

Viable populations of species

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



Photo: BioGeo project and Metsähallitus 2003

## 2. Towards a Baltic Sea unaffected by eutrophication

Eutrophication is a major problem in the Baltic Sea. Since the 1800s, the Baltic Sea has changed from an oligotrophic clear-water sea into a eutrophic marine environment. Nitrogen and phosphorus are among the main growth-limiting nutrients, which in themselves do not pose any direct threat to marine organisms. Eutrophication, however, is a condition in an aquatic ecosystem where high nutrient concentrations stimulate the growth of algae which leads to an imbalanced functioning of the system, resulting in:

- intense algal growth, excess of filamentous algae and phytoplankton blooms;
- production of excess organic matter;
- increase in oxygen consumption;
- oxygen depletion with recurrent internal loading of nutrients; and
- death of benthic organisms, including fish.

Excessive nitrogen and phosphorus loads from land-based sources are the main cause of the eutrophication of the Baltic Sea. About 75% of the nitrogen load and at least 95% of the phosphorus load enter the Baltic Sea via rivers or as direct waterborne discharges. About 25% of the nitrogen load comes as atmospheric deposition.

### Goal and ecological objectives for eutrophication

The HELCOM goal related to eutrophication is to have the Baltic Sea unaffected by eutrophication. This goal is described by five ecological objectives:

1. Concentrations of nutrients close to natural levels
2. Clear water
3. Natural level of algal blooms
4. Natural distribution and occurrence of plants and animals
5. Natural oxygen levels.

Photo: Metsähallitus 2004



In order for the ecological objectives to be operational, measurable indicators are needed. Target levels reflecting good ecological status will be set for these indicators.

The following measurable indicators will be applied for the agreed objectives:

- Winter surface concentrations of nutrients (objective 1)
- Summer Secchi depth (objective 2)
- Chlorophyll a concentrations (objective 3)
- Depth range of submerged vegetation (objective 4)
- Area and length of seasonal oxygen depletion (objective 5).

The clarity of seawater integrates many of the concrete effects of eutrophication, and has been chosen as the primary ecological objective, with the Secchi Depth during the summertime (June-September) as the key indicator. The other indicators can be regarded as supportive indicators to give additional information about the ecological status of the sea.

### Proposed actions to reach targets

HELCOM assessments clearly show that problems with eutrophication persist in most sub-basins, and good environmental status has not yet been reached. Efforts to identify further cost-effective nutrient reduction measures for the Baltic Sea Action Plan in the different sectors and parts of the Baltic Sea catchment area are ongoing.

At the moment HELCOM is working to assess the environmental impacts of various policies in the Baltic Sea region, by comparing the results of a number of policy scenarios produced by MARE with HELCOM target levels for environmental indicators. The results show how far existing EU legislation and programmes, and HELCOM Recommendations, will bring us towards reaching the targets for eutrophication and good environmental status. Accurate policy scenarios are difficult to define, but even imperfect scenarios can help to reveal the extent of the need for further measures. This work combines pollution load models with environmental effect models to enable the



Photo: Nikolay Vlasov, HELCOM



Photo: Rainer Varis

prediction of the environmental effects of various policies.

The preliminary results of the MARE scenarios show that the measures with great potential to further decrease nutrient inputs, especially in the new EU countries (Estonia, Latvia, Lithuania and Poland), Russia and Belarus, are:

- efficient municipal wastewater treatment
- increased connectivity to sewerage systems
- the introduction of phosphorus-free detergents.

Because there has been less progress in agriculture and agricultural production, nutrient reduction efforts should particularly address the impacts of agriculture. Efforts should also be made to reduce airborne nitrogen, since atmospheric nitrogen deposition to the Baltic Sea makes up a large proportion of the total nitrogen input. Nutrients inputs from agriculture can only be effectively achieved through a combination of different measures applied according to e.g. specific hydrological and soil characteristics of each region. The scenarios also show that if the agricultural production is intensified throughout the Baltic Sea region inputs will increase substantially unless strict measures are applied.

First of all, the action plan should encourage and enhance the full enforcement of existing legislation. Even after current legislation has been fully implemented, additional nutrient reductions are necessary to bring the Baltic Sea to a good environmental status. It should be noted that the necessary actions may have to go beyond those needed to reach good status according to the EU Water Framework Directive, because the restoration of the whole Baltic Sea probably requires more drastic measures than those within the 1 nautical mile limit regulated by the Directive. The measures proposed for nutrient reduc-

tion in the action plan also evidently comply with the parallel aims of the proposed EU Marine Strategy Directive.

As the starting point for all actions under the HELCOM Baltic Sea Action Plan is the objective of achieving a good environmental status in the Baltic marine ecosystem, the action plan must incorporate definitions of the nutrient reductions required to reach the target levels set for the indicators defined for each ecological objective:

- by country
- by sub-region
- for the entire Baltic Sea.

Reduction targets should also be set within each country or sub-region for different sectors wherever possible, and at least for agriculture.

In seeking to successfully reduce nutrient inputs to target levels, the possibility of establishing a quota system based on calculations of the required reductions will be examined. In the envisioned quota system all the coastal countries will have nutrient reduction quotas expressed in tonnes of phosphorus and nitrogen, which they will be required to reduce from their annual nutrient inputs into the Baltic Sea by a fixed target year. With responsibilities transferred to country level, the HELCOM Member States will have flexibility to choose the most effective measures to fulfil their reduction quotas and include them in their own national programmes and River Basin Management Plans.

One idea for a possible means to share the costs of reducing nutrient inputs is the establishment of a simple trading mechanism for reduction quotas among the HELCOM countries, inspired by the Kyoto process for greenhouse gas emissions.

The action plan should also seek to encourage the elaboration of bilateral and/or multilateral projects and programs to reduce nutrient inputs using the most cost-efficient measures. Reduction quotas could thus also be achieved by international means on a sub-regional basis.

Based on the results of the scenarios, cost-efficiency analysis and evaluations of gaps in existing requirements at HELCOM, national and international level, the Task Force for the development of the Baltic Sea Action Plan is currently considering various possible actions to be selected and developed for the Ministerial Meeting in November 2007 for the following sectors:

- Wastewater: municipalities, scattered settlements and single family homes
- Agriculture
- Industry
- Transboundary airborne and waterborne pollution.

The coastal countries are also considering the identification of nutrient pollution hot spots, defining specific locations especially within agriculture such as major pig farms and poultry farms where nutrient reduction measures should be prioritised.

Taking into account that diffuse nutrient sources have a central role in determining the future state of the Baltic Sea environment, HELCOM will give joint input to the forthcoming "health check" of the EU Common Agricultural Policy stressing the importance to the marine environment of the policy's Pillar II on rural development programmes,

cross compliance, and subsidies, also aiming to influence the revision of the targets for nitrogen in the Gothenburg Protocol of the UN Economic Commission for Europe and the EU National Emissions Ceilings Directive.

### 3. Reducing concentrations of hazardous substances to natural levels

Polluting hazardous substances include a massive number of different anthropogenic substances which end up in the marine environment. Some are substances that do not occur naturally in the environment, while others are substances which today occur at concentrations considerably exceeding their natural levels. Although monitoring indicates that the loads of some hazardous substances have been reduced considerably over the past 20–30 years, some problems still persist.

Once released into the Baltic Sea, hazardous substances can remain in the water for very long periods. They can also accumulate within the marine food web up to levels which are toxic to many marine organisms. Hazardous substances cause adverse effects on the ecosystem, including:

- impaired general health status of animals
- impaired reproduction of animals, especially top predators
- increased pollutant levels in fish used as food by humans.

Certain contaminants may be hazardous because of their effects on hormone and immune systems,

Changes in eelgrass (upper row) and bladder wrack density and epiphyte biomass with increasing eutrophication. Pictures by Nanna Rask (Fyn County) and Georg Martin (University of Tartu).





Photo: Metsähallitus 2004

as well as their toxicity, persistence or bio-accumulating properties.

Substances that bio-accumulate within the food web may particularly represent a potential hazard to humans.

#### Goal and objectives for hazardous substances

The agreed goal of HELCOM on Hazardous substances – a Baltic Sea undisturbed by hazardous substances – is described by four ecological objectives:

1. Concentrations of hazardous substances close to natural levels
2. All fish safe to eat
3. Healthy wildlife
4. Radioactivity at pre-Chernobyl level.

Measurable indicators are needed for these ecological objectives. The agreed objectives will be preliminarily monitored through 'state of environment' indicators including the concentrations of selected heavy metals and organic substances in different compartments of the environment, fish and some indicator species such as white-tailed eagles and seals.

The target levels for these indicators will reflect an undisturbed marine environment, i.e. good ecological status. Existing target values will be used

as much as possible, and existing methodologies should be used when new targets are developed.

#### Proposed actions to reach targets

With the EU enlargement and development of new EU measures, there is a reduced need for corresponding HELCOM measures. But there is still a need to identify the specific problems of the Baltic marine environment, and to review whether measures implemented by various bodies (global organisations, EU, HELCOM or the national authorities) adequately cover the general obligations of the Helsinki Convention and the HELCOM Objective with regard to the cessation target for hazardous substances by 2020 in the whole Baltic catchment area. Particular care should be taken that the interests of all HELCOM Contracting Parties are taken into account. This might generate the need for HELCOM to adopt separate measures particularly for the Baltic Sea.

The basic steps for taking action within HELCOM are:

- identification of threats;
- identification of fields of action and the need for measures;
- screening the coverage of existing international and national provisions; and
- deciding whether to develop measures at international, regional or national level.



Photo: Rainer Varis

The HELCOM assessments show that a significant share of both the airborne and waterborne inputs to the Baltic Sea originate in countries which are not Contracting Parties to the Helsinki Convention. This also means that it is of utmost importance that the results of HELCOM assessments are taken into account in other forums.

There is much less information available on inputs and sources for hazardous substances than for nutrients, and this limits the scope for a comprehensive assessment of the situation in the Baltic at present.

In order for HELCOM to be able to influence the development of the European Marine Strategy and co-ordinate its own measures with those in the Strategy and other international activities affecting the Baltic Sea, HELCOM is conducting a survey where all the available information on certain hazardous substances is jointly evaluated. This scheme aims to assess the impacts on the Baltic Sea environment, which will also facilitate the development of HELCOM's Baltic Sea Action Plan.

The survey is focusing on nine organic hazardous substances that have already been prioritised by HELCOM and other international bodies. Initial information is already available for these substances to enable the activity to commence. The selected hazardous substances include brominated flame retardants and perfluorochemicals (PFOS), which have not previously been assessed in detail within HELCOM.

HELCOM has so far collected information on the use of these substances in different sectors from various national registers and other sources as well as any available information on their occurrence in the marine environment. But the data

so far compiled is still very limited, and additional information is to be collected through a proposed screening study focussing on some of the selected substances.

Sources to be used are HELCOM assessments and reports, including a questionnaire on the uses of the selected substances. This information will be further utilised in a HELCOM project carried out to identify actions for the Baltic Sea Action Plan which will also cover other toxic substances.

The identification of most relevant hazardous substances of specific concern in the various sub-regions, their main uses and their most significant sources, will form the basis for a joint position to be used by the HELCOM countries in international, regional or national actions. Such actions will be based on substance-specific measures as well as sector-specific measures, preferably on a plant by plant basis (as "hot spot related measures").

#### **4. Achieving a favourable status for biodiversity**

The effective protection of the biodiversity of the Baltic Sea is a prerequisite for marine ecosystems to be resilient and able to adapt to changing environmental conditions such as climate change. In the HELCOM Baltic Sea Action Plan the definition of a good ecological status for the sea includes the concept of a favourable conservation status for its species and habitats. Neither of these goals can be achieved without a holistic approach that takes into account all the relevant pressures. Biodiversity lies in the core of HELCOM's vision of a healthy Baltic Sea. This issue therefore serves as a controlling element for the performance of the whole action plan.

Actions aiming at protection should enable the marine environment to be used at sustainable levels, thus safeguarding socio-economic opportunities for future generations.

The quality of underwater landscapes and habitats has degraded due to eutrophication, while hazardous substances have accumulated in biota leading especially to serious impacts on top predators. Many species suffer from the destruction of habitats caused by intensive economic activities conducted on the seabed and adjacent land. Several fish species and also other marine species are directly affected by fisheries. The likelihood of severe oil spills is continuously increasing, and intensive maritime traffic involving ships coming from other parts of the world has also introduced non-native species into the Baltic, disrupting its ecosystems.

Together with projected climate change, all the aforementioned pressures pose hazards to biodiversity. There is clearly an urgent need to protect the marine ecosystems of the Baltic.

### Goal and ecological objectives for biodiversity and nature conservation

The overall goal of HELCOM is to have a favourable status of the Baltic Sea biodiversity, which means halting the loss of biodiversity caused by all human activities, assisting with its restoration, and guaranteeing the long-term maintenance of habitats and species.

The overall goal is described by three ecological objectives:

1. Natural landscapes and seascapes
2. Thriving and balanced communities of plants and animals
3. Viable populations of species.

In order to make the ecological objectives operational, concrete short-, middle- and long-term targets should be set, with progress towards these targets monitored through measurable indicators. Suitable targets and indicators are currently being developed for this purpose.

Photo: Kerstin Hinze



Natural landscapes and seascapes underline the importance of diverse coastal and marine landscapes, associated ecosystems and processes, as well as cultural and aesthetic values. HELCOM aims to restore and prevent the further degradation of natural marine and coastal landscapes, maintaining the long-term ecological integrity of the sea-floor so as to safeguard the functions of marine ecosystems.

Thriving and balanced communities of plants and animals are essential for the favourable status of biodiversity in the Baltic Sea. Changes in the structures of ecological communities have cascading effects on their associated species and the functioning of entire ecosystems. For example, changes in plankton communities can have effects on entire food chains, including fish stocks. While all species and habitats are of interest, initial focus should be directed to major habitat forming species, and their associated communities.

HELCOM aims to preserve and recreate structures and distribution patterns of biological communities that do not deviate from their natural vari-

ability. Issues related to introduced non-native species should be addressed aiming to avoid any adverse effects on ecosystems.

Both natural ecosystems and balanced communities are reliant on viable populations of species. A viable population consists of a successfully breeding, healthy population that is able to maintain itself and perform its functional role in the ecosystem. The objective is to focus on improving the conservation and population status, or maintaining the favourable status, of key species (such as seals, harbour porpoise, white-tailed eagle, salmon, cod, and species that support them), as well as other threatened and declining species.

HELCOM aims to increase the abundance and distribution of threatened and declining marine animal and plant species in intact habitats, also ensuring that fish stocks remain within safe biological limits.

#### **Proposed actions to reach targets**

Reaching the favourable status of the biodiversity of the Baltic Sea is the starting point for all actions to be carried out at national, Baltic-wide, European or even global level.

Work done on this issue will also contribute to actions required by other international agreements, such as the UN Convention on Biological Diversity, the Bern Convention, the EU Habitats and Birds Directives and the proposed Marine Strategy Directive.

Natural landscapes, balanced communities and viable populations of species cannot be achieved through conventional nature conservation measures alone. Other vital measures include reductions in eutrophication and the inputs of hazardous substances, as well as actions to halt the introduction of non-native species.

The Baltic Sea countries have international obligations to address invasive alien species, principally according to the 2004 IMO International Convention for the Control and Management of Ships' Ballast Water and Sediments.

Many Baltic Sea fish populations are genetically unique, and fish are a vital component of the



Photo: Riku Lumiaro, FIMR



Photo: Nikolay Vlasov, HELCOM

food web. For the EU Member States, management of the fisheries sector is the responsibility of the European Community. Any actions related to the safeguarding of viable fish stocks and the good environmental performance of fisheries in the Baltic must, therefore, be co-ordinated with the EC.

Following the 2003 Bremen Ministerial Declaration, steps will be taken to designate established marine Natura 2000 and Emerald sites also as HELCOM Baltic Sea Protected Areas. In order to reach the goal of an ecologically coherent and well-managed network of coastal and offshore protected areas by 2010, additional BSPA's should also be designated with special attention to the inclusion of new marine areas outside the territorial waters, i.e. within Exclusive Economic Zones.

HELCOM's development of a broad-scale spatial zoning template of the Baltic Sea area would serve the nature conservation aspect of the action plan, and also be an important tool to be applied both at national and international level in spatial planning and the development of HELCOM's work on Integrated Coastal Zone Management.

Our relative lack of knowledge about the underwater world – at landscape, habitat and species levels – still poses a challenge to science, which should be addressed at the EU and national levels.

Special management plans to protect endangered habitats and species will be incorporated into the action plan.

## 5. Ensuring environmentally friendly maritime activities

The Baltic Sea is one of the most intensely trafficked marine areas in the world. Both the numbers and the sizes of ships have been growing in recent years, especially oil tankers, and this trend is expected to continue.

A combination of heavy shipping traffic, criss-crossing shipping lanes, narrow straits, shallow waters and prolonged ice cover makes the Baltic a difficult area for navigation, with an increased risk of shipping accidents.

The share of the total pollution loads in the sea originating from maritime activities is growing, partly due to the stricter controls now applied to limit pollution from land-based sources.

The main environmental effects of shipping and other activities at sea include air pollution, illegal and accidental discharges of oil, hazardous substances and other wastes, and the introduction of invasive alien species in ships' ballast water or on their hulls. Emissions of nitrogen oxides from ships contribute 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 even represent a risk to human health.

Shipping and safety of navigation are of global importance and scope. The HELCOM Contracting Parties have issued many recommendations in this field, and actions are being taken at all levels:

national, regional, European and global. Joint initiatives of the HELCOM countries undertaken through the International Maritime Organization have led to the recognition of the sensitivity of the Baltic Sea, especially with regard to the impact from its heavy traffic. Where possible and needed, the strictest implementation of international environmental regulations is pursued. Regional actions are additionally being initiated to respond to the 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 with regard to six issues of major importance for all the Baltic Sea coastal countries. Six corresponding management objectives have been defined:

- 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 in relation to economic activities at sea and their possible negative impacts.

A first set of possible actions is under discussion by the HELCOM countries to ensure that these agreed objectives will be met. One point of departure for these discussions is deficiencies and gaps within existing policies, controls, enforcement frameworks and monitoring programmes.

#### **No illegal pollution**

The annual numbers of illegal discharges of oil in the Baltic Sea are decreasing, but every single breach of the anti-discharge regulations is unacceptable. It is therefore of vital importance to further strengthen countries' ability to detect illegal oil discharges, also at night or during periods of poor visibility when deliberate discharges are more likely to occur.

The problem of illegal discharges does not only concern oil. Plastics and synthetic materials, which



Photo: Nikolay Vlasov, HELCOM



are durable and slow to degrade, have become the most abundant form of marine litter. Very little information is available on the amounts and types of marine litter in the Baltic, and the scale of this problem has not yet been investigated comprehensively or systematically.

HELCOM's policies already address all major marine pollutants and their significant sources. However, in some areas stricter legislation has recently been introduced at a European and global level including the 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. Very few areas show positive trends. This is mainly due to the growing density of shipping, which requires the Contracting Parties to put even more emphasis on ensuring the safety of navigation. One way to do this is to make fuller use of the new tools available to control shipping traffic, notably the Automatic Identification System. Considering the increase in the transportation of oil products and the difficulties of responding to oil spills in icy conditions, further measures should especially be taken to increase safety during winter time.

#### **Efficient response capability**

The risk of a shipping accident will never be totally eliminated, so there is a need to ensure the sufficient emergency and response resources in the HELCOM countries. The most efficient way to establish an adequate response capability, also in

financial terms, is to build up capacity on a sub-regional basis. A "three-tier" approach is applied by HELCOM reflecting the 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 bollard pull of 50 or more tonnes and around 40 sea-going response vessels are located around the Baltic, including vessels chartered by the European Maritime Safety Agency (see map on page 29). Building up an effective capacity is a costly and timely process, so a step-wise approach should be applied, in which the work starts by assessing the risk of accidents in individual sub-regions. Such assessments have been started in most areas of the Baltic, but none have yet reached a stage where missing capacities could be quantified to allow decisions on common actions to fill in such gaps in the most efficient way possible.

#### **No introductions of alien species from ships**

Increasing numbers of non-native species are being observed in seas all around the world, and the Baltic is no exception. Shipping is the most important vector of unintentional species introductions into aquatic environments, due to releases of ballast water and the fouling of hulls. The entry into force of the 2004 IMO International Convention for Control and Management of Ships' Ballast Water and Sediments would be the most important step forward to tackle this problem. The ratification of the Convention by the HELCOM countries is a very challenging goal, but this 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. At the same time the need for measures along inland



Photo: Nikolay Vlasov, HELCOM

waterways connecting the Baltic Sea and the Ponto-Caspian regions should also be addressed.

#### **Minimum air pollution from ships**

Emissions from shipping are already significant, and they are expected to grow in future. There are already feasible and cost-effective methods of substantially reducing air pollution from ships, however. The HELCOM Contracting Parties should

continue to work out common positions and provide joint inputs to ongoing global legislative processes to ensure that the best solutions are promoted and up-to-date technology is applied.

Improvements in ships' environmental performance should also be promoted by introducing non-discriminatory economic incentives to further reduce pollution.

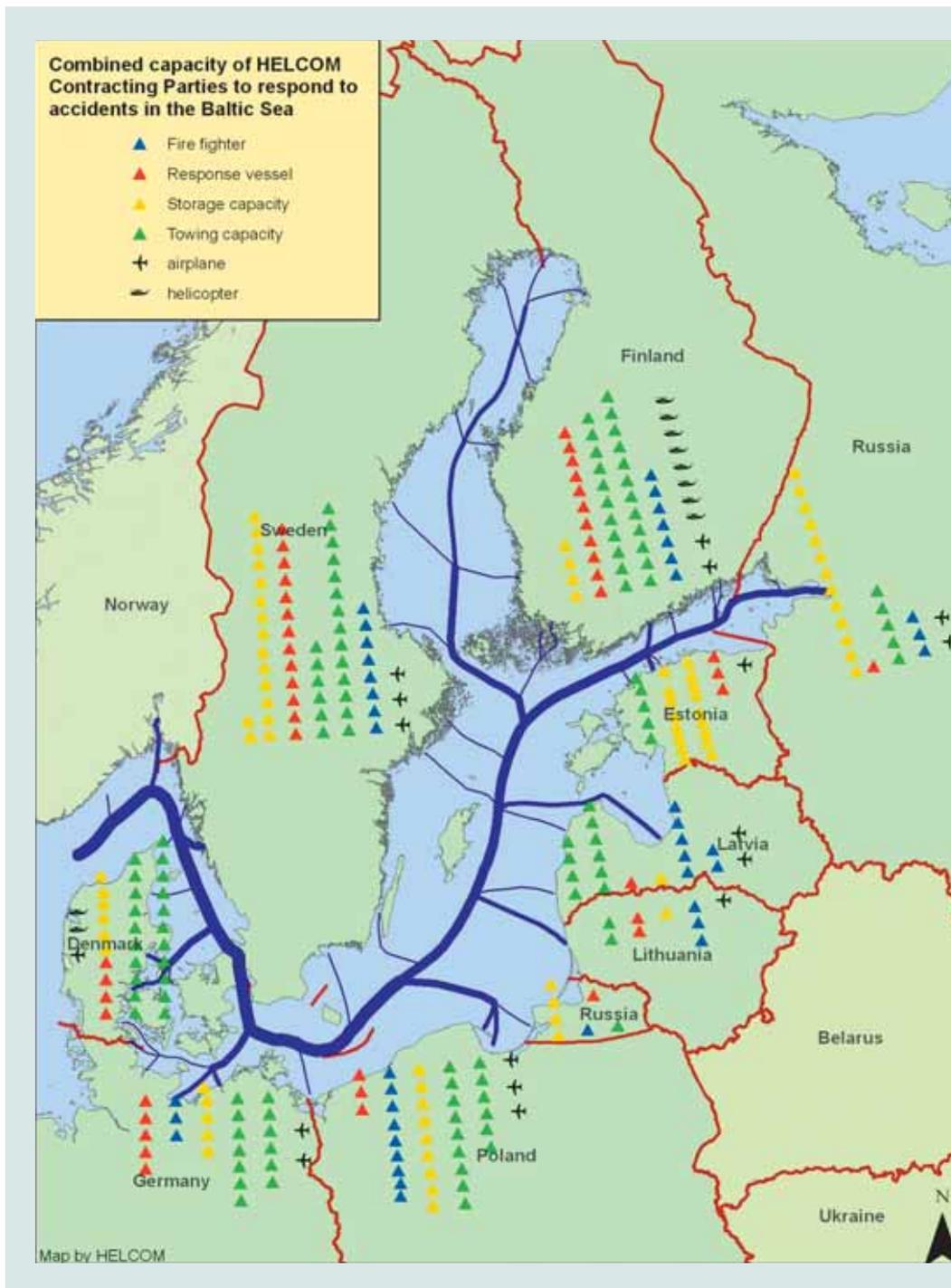


Photo: Kaj Granholm, HELCOM

### Zero discharges from offshore platforms

Best Environmental Practice (BEP) and Best Available Techniques (BAT) are subject to continuous review and updating. Drawing on BEP and BAT, HELCOM is considering a target of “zero discharge” from offshore platforms to be applied throughout the Baltic Sea.

The steps listed above all aim to identify further actions that would bring us closer to the goal of environmentally friendly maritime activities. Failure to reach these agreed management objectives would seriously hinder the achievement of a good ecological status for the Baltic Sea.



## HELCOM's new strategy highlighted in major international forums

The concept of the HELCOM Baltic Sea Action Plan has been widely presented at various major international conferences, meetings and exhibitions dealing with environmental protection during 2006.



The concept received overwhelming support at a Stakeholder Conference held on 7 March 2006 in Helsinki, where more than 200 participants representing scientific and business communities, the governments of the coastal countries, the EU, and major regional organisations, met to discuss the objectives of the strategy and to provide input for its further development.



The plan was also welcomed by participants in the VII International Environmental Forum "Baltic Sea Day", held on 22-23 March 2006 in St. Petersburg, Russia, as a major strategic step towards achieving a healthy marine environment. The presentation of the action plan at this forum formed an integral part of the public consultation process on the development of this new environmental strategy.



HELCOM additionally presented its new strategy at a Baltic Sea Day event held in the Parliament of Finland on 29 March 2006. This event, which featured an exhibition and various presentations on marine environmental protection, was organised by members of the Finnish Parliament. Participants included several leading environmental institutions, as well as private enterprises. Keynote speakers included the Speaker of the Parliament of Finland, Paavo Lipponen. HELCOM's stand was visited by the Prime Minister of Finland Matti Vanhanen, and many other members of the Finnish Parliament.



The HELCOM action plan was highlighted at the First International Conference on the Assessment of Climate Change for the Baltic Sea Basin on 22-23 May 2006 in Gothenburg, Sweden. The conference, organised by the University of Gothenburg, BALTEX and HELCOM, presented an assessment of ongoing and possible future climate variations in the Baltic Sea basin.



HELCOM's work, including the proposed action plan, was also praised at major UN meetings on marine environment protection, including the United Nations Environment Programme (UNEP) Eighth Global Meeting of the Regional Seas Con-

ventions and Action Plans, Beijing, China, 13-14 October 2006; and the UNEP 2nd Intergovernmental Review Meeting of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), Beijing, China, 16-20 October 2006.



The plan also received strong support at a major international conference on the marine environment entitled "The Baltic Sea and the European Marine Strategy – Linking Science and Policy", which was organised during Finland's EU Presidency on 13-15 November 2006 in Helsinki. This

conference focused on the need for intensified dialogue between researchers and policy-makers on issues related to the marine environment. In an official Statement of the Conference, participants "welcomed the HELCOM Baltic Sea Action Plan for bridging science and policy".



HELCOM also presented its new strategy at a major exhibition on the protection of the Baltic Sea at the European Parliament in Brussels on 8-12 January 2007. The exhibition, entitled



"Linking Science and Policy in Regional Seas - Case Baltic Sea", was organized together with the BONUS Project and the John Nurminen Foundation.



# 3. Monitoring the marine environment

As the focal point for the environmental protection of the Baltic Sea, HELCOM has been assessing the sources and inputs of nutrients and hazardous substances and their effects on marine ecosystems for almost 30 years. The resulting reports are unique compilations of data and analyses based on wide-ranging scientific research carried out around the Baltic Sea, including special monitoring programmes co-ordinated by HELCOM.

Over the last year, HELCOM's Monitoring and Assessment Group has updated the Fact Sheets on indicators of pollution loads and the state of the Baltic marine environment. Various scientific institutions have been involved in compiling these Facts Sheets. The new reports are available on the HELCOM website ([www.helcom.fi/environment2/ifs/en\\_GB/cover/](http://www.helcom.fi/environment2/ifs/en_GB/cover/)). In 2006, the Group also adopted a thematic assessment on climate change in the Baltic Sea basin, which has been produced by a group of about 20 top scientists, meteorologists, oceanographers and ecologists.

## HELCOM launches a new comprehensive assessment of the Baltic Sea

HELCOM has initiated the preparation of several major assessments of the Baltic Sea to support the implementation of its upcoming strategic action plan to restore the Baltic marine environment.

The ninth regular Meeting of the HELCOM Monitoring and Assessment Group (HELCOM MONAS) held on 2-6 October 2006 in Silkeborg, Denmark, approved guidelines for the new assessments of eutrophication, biodiversity, and hazardous substances, which are to be completed by 2009. These assessment reports will be produced from the results of a unique compilation of data and analyses based on the vast amounts of scientific research being carried out around the Baltic Sea.

HELCOM's thematic assessment of eutrophication will provide information on the extents of nutrient inputs to the Baltic Sea, which will facilitate evaluations of the effects of regional environmental protection measures. It will also indicate how much nitrogen and phosphorus inputs need to be reduced to reach a good ecological status of the

marine ecosystem, with clear water and natural levels of algal blooms.

The assessment of nature conservation and biodiversity will emphasise the sustainable use of the Baltic Sea ecosystem and the protection of species, habitats and marine landscapes.

The assessment on hazardous substances aims to focus on the sources of hazardous substances, their occurrence in the ecosystem, and their accumulation and effects in biota. HELCOM will also produce a comprehensive assessment on the changes in radioactivity levels in the Baltic Sea ecosystem.

These assessments all require data from HELCOM's pollution load compilations, which are currently carried out for airborne and waterborne loads of nutrients and hazardous substances entering the Baltic Sea.



Photo: Mershallitus 2004

## Serious oxygen depletion discovered in the Baltic Proper and the Gulf of Finland

The Finnish research vessels Aranda and Muikku returned to Helsinki in August 2006 with worrying news about the state of the Baltic Sea bed. Oxygen concentrations recorded in waters below 50-60 metres were very low or minimal at all observation stations in the Gulf of Finland and the northern Baltic Proper. There is less oxygen in these waters today than at any time in 44 years

Aranda has carried out surveys. Aranda found hydrogen sulphide in deeper waters everywhere in the Gulf of Finland, including the easternmost observation points.

Since the beginning of this year salinity stratification has become more pronounced in the Gulf of Finland. Saltier water with very little oxygen has been flowing from the Baltic Proper into the Gulf of Finland. This stratification prevents the vertical mixing of water masses, meaning that little oxygen gets into deeper waters. As a consequence of this oxygen depletion, phosphorus concentrations have generally increased near the sea bed since summer 2005.

Bottom sediments in the Gulf of Finland are in a worse state than at any time since the research vessel Muikku started monitoring coastal waters in 1999. Benthic fauna were only abundant and diverse at 4 observation sites out of 47 – and the sea bed was found to be lifeless at no fewer than 37 sites. The occurrence of bottom fauna is a good indicator of the long-term status of the sea bed and changes in the oxygen regime.

The Archipelago Sea is still in a considerably better condition than the Gulf of Finland. Even the bottom waters in the areas with the highest loads had distinctly lower phosphorus concentrations than those measured in the Gulf of Finland. The oxygen status was good, and benthic fauna was abundant and diverse at most observation sites.

The blue-green algae situation in the Gulf of Finland was better than in recent years. Few surface blooms were observed in the beginning of August, and the amounts of blue-green algae were comparatively low, especially in the eastern part of the Gulf of Finland. During the second week of August 2006, however, surface blooms were observed in central parts of the Baltic Sea, and especially in the southern parts of the Archipelago Sea. These observations are generally conformed with the blue-green algal bloom forecasts given in the beginning of the summer.

As a consequence of the poor condition of the sea floor in the Gulf of Finland, internal



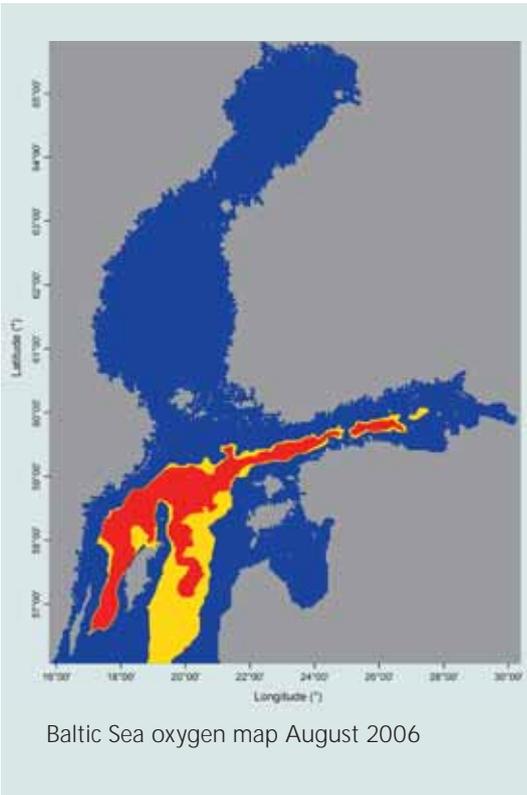
Lifting a wave buoy



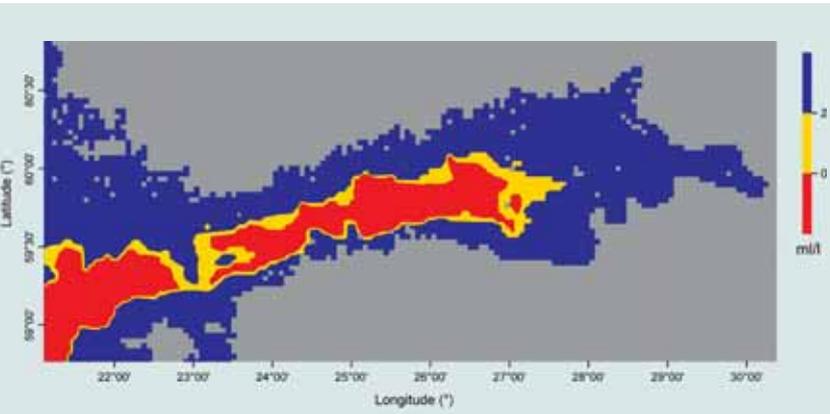
Photo: Nanna Rask, Fyn County

phosphorus loads are exacerbated every time the Baltic's natural salinity stratification creates conditions conducive to this process. A more permanent recovery will only be possible if phosphorus and

nitrogen inputs are significantly reduced throughout the catchment area of the Gulf of Finland and the entire Baltic Sea.



Baltic Sea oxygen map August 2006



Gulf of Finland oxygen map August 2006. The red areas show where hydrogen sulphide was present, and the yellow areas show other oxygen-free parts of the sea bottom.

## Water transparency no longer declining in parts of the Baltic Sea

Water transparency levels have stopped decreasing and appear to have stabilized in some sub-basins of the Baltic marine area, according to a new assessment by the Helsinki Commission.

In the Kattegat, the Southern and Eastern Baltic Proper, the Bothnian Sea and the Bothnian Bay the declining trend in water transparency has ceased over the recent 10 to 15 years, with transparency levels subsequently remaining at about the same level or in some cases even slightly improving. Underwater visibility is today only declining still in the Gulf of Finland and the Northern Baltic Proper.





Photo: Nikolay Vlasov, HELCOM

Assessments indicate that overall water transparency has decreased considerably in all sub-basins of the Baltic Sea over the last century. The trend shows a steady linear decline ever since measurements were started in 1903.

The decrease has been most pronounced in the Northern Baltic Proper (from almost 9m to 4m) and in the Gulf of Finland (from 8m to 4m). The most dramatic decline in underwater visibility has been recorded during the last 25 years in western and northern parts of the Baltic Proper and in the Gulf of Finland.

The primary cause of reduced water transparency during the summer (June-September) is most likely the increase in phytoplankton biomass, and especially in the Baltic Proper and the Gulf of Finland the increasing intensity of cyanobacterial blooms. Intensified cyanobacterial blooms are an indicator of increased nutrient concentrations and low phosphorus to nitrogen ratios. This makes them an

obvious symptom of the ongoing eutrophication of the Baltic Sea.

Reductions in water transparency over the past century have been less dramatic in the Bothnian Bay, where visibility has declined from 8m to 6m. In the Southern Baltic Proper and the Kattegat changes in water transparency have not been as dramatic as in more northerly waters. The Kattegat is a transitional region between the highly saline North Sea and the brackish water Baltic Sea, which may explain this discrepancy.

## Latest assessment predicts dramatic warming in the Baltic Sea region

Projections for future climate change in the Baltic Sea region, presented with due regard to caveats and uncertainties, indicate that atmospheric temperatures will continue to rise during the course of the 21<sup>st</sup> century in every sub-region of the Baltic Sea region, according to a Thematic Assessment on Climate Change in the Baltic Sea Area, adopted at the 28<sup>th</sup> annual Meeting of the Helsinki Commission by the representatives of the Baltic Sea coastal countries. The assessment will serve as a background document to the HELCOM Baltic Sea Action Plan, which is due to be adopted at the HELCOM Ministerial Meeting in November 2007.

This new report is based on the Assessment of Climate Change for the Baltic Sea Basin Project (The BACC Project), which integrates the available knowledge of historical, current, and expected future climate change. The BACC Project is a joint venture of the BALTEX (Baltic Sea Experiment)

Programme and HELCOM which constitutes a good example of a dialogue between the scientific community and environmental policy-makers. One unique feature of the BACC is its combination of evidence on climate change and the related impacts on marine, freshwater, and terrestrial ecosystems across the catchment area of the Baltic Sea. It is also the first systematic scientific effort for assessing climate change in a European region. More than 80 scientists from 12 countries have contributed to the report on a voluntary basis.

According to the assessment, the warming trend for the mean surface air temperature of the entire globe was about 0.05°C/decade from 1861–2000, while the upward trend for mean air temperature in the Baltic Sea region has been somewhat steeper, averaging 0.08°C/decade. This warming trend has been reflected in a decrease in the number of very cold days during the winter, as well as a decrease in the duration and thickness of ice cover on many rivers and lakes, particularly in the eastern and southeastern Baltic Sea region. Increases in the length of the frost-free season





and the growing season have also been observed during this period.

Based on available regional modelling studies, a warming of the mean annual air temperature near the surface in the order of 3°C to 5°C is projected as an average for the total Baltic Sea region during this century. These figures, however, do not reflect the full range of uncertainties in global climate model projections. Seasonally, the largest part of this warming would occur to the east and north of the Baltic Sea during winter months and to the south of the Baltic Sea during summer months. A warming of such magnitude would lead to a lengthening of the growing season by as much as 20 days to 50 days for northern areas, and 30 days to 90 days for southern areas, by the late 21<sup>st</sup> century, depending on the different emissions scenarios used.

There has also been a general tendency toward milder sea-ice conditions in the Baltic during the past century, as reflected in time-series data on the maximum annual extent of sea ice and the length of the ice season in the Baltic Sea. The largest change has been in the length of the ice season, which has decreased by 14–44 days over the past century, mainly due to earlier ice break-up. On the basis of the ice extent, the shift towards a warmer

climate took place in the latter half of the 19th century. During the past ten years, all ice winters have been average, mild, or extremely mild.

The mean surface temperature of the Baltic Sea is projected to increase by between 2°C and 4°C, depending on the models and scenarios used. This would result in a marked decrease in the extent of sea ice by the end of the 21st century, with the Bothnian Sea, large areas of the Gulf of Finland and the Gulf of Riga, and the outer parts of the Finland's southwestern archipelago remaining free of ice during average winters. The ice season would shrink by 1–2 months in the northern waters of the Baltic, and by 2–3 months in its central parts.

Because the mitigation of climate change is a global challenge, it is vital to support the implementation of national, EU, and particularly global initiatives to reduce emissions of greenhouse gases, including the European Climate Change Programme, the UN Framework Convention on Climate Change, and the Kyoto Protocol.

The assessment suggests that adaptation to climate change will need to be regional and local, and should aim to reduce the negative effects of climate change. In order to balance management decisions between the precautionary principle and scientific

*The ice-breakers stationed around the Gulf of Finland had much less work than usual during the exceptionally mild winter of 2006–2007. A dramatic decrease in the average extent of winter sea ice in the Gulf is predicted by the end of this century.*

evidence, a robust basis consisting of environmental observations and model projections should be developed to support policy-making and management.

In relation to the programmes of HELCOM, it is clear that climate change will affect the attainment of all four HELCOM goals for the upcoming Baltic Sea Action Plan: (1) the Baltic Sea unaffected by eutrophication; (2) a favourable status of Baltic Sea biodiversity; (3) Baltic Sea life undisturbed by hazardous substances; and (4) maritime activities carried out in an environmentally friendly way. The greatest effect would be on biodiversity, but clear effects could also be anticipated on eutrophication.

The HELCOM strategy in relation to climate change should aim to limit or mitigate adverse impacts, as well as to enhance the resilience of

the Baltic marine environment by improving its capacity to cope with the stresses generated by climate change. It is thus necessary to continue to improve measures:

- to reduce inputs of heavy metals and persistent or hazardous organic pollutants;
- to reduce emissions from maritime transport (including emissions derived from both fuel combustion and anti-fouling treatments) and prevent ballast water releases;
- to enhance the protection of marine and coastal landscapes and habitats, and particularly the conservation of native Baltic species.

The implementation of the strategic Baltic Sea Action Plan will provide a basis for enhancing the resilience and adaptive capacity of the Baltic marine environment.

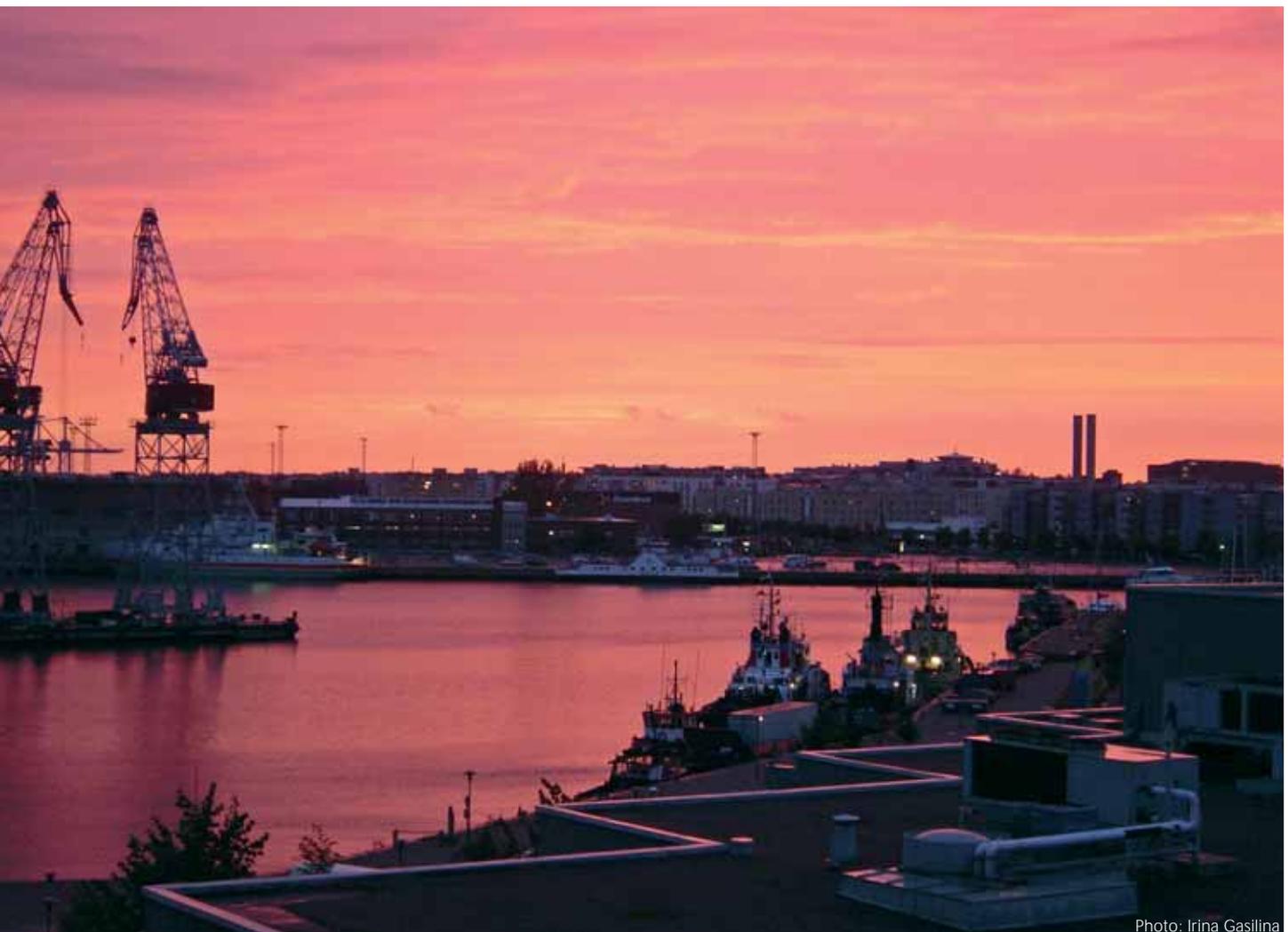


Photo: Irina Gasilina

## Catches of chemical munitions remain low

For the second year in a row, Baltic fishermen have reported a record low number of incidents of dumped World War II chemical munitions being caught in their nets. According to the latest annual statistics, recently submitted by Denmark to HELCOM, there were only four small-scale catches in 2005, the same number as in 2004, compared to 25 incidents reported in 2003.

This is the lowest figure for annual catches since 1999. However, experts are not yet attributing the decrease to any specific factors. The reason for the dramatic decrease is unknown, as was the case for the dramatic increase in 2003. These variations are probably due to a combination of different factors, such as the intensity of fishing activities in the areas close to the dumped chemical munitions, and the recommendations issued by HELCOM and local authorities.

As Lead Country for monitoring dumped chemical munitions, Denmark prepared the latest annual report based on information received as of 31 August 2006. All the catches occurred east of the island of Bornholm, near an area where large amounts of chemical munitions were dumped after World War II. Most of the netted chemical munitions caught in 2005 were completely corroded, and all four consisted of lumps of mustard gas, with a total weight of approximately 105 kg. All catches were released at sea. The total weight of the chemical munitions caught in 2005 was slightly lower than in 2004 – when three separate incidents involved mustard gas, with a total weight of approximately 140 kg netted in clay-like lumps, and another episode involved a 20 kg lump of ‘sneeze gas’ caught by a fishing vessel. Most of the catches were released by fishermen at sea, although one catch was brought ashore for safe disposal.

The year 2003, when a total of 1,110 kg of gas-derived lumps was netted in 25 incidents represented one of the biggest increases in both the numbers of incidents and the total weight of the chemical munitions caught in the Baltic Sea since the mid-1990s. Over the period 1995-2002, about 3-11 incidents were reported annually, with the total weight of munitions involved not exceeding 512 kg a year. The highest number of incidents during the last 20 years



Waters where World War II chemical munitions were dumped

was in 1991 when a total of 5,378 kg of munitions was netted in 103 incidents.

About 40,000 tonnes of chemical munitions were dumped into the Baltic Sea after WWII – mostly in the area to the east of Bornholm, southeast of Gotland and south of the Little Belt. It is estimated that these chemical munitions contained some 13,000 tonnes of chemical warfare agents. Dumping areas are marked as foul, with “anchoring and fishing not recommended” on nautical charts. However, fishing in these waters is not prohibited, and commercial fishing is continuing.

Warfare agents are also discovered outside the dumping areas from time to time, especially near Bornholm. Fishermen in these waters regularly find bombs, shells or fragments of munitions and even lumps of mustard gas in their bottom trawl nets. The crews of fishing vessels risk contamination from chemical warfare agents if lumps of viscous mustard gas or chemical munitions caught in bottom trawls are hauled on board. Simply touching these chemical agents or inhaling their vapours is very dangerous.

Chemical warfare agents break down at varying rates into less toxic, water-soluble substances. Some compounds, however, show an extremely low solubility and slow degradability (e.g. viscous mustard gas, Clark I and II, and Adamsite). These compounds cannot occur at higher concentrations in water, so any wide-scale threat to the marine environment from these dissolved chemical warfare agents can be ruled out. HELCOM has carried out extensive assessments and concluded that any threat to coastal areas from such residues of warfare agents or chemical munitions is also unlikely.



Photo: L. Nánhi

## 4. Combating eutrophication and hazardous substances

The natural balance of the Baltic Sea has been seriously disrupted by excessive inputs of the nutrients nitrogen and phosphorus, which originate from diffuse sources like over-fertilised farmland and air pollution, as well as point sources like sewage treatment plants and industrial wastewater outlets. Symptoms of this eutrophication process include abnormal algal blooms and lifeless areas on the seabed.

The gradual pollution of the Baltic marine environment by hazardous substances has caused a serious threat to the environment, and may even threaten the health of future generations. Although monitoring indicates that the loads of some hazardous substances have been reduced considerably over the past 20–30 years, problems still persist. There is still too little comprehensive knowledge about the impact of the most widely used chemicals and their cocktail-like combinations on human health and the environment. Relatively few organic pollutants are fully understood or even identified today. Another problem is that the degradation and transformation of these substances in the marine environment may change their structure and reactive properties. These unknown substances could pose a considerable threat to the environment.

### Modelling nutrient reduction scenarios

HELCOM assessments clearly show that problems with eutrophication persist in most of the Baltic Sea's sub-basins, and good environmental status has not yet been reached. Actions to identify further cost-effective nutrient reduction measures for the Baltic Sea Action Plan in the different sectors and parts of the Baltic Sea catchment area are ongoing.

At the moment HELCOM is working to assess the environmental impacts of various policies in the Baltic Sea region, by comparing the results of a number of policy scenarios with HELCOM target levels for environmental indicators. The results will show how far existing EU legislation and programmes, and HELCOM Recommendations, will bring us towards reaching the targets for eutrophication and good environmental status. Accurate policy scenarios are difficult to develop but even if imperfect scenarios can help to reveal the extent of the need for further measures. This work combines pollution load models with environmental effect models, enabling predictions of the environmental effects of various policies. The time-lag between applied measures and observed environmental effects is an important aspect which has not yet been fully considered at this stage.

This section includes initial scenarios for the impacts of various policies, produced using one specific model (MARE-NEST). The model results for the environmental parameters are average values of offshore waters in the Baltic's main basins. The model does not explicitly account for coastal waters or the exchange of waters between offshore and coastal waters. It must also be remembered that results from all models of this kind are very much dependent on the quality and accuracy of the input data.

The following scenarios have been assessed by HELCOM:

- Improved sewage treatment scenario
- Phosphorus-free detergent scenario
- Improved sewage treatment and P-free detergent scenario
- Two agricultural scenarios:
  - Intensive agriculture
  - Best possible agricultural practices
- Combinations of the above scenarios.



Photo: Nikolay Vlasov, HELCOM

### Scenario 1: Improved sewage treatment

HELCOM has assessed the effects on nutrient inputs of improved sewage treatment and a ban on the use of phosphorus in detergents, as well as a combination of these measures.

The MARE improved sewage treatment scenario assumes that all countries will achieve the sewage treatment standards as Sweden in 2004. This scenario reduces the overall nitrogen load by 5% and phosphorus loads by 33%. No reductions occur in the Bothnian Bay or the Bothnian Sea, the Danish Straits or Kattegat since direct loads to these basins originate only from the Nordic countries and Germany. The largest reductions in both P and N loads achievable through improved sewage treatment are for Poland (43%), Russia (31%) and Belarus (16%).



Photo: Mershanitu 2005

### Summary

#### Improved wastewater treatment scenario

If all countries in the Baltic Sea drainage basin would improve their sewage treatment to Swedish 2004 levels (85.8% population with tertiary, and 5.8% population with secondary treatment), with the exceptions of Denmark, Finland, Norway and Germany where no changes are expected, it would result in:

- An overall reduction of the nitrogen load by 5% and the phosphorus load by 33%.
- All basins are affected, even those where there are no direct reduction of loads from the surrounding drainage basins, because the advective inflows from other basins are reduced.
- Atmospheric dinitrogen fixation, which can be considered as a proxy for the intensity of cyanobacterial blooms, are virtually eliminated in all the basins, except in the Baltic proper.
- The blooms in the Baltic proper will be halved and the extension of hypoxic areas will be reduced with 26% from 42,000 km<sup>2</sup>, but the effect on water transparency will be limited (+17%).
- Changes in the Gulf of Finland and Riga will be more pronounced, in addition to the elimination of cyanobacterial blooms, with improved water transparency and reduced primary productivity. The Gulf of Riga will switch from being limited by N to P, which is also reflected in an increase in concentrations of unutilized N.
- The smallest effects are seen in the northernmost Bothnian Bay. The conditions in the nitrogen limited Danish Straits and Kattegat are not affected significantly since this scenario primary reduce P loads.
- Overall the largest effects can be seen in the Baltic proper and in the Gulf of Finland and Riga.

### Scenario 2: Phosphorus-free detergents

Phosphorus inputs derived from the phosphates used in detergents are largely dependent on use patterns, marketing conditions and various controls over the use of phosphates in detergents through regulatory or voluntary agreements. These factors are likely to vary considerably between countries. Considering the great uncertainty and range in these estimates, two scenarios were chosen, where P emissions are reduced by 0.6 kg or by 0.2 kg per person per year, in order to cover the maximum and minimum effects of a possible ban on the use of detergents containing phosphates.

The overall reductions in phosphorus loads would range from about 3,000 to 9,000 tonnes, which in percentage terms would mean a reduction of 24% of total phosphorus inputs at most.

### Scenario 3: Improved sewage treatment and P-free detergents

HELCOM has also assessed the combined effect of improving sewage treatment and the use of P-free detergents (assuming that this means a reduction of 0.6 kg P per person per year).

The combined measures would result in a 41% reduction in total phosphorus inputs and 5% in nitrogen inputs. The combined effect gives a total

phosphorus load reduction less than the sum of the effects of the two separate measures. This is because the scenario assumes that most people will already be connected to sewage treatment systems with highly efficient phosphorus removal, reducing the impact of the P-free detergent measure. The combined scenario would nevertheless result in a halving of primary production in the Gulf of Riga and the Gulf of Finland, a reduction of 30% in the extent of hypoxic bottom areas, and a substantial decrease in cyanobacterial blooms (see Figure 1).

#### Scenario 4: Business as usual in agriculture

Agricultural practices have changed dramatically during the last century. New technologies, crops, animal breeding and particularly the introduction of artificial fertilisers, have increased productivity enormously. At the same time, consumers' dietary preferences have changed dramatically, with people eating more meat. These changes have been most pronounced in the western countries, but similar changes are now occurring in the new EU Member States, as well as in Russia and Belarus. Higher living standards and EU agricultural subsidies are driving this development.

In this scenario it is assumed that all countries around the Baltic will develop their agriculture to the same level as Denmark, the Baltic region's leading country in terms of agricultural development. This 'pessimistic' scenario also assumes that sewage treatment will remain at 2004 levels and that there will be no further restrictions on the use of P in detergents.

This scenario results in a massive increase in nutrient loads; with doubled phosphorus inputs into the Baltic proper and a 70% increase in nitrogen loads, with even higher relative increases for the Gulf of Riga. The contributions of additional nutrient loads for each country are dependent on the differences between the current levels of livestock-based production in agriculture and that of Denmark, and on the total area of agricultural land in each country's part of the Baltic drainage basin.

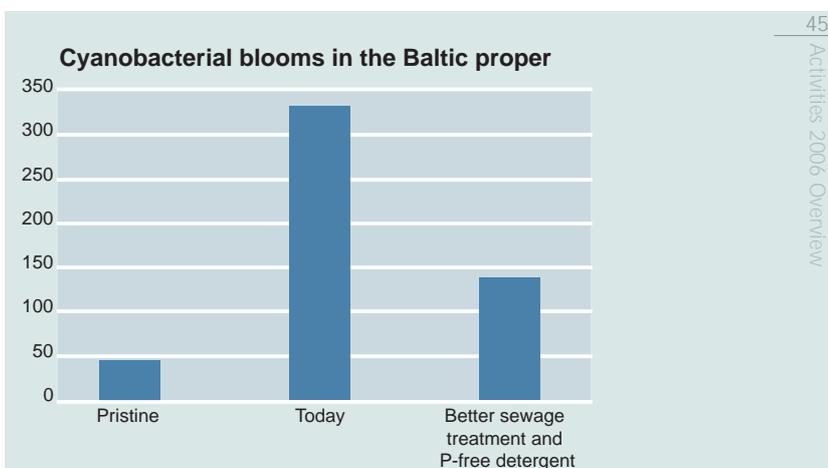


Figure 1. Effects of the combined scenario on cyanobacterial blooms in the Baltic Proper.

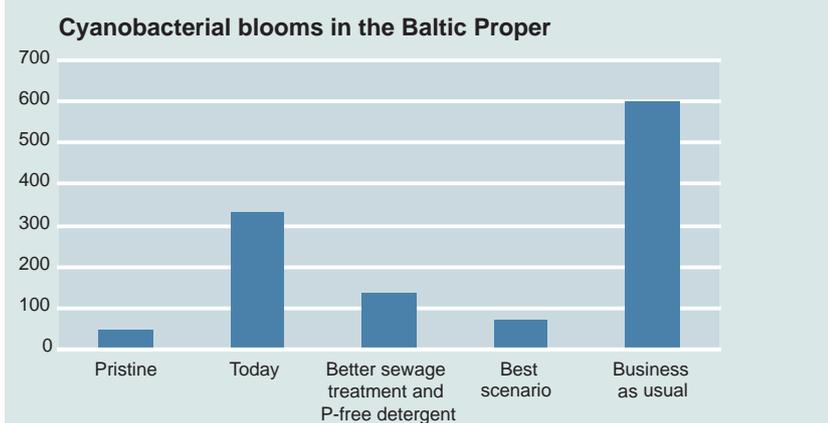


Figure 2. Effect on cyanobacterial blooms of the different scenarios.

### Summary

#### Assuming business as usual in agriculture

If all countries around the Baltic would have the same number of animals per agricultural area and same level of production in meat of milk cow and other cattle, sows and slaughter pigs as Denmark, it would result in:

- 48 % and 43 % increase of nitrogen and phosphorus loads, respectively, in total to the Baltic Sea.
- The total hypoxic bottom areas will increase from about 42,400 to almost 64,000 km<sup>2</sup>.
- Nitrogen fixation that today is small in the Bothnia Sea will increase 2.5 times and undoubtedly cause environmental damage obvious to humans.
- The Gulf of Riga will have drastically reduced water transparency, doubled primary production and cyanobacterial blooms. Even the Danish Straits will see clear deteriorations of the environmental conditions.
- Only the Bothnian Bay and Kattegat will be relatively unaffected, compared to the present situation in this scenario.

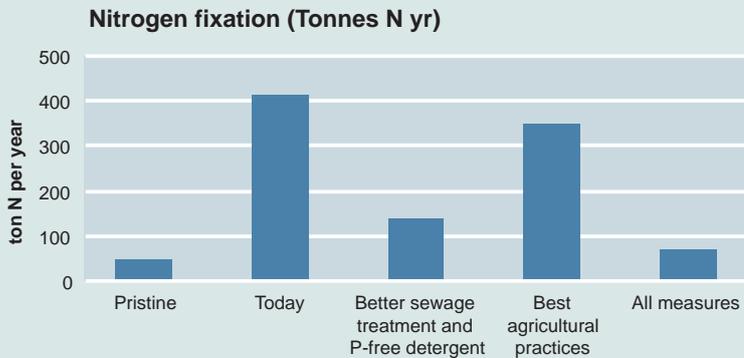


Figure 3. Effects on nitrogen fixation of the various scenarios.

## Summary

### Best possible agricultural practices

- The net P load would be eliminated and that the N load would be halved (47%). The effects on current total loads, varies from a few % to the northern basins with a small proportion of cultivated land to almost a third of the N load and almost half of the P load to the Danish Straits.
- There will be a substantial reduction in water transparency (Secchi depth) in the Baltic proper, Gulf of Riga and Danish straits in this scenario.
- The effects on primary production and cyanobacterial blooms (nitrogen fixation) are small.

### Scenario 5: Best possible agricultural practices

A variety of measures are available for reducing nutrient loads from agriculture, including balanced strategies for animal feeding, for the storage, handling and spreading of manure, and for crop cultivation. The current practices of concentrating animals in different regions from

where animal feed is produced, and supplementing animal fodder with a large proportion in imported food, contributes to excess nutrient leakage, which can be minimised through planning and policy measures.

However, the effects of such improved agricultural practices on nutrient loads entering the Baltic would vary to a great extent between different regions, due to variations in soil properties, climate and hydrology. The current version of the drainage basin model included in NEST cannot model these differences in detail, due to a lack of data. Therefore this scenario should only be seen as a rough expert judgment on the magnitude of combined net effects on nutrient loads, if all such possible agricultural improvement measures were implemented.

### Scenario 6: Best case scenario combining all possible actions

The combined effects of improved sewage treatment, P-free detergent and best possible agricultural practices would result in an overall reduction of almost 150,000 tonnes of nitrogen and about 21,000 tonnes of phosphorus, corresponding to reductions of 21% and 56 % respectively compared to total loads recorded for 2004.

Primary production and nitrogen fixation levels in the Baltic proper would thus be substantially reduced, resulting in a situation approaching the pristine conditions that prevailed until the beginning of the 20<sup>th</sup> century.

The effects on the marine ecosystems, expressed as % of the 2004 scenario are presented in the Table below.

Table 1. The effect of the combined scenarios on the Baltic Sea marine environment.

Sub-basin	TotN conc	TotP conc	Secchi depth	Primary production	Nitrogen fixation	Hypoxic area
Bothnian Bay	2%	0%	11%	-20%		
Bothnian Sea	-4%	-40%	41%	-55%	-100%	
Baltic Proper	-19%	-50%	50%	-37%	-83%	-57%
Gulf of Finland	-13%	-50%	62%	-63%	-100%	
Gulf of Riga	-7%	-55%	73%	-65%	-100%	
Danish Straits	-17%	-38%	37%	-21%		
Kattegat	-8%	-14%	14%	-10%		

## Conclusions

It is clear that nutrient inputs into the Baltic would be reduced considerably, particularly for phosphorus, if efficient modern municipal sewage treatments could be implemented in the entire drainage basin. Improving agricultural practices would further reduce phosphorus loads, and also cause a substantial reduction in nitrogen loads. The combined effects of these measures on marine ecosystems would be considerable. HELCOM's targets for water clarity would most likely be reached and surpassed in all basins. However, the healthy future of the Baltic Sea cannot be guaranteed if the current rapid development of agriculture continues, as is shown in the 'business as usual' scenario. Even though these scenarios are the result of a single

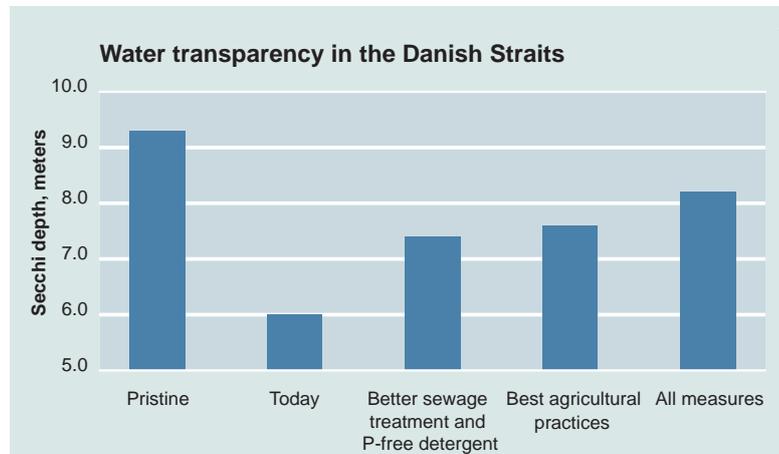


Figure 4. Effects of various measures on water transparency in the Danish Straits.



model, they should provide an instructive basis for initial assessments of how the selected measures would need to be further developed. Complicating factors include the long time-lag before the effects of measures taken to reduce loads entering the sea become visible, as well as the delayed response in the Baltic Sea due to internal nutrient loading. Such factors must also be taken into account when assessing the need for reductions.

## HELCOM halves the number of Baltic Sea pollution hot spots

The Heads of Delegation to the Helsinki Commission, meeting in Lithuania's capital, Vilnius, on 21-22 June 2006, approved the removal of several designated hot spots from the list of the Baltic

Sea's most significant pollution sources, following an extensive review of clean up efforts.

Among the deleted hot spots are several industrial plants and municipalities in Estonia, Lithuania, Poland and Russia, which have made vast improvements by updating their processes and/or applying pollution abatement technologies.

HELCOM has welcomed these countries' good progress in the reduction of pollution from point sources such as municipal wastewater treatment facilities, as well as industrial plants, and found that the efficiency of wastewater treatment at the former hot spots now meets the requirements of the relevant HELCOM Recommendations.

Successful efforts to remediate hot spots show the strong commitment of the HELCOM Member States to eliminate all hot spots in the Baltic Sea catchment area. The remedial actions at the hot spots should be seen as major steps towards achieving a cleaner marine environment. These ongoing activities are also going to be part of the HELCOM Baltic Sea Action Plan.

The deleted hot spots include:

- 8 municipal wastewater treatment plant sub-hot spots in St. Petersburg
- 3 municipalities in Estonia – in the capital Tallinn, Pärnu and Paide
- the coking plant at Przyjazn in Katowice, Poland
- the Duo-Stal metallurgical plant in Bytom, Poland, which has now been closed
- 2 municipalities in Lithuania: Klaipeda and Siauliai,
- 3 industrial hot spots along the Lithuanian coast: the "Amalg Azotaz" fertiliser plant, the Panezys foodstuffs plant, and the Klaipeda cardboard factory.

The Hot Spots List of the most significant point sources of pollution around the Baltic Sea was first drawn up under the HELCOM Baltic Sea Joint Comprehensive Environmental Action Programme (JCP) in 1992. The objective of the JCP is to facilitate the implementation of pollution reduction measures at the most polluted sites in the Baltic Sea catchment area. This programme, which should be completed by 2012 at the latest, specifies a series of actions to be undertaken at pollution hot spots.

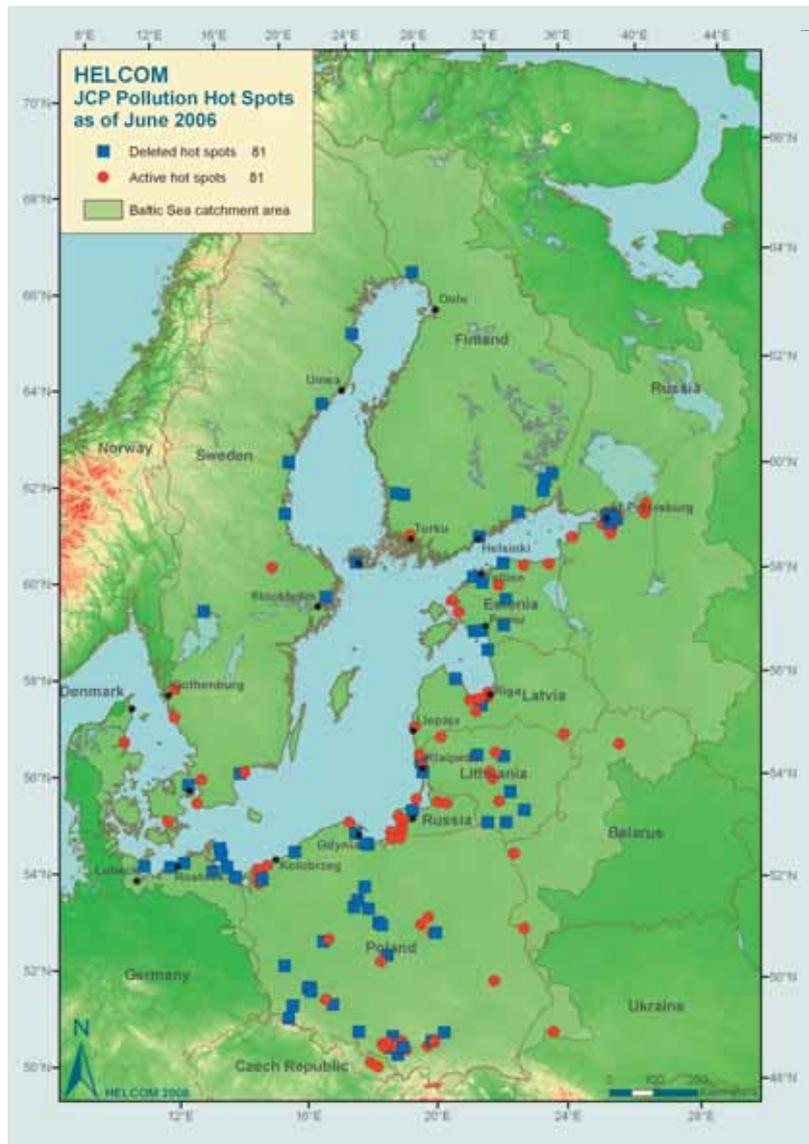


Photo: Nikolay Vlasov, HELCOM

The most notorious hot spots are point sources such as municipal facilities and industrial plants, but the programme also covers pollution from agricultural areas and rural settlements, and sensitive areas such as coastal lagoons and wetlands where special environmental measures are needed. Certain hot spots have been split into sub-hot spots in order to facilitate their management and actions to reduce pollution.

The hot spots were designated in 1992 by an international group of scientists, engineers, environmental managers, bankers and national representatives, according to practical economic considerations as well as the seriousness of their impact on the environment and human health. A total of 81 hot spots and sub-hot spots remain on the list today, following the deletion of 81 of the earlier identified 162 hot spots/sub-hot spots. Investments and remediation projects carried out at pollution hot spots around the Baltic Sea have contributed substantially towards overall pollution load reductions in the Baltic Sea catchment area.

Water quality in many coastal waters of the Baltic Sea has improved considerably since 1992, reflecting welcome progress in the treatment of municipal and industrial wastewater. But although significant progress has been made at municipal and industrial hot spots, continued and substantial additional support will be required to reach the targets of the programme.





# 5. Ensuring maritime safety and response capacity

Shipping traffic densities in the Baltic Sea are among the highest anywhere in the world. The transportation of oil and other potentially hazardous cargoes is growing steeply and steadily. The major impacts of shipping on the marine environment include pollution related to ship-generated waste, accidents, or ships' airborne emissions, as well as the introduction of non-native species in discharges of ballast water.

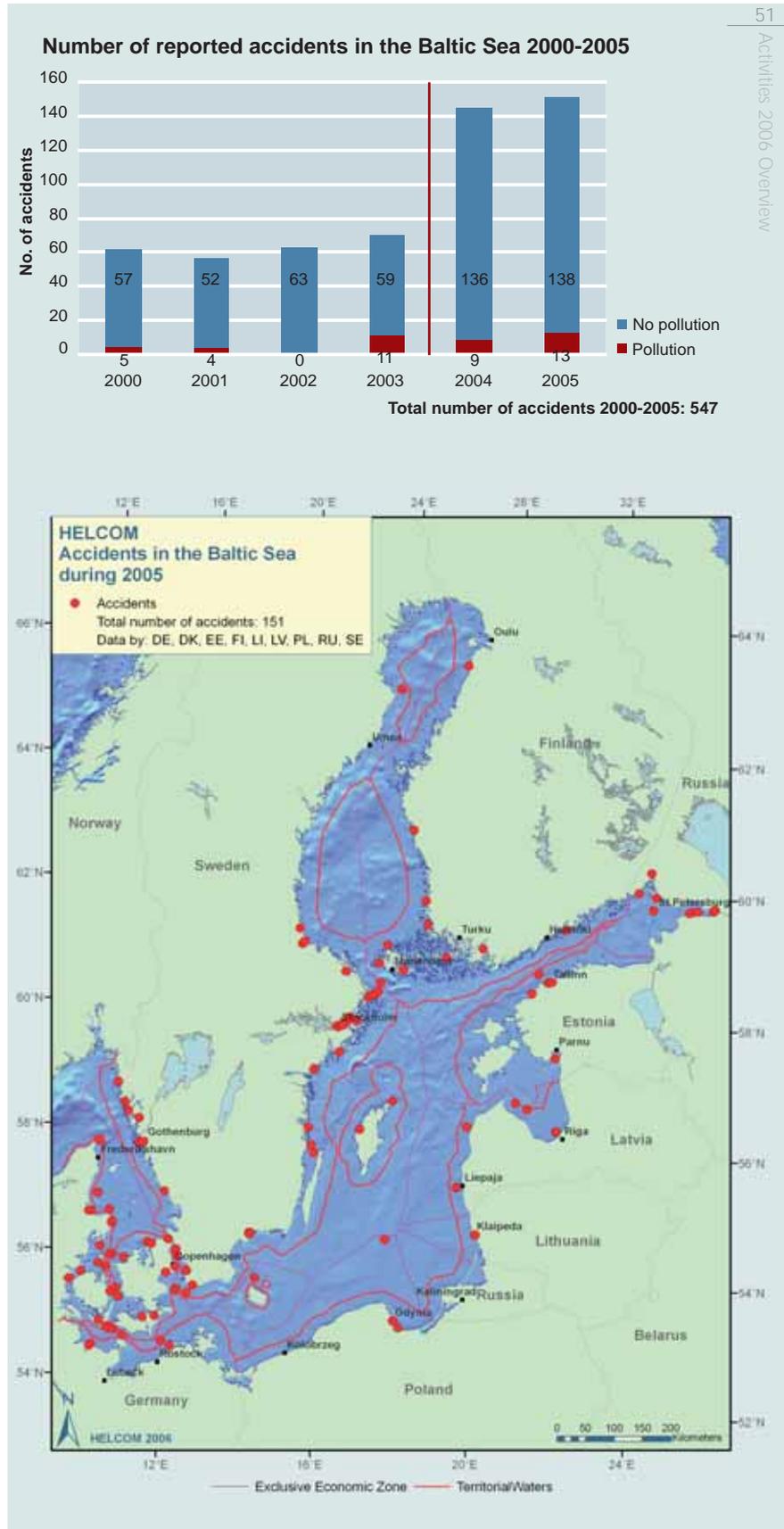
Around 100 million people live in the 14 countries in the Baltic Sea catchment area – and it is estimated that 75 million passengers cross the Baltic annually by ship. More than 2,000 passenger or cargo ships sail the Baltic at any time. All this shipping leaves its own footprint on the marine environment – with around 140 shipping accidents and over 200 detected illegal oil discharges annually.

By 2015 a 40% increase is expected in the amounts of oil being shipped on the Baltic, which currently stand at 160 million tonnes of oil a year. The use of much bigger tankers is also expected to rise – meaning that we will see more tankers in the Baltic carrying 100,000-150,000 tonnes of oil.

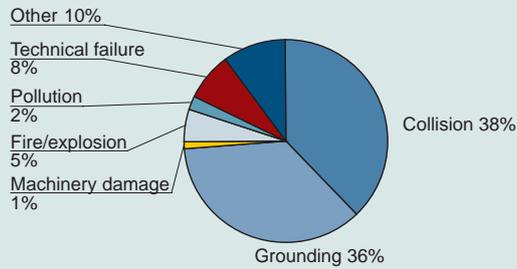
## Latest report on shipping accidents in the Baltic

The number of shipping accidents annually in the Baltic Sea marine area has more than doubled since the beginning of the 21<sup>st</sup> century, according to the latest HELCOM study. Analysis of the data contained in the latest annual reports provided by the Baltic Sea countries to HELCOM reveals that there were 151 accidents in 2005, and 145 in 2004, compared to about 60-70 per year during the period 2000-2003. In 2005, 13 accidents resulted in small-scale pollution, compared to 9 similar cases in the previous year.

According to HELCOM experts, one possible explanation for the apparent increase is the new reporting requirements for shipping accidents recently established by HELCOM. Previously not all accidents were reported, but the new system ensures that the Helsinki Commission now gets more com-

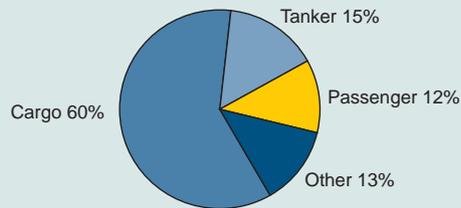


### Types of accidents in the Baltic Sea during 2005



Total number of accidents: 151

### Types of ships involved in accidents in the Baltic Sea during 2005



Total number of ships involved in accidents: 157

plete data. But it is still clear that the rapidly growing maritime traffic in the region could also have contributed to this increase in the number of accidents.

The study shows that collisions (38%), groundings (36%), technical failures (8%), and fires/explosions (5%) were the most common types of accidents recorded in 2005. The share of groundings has decreased (from 41% in 2004), while the share of collisions has increased (from 27% in 2004). Collisions involving two ships accounted for 60% of all collision cases in 2005, and the remaining cases involved collisions with fixed or floating structures such as piers, navigation signs etc.

Cargo vessels (60%), tankers (15%) and passenger ferries (12%) were the main types of vessels involved in accidents. The main reason for accidents was human error (42%), followed by technical factors (23%).



According to the HELCOM Automatic Identification System (AIS) for monitoring maritime traffic, each year around 50,000 ships ply the waters of the Baltic Sea. Although growing traffic is a positive sign of intensified co-operation in the Baltic Sea region and a prospering economy, it also makes potentially polluting shipping accidents more likely.

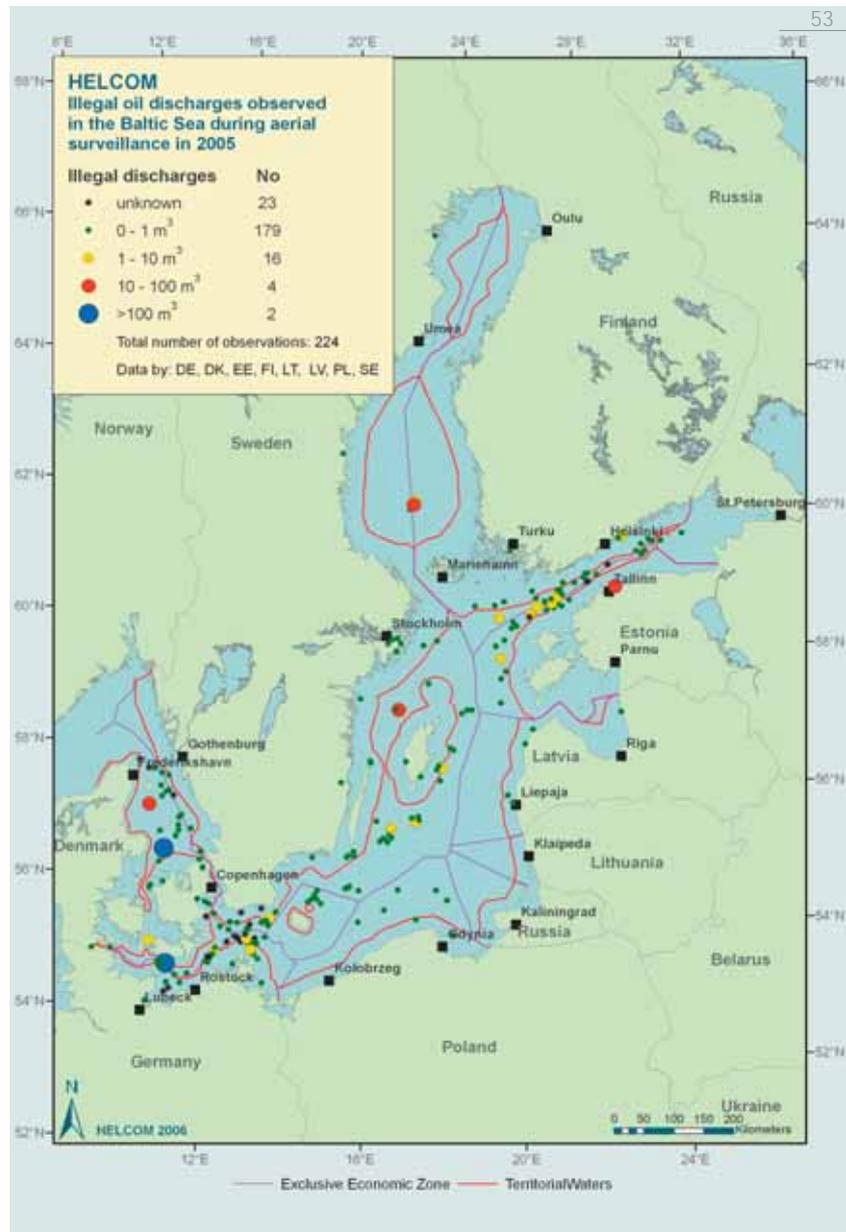
Fortunately, most of the accidents in the Baltic do not cause notable pollution, but even one large-scale accident would seriously threaten the marine environment. Over the period 2000-2005, an average of 8-9% of all reported accidents resulted in some kind of pollution. Two of the five most serious accidents in the Baltic marine area have occurred since 2001 – involving “Baltic Carrier” in 2001 (2,700 tonnes of oil spilt), and “Fu Shan Hai” in 2003 (1,200 tonnes of oil spilt).

## HELCOM achieves a 50% reduction in illegal oil discharges

The number of illegal oil discharges from ships annually observed by surveillance planes in the Baltic Sea area has decreased by more than 50% over the last seven, eight years, according to the latest HELCOM study.

Analysis of the data contained in the latest annual reports provided by the Member States to HELCOM reveals that 224 illicit oil spills were observed during a total of 5,637 hours of surveillance flights conducted by the coastal countries over the Baltic Sea during 2005. This is the lowest number since 1999, when 488 discharges were detected during 4,833 air patrol hours.

HELCOM considers this as a very positive development, although the number of discharges is still unacceptable. Experts attribute this positive trend to the success of the complex set of measures known as the Baltic Strategy to prevent illegal discharges of oil and waste into the Baltic Sea, which the HELCOM Member States have been implementing since the late 1990s. It is also very significant that this decrease is continuing despite the rapidly growing density of shipping in the Baltic Sea, the increased frequency of surveillance flights, and improved usage of remote sensing equipment.



Deliberate oil discharges from ships have been regularly observed during surveillance flights over the Baltic Sea since 1988. One of the peak years was 1989, when 763 spills were detected during 3,491 flight hours. As from 1999 the number of discharges has been steadily decreasing.

In 2005, most of the illegal oil discharges were detected along major shipping routes. The six most significant spills, each consisting of more than 10 cubic metres of oil, were detected in the south-western Baltic, the Kattegat, north-east of Gotland, in the Gulf of Finland and in the Bothnian

Sea. The two largest spills of all (both more than 100 cubic metres) were observed near the Danish coast – south of the island of Lolland and in the western part of the Kattegat.

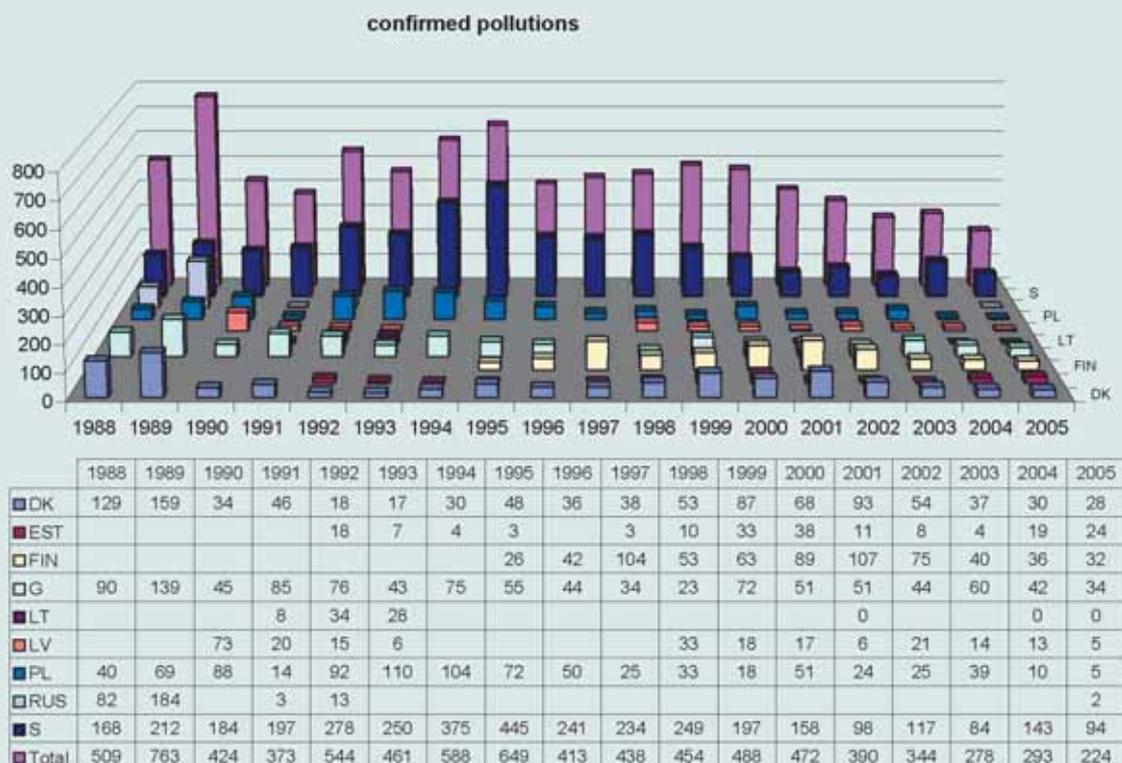
Regular aerial surveillance flights have contributed significantly to the decrease in discharges, as ships are aware that their illicit polluting activities can be detected. The HELCOM aerial surveillance fleet today consists of more than 20 airplanes and helicopters, many of them equipped with remote sensing equipment such as side-looking airborne radar (SLAR), infrared (IR) and ultraviolet (UV) cameras, photo and video equipment.

The main objectives of the Baltic Strategy, which was operationalized by the HELCOM Ministerial Meeting in 1998, are to ensure ships' compliance with global and regional discharge regulations and to eliminate illegal discharges into the sea of all wastes from all ships, and thus prevent pollution of the Baltic Sea. Another objective is to ensure an environmentally sound treatment of ship-generated wastes when these wastes have been delivered to port reception facilities ashore.

Today, all discharges into the Baltic Sea of oil, or diluted mixtures containing oil in any form, including crude oil, fuel oil, oil sludge, or refined products, are prohibited. This prohibition stems from the international designation of the Baltic Sea as a "special area" under the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).

To uphold this prohibition, HELCOM requires all ships, with a few exceptions, to deliver all such oily wastes to reception facilities before leaving port. To further encourage delivery, the countries bordering the Baltic Sea have agreed that ships should not be charged for using such reception facilities, under the "no-special-fee" system. Costs are instead recovered from general harbour fees or general environmental fees, for instance.

The increased amounts of wastes now being delivered to the Baltic Sea ports illustrate that more and more ships are delivering their oily wastes to port reception facilities rather than illegally discharging them into the Baltic Sea.



## Monitoring shipping traffic in the Baltic

More than 50,000 vessels annually pass the Skaw at the northernmost tip of Denmark on their way into or out of the Baltic, according to the latest statistics provided by the new HELCOM Automatic Identification System (AIS) for monitoring maritime traffic in the Baltic Sea area. The HELCOM AIS system, which was officially launched on 1 July 2005, is now providing for the first time ever an up-to-date and comprehensive overview of the shipping traffic situation in the Baltic.

During the twelve months up to July 2006, around 51,600 ships entered or left the Baltic via the Skaw, about 51,000 passed the Swedish island of Gotland, and more than 37,000 entered or left the Gulf of Finland.

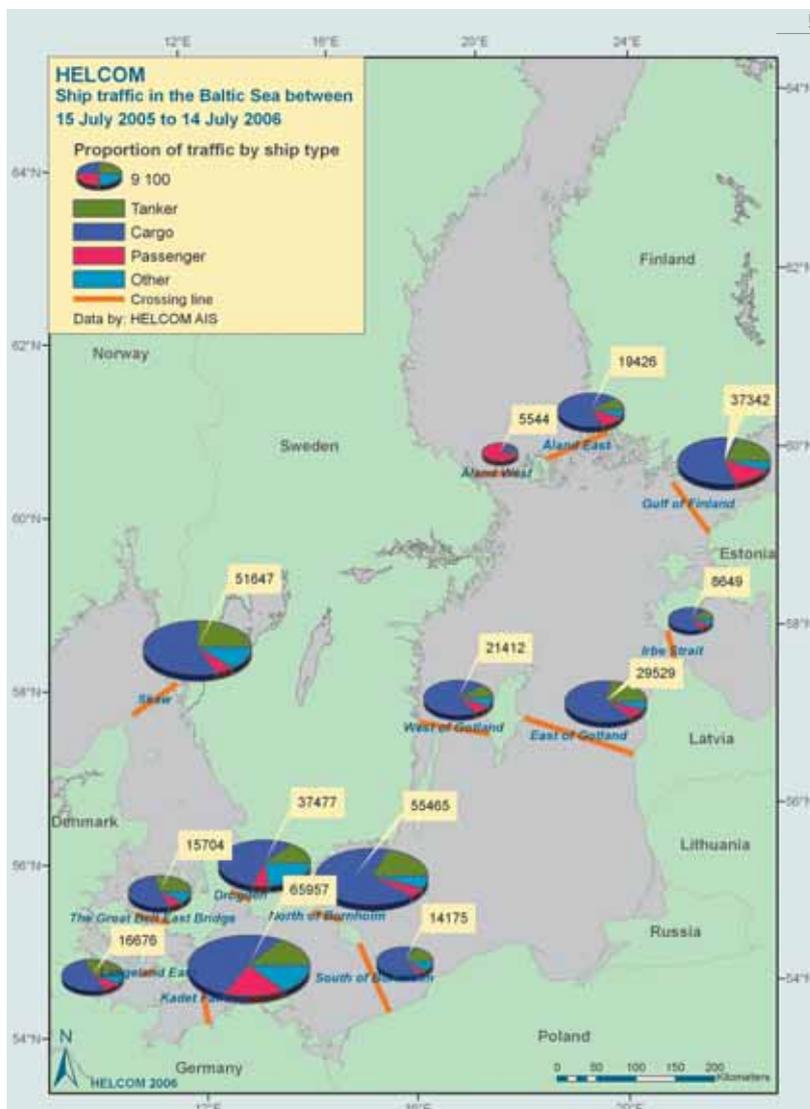
Approximately 60-70% of these ships were cargo vessels, and 17-25% were tankers. There are about 1,800 – 2,000 ships in the Baltic marine area at any given moment. Vessels with a draught of less than seven meters account for most of the ships entering or leaving the Baltic via the Skaw.

The reporting area boundaries of the HELCOM AIS used to show the spatial distribution of shipping activities can be seen on the map below.

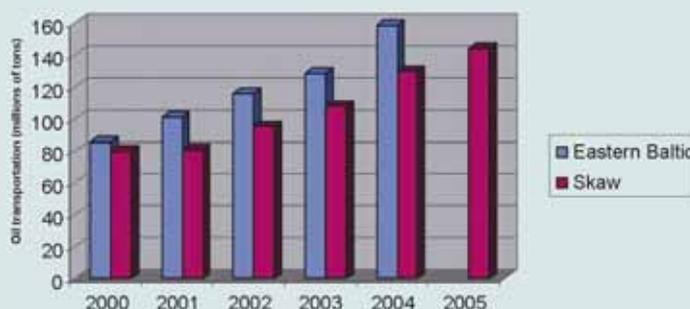
The AIS data indicates that both the numbers and sizes of ships (especially oil tankers) have been growing, and that ships carrying up to 150 thousand tonnes of oil are now sailing the waters of the Baltic. The amounts of oil transported on the Baltic have increased significantly since 2000.

The HELCOM AIS system enables the identification of the name, position, course, speed, draught and cargo of every ship of more than 300 gross tonnes sailing in the Baltic Sea. The system displays all the available data over a common outline map of the region.

The system covers Norwegian waters as well as the whole of the Baltic Sea. This greatly improves risk assessments and management, and also facilitates decisions on new measures to prevent collisions and improve navigational safety in the Baltic.



### Oil transportation in the Baltic



Amounts of oil transported via the 11 largest oil terminals in the Eastern Baltic (Gdansk, Klaipeda, Ventspils, Muuga, Primorsk, Porvoo, Naantali, Riga, Butinge, St. Petersburg and Kaliningrad) and past the Skaw (in millions of tonnes)

The system includes land-based stations established in all the coastal countries to receive information from all vessels passing through their national waters. All stations are linked to a special "HELCOM server", which combines all the data and provides a comprehensive real-time picture of the overall maritime traffic situation in the Baltic Sea to the competent authorities in each HELCOM member state. The server updates ships' positions every six minutes.

In addition to providing shore stations with information, the AIS also enables ships to detect and identify each other at sea. AIS messages contain information on the identity, position and course of the vessel, as well as various additional data.

The primary task of the shore-based AIS network is to provide the competent authorities with a monitoring tool for supervision, risk analyses, search and rescue (SAR) operations, port state control, security and other safety-related tasks to ensure safe navigation in the crowded waters of the Baltic Sea.

The decision to establish a land-based monitoring system for ships, based on AIS signals, was agreed during the HELCOM Extraordinary Ministerial Meeting in Copenhagen in 2001, which closely followed one of the most serious oil spills in the Baltic in recent years. On 29 March 2001, close to the sea border between Germany and Denmark, the double-hulled oil tanker "Baltic Carrier" collided with the bulk carrier "Tern" resulting in the spillage

of 2,700 tonnes of heavy fuel oil, much of which eventually washed up along the Danish coast.

The new system builds upon the International Maritime Organisation's requirements for all larger ships to be equipped with AIS. HELCOM's work will also contribute at European level to the implementation of the EU directive on traffic monitoring and information, under which an AIS exchange system should be operational by the end of 2008.

## Practising response to oil spills

A fleet of oil-pollution-combating ships from the Baltic Sea countries working together under HELCOM's flag tested its capabilities to deal with a massive oil spill during the Helsinki Commission's annual international pollution response exercise BALEX DELTA, held off Gdynia, Poland, on 6 September 2006.

A total of 23 vessels and three airplanes, from Denmark, Finland, Germany, Lithuania, Poland, Russia and Sweden, took part in HELCOM's operational exercise to assess the Baltic Sea countries' readiness to jointly respond to major oil accidents at sea.

The Gdynia exercise was the first time the European Union (which is also a HELCOM Contracting Party) has participated in BALEX DELTA. The EU was represented by two vessels chartered by the European Maritime Safety Agency.

The exercise was successful. All the task forces displayed exceptional performance working under a single command. The results of the exercise show the growing capability of the HELCOM countries to jointly and effectively deal with major oil spill accidents in the Baltic Sea region.

BALEX DELTA 2006 was organised by the Polish Maritime Search and Rescue Service.

The exercise involved a scenario where a general cargo vessel collided with an oil tanker carrying a cargo of around 30,000 tonnes of light crude oil in the Gulf of Gdansk. Besides its cargo, the oil tanker also had some 1,200 tonnes of heavy fuel oil and



120 tonnes of marine diesel oil as bunker. After the collision, the oil tanker had supposedly leaked around 6,000 – 8,000 tonnes of oil cargo, which was assumed to be drifting towards the Polish and Russian coastlines. Units from HELCOM countries were assigned to jointly prevent the oil slick from coming ashore.

In 2006, the discharged oil was no longer simulated using popcorn, but with expanded perlite, a mineral substance several times lighter than water, white in colour and easily visible on the water surface. Expanded perlite is absolutely harmless to the environment. Perlite is a naturally occurring glassy volcanic rock found in many parts of the world. It can be heated to a high temperature to produce a lightweight, micro-porous material with a high surface area. The idea of using this material to simulate oil spills has been developed by the Chemical Faculty of the Gdansk University of Technology and the Polish Maritime Search and Rescue Service.

BALEX DELTA operational response exercises have been held annually since 1989. Throughout this time HELCOM has steadily improved the readiness of the countries around the Baltic to jointly respond to oil spills at sea. The Baltic coastal countries now have a total of more than 30 response vessels located around the region. These vessels are able to reach any place in the Baltic Sea within 6 to 48 hours of notification of an accident.

## Launch of a new system to help identify suspected illegal dischargers

At the HELCOM Response Group Meeting, held on 13 - 15 September 2006 in Gdynia, Poland, representatives of the Baltic Sea countries shared their first experiences in using the HELCOM STW/AIS system, which integrates data from the Seatrack Web (STW) oil drift forecasting system and the Automatic Identification System (AIS) for monitoring maritime traffic.

The aim of this new system is to provide additional tools for identifying ships that illegally discharge oil into the Baltic Sea. Up until now, only a few of the ships that illegally discharge oil into the sea could



be identified. But by combining data on ships' routes from the AIS with reversed calculations of the pathways of oil slicks based on the Seatrack Web system, identification procedures can now be significantly improved, providing better evidence for the courts.



## 6. Baltic Sea Regional Project extended by one year

A lot has been done under the Baltic Sea Regional Project (BSRP) in its three-year active lifetime. More than 50 people are directly involved with the project in their everyday work, but hundreds more contribute to the related activities or receiving direct benefit from the project.

In the spring of 2006 it became evident that in order to reap full benefits and fulfil the objectives of Phase I of the BSRP, the Project needs an extension beyond its original completion date of 30 June 2006. The World Bank has consequently extended the validity of the GEF Grant until 30 June 2007. The additional time given to the project enables a more complete assessment of its results and impacts. This will provide information that can be of great use to future forms of regional co-operation.

It is already possible to describe some preliminary outputs and achievements with respect to the two main strategic focal areas of the project: technical capacity building and investments, and human capacity building. Many of these key advances concern work in which HELCOM has been involved.

### Technical capacity building

Capacity building activities form the essential element of the Large Marine Ecosystem (LME) component of the BSRP. These activities improve the abilities of the project beneficiaries to monitor and assess the status of different components of Baltic coastal and open sea ecosystems, and to produce tools for comprehensive assessments and the planning of actions.

During 2006, the institutes which form the network of thematic centres of excellence established by the BSRP received concrete benefits from the project in the form of scientific field-work and laboratory research equipment with a total value of nearly 1 million US dollars. This equipment will especially improve the institutes' technical capacity to monitor and assess eutrophication, phytobenthos, lower trophic level productivity, and coastal and offshore fish stocks. The harmonisation and upgrading of methods

### Main coordination and partner institutions in the GEF-Baltic Sea Regional Project

- Large Marine Ecosystem component management institute
- Large Marine Ecosystem component partner institute
- Land and coastal component management institute
- Land and coastal component Local Implementation Unit
- HELCOM Secretariat



#### Marine Ecosystem component institutes

Denmark:  
International Council for the Exploration of the Sea (ICES), Copenhagen

Estonia:  
Estonian Marine Institute, University of Tartu (EMI), Tallinn

Latvia:  
Institute of Aquatic Ecology, University of Latvia (IAE), Riga  
Latvian Fish Resource Agency (LFRA), Riga

Lithuania:  
Institute of Ecology, Vilnius University (IEVU), Vilnius  
Coastal Research and Planning Institute (CRPI), Klaipeda

Russia:  
Atlantic Research Institute of Marine Fisheries and Oceanography (AtlantNIRO), Kaliningrad  
Zoological Institute, Russian Academy of Sciences (ZIN-RAS), St. Petersburg

Poland:  
Sea Fisheries Institute (SFI), Gdynia

#### Land and coastal component institutes

Sweden:  
Swedish University of Agricultural Sciences (SLU), Uppsala

Estonia:  
Rural Economy Research Centre (RERC), Jäneda

Latvia:  
Latvian Rural Advisory and Training Centre (LRATC), Jelgava

Lithuania:  
Lithuanian Agricultural Advisory Service (LAAS), Kedainiai

Russia:  
Kaliningrad Institute for Re-training of Staff in Agribusiness (KIRSA), Kaliningrad



Photo: Kaj Granholm, HELCOM

and equipment also enable the institutes in the Eastern Baltic region to improve coordination and efficiency in providing data for the International Council for the Exploration of the Sea (ICES) and HELCOM. As a result, a consensus has been reached on ecosystem indicators and quantitative targets that can serve as goals with regard to the task of achieving a good ecological status for the Baltic Sea.

To complement the marine monitoring done in the LME component, the Land and Coastal Component of BSRP has improved the technical capacity of the beneficiary countries to monitor nutrient runoff and water quality from farmlands. This activity is based on the idea of a network of institutions around the Baltic region responsible for regular water monitoring, analysis and reporting. This network is now operational, although further harmonisation of monitoring and modelling methods is still ongoing. The BSRP has contributed to this process by providing resources and expertise for the construction, upgrading and equipping of one water monitoring station in each of the four beneficiary countries (Estonia, Latvia, Lithuania and Russia).

## Human capacity building and farm investments

It has often been said that the most important contributions of the GEF's Baltic Sea Regional Project are network building, and the provision of funds to enable more extensive participation by scientists and doctoral students from the Eastern Baltic countries in regional co-operation and the working groups of ICES and HELCOM. The activation of regional co-operation by providing funds for travel has undoubtedly contributed to regional efforts by accelerating the assessment and review processes. These developments have led to increased output in a short period of time. The BSRP has also organized several training events especially targeted for the representatives of beneficiary countries in the fields of joint productivity, fish monitoring, integrated assessment, remote sensing, geographical information systems (GIS), marine habitat mapping, and governance in Large Marine Ecosystem (LME) projects.



Training plays an important role in the BSRP. In the sphere of land and coastal issues, the BSRP functions through the Agricultural Advisory Services in the beneficiary countries, where Local Implementation Units (LIU) have been established. Local partners have been trained by Swedish and Norwegian partners in the area of environmentally sustainable agricultural practices. The BSRP local implementation units have then in turn organised training events to reach nearly all other active agricultural advisors in the region, as well as many farmers themselves. Under the BSRP, approximately 1,200 farmers have taken part in introductory seminars, and nearly 200 of them have gone on to participate in tailor-made courses on environmental farm management practices. As a result of this training, each farmer prepared a comprehensive investment plan with the aim of submitting an application for funding either to the BSRP credit scheme managed by NEFCO, or to other funding sources, such as the EU structural funds or national rural development funds. At the end of 2006, a total of 22 farms are on board the BSRP scheme with total investment amounting to over 8 million euros, of which 4 million is direct environmental investment. Some of these farms will further serve as demonstration cases. Such farms have been carefully selected on the basis of a detailed evaluation of both the environmental and economic efficiency of the related investment.

The environmental farm investments in the BSRP evidently have a high economic efficiency in terms of the costs of nutrient reductions compared to similar investments in general across the Baltic region. The agri-environmental investments made through the BSRP also have a high cost-efficiency compared to investments in municipal or industrial wastewater treatment.

It has to be emphasized, however, that although the investments have proven to be both attractive for farmers and cost-efficient as nutrient reduction measures, the greatest impact is felt on the level of an individual farmer and the local farming community. There is now an increased awareness of the environmental impacts of farming, especially on nearby rivers and eventually the sea, as well as improved knowledge concerning how to develop farm management practices in order to ensure both economic and environmental sustainability.

#### Some outputs for HELCOM work:

- HELCOM Assessment of Coastal Fish in the Baltic Sea (BSEP 103 A)
- Indicator fact sheets on coastal fish
- Sub-regional eutrophication assessment
- Contributions to Decision Support System for ballast water management and port monitoring
- Establishment of a permanent joint ICES/HELCOM working group on integrated assessment



## 7. HELCOM Youth Forum: inspiring the next generation of environmental leaders

“Nine states – one identity” was the theme of the Third HELCOM Youth Forum, held on 15-17 August 2006 in Flensburg, Germany. Nearly 30 student delegates, representing several Baltic Sea coastal countries met to exchange views on how to enhance international co-operation on environmental protection and sustainable development around the Baltic Sea region, and to convey creative new ideas and policy recommendations to decision-makers.

The Third HELCOM Youth Forum was organised by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, in co-operation with other partners including the German Federal Maritime and Hydrographic Agency, Landtag Mecklenburg-Vorpommern, the Baltic Sea Forum, and Flensburg Tourismus und Stadtmarketing.

The HELCOM Youth Forum provides an excellent opportunity for tomorrow's leaders to interact with HELCOM representatives and current decision-makers from the Baltic Sea countries. The forum also aims to increase awareness of environmental issues and sustainable development.

HELCOM is convinced that increasing public awareness among young people is of utmost importance for securing future generations' interest in the Baltic. By regularly arranging such youth forums HELCOM has initiated a long-term strategy of drawing young people's attention to regional environmental and sustainable development issues, and proactively involving students in the work of the Helsinki Commission.

The main aim of the Youth Forum is to encourage young people to become interested and participate in decision-making process associated with environmentally sustainable development in the Baltic Sea region. Inspiring the next generation of leaders to become actively involved in environmental issues will ensure an economically and environmentally sound future for the sea we all share.

Several workshops held during the forum offered participants the opportunity to actively investigate various views and defend personal evaluations on such issues as the role of the Helsinki Commission in protecting the Baltic marine environment, joint international actions on key environmental issues affecting the Baltic Sea, and ways to balance the economic use and ecological needs of the Baltic Sea.



*Prof. Dr. Peter Ehlers, President of the German Federal Maritime and Hydrographic Agency, chaired the HELCOM Youth Forum.*

One of the top subjects on the agenda was the objectives of the strategic HELCOM Baltic Sea Action Plan. HELCOM representatives received a lot of input and heard a lot of creative ideas from young people, who displayed sincere interest to contribute towards making the new HELCOM strategy even more relevant and robust.

The HELCOM Youth Forums, which are designed to echo the concerns of young people and feed their personal visions into future policies affecting the Baltic Sea, have already been hailed as a success. The First Youth Forum was held on 1 March 2004 in Helsinki, Finland, in connection with the 30<sup>th</sup> Anniversary Jubilee Session of the Helsinki Commission. The Forum adopted a Youth Declaration, which was handed over to the President of the Republic of Finland Tarja Halonen. The Second Youth Forum, held on 9-11 August 2005 in Rostock-Warnemünde, Germany, resulted in a resolution “Our Baltic Sea of tomorrow”, which is comprised of students' visions and concrete demands directed at politicians and key players around the Baltic Sea region.



# 8. HELCOM's new mariners' routeing guide for the Baltic

The HELCOM Transit Guide for the Baltic Sea is the first publication of its kind in the region. This single source of essential navigational information enables ship masters to plan safe routes through the Baltic. The initial idea of this project was to provide mariners with an easy-to-use guide allowing instant access to the necessary information.

The Transit Guide is designed to supplement the existing nautical chart portfolio for the Baltic Sea. It includes information on reporting systems, ice conditions, maritime assistance services, special regulations, water levels and locally significant land uplift.

The guide has been developed by the HELCOM Transit Route Expert Working Group, using a chart designed and printed by the German Federal Maritime and Hydrographic Agency (BSH). Germany has also offered to keep the guide up to date.

Maintaining the printed version and developing and continually improving the web version of the Transit Guide will be the next important phase of this project. The development of an advanced version of the guide will be led by Denmark.

To order your copy of the Transit Guide, visit the BSH website: <http://www.bsh.de/en/Products/Charts/Routeing%20Guides/index.jsp>.

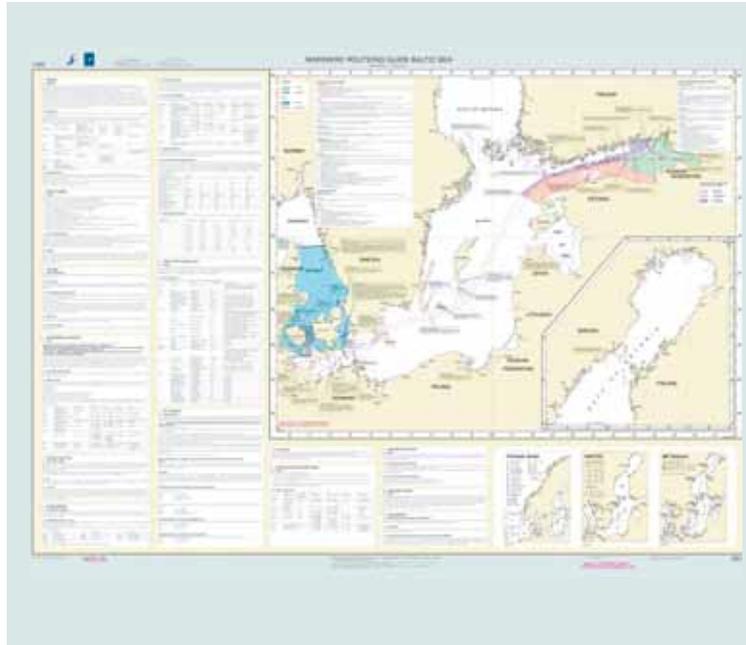


Photo: Lauri Nanni



Photo: Ysa Hietalahti

# 9. Appendices

## Recommendations adopted by HELCOM 28

The 28<sup>th</sup> Meeting of the Helsinki Commission in March 2007 approved a new HELCOM Recommendation on "Strengthening of sub-regional co-operation in response field", which will also form part of the HELCOM Baltic Sea Action Plan. This Recommendation will be supplemented by guidance on how to quantify the need for emergency and response capacity in each of the sub-regions of the Baltic Sea. The new Recommendation and the related guidelines will be submitted for adoption by the HELCOM Ministerial Meeting in November 2007.

The Meeting also adopted the revised HELCOM Recommendation 26/1 "Application of the no-special-fee system to ship-generated wastes in the Baltic Sea Area". The amendment concerns a new criterion for the indication of the frequency of "scheduled traffic with regular and frequent port calls", which will be exempted from the obligatory payment for waste delivered to port (point 3.2.3. of the Recommendation).

Additionally, the 28<sup>th</sup> Meeting of HELCOM amended two HELCOM Recommendations to bring them into line with the new Annex VI (Prevention of Air Pollution from Ships) to the MARPOL 73/78 Convention, which entered into force on 19 May 2005. The HELCOM Recommendations concerned are:

- HELCOM Recommendation 7/7 on recording of fuel oil bunkering operations in the oil record book and documentation for the use of reception facilities;
- HELCOM Recommendation 24/6 on guidelines on bunkering operations and ship to ship cargo transfer of oils, subject to Annex I of MARPOL 73/78, in the Baltic Sea area.

## Press releases

- 08.03.2007 Annual HELCOM Meeting defines the shape of the new Baltic strategy
- 07.03.2007 Baltic Sea region air temperature likely to increase by 3°C to 5°C this century
- 06.03.2007 Stakeholder Conference backs HELCOM blueprint for action in the Baltic

- 05.03.2007 Annual HELCOM Meeting to consider proposed actions for the Baltic Sea Action Plan
- 05.03.2007 Media Advisory: HELCOM Executive Secretary to hold media availability
- 01.03.2007 International Conference to review draft HELCOM strategy to restore Baltic marine environment
- 01.03.2007 Media Advisory: 2nd Stakeholder Conference on the HELCOM Baltic Sea Action Plan
- 27.02.2007 Nutrient pollution from ships remains small but not negligible
- 06.02.2007 HELCOM Task Force to detail actions for the new Baltic Sea strategy
- 26.01.2007 HELCOM to unveil draft Baltic Sea Action Plan at March Conference
- 26.01.2007 Call for participants: 2nd Stakeholder Conference on the Baltic Sea Action Plan
- 19.12.2006 HELCOM to adopt the Baltic Sea Action Plan at a Ministerial Meeting in Krakow
- 14.12.2006 Statement by the Minister of the Environment of Poland at the 20th Meeting of the Heads of Delegation to HELCOM
- 12.12.2006 HELCOM set to approve an initial outline of the Baltic Sea Action Plan
- 01.12.2006 HELCOM Task Force to discuss actions, quota system, and funding mechanisms for the Baltic Sea Action Plan
- 30.11.2006 HELCOM achieves a 50% decrease in illegal oil discharges in the Baltic
- 07.11.2006 Speech by HELCOM's Chairman at a diplomatic working lunch, 6 November 2006
- 06.11.2006 HELCOM Chairman briefs the Ambassadors of the Baltic Sea countries on the preparation of the Baltic Sea Action Plan
- 02.11.2006 Sunken Swedish cargo ship leaking oil
- 02.11.2006 Latest issue of HELCOM News released
- 01.11.2006 Swedish cargo ship sinks in storm off Oland Island
- 30.10.2006 HELCOM experts to further elaborate the maritime segment of the Baltic Sea Action Plan
- 24.10.2006 International Task Force to consider an initial list of actions for the Sea Action Plan
- 11.10.2006 Catches of chemical munitions in the Baltic remain low

- 10.10.2006 HELCOM launches new comprehensive assessment of the Baltic Sea
- 10.10.2006 HELCOM's Chairman and Russia's Minister of Natural Resources discuss the preparation of the Baltic Sea Action Plan
- 28.09.2006 HELCOM report reveals significant increase in shipping accidents in the Baltic
- 12.09.2006 HELCOM experts to determine a set of priority marine pollution response activities to be included into the Baltic Sea Action Plan
- 08.09.2006 HELCOM fleet drills response actions in a simulated massive oil spill accident off Gdynia
- 08.09.2006 Finnish Navy team wins HELCOM Trophy
- 04.09.2006 Poland's Maritime Search and Rescue Service to host a media tour of the HELCOM BALEX DELTA exercise area
- 28.08.2006 HELCOM to test its fleet readiness to respond to oil spills
- 14.08.2006 Third HELCOM Youth Forum: inspiring the next generation of environmental leaders in the Baltic
- 08.08.2006 HELCOM publishes mariners' routing guide for the Baltic Sea
- 03.08.2006 HELCOM releases latest statistics on ship traffic in the Baltic Sea
- 29.06.2006 Poland takes over the chairmanship of the Helsinki Commission on 1 July
- 27.06.2006 Less intense algal blooms likely this summer in the northern Baltic Sea
- 22.06.2006 HELCOM announces the elimination of several major pollution Hot Spots in the Baltic Sea region
- 21.06.2006 Lithuania concludes chairmanship of HELCOM
- 19.06.2006 HELCOM releases Annual Report on 2005 activities
- 15.06.2006 Development of the Baltic Sea Action Plan and recovery of major pollution Hot Spots in the region to top the agenda of the HELCOM Meeting in Vilnius
- 12.06.2006 HELCOM Youth Forum 2006 - Call for applications
- 17.05.2006 HELCOM releases new report on phytoplankton in the Baltic Sea
- 16.05.2006 International conference to introduce climate change scenarios in the Baltic Sea region
- 15.05.2006 HELCOM LAND experts to review recovery progress at several major pollution Hot Spots in the Baltic Sea area
- 15.05.2006 HELCOM HABITAT Meeting to focus on strengthening the network of marine protected areas
- 09.05.2006 HELCOM Executive Secretary meets with EU Environment Commissioner
- 27.04.2006 Latest study indicates that achieving the Gothenburg Protocol and the EU NEC Directive 2010 emission targets will not decrease nitrogen deposition to the Baltic
- 25.04.2006 HELCOM Task Force begins drafting a proposal for the Baltic Sea Action Plan
- 20.04.2006 Notice of change of the HELCOM Secretariat telephone numbers
- 12.04.2006 Baltic Sea Action Plan Stakeholder Conference materials released
- 24.03.2006 Call for participation: First International Conference on the Assessment of Climate Change for the Baltic Sea Basin 22 - 23 May 2006, Gothenburg, Sweden
- 24.03.2006 HELCOM Youth Forum 2006 first announcement
- 20.03.2006 HELCOM to present its Baltic Sea Action Plan at the Baltic Sea Day in St. Petersburg
- 17.03.2006 New HELCOM book explores the variety of marine life in the Baltic Sea

## Newsletters

### HELCOM NEWS 1-2/2006



## Publications

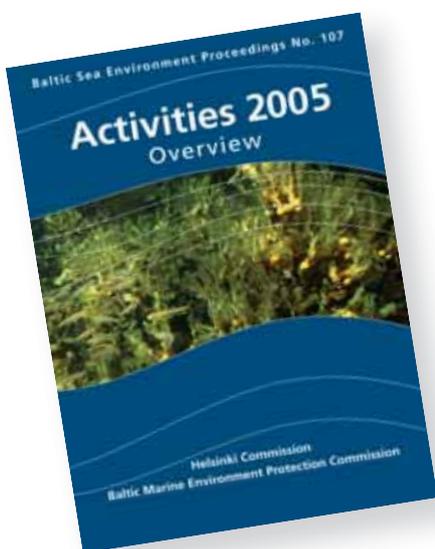
The following list includes HELCOM publications released since the 27<sup>th</sup> annual Meeting of the Helsinki Commission in March 2006.

A complete list of HELCOM publications is available at: <http://www.helcom.fi/publications>, where these publications can also be viewed. To order printed copies, please call the HELCOM Secretariat: +358 (0)207 412 649 or send an e-mail to [info@helcom.fi](mailto:info@helcom.fi).

### Baltic Sea Environment Proceedings (BSEP)

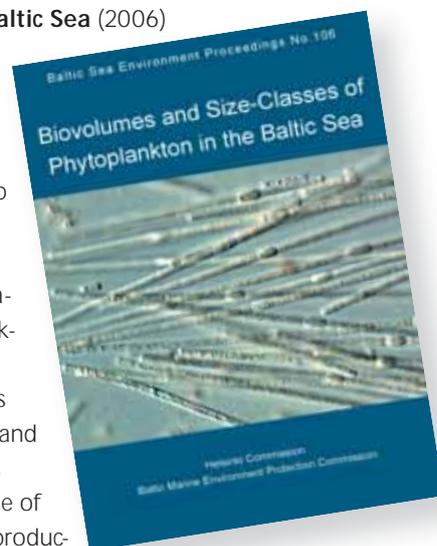
#### No. 107 **Activities 2005 Overview** (2006)

This report summarises the activities of the Helsinki Commission related to the protection of the Baltic Sea marine environment over the period from March 2005 to March 2006, also reviewing these activities together with current trends related to the main environmental issues.



#### No. 106 **Biovolumes and Size-Classes of Phytoplankton in the Baltic Sea** (2006)

The use of a standardised species list with fixed size-classes and biovolumes contained in this report will greatly help to improve the quality of phytoplankton counting methods and the comparability of results. Phytoplankton is a basic component of aquatic ecosystems. It is impossible to understand and model aquatic ecosystems without a good knowledge of the species composition, productivity and biomass of phytoplankton communities. The report is available only in an electronic form via the HELCOM website: <http://www.helcom.fi/stc/files/Publications/Proceedings/bsep106.pdf>.



#### No. 104 **Development of tools for assessment of eutrophication in the Baltic Sea** (2006)

This report is the result of the HELCOM Pilot Project "Development of tools for a thematic eutrophication assessment (HELCOM EUTRO)". One of the priority goals set by HELCOM is to reduce eutrophication in the Baltic Sea. This requires achieving consensus on assessment procedures, as well as a subsequent linking of effects with activities taking place in the drainage basin. The Pilot Project was established to develop assessment tools for a Baltic Sea-wide harmonization of eutrophication assessment criteria and procedures, including the establishment of reference conditions for different parts of the Baltic Sea.



## Other publications



### Estimation of atmospheric nitrogen deposition to the Baltic Sea in 2010 based on agreed emission ceilings under the EU NEC Directive and the Gothenburg Protocol -Complete Report (2006)

A study recently released by HELCOM shows that achieving the nitrogen emission targets set for 2010 by the Gothenburg Protocol to the UN/ECE Convention on Long-range Transboundary Air Pollution (CLRTAP) and the EU Directive on National Emission Ceilings for Certain Atmospheric Pollutants (NEC) may not be enough to reduce airborne nitrogen deposition to the Baltic Sea. The Gothenburg Protocol and EU NEC Directive are currently the two most important instruments for limiting emissions in Europe. Atmospheric nitrogen deposition is one of the main contributors to the high nutrient concentrations that stimulate massive algae blooms in the Baltic. One of the deposition scenarios modelled for HELCOM by EMEP (the Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe) clearly indicates that atmospheric nitrogen deposition into the Baltic Sea will be higher in 2010 than in 2003, even if the emission targets in the Protocol and the Directive are achieved. Total nitrogen deposition will amount to 223.1 kilotonnes in 2010 compared to 217.4 kilotonnes in 2003. The report is available only in an electronic form via the HELCOM website: <http://www.helcom.fi/stc/files/Publications/OtherPublications/2010NitrogenDeposition.pdf>.



### Estimation of atmospheric nitrogen deposition to the Baltic Sea in 2010 based on agreed emission ceilings under the EU NEC Directive and the Gothenburg Protocol -Executive Summary (2006)

The Executive Summary is available only in an electronic form via the HELCOM website: <http://www.helcom.fi/stc/files/Publications/OtherPublications/2010NdepExecSumm.pdf>.

### Baltic Sea Action Plan kick-off Stakeholder Conference materials (2006)



This comprehensive set of materials related to the kick-off Stakeholder Conference on the development of the HELCOM Baltic Sea Action Plan, held on 7 March 2006 in Helsinki, Finland, includes: a general presentation of the aims and timing of the Baltic Sea Action Plan; an introduction to the state of the marine environment; draft HELCOM thematic assessment reports; various presentations and comments from the four thematic sessions on the proposed objectives for the main environmental issues; and presentations by high-level politicians. The materials are available via the HELCOM website: [http://www.helcom.fi/BSAP/kickoff/en\\_GB/kick\\_off/](http://www.helcom.fi/BSAP/kickoff/en_GB/kick_off/).

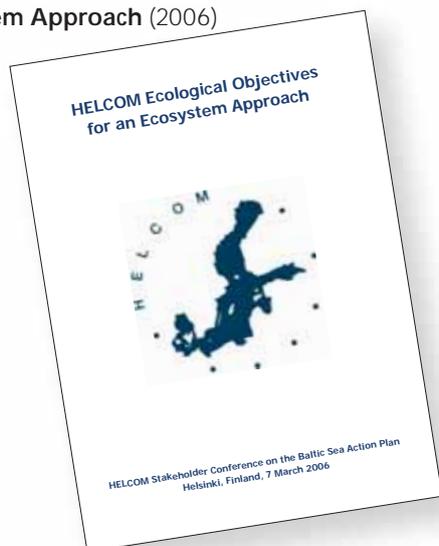
### Baltic Sea Action Plan 2<sup>nd</sup> Stakeholder Conference materials (2007)



This set of materials was released following the 2<sup>nd</sup> Stakeholder Conference on the Baltic Sea Action Plan, held on 6 March 2007, where HELCOM unveiled the initial draft outline of the new strategy. It includes the conference outcome document as well as presentations from the four thematic sessions on the proposed actions, targets and objectives for the main environmental issues and the session on the economic analysis of the implementation of the action plan. The package also includes four thematic reports containing concise draft overviews of the status of eutrophication,

pollution by hazardous substances, biodiversity and nature conservation, and maritime safety, as well as possible actions for the four segments of the plan. The materials are available via the HELCOM website: [http://www.helcom.fi/BSAP/2nd/en\\_GB/2nd\\_Stakeholder\\_Outcome/](http://www.helcom.fi/BSAP/2nd/en_GB/2nd_Stakeholder_Outcome/).

### HELCOM Ecological Objectives for an Ecosystem Approach (2006)



The aim of this online publication is to describe the emerging HELCOM Baltic Sea assessment system based on the Ecological Objectives presently merged into the HELCOM Baltic Sea Action Plan. The results are an example of a way to begin implementing the ecosystem approach and defining ecosystem health in a regional sea. The relationship of this drafted HELCOM assessment system to similar concepts in other international initiatives such as Convention of Biological Diversity (CBD, 1992), European legislation (WFD as well as the emerging EMS) will be discussed. This material is available via the HELCOM website: <http://helcom.navigo.fi/stc/files/BSAP/FINAL%20ecological%20Objectives.pdf>.

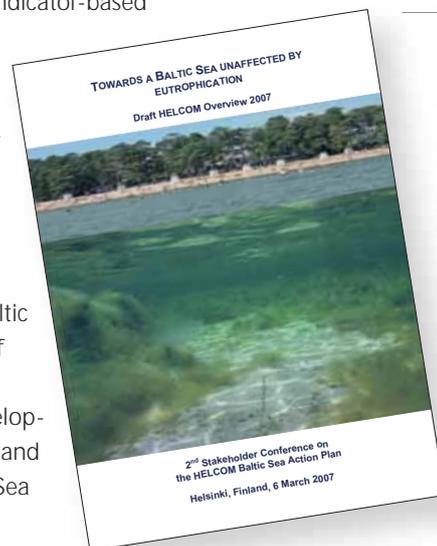
### Towards a Baltic Sea unaffected by eutrophication (Draft HELCOM Overview 2007)

This report, which was submitted as background information material for the 2nd Stakeholder Conference on the HELCOM Baltic Sea Action Plan in March 2007, contains a concise draft overview of the status of eutrophication in the Baltic Sea.

The aim of the Overview is not to be a comprehensive assessment of eutrophication but rather to

make a first attempt to outline an indicator-based assessment by

- showing how ecological objectives can be used as basic assessment tools for evaluating whether the Baltic Sea has reached a good status with respect to eutrophication;
- presenting a set of scenarios for reducing nutrient inputs to the Baltic Sea and their consequent results if implemented; and
- stimulating discussion on the development of actions as well as targets and indicators for the HELCOM Baltic Sea Action Plan.



This report is available via the HELCOM website: [http://www.helcom.fi/stc/files/BSAP/Eutrophication\\_draft%20overview%202007.pdf](http://www.helcom.fi/stc/files/BSAP/Eutrophication_draft%20overview%202007.pdf).

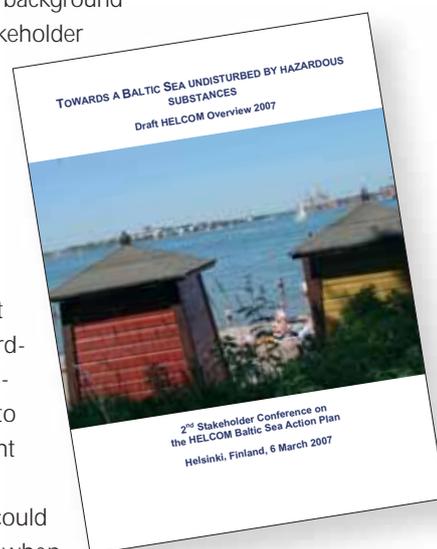
### Towards a Baltic Sea undisturbed by hazardous substances (Draft HELCOM Overview 2007)

This report, which was submitted as background information material for the 2nd Stakeholder Conference on the HELCOM Baltic Sea Action Plan in March 2007, contains a concise draft overview of the status of pollution by hazardous substances in the Baltic Sea.

The aim of the Overview is not to provide a comprehensive assessment of the extent of the impacts of hazardous substances on Baltic marine environment, but rather, a first attempt to outline an indicator-based assessment that:

- shows how ecological objectives could be used as basic assessment tools when assessing the degree to which the Baltic Sea ecosystem is affected by hazardous substances; and
- stimulates discussion on the development of actions, targets and indicators in the HELCOM Baltic Sea Action Plan (BSAP).

This report is available via the HELCOM website: [http://www.helcom.fi/stc/files/BSAP/Hazardous%20substances\\_draft%20overview%202007-2.pdf](http://www.helcom.fi/stc/files/BSAP/Hazardous%20substances_draft%20overview%202007-2.pdf).



### Towards favourable status of Baltic Sea biodiversity (Draft HELCOM Overview 2007)

This report, which was submitted as background information material for the 2<sup>nd</sup> Stakeholder Conference on the HELCOM Baltic Sea Action Plan in March 2007, contains a concise draft overview of the status of biodiversity and nature conservation in the Baltic Sea.

The aim of the Overview is not to be a comprehensive assessment of biodiversity and nature protection, but to make a first attempt to outline an indicator-based biodiversity assessment:

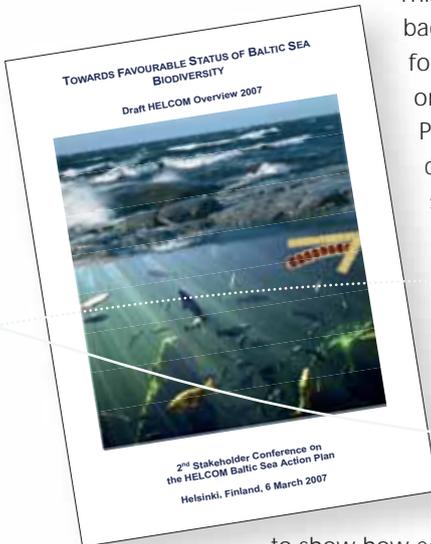
- to show how ecological objectives could be used as basic assessment tools when assessing the favourable status of land and seascapes, communities and species; and
- to stimulate discussion on actions as well as the development of targets and indicators in the HELCOM Baltic Sea Action Plan.

This report is available via the HELCOM website:  
[http://www.helcom.fi/stc/files/BSAP/Biodiversity\\_draft%20overview%202007-2.pdf](http://www.helcom.fi/stc/files/BSAP/Biodiversity_draft%20overview%202007-2.pdf).

### Towards a Baltic Sea with environmentally friendly maritime activities (Draft HELCOM Overview 2007)

This report, which was submitted as background information material for the 2<sup>nd</sup> Stakeholder Conference on the HELCOM Baltic Sea Action Plan in March 2007, provides a concise draft overview of actions which have been taken so far in six HELCOM priority areas addressing maritime activities (management objectives), as well as concrete proposals for further measures that could be taken by the HELCOM Contracting Parties to ensure the good performance of shipping and other uses of the Baltic Sea.

This report is available via the HELCOM website: [http://www.helcom.fi/stc/files/BSAP/Maritime%20activities\\_draft%20overview%202007-2.pdf](http://www.helcom.fi/stc/files/BSAP/Maritime%20activities_draft%20overview%202007-2.pdf).







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