

Joint Final Report on the Audit of Environmental Monitoring and Fisheries Management and Control in the Baltic Sea



CO-ORDINATED/PARALLEL AUDIT

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Summary

In 2008 the Supreme Audit Institutions of Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, and Sweden conducted an audit of environmental monitoring and fisheries management and control in the Baltic Sea.

The audit was divided into two parts: Germany, Latvia, Poland, and Denmark participated in the first part which is about environmental monitoring in the Baltic Sea. Estonia, Finland, Lithuania, Russia, Sweden, and Denmark participated in the second part about fisheries management and control in the Baltic Sea.

The overall objective of the first part was to assess whether the signatory states of the Helsinki Convention are complying with the standards of the Cooperative Monitoring in the Baltic Marine Environment (COMBINE) and how the Baltic Sea Action Plan (BSAP) will affect national monitoring.

The overall objective of the second part was to conduct a review of fisheries management and control in the Baltic Sea.

THE OVERALL CONCLUSIONS AND RECOMMENDATIONS

The review of environmental monitoring in the Baltic Sea (first part of the report) has shown that:

- In their national monitoring programmes, the participating countries have paid due regard to the requirements set by the COMBINE programme, thus implementing the Helsinki Commission (HELCOM) recommendation no. 19/3.
- The COMBINE measuring network is not based on scientific research. As a result, the number and distribution of the COMBINE measuring stations vary considerably among the HELCOM states. There is a serious risk that measuring stations which are important for the Baltic Sea ecosystem as a whole will not be monitored adequately.
- The agreements on the timely communication of data to the International Council for the Exploration of the Sea (ICES) are fulfilled only in part. The data held at ICES, especially on the biological parameters and on dangerous substances, are incomplete.

The participating countries should ensure that the agreed reports and data are provided in the stipulated data format and on time.

- Regular reviews of the accreditation of laboratories by independent bodies, serve to check compliance with the quality standards which are important for monitoring. The current requirements contained in the COMBINE manual do not ensure compliance.

In order to ensure that monitoring meets uniform standards of quality assurance, the participating countries should agree that all laboratories involved in monitoring must be accredited according to ISO 17025.

- The audited countries carry out intercomparison exercises concerning chemical analysis to an adequate extent. Intercomparison exercises in biological monitoring are only carried out in isolated cases, for instance with respect to biological effects.
- The COMBINE programme is limited to monitoring eutrophication and contaminants of the Baltic Sea. The ecosystem approach of the Baltic Sea Action Plan will lead to additional requirements to biodiversity monitoring. Therefore it will be necessary to enhance the monitoring of ecological status indicators. This approach will overlap with other international monitoring obligations also calling for biological monitoring.

The participating countries should review the COMBINE programme. Following the lines of the national status reports on monitoring, it should be considered to produce an overall status report describing all monitoring activities and obligations and looking for interfaces for the entire Baltic Sea. Furthermore, a scientific analysis should be conducted to determine which parameters should be monitored at which intervals and on which locations.

The review of fisheries management and control in the Baltic Sea (second part of the report) has shown that:

- All the involved countries operate with elements of risk assessment (e.g. unregistered landings) and performance indicators and measurements of effect of fisheries control. They all have legal frameworks governing the fisheries control bodies and requirements for sanctions in case of infringement of the legal regulation of fisheries in the Baltic Sea. A major obstacle for the fisheries control is a lack of effective fisheries monitoring systems supporting a risk based fisheries control.

Considering the need to establish a more effective fisheries control in the Baltic Sea, it is crucial to implement more risk based control strategies and measuring of the use of fisheries control resources. Consistent and reliable data and performance indicators are essential and a prerequisite for effective fisheries control and evaluation of the effect of fisheries control strategies.

- Catches are entered in logbooks and the fisheries control data are being cross-checked to some extent, e.g. catch registrations are checked against sales notes. Often the cross-checking of fisheries control data is not done systematically and is not being effectively supported by electronic fisheries information systems.

It is important to focus on development and implementation of electronic logbooks and support of cross-checking of fisheries control data by well functioning electronic fisheries information systems.

- There are major differences between the countries within for instance expertise, training and control strategy.

It is important that the Baltic Sea countries continue to work closely together, share knowledge, and build on and further develop the positive experiences gained within fisheries surveillance and control activities.

- The EU Member States regulate quotas and lay down structural policies in compliance with EU regulations. There are significant differences between the national quota regulations and structural policies. Strategies for sustainable and multipurpose use of fish resources are developed, supported and controlled by national fisheries policies and the European Union's Common Fisheries Policy (CFP).

In order to establish a sensible and effective co-operation in the area of fisheries and conservation of fisheries stocks in the Baltic Sea, it is essential that the Russian Federation and the EU sign an agreement on co-operation in the area of fisheries and conservation of living marine resources in the Baltic Sea.

- The countries perform scientific investigations of sustainable fisheries stocks and provide this information to ICES.

It is crucial for effective fisheries control and sustainable fisheries policy in the Baltic Sea that data are reliable and valid.

I. Introduction and background information

1. In 2008 the Supreme Audit Institutions of Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, and Sweden conducted an audit of environmental monitoring and fisheries management and control in the Baltic Sea. The Supreme Audit Institutions in Estonia, Finland, Lithuania, Russia, and Sweden did not participate in the audit of the environmental monitoring in the Baltic Sea. The Supreme Audit Institutions of Latvia, Poland and Germany did not participate in the audit of fisheries management and control in the Baltic Sea. The audit was performed as a performance and compliance audit and covered the period 2005-2007.

2. The audit was divided into two parts: The first part was about environmental monitoring in the Baltic Sea and the second part was about fisheries management and control in the Baltic Sea.

3. The overall objective of the first part was to assess whether the signatory states of the Helsinki Convention are complying with the standards of the Cooperative Monitoring in the Baltic Marine Environment (COMBINE) and how the Baltic Sea Action Plan (BSAP) will affect national monitoring.

4. The overall objective of the second part was to conduct a review of fisheries management and control in the Baltic Sea.

5. The first and the second part of the audit share the following overall objective: How have the monitoring and fisheries control authorities contributed to preserve the marine environment and protect the fish stock in the Baltic Sea?

6. The relevant national legislation in the EU Member States is supposed to be within the frame set by the EU. However, the monitoring and fisheries management and control strategies may differ significantly among the individual countries, and comparative analyses may provide an overview of what is considered good practice. Furthermore, Russian fisheries legislation is, naturally, not adjusted to the EU-regulations.

The Russian Federation's national fishery legislation takes into consideration the requirements and provisions of nine international conventions and agreements related to fishery issues in the Baltic Sea. Moreover, Russia still adheres to the recommendations of the International Baltic Sea Fisheries Commission (IBSFC) in spite of the fact that it was dissolved in 2004.

7. The audit was planned and conducted as a parallel audit. A parallel audit means that the participating audit institutions audit the same audit objectives in their respective countries and identify relevant audit criteria and audit methods together. However, it is up to the individual supreme audit institution to decide how to conduct the audit and which audit criteria and audit methods to apply in the audit. The Joint Final Report is prepared on the basis of the data provided by the participating supreme audit institutions. Some of the

supreme audit institutions have also prepared national audit reports which include more analyses and details.

The National Audit Office of Denmark has co-ordinated the parallel audit. The National Audit Office of Denmark and the German Federal Court of Audit have compiled the Joint Final Report, but data and audit findings have been provided and validated by the participating supreme audit institutions.

The national reports have been forwarded to the national authorities and to the parliaments, and the Joint Final Report has been forwarded for information to the Helsinki Commission, ICES, the European Commission, the European Court of Auditors and the national fisheries authorities.

In 2000, the Supreme Audit Institutions of Denmark, Estonia, Finland, Latvia, Lithuania, Poland, Russia, and Sweden conducted a parallel audit of implementation of article 6 of the Helsinki Convention concerning pollution from land-based sources.

In 2004, the Supreme Audit Institutions of Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, and Russia conducted a parallel audit of pollution from ships in the Baltic Sea.

Thus, this parallel audit is the third parallel environmental audit concerning the Baltic Sea and the requirements of the Helsinki Convention.

8. International co-operation in the marine environmental area is well developed and anchored in several bilateral and multilateral agreements. As a rule, the provisions of the Helsinki Convention are in compliance with the regulations issued by the International Maritime Organisation (IMO), although the recommendations of the Helsinki Convention are often more strict.

The main objective of the Helsinki Convention is to ensure the protection of the Baltic Sea against pollution. It comprises all states bordering the Baltic Sea. The Helsinki Convention was drawn up in 1974 and revised in 1992. All countries bordering the Baltic Sea have acceded to the Convention, which cover the Baltic Sea, the Sound, the Belts and part of Skagerrak.

The Helsinki Convention consists of 38 articles and 7 annexes. In addition, the states have agreed on more than 100 recommendations functioning as guidelines to the Helsinki Convention. The objectives of the Helsinki Convention are pursued on the basis of joint decisions and agreements, joint declarations, recommendations, and broad co-operation in the area of environmental protection. To become legally valid, the recommendations have to be implemented by the contracting states in national legislation. However, the contracting states decide individually how and to which extent the recommendations are transposed into their respective national legislation, and therefore uniform and binding provisions covering several nations are an exception. HELCOM (the Helsinki Commission, the Baltic Marine Environmental Protection Commission) has no legal means of enforcing the implementation of its recommendations upon the contracting states. Unlike the HELCOM recommendations, the EU directives are legally binding and may lead to EU sanctions if the Member States do not transpose them into national law on a timely basis and in conformity with European community law. The EU plays an increasingly greater role in the protection of the marine environment.

Every three to five years, HELCOM conducts an assessment of the Member States' implementation of the Helsinki Convention provisions. In reality, however, it is a self-assessment carried out by the national authorities in the individual Member States.

9. The legislation relevant for this parallel audit is

- Directive 2000/60/EC from 23 October 2000 establishing a framework for community action in the field of water policy
- Directive 2008/56/EC from 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)
- International fisheries law; LOSC from 1982 (especially sections V and XII) and the Straddling Fish Stocks Agreement from 1995
- EU legislation regarding the common fisheries policy (CFP), such as council regulations no. EC 2371/2002 (from 20 December 2002) and no. EC 861/2006 (from 22 May 2006)
- National fisheries legislation
- The Helsinki Convention from 1974.

10. At national level, responsibility for the marine environment of the Baltic Sea is often divided between local authorities, regional authorities and central and/or federal government. Therefore, the protection of the Baltic Sea marine environment involves many authorities and it is important to define the individual authorities' tasks and responsibilities.

11. In global terms, the Baltic Sea is a small sea, but as one of the world's largest bodies of brackish water it is ecologically unique. Due to its special geographical, climatological and oceanographic characteristics, the Baltic Sea is highly sensitive to the environmental impact of human activity.

The Baltic Sea is connected to the world's oceans only by narrow and shallow waters of the Sound and the Great Belt. This limits the exchange of Baltic water with well aerated and rich in salt waters of the North Sea. The water exchange process is irregular and dependent on meteorological conditions. In the past years, water inflows from the North Sea into the Baltic Sea occurred – on an average – every 11 years. It is estimated that full exchange of the Baltic Sea waters takes place over a period of 25-30 years.

II. Environmental monitoring in the Baltic Sea

A. Background information on monitoring

12. The Helsinki Convention provides for various programmes designed to monitor the environmental condition of the Baltic Sea according to uniform criteria. Apart from emissions of various pollutants, the three components: water, sediment and biota of the Baltic Sea shall be continually analysed at different measuring stations covering in particular the following parameters:

- Physical parameters such as temperature or marine water transparency
- Chemical parameters such as salt content, oxygen content or metal traces
- Biological parameters such as plankton or benthos.

The data collected are evaluated and incorporated into reports on the environmental marine condition. This approach ensures that the success of the environmental protection steps taken can be assessed and that other steps can be taken, if needed. As a result, monitoring has a major environmental steering and oversight function.

13. This audit looks at the COMBINE Programme which is designed to monitor eutrophication and hazardous substances (contaminants) and their effect on the Baltic Sea. For this purpose, the COMBINE manual¹⁾ imposes requirements on the parameters used for analysis, measuring stations and measuring intervals, notification and reporting duties, analysing methods as well as quality assurance. Under the HELCOM recommendation no. 19/3²⁾, the participating countries shall:

- Carry out marine monitoring according to the requirements set in the COMBINE manual
- Also comply with the requirements of the manual in analysing coastal waters
- Submit the monitoring data by the deadlines fixed in the manual
- Supplement the monitoring data with national data reports and other information on monitoring and quality assurance.

B. National monitoring practices and procedures

Implementation of HELCOM monitoring recommendation no. 19/3 into national legislation or into a national monitoring strategy




14. All participating countries have put into place national monitoring programmes serving the implementation of the different international monitoring requirements. Such programmes also include the COMBINE manual requirements and provide details on the scope and the frequency of testing. In addition, some countries include in their programmes, details on the quality assurance performed in the course of analysing and assessing the samples taken. As a basis for their programmes, certain participating countries have prepared

¹⁾ HELCOM, Manual for Marine Monitoring in the COMBINE Programme of HELCOM as of October 2006.

²⁾ HELCOM Recommendation no. 19/3 of 26 March 1998, The manual for the monitoring in the COMBINE programme of HELCOM.

reports on the marine situation stating all international monitoring, quality assurance and reporting duties and mentioning the national bodies responsible (for instance Denmark in 2001 and Germany in 2008).

Table 1. Implementation of HELCOM recommendation no. 19/3

	Denmark	Germany	Latvia	Poland ³⁾
Implementation into national monitoring strategy				
Smiling man: The provisions are implemented. Not very pleased man: The provisions are partly implemented. Displeased man: The provisions are not implemented.				

15. So far, the participating countries have not transposed HELCOM recommendation no. 19/3 into their national legislation.

Institutions involved in national monitoring

16. In the participating countries, national monitoring is organised in various manners. In **Poland** and **Denmark** a central body is in charge of monitoring. In **Latvia**, the responsibility for implementing the COMBINE manual requirements in the audit period was shared by two government bodies. In **Germany**, it is shared by various bodies at both federal government and coastal federal state level.

In all the participating countries, several institutions are involved in the monitoring of the Baltic Sea environment according to the requirements of the COMBINE manual.

Table 2. Bodies involved in the national monitoring of the Baltic Sea environment according to the requirements of the COMBINE manual

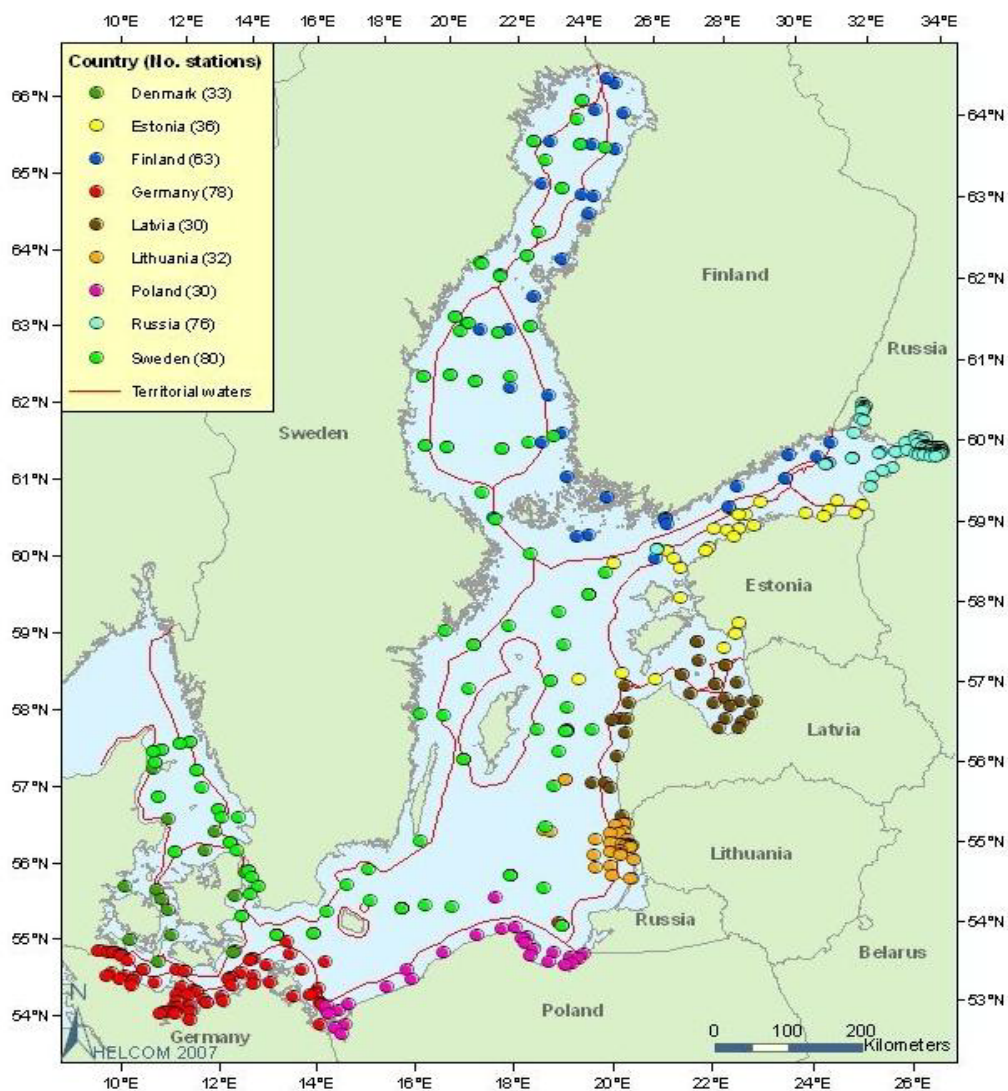
Denmark	<ul style="list-style-type: none"> • Agency for Spatial and Environmental Planning • National Environmental Research Institute
Germany	<ul style="list-style-type: none"> • Authority of the Environment, Nature Protection and Geology, Mecklenburg-Vorpommern • Research Institution for Agriculture, Food Safety and Fishery of the State of Mecklenburg-Vorpommern • Authority for Nature and the Environment of the State of Schleswig-Holstein • Federal Board of Shipping and Hydrography • Leibniz Institute for Research in the Baltic Sea at Rostock Warnemünde University • Johann Heinrich von Thünen Institute • Federal Environmental Office • Environmental sample data base
Latvia	<ul style="list-style-type: none"> • Latvian Institute of Aquatic Ecology • Latvian Environmental, Geological and Meteorological Agency
Poland	<ul style="list-style-type: none"> • The Chief Inspectorate for Environmental Protection • The Institute of Meteorology and Water Management, Maritime Branch in Gdynia • Voivodship Inspectorates for Environmental Protection in Gdansk, Olsztyn and Szczecin

³⁾ According to the Constitution of the Republic of Poland international agreements do not need to be transposed into national legislation – they are applied directly. This also applies to the COMBINE manual and HELCOM recommendations.

Monitoring measuring networks

17. The COMBINE manual provides details on the positioning of the measuring stations serving to measure the physical, chemical and biological parameters in the Baltic Sea. In accordance with this requirement, the network for monitoring eutrophication and contaminants in the Baltic Sea looks as follows:

Figure 1. COMBINE measuring network



Source: www.helcom.fi/groups/monas/COMBINEManual/PartA/en_GB/fig2/

18. The COMBINE measuring network is not based on scientific research stipulating the frequency with which the responsible bodies should analyse the individual parameters to provide reliable information on the development of the marine environment in the entire Baltic Sea. The COMBINE measuring network represents information received by the participating countries via their national networks which is subsequently being communicated to HELCOM. The national measuring networks represent the result of historical developments and reflect national criteria and resources. They are designed to meet various marine monitoring requirements which, in addition to the HELCOM requirements also include the European requirements, under the EC Water Framework Directive (EC WFD), the Fauna, Flora, and Habitats Directive (FFH Directive) and the EC Birds Directive.

National resources (e.g. staff and equipment)

19. With so many different bodies being involved in the process, some countries are not able to quantify the resources applied for monitoring. Others are only able to specify the cost of individual monitoring projects or programmes. An international comparison of the resources applied for monitoring is therefore not possible.

20. All the participating countries stressed the fact that resources applied did not suffice to ensure compliance with the monitoring requirements. As an example, shortage of funding has had the effect that **Latvia** no longer carries out surveys on contaminants as the analyses are too costly and the adequate equipment is missing. In **Denmark**, funding has been cut over the years, which has resulted in a reduction of the number of high-frequency measurement stations and in test frequency. **Germany** has discontinued testing at measurement stations at the Gotland Basin because these are outside its remit.

Conclusion

21. In their national monitoring programmes, the participating countries have paid due regard to the requirements of the COMBINE programme, and implemented HELCOM recommendation no. 19/3. For this reason, a transposition into national law is not absolutely necessary.

22. The COMBINE measuring network is not based on scientific research stipulating the frequency with which the responsible bodies should analyse the individual parameters to provide reliable information on the development of the marine environment in the Baltic Sea. The COMBINE measuring network represents the information received by the participating countries via their national networks which is subsequently being communicated to HELCOM. As a result, the number and geographical distribution of the COMBINE measuring stations vary considerably among the HELCOM states.

C. Reporting to ICES and the Helsinki Commission**Compliance with reporting deadlines and completeness of data**

23. Under section A.5 of the COMBINE manual, the participating countries must report to ICES, in a stipulated data format, and in compliance with fixed deadlines of submission, i.e. hydrographic and hydro chemical data must be submitted by 1 May every year and data on biological parameters and contaminants by 1 September every year:

Table 3. Compliance with reporting deadlines

Reporting year	Denmark	Germany	Latvia	Poland
2005	☹️	☹️	☹️	☹️
2006	☹️	☹️	☹️	☹️
2007	☹️	☹️	☹️	☹️
Smiling man: The provisions are implemented. Not very pleased man: The provisions are partly implemented. Displeased man: The provisions are not implemented.				

None of the participating countries have reported the data required for the years 2005-2007 to ICES on time. The participating countries submitted the hydrographical and hydro chemical data up to several months after the deadline. ICES has not yet received complete information about the biological parameters and the contaminants.

ICES has not received the data on biological parameters for the years 2005-2007 from **Denmark**. The data have been collected by the national institutions and are available in the national database. However, the format is not compatible with the ICES data format

and therefore cannot be transmitted. Denmark, ICES and HELCOM have discussed the problem, but there is no prospect of a solution in the foreseeable future.

Germany reports all data once a year, and thereby deviates from the requirements of the COMBINE manual. Moreover, the data on biological parameters communicated for the year 2005 are incomplete, as the samples taken by a particular national body have not yet been analysed.

Latvia still has not submitted the data on contaminants for the years 2006-2007⁴⁾. In 2005, the responsible bodies did not collect these data.

Poland has submitted data for biological parameters and contaminants only for 2005. Data available for 2006 and 2007 are not compatible with the ICES data format. The data modules in the required ICES format are currently being developed.

Completeness of reports













24. Section A.5 of the COMBINE manual also stipulates the format for communication of data to ICES or HELCOM. The submission of measuring data to ICES should be supplemented by a report, addressing the activities pursued (for example: measuring stations, comments on test results), special events and the environmental situation of the region under review.

Box 1 Structure of the report to the ICES

- I Data identification in the reporting format
 - type of samples
 - sample identification.
- II Results
 - 1. Compliance with the programme
 - 2. Internal Quality Assurance information
 - methods (possible deviations from the manual)
 - detection limits
 - equipment
 - conditions during sampling and analysis.
 - 3. External Quality Assurance information
 - certified reference material used (mean values)
 - participation in ring tests
 - participation in taxonomic workshops.
- III Activity report
 - stations
 - variables
 - basic statistics on data aggregated by sub-region, season and variable/species with full scientific name (mean, range and number of samples, for phytoplankton range of cell volumes)
 - comments on concentrations/values found.
- IV Information about adjustments of the data submitted in previous years
- V Description of exceptional natural conditions, possible events, etc. in the sub-regions
- VI Short description of the environmental condition of the sub-regions

⁴⁾ The audit was finished before the reporting deadline for 2007 data, i.e., 1 September 2008.

Table 4. Completeness of the reports

Reporting year	Denmark	Germany	Latvia	Poland
2005				
2006				
2007				
Smiling man: The provisions are implemented. Not very pleased man: The provisions are partly implemented. Displeased man: The provisions are not implemented.				

The participating countries **Denmark**, **Germany** and **Latvia** merely communicated the data to ICES in the stipulated format. They did not provide the additional information required, for instance those referred to in section A.5, items V and VI of the COMBINE manual (see box 1) for the years 2005-2007. Thus the reporting of these three countries does not comply with the jointly agreed HELCOM requirements.

Poland has provided the required report in compliance with the COMBINE manual.

Conclusion

25. The participating countries have only partially managed to observe the deadlines for submission of data to ICES, and only one of the four countries has complied in full with the COMBINE requirements to supplementary reports.

The data hosted at ICES, especially on the biological parameters and hazardous substances, are incomplete. However, some of the missing data are available locally in the audited participating countries. As a result hereof, the data held locally in the participating countries are providing the basis for current overall evaluations of the condition of the Baltic Sea. This procedure is not in line with the objective of the ICES database which was to make all data collected by the Baltic Sea countries available from a single data source.

Therefore the participating countries must ensure that the agreed reports and data are provided in the stipulated data format on time.

D. Information sharing among participating countries

Publication of monitoring data

26. According to section A.6 of the COMBINE manual, the participating countries are to publish the following information on the Internet:

- Cruise plans relevant for the monitoring programmes
- Cruise reports
- Exceptional environmental events
- Other relevant information on the Baltic Sea environment.

The monitoring data of the audited participating countries can be retrieved or requested via the Internet. With the exception of cruise plans of vessels used for monitoring, almost all the data mentioned above are available. Extraordinary environmental events and other important information about the water quality of the Baltic Sea are published at regular intervals, and the prevailing conditions are described in reports, papers, and booklets which may all be requested via the Internet. These publications cover for instance, analyses of the water catchment area of the Baltic Sea, non-point source pollution via rivers or the air or the concentration of contaminants in the Baltic Sea and in marine species.

Box 2**Publication of data on the Baltic Sea: Case study Germany**

Via www.bsh.de/de/Meeresdaten/Beobachtungen/DOD-datazentrum/index.jsp, enquiries about the data held in the German marine environment database may be addressed to the Federal Maritime and Hydrographic Agency. Data on all measurement results (e.g. values of nitrogen contents, values measured by individual stations or time series on heavy metal pollution) or the cruise reports of the monitoring vessels are provided on request. The German Marine Environmental Database (MUDAB) currently holds data and information on about 5,500 monitoring cruises and 250,000 measuring stations with a total of 13 million data records. Most of these data relate to physical variables, e.g. temperature and salt content, chemical variables, like nutrients, organic, inorganic and radio-chemical components of the sea water as well as physical and chemical variables relating to sediment.

Measurement results in **Poland**, and the description of the ecological situation in the Polish Baltic zone, are published regularly in the "Cruise Report of r/v Baltica" and posted on the web pages of the Institute of Meteorology and Water Management and the Chief Inspectorate for Environmental Protection.

Denmark and **Latvia** do not at present post the cruise plans of monitoring vessels on the Internet. The publication of these plans contributes to an effective implementation of the monitoring requirements. Moreover, it facilitates coordination of time schedules with regard to for instance the performance of series of measurements, as all participating countries have access to the data on the monitoring cruises. Finally, visiting scientists may more easily plan and take part in monitoring cruises when cruise plans are published on the Internet. Also research institutions benefit from the publication, as they may decide to take their measurements while onboard vessels operated by other participating countries.

Reliance on data provided by other members of the Helsinki Commission

27. All the audited participating countries regularly rely on data from other participating countries when drawing up documents, e.g. data on temperature and concentrations of salt, oxygen, nitrogen or contaminants. Especially, in the case of comprehensive descriptions of water conditions, some of the data are retrieved via ICES. When updated or more comprehensive data are needed, the scientists use their contacts under the HELCOM working groups and retrieve the data directly from other Baltic Sea countries, because the data held by ICES are incomplete and reported only once a year.

The German National Audit Office found that the current co-operation established under the auspices of HELCOM is characterised by a spirit of mutual trust which facilitates data collection from the other Baltic Sea countries.

Co-operation on data collection and data sharing

28. Formal co-operation arrangements on collection and exchange of data are organised via HELCOM and ICES as well as other channels. Furthermore, all the audited participating countries also co-operate with the other Baltic Sea countries, EU institutions and research institutions through their involvement in a large number of working groups. For instance, in 1999, institutions from Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Poland, Germany, and Denmark entered a co-operation agreement on the performance of oceanographic work (known as BOOS)⁵⁾. Furthermore, the audited participating countries have concluded co-operation agreements with adjacent Baltic Sea countries.

Other co-operation arrangements, especially those entered with research institutions, are of an informal nature. Due to the co-operation under the auspices of various HELCOM working groups, the representatives of the Baltic Sea countries are acquainted with each other and share data, for instance for reporting and research purposes. Within the framework of contacts at working level, joint data collection exercises or intercomparison exercises are

⁵⁾ Baltic Operational Oceanographic System (BOOS), Memorandum of Understanding of 1999.

carried out (cf. item 33). However, the joint collection of data and co-operation arrangements with universities, research institutions, environmental protection associations and other NGOs are not institutionalised and vary in form.

Box 3
Overview of co-operation partners – Example from Latvia

- KUCORPI – The Coastal Research and Planning Institute of Klaipeda University (Lithuania)
- CMR – Centre of Marine Research (Lithuania)
- EKOI – Institute of Ecology of Vilnius University (Lithuania)
- EMI – Estonian Marine Institute
- Finnish Forest and Park Service (Metsähallitus)
- FIMR – Finnish Institute of Marine Research
- SYKE – Finnish Environment Institute
- HELCOM – Secretariat of Helsinki Commission (Finland)
- University of Helsinki (Finland)
- Umeå University (Sweden)
- Stockholm University (Sweden)
- Linchoping University (Sweden)
- SMHI – Swedish Meteorological and Hydrological Institute
- Swedish Environmental Protection Agency
- WWF – World Wildlife Fund (Sweden)
- NERI – National Environmental Research Institute (Denmark)
- SNS – Danish Forest and Nature Agency
- GEUS – Geological Survey of Denmark and Greenland
- ICES – International Council for the Exploration of the Sea (Denmark)
- WWF – World Wildlife Fund (Germany)
- BSRI – Baltic Sea Research Institute (Germany)
- IMGW – Institute of Meteorology and Water Management (Poland)
- JRC – Joint Research Centre (Italy)
- IFREMER – French Research Institute for Exploration of the Sea

Conclusion

29. Overall, arrangements for sharing information among the participating countries and co-operation arrangements with universities, research institutions, environmental protection organisations and other NGOs are already in place. Still, there is room for improvement within information sharing. For instance, all the Baltic Sea countries should publish the cruise plans for their monitoring vessels and thus make it easier for visiting scientists to participate in monitoring cruises.

E. Quality assurance of data analyses and studies

Review of quality standards

30. According to section B.1.1 of the COMBINE manual, the participating countries must have a structured, independent and documented quality assurance system in place. The system must furthermore be in compliance with the requirements of ISO 17025 which stipulates the accreditation requirements for laboratories within technical competence of test and calibration.

Box 4 Requirements according to ISO 17025

ISO 17025 is designed to facilitate mutual acceptance among countries of testing or calibration results by means of agreements entered between peer bodies in different countries. The introduction of the new quality management systems requires profound changes and modifications in all the activities pursued by the individual laboratory. The following are essential criteria of the quality management system:

- The laboratory must dispose of qualified managerial and technical staff which is familiar with the quality management system.
- A quality management manual must be drawn up for the laboratory.
- If a laboratory is sub-contracting work, the contractor must comply with ISO 17025.
- The laboratory must introduce and maintain procedures for marking, collection and registration of quality and technical records, including for instance, records on internal audits, management evaluations, corrective action and preventive quality assurance measures.
- The laboratories' work must be subjected to adequate internal auditing.
- The laboratory is under an obligation to participate in intercomparison exercises regularly in order to ensure and substantiate the quality of its results.

Table 5. Accreditation according to ISO 17025

Denmark	Germany	Latvia	Poland
			
Smiling man: The provisions are implemented. Not very pleased man: The provisions are partly implemented. Displeased man: The provisions are not implemented.			

In **Denmark** and **Latvia**, all laboratories involved in monitoring are accredited in accordance with ISO 17025.

Poland has a central body for quality assurance – the Polish Centre of Accreditation. But the laboratories performing Baltic Sea monitoring tests do not hold accreditation certificates, or their accreditation does not cover all the parameters tested.


In **Germany**, the accreditation of the laboratories under contract to conduct analyses is only partially in conformity with ISO 17025. There is no other well-structured, independent and documented quality assurance system in place that can meet the requirements of ISO 17025.

The responsible bodies in **Germany** have decided that all laboratories involved in monitoring must be accredited in accordance with ISO 17025 by 2012. So far, 11 percent of the laboratories have been accredited in accordance with ISO 17025 and accreditation of 19 percent of the laboratories has been initiated. In Germany, the accreditation of biological-ecological laboratories is considered a challenging exercise. The laboratories are usually very small and therefore have problems meeting the high-quality standards of ISO 17025.

Regular review of compliance with quality standards

31. The laboratories' compliance with the stipulated quality standards must be reviewed regularly. The ISO 17025 accredited laboratories are subjected to regular review of compliance with the quality standards as an integral part of quality management. If the accredited laboratories do not regularly submit themselves to such reviews, their accreditation may be withdrawn.

Table 6. Regular review of compliance with quality standards

Denmark	Germany	Latvia	Poland
			
Smiling man: The provisions are implemented. Not very pleased man: The provisions are partly implemented. Displeased man: The provisions are not implemented.			

The laboratories in **Denmark** and **Latvia** are all accredited and therefore reviewed regularly for compliance with the quality standards stipulated by ISO 17025. In **Poland**, a regular review of the quality standards takes place independently of accreditation.

In **Germany**, the laboratories accredited according to ISO 17025 are reviewed regularly for compliance with quality standards. For the other laboratories, the regular review is voluntary; a quality assurance body assists with these reviews. Currently, however, owing to cost problems, not all laboratories arrange for their regular review.

Intercomparison exercises

32. According to ISO 17025 or national government accreditation procedures, accredited test laboratories are obliged to participate in intercomparison exercises on a regular basis. Failing to do so may have the consequence that the accreditation is not renewed, because the stipulated quality assurance is unwarranted. According to section B 1.1 of the COMBINE manual, the laboratories involved in HELCOM monitoring must regularly participate in the Baltic Sea countries' intercomparison exercises, especially in the QUASIMEME circle (Quality Assurance of Information in Marine Environmental Monitoring in Europe).

Box 5

Intercomparison exercises in the QUASIMEME circle

An intercomparison exercise (or ring test) is an external quality assurance test of the methods of measurement applied by measurement and test laboratories. Generally, it involves collection of identical samples which are being analysed to determine the precision and/or quality of the measurements performed by the laboratories. The tests are also used to review measuring procedures.

The QUASIMEME circle organises such external quality assurance tests for laboratories that regularly carry out chemical analyses of the marine environment. QUASIMEME intercomparison exercises are carried out regularly, sometimes more than once a year, for hydrochemistry, for organic contaminants (e.g. lindane, polychlorinated biphenyls – PCB – or dichlorodiphenyl-trichlorethane – DDT –), inorganic contaminants (e.g. nitrate, mercury, cadmium or lead) and phytoplankton, especially chlorophyll -a- in the sea water.

All audited participating countries regularly take part in intercomparison exercises under the auspices of QUASIMEME. For purposes of accreditation according to ISO 17025, the laboratories in **Denmark** carry out additional intercomparison exercises. National workshops are arranged every three to five years in the areas of biological effects, phytoplankton, zooplankton and benthos. This is a practise which will be continued in the years ahead.

However, the laboratories in **Germany** and **Poland** also participate voluntarily in additional national and international intercomparison exercises focused on quality assurance.

In **Germany**, so far no intercomparison exercises have been carried out for the biological monitoring of makrophytes, fish and cyclostomes, birds and relevant mammals (common seal, grey seal and harbour porpoise). The quality of the results achieved within biological monitoring should be supported by intercomparison exercises on taxonomy and methodological questions (assurance of uniform quality standards at all participating laboratories). The tests serve to substantiate and compare taxonomic skills, e.g. the ability

to distinguish species e.g. sturgeon, lamprey, twaite shad and river herring, and the level of experience within analysing methods.

Conclusion

33. In order to ensure that monitoring meets uniform standards of quality assurance, the participating countries must agree that all laboratories involved in monitoring must be accredited according to ISO 17025. Regular independent reviews of the accreditation, serve to check compliance with the quality standards of monitoring. This level of quality assurance cannot be ensured by the current wording of the COMBINE manual which also allows a comparable quality assurance system.

With regard to chemical analyses, the audited countries carry out adequate comparison exercises – also under QUASIMEME. On the other hand, the intercomparison exercises within biological monitoring are inadequate. In this field, intercomparison exercises with respect to makrozoobenthos, biological effects and zooplankton are carried out in isolated cases only.

F. Monitoring of eutrophication

Measurement values, measurement stations and measurement frequencies

34. One of the major areas of focus of the COMBINE activities is the monitoring of the extent of eutrophication in the Baltic Sea. In order to record the quantities of anthropogenic nutrient input over time and its impact on the marine environment, the concentration levels of nutrients, oxygen and hydrogen sulphides and water transparency are determined, and the reactions of organisms are also observed. These measurements are supplemented by hydrographical data.

Box 6 Eutrophication

The input of nutrients into the Baltic Sea is a natural process, which is of fundamental importance for life in the marine system. Human activities result in an increased input of nutrients into the Baltic Sea, which may lead to increased plankton growth, and may influence the range of species present in this habitat.

35. Section C.1 of the COMBINE manual sets forth the mandatory parameters (core variables) of measurement and the recommended parameters (main variables) of data collection in various biological compartments – water, sediment, biota. This matrix of variables to be measured must serve as the foundation of the national monitoring eutrophication programmes. The COMBINE manual also mentions various subjects of analysis for supplementary studies.

36. According to section C.2 of the COMBINE manual, the measuring stations are classified in the categories of mapping stations and high frequency stations.

Table 7. Sampling frequency, cf. section C.2 of the COMBINE Manual

	Mapping stations	High frequency stations		
		Cruise stations	Automatic stations	Ship-of-opportunity
Nutrients and hydrography	Measurements are taken several times per year in order to identify seasonal conditions	Where possible, frequency >12 times per year	Measurement intervals varying between a few minutes and several hours For the sink rate of suspended solids intervals ranging from days to weeks	Measurement of temperature and salt content every 200 m every 1-3 days Measurement of nutrients every 1-3 weeks
Plankton		Frequency >12 per year		For chlorophyll-a every 200 m every 1-3 days For phytoplankton about every 10 km every 1-3 weeks
Benthos	Once a year for studies on geographical and long-term changes			

Mapping stations – hydrography and nutrients/makrozoobenthos

37. At year-end 2007, **Denmark**, **Latvia**, **Poland**, and **Germany** operated the number of mapping stations mentioned below.





Table 8. Numbers of mapping stations

	Denmark	Germany	Latvia	Poland
Nutrients and hydrography	32	48		52
Makrozoobenthos	5	33 ⁶⁾		8
Stations (total)	37	74	34	57
Measurements per year	1-6	1-5	1-5	1-7

The number of measurements carried out by the participating countries at the existing stations, largely complied with the requirements of the COMBINE manual.

38. **Poland** and **Germany** measure the entirety of the core variables set forth in section C.1 of the COMBINE manual. **Latvia** meets the requirements except for the measurement of hydrogen sulphide (H₂S). Separate data on nitrates are not collected. However, data on nitrites and the overall nitrogen content are collected. **Denmark** measures all core variables. Hydrogen sulphide is measured by **Denmark** only under special circumstances of oxygen deficiency.

Table 9. Measurement of core variables at mapping stations

Denmark	Germany	Latvia	Poland
			
Smiling man: The provisions are implemented. Not very pleased man: The provisions are partly implemented. Displeased man: The provisions are not implemented.			

⁶⁾ At seven stations, data are collected on hydrography and nutrients.

39. In addition to the mandatory measurement of core parameters, section C.1 of the COMBINE manual recommends the measurement of a number of additional variables (main variables) on makrozoobenthos.

Denmark measures main variables on temperature, salt and oxygen content of the water at five stations several times per year. In addition, hydrogen sulphides are measured together with makrozoobenthos under special circumstances of oxygen deficiency and the weight loss on ignition is measured every five years. The oxygen distribution in the sediment is determined at irregular intervals.

Latvia monitors the composition by species, the quantity and the biomass of the makrozoobenthos.

In connection with makrozoobenthos, **Germany** determines the production rate, the sink rate of suspended matter and vertical profiles of chlorophyll-a.

Poland collects data on taxonomic structure and on the number of organisms contained in the makrozoobenthos on wet and dry matter.

High frequency stations (cruise stations/ship-of-opportunity sampling/automatic fixed stations)

40. In addition to the measurements performed by the mapping stations, the participating countries are to gather data at stations with high frequency (cruise stations), install automatic fixed stations where possible and implement measurement systems on board ships travelling on regular routes (ship-of-opportunity sampling).

Table 10. Number of high frequency stations

	Denmark	Germany	Latvia	Poland
Cruise stations	30	39	21 (2004/2005) 6 (2006) 8 (2007)	1
Automatic fixed stations	2	5	-	-
Ship-of-opportunity sampling	-	-	-	1

With the exception of **Poland**, the participating countries have not used automatic measurement systems installed on ships.



Poland has operated an automatic measurement system on a Stena Nordic ferry on the Stena-Line since April 2007. The system continuously supplies data on chlorophyll-a, water temperature, salt concentration, oxygen content and saturation of the surface water. In addition, water samples are taken in certain areas in order to determine biogenic compositions and phytoplankton.

41. The measurement intervals of the installed high frequency stations in **Germany**, **Denmark** and **Poland** meet the requirements of the COMBINE manual.

Latvia has implemented the measurement frequency called for in the COMBINE manual in the Gulf of Riga in the years 2004 and 2007. In 2005 and 2006, the number of measurements carried out did not meet the requirements of the COMBINE manual. In the eastern Gotland Basin, stations have been installed as late as 2006. In that area, **Latvia** complies with the measurement frequency requirements laid down in the COMBINE manual.

42. **Poland** and **Germany** measure all the core parameters mentioned in section C.1 of the COMBINE manual. **Latvia** also meets these requirements, with the exception of measurements of hydrogen sulphide (H₂S). No separate data for nitrates are collected. However, data for nitrites and the overall nitrogen content are collected. **Denmark** measures all core variables. **Denmark** measures hydrogen sulphide only under special circumstances of oxygen deficiency.

Table 11. Measurement of core variables at high frequency stations

Denmark	Germany	Latvia	Poland
			
Smiling man: The provisions are implemented. Not very pleased man: The provisions are partly implemented. Displeased man: The provisions are not implemented.			

43. In addition to the mandatory core variables, section C.2 of the COMBINE manual recommends the measurement of a number of main variables at the high frequency stations.





Table 12. Main variables measured at high frequency stations

	Denmark	Germany	Latvia	Poland
Hydrography and nutrients	Temperature Salt and oxygen content of the water Hydrogen sulphide	Suspended matter Humid matter Suspended solids (carbon, nitrogen, phosphorus)	Acid content	Temperature Salt concentration Content of oxygen sulphur hydrogen Light absorption rate pH-value of the water Nitrates Nitrites Ammoniasalts Total nitrogen content Phosphates Total phosphorus content Suspended silicates
Biology	Weight loss on ignition	Production rate Sink rate of suspended matter Vertical profiles of Chlorophyll-a Depth distribution and taxonomic structure of phytobenthos	Mesozooplankton Water transparency	Phytoplankton Zooplankton Chlorophyll-a

Use of data

44. One objective of monitoring is to use the data obtained for development activities that will contribute to a sustainable improvement of the state of the Baltic Sea ecosystem. In **Denmark, Latvia, Germany and Poland**, the monitoring results serve as input to national reports on the state of the Baltic Sea. They are further reflected in national programmes on the protection of the Baltic Sea and in national legislation.

Table 13. Activities based on the results of eutrophication monitoring

Denmark	Germany	Latvia	Poland
			
Smiling man: The provisions are implemented. Not very pleased man: The provisions are partly implemented. Displeased man: The provisions are not implemented.			

Box 7

Use of eutrophication monitoring data for development activities in support of the protection of the Baltic Sea – Example from Germany

In the Federal Republic of Germany, the national measures derived from eutrophication monitoring are in line with EU requirements. In some instances, the German legislation and regulations exceed the EU requirements.

The Washing and Cleaning Agents Act of 29 April 2007 represents an example of action taken on the basis of findings generated by eutrophication monitoring. It stipulates rules for the manufacture, identification marking and distribution of detergents in the Federal Republic of Germany. The Washing and Cleaning Agents Act adapted the relevant legal provisions previously in force in Germany to the directly applicable EU regulation on detergents.

Other legislation reflecting results achieved through monitoring is the Federal Water Resources Act of 27 July 1957 as last amended on 10 May 2007. It serves to implement Directive 2000/60/EC of 23 October 2000 through the establishment of a framework for Community action in the field of water policy. The Federal Water Resources Act requires that water bodies are protected as a part of the natural balance and habitat for animals and plants. Furthermore, water bodies must be managed to serve the common good and to preclude avoidable interference with their ecological function. The Waste Water Regulation which has been developed on the basis of Art. 7a of the Federal Water Resources Act, sets high standard rules for certain discharges of waste water.

Conclusion

45. The eutrophication monitoring performed by the participating countries, essentially complies with the requirements of the COMBINE manual. The data generated by monitoring provide the basis for reports on the state of the Baltic Sea and serve as input to national legislation. The latter is in compliance with the framework set by the EU. Furthermore, the data generated by eutrophication monitoring are used to define the objectives of various action programmes like, for instance the Baltic Sea Action Plan.

G. Monitoring of contaminants and their effect

Supplementary studies

46. The monitoring of contaminants comprises the detection of trace metals and organic contaminants in water, in the sediment and in biota. There are advantages and disadvantages related to the monitoring of these three areas, for instance it is extremely difficult to determine the location when measuring biota. However, this can be compensated by measurements in the other compartments. The COMBINE manual essentially focuses on measurements in water and in biota.

47. Owing to the high cost of analysing methods, the monitoring of contaminants called for in the COMBINE manual does not cover all regions of the Baltic Sea. Therefore, it is

suggested to conduct various supplementary studies in addition to the routine measurements:

- Supporting studies
- Spatial distribution studies
- Biological effect monitoring.

48. In the period 2005-2007, **Latvia** and **Poland** have not produced any supporting studies pursuant to section D. 4 of the COMBINE manual.

Variables studied by **Germany** included Tributyltin (TBT) in water and sediment and hydrocarbons in sediment.

Denmark has carried out studies on TBT and brominated flame retardants.

Box 8 Supporting studies

According to section D.4 of the COMBINE manual, these studies are to generate findings on matters such as the accumulation of contaminants in herring. Other fields of activity include studies on TBT in biota, water and sediment, on dioxins and furans, and the detection of hydrocarbons in water and biota.

Spatial distribution studies

In section D.9, the COMBINE manual refers to new studies on statistical aspects and spatial distribution of contaminants. The current programme on the herring (a core variable) would, for instance make it possible to carry out studies on the spatial distribution of the contaminants analysed in the Baltic Sea.

Biological effect monitoring

This method is designed to generate conclusions on the presence of contaminants in the marine environment on the basis of the responses of organisms. Section D.11 of the COMBINE manual defines the studies on biological effects, e.g. the correlation between the concentration of contaminants and their effect on organisms.

49. **Germany** and **Latvia** do not produce any studies on statistical aspects and spatial distribution of contaminants in the Baltic Sea. Under the National Programme for Monitoring of Water Environment and Nature (NOVANA), **Denmark** carries out such studies on the spatial distribution of contaminants in mussels and in the sediment.

Poland studied the distribution of biogenic pollution in seawater by means of an installed measurement network.

50. **Denmark** carries out biological effect monitoring as part of the NOVANA programme. The parameters addressed in the studies are based on the ICES recommendations and have been harmonised by OSPAR (Co-operation to Protect the Marine Environment of the North-East Atlantic).

In **Germany**, many experts hold the view that the results generated by the methods used until now are not satisfactory. Therefore, only the German state of Mecklenburg-West Pomerania currently carries out biological effect monitoring.

Latvia does not carry out any studies in the field of biological effect monitoring. **Poland** does not carry out such studies neither, as the HELCOM has decided to postpone the introduction of biomarkers into the monitoring program until a broader knowledge has been gathered in this field.

Use of data

51. In **Denmark, Latvia, Germany, and Poland**, the monitoring results serve as input to national reports on the state of the Baltic Sea. Moreover, they are reflected in national programmes for the protection of the marine environment and in national legislation.

Box 9
Data generated from the monitoring of contaminants
used to identify activities designed to protect
the Baltic Sea marine environment – Example from Germany

The national measures taken on the basis of the monitoring of contaminants are in compliance with the EU's regulatory framework. Restrictions and prohibitions for many substances identified as hazardous for humans and the environment were promulgated already in the 1980s and 1990s.

The Water Resources Act and the Waste Water Regulation represent core legislation which is reflecting the results of monitoring. The Water Resources Act sets forth the general requirements for pesticides.

The corresponding pollution limits to be complied with are laid down in the high standard rules of the Waste Water Regulation. The annexes impose specific requirements to be met by individual industries when discharging waste waters before mixture.

H. Impact of the Baltic Sea Action Plan on national monitoring

Background information

52. On 17 June 2008, the European Parliament and the Council of the European Union adopted Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). In order to achieve a favourable conservation status of the marine environment by 2021, the Member States shall work out regional agreements for marine waters. To do so, they need to evaluate the pollution of the marine environment, establish regional environmental objectives and describe indicators and monitoring measures. As opposed to the HELCOM recommendations, the requirements of the Marine Strategy Framework Directive are legally binding on the EU Member States.

53. In anticipation of this directive, the participating countries adopted the Baltic Sea Action Plan in November 2007, as the regional action plan for the Baltic Sea. Up to 2021, a "favourable conservation status" is to be achieved for the Baltic Sea translated into the following major objectives:

- "Towards a Baltic Sea unaffected by eutrophication"
- "Towards a Baltic Sea undisturbed by hazardous substances"
- "Towards a Baltic Sea with environmentally friendly maritime activities"
- "Towards a favourable conservation status of Baltic Sea biodiversity".

The Baltic Sea Action Plan sets targets and indicators for each of the above objectives. To implement the plan, HELCOM set up an implementation group in March 2008 whose task it will be to specify and coordinate the indicators and measures.

Impacts on the national monitoring activities

54. The participating countries point out that the Baltic Sea Action plan is at an early stage and that its impact on national monitoring cannot yet be predicted in detail. Nevertheless, all participant countries expect the ecosystem approach adopted for the Baltic Sea Action Plan to create new requirements in the field of biodiversity monitoring. So far, biological analyses in the fields of benthos and plankton have been carried out under the COMBINE programme. Biodiversity monitoring under the Baltic Sea Action Plan will require additional biological analysis.

Poland anticipates a need for adjustment in the field of ecological status indicators that will have to be monitored in future.

Denmark is planning a revision of the NOVANA programme by the end of 2009 in order to adapt to the ecosystem approach of the Baltic Sea Action Plan.

Latvia is currently developing indicators and evaluation methods to be able to supply monitoring data for the description of a favourable conservation status.

Germany also expects additional requirements for the monitoring of biodiversity under the Baltic Sea Action Plan.

Parallel to this new HELCOM requirement, the participating countries which are Member States of the EU are already under a binding commitment to monitor biodiversity. Art. 11 of the FFH Directive requires that the “conservation status of the species and habitats of common interests” be monitored in the Baltic Sea. In addition, the EC WFD imposes reporting duties on the ecological and chemical status of coastal waters.

Box 10

Implementation of biological research – Example from Germany

In Germany, four different bodies carry out biological research in the Baltic Sea at federal level. Under the COMBINE programme, the Leibniz Institute for Baltic Sea Research located at Warnemünde analyses the diversity and the quantities of plankton and benthos and the impact of eutrophication on these organisms. The Johann Heinrich von Thünen Institute analyses the stocks of commercially important species of fish in the Baltic Sea and the concentration of pollutants in marine organisms. Under Art. 11 of the FFH Directive, the Federal Office of Nature Conservation monitors such factors as the quantities and development of benthos and fish. Moreover, in coastal waters, the Federal Institute of Hydrology monitors biological parameters (like benthos) according to the EC WFD.

Conclusion

55. Even though the consequences of the Baltic Sea Action Plan cannot yet be fully described, it is obvious even at this point of time that the ecosystem approach of the Baltic Sea Action Plan will lead to additional requirements to biodiversity monitoring. In future, it will become necessary to enhance the monitoring of indicators from which findings on the ecological status of the Baltic Sea as an overall ecosystem may be derived. Moreover, following the promulgation of the EU's Marine Strategy Framework Directive, all monitoring obligations of the Baltic Sea Action Plan will become legally binding on the participating countries that are also EU Member States. It is doubtful that the participating countries will be able to fulfil the increased monitoring obligations without injections of additional resources. In any case, the activities need to be coordinated and the resources need to be used consistently if an effective and efficient monitoring of the Baltic Sea marine environment is to be ensured.

56. To achieve this goal, HELCOM and the participating countries need to address in particular two problems:

- 1) The COMBINE programme has so far been limited to monitoring eutrophication and contaminants of the Baltic Sea. The new ecosystem approach overlaps with other international monitoring obligations such as the EU WFD, the FFH Directive and the EC Birds Directive which all call for biological monitoring.
- 2) The current COMBINE measuring network consists of national measurement networks which the contracting parties have reported to HELCOM. These networks are partly based on historical development. Looking at the varying density of the measurement networks in the participating countries gives rise to doubts with respect to the existence

of a well-structured measurement network. In general, there is a serious risk that measuring stations which are important for the Baltic Sea ecosystem as a whole will not be monitored adequately due to lack of resources.

57. The participating countries should take notice of the present challenge posed by the Baltic Sea Action Plan and the Framework Directive on Protection of the Marine Environment to thoroughly review the COMBINE programme. Following the lines of the national status reports on monitoring, the elaboration of an overall status report describing all monitoring activities and obligations and looking for interfaces for the entire Baltic Sea could bring this work forward. Furthermore, a scientific analysis is required for the whole of the Baltic Sea to determine which parameters should be monitored at which intervals and on which locations. On this basis, the participating countries should determine how the monitoring tasks should be distributed among the Member States and how the responsible authorities can mutually support each other. The distribution and density of measuring stations must no longer be determined solely by national responsibility boundaries or national resources.

58. Only a harmonised HELCOM strategy for a measuring network that serves to monitor the environment of the entire Baltic Sea will help ensure that the participating countries can effectively face the increasing marine environment monitoring challenges.

III. Fisheries management and control in the Baltic Sea

A. Organisation and functioning of national fisheries control in the Baltic Sea

The implementation of relevant legislation concerning fisheries control in national legislation

59. The parallel audit reviewed the implementation of relevant EU legislation and provisions of relevant international conventions in national legislation. The audit showed that the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**) taking part in this part of the parallel audit all apply the relevant EU legislation and provisions of relevant conventions. However, Russian fisheries legislation is, naturally, not adjusted to the EU-regulations.

The formulation of performance indicators for the fisheries control

60. The parallel audit reviewed whether the countries have formulated performance indicators for the control. The audit showed that the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**) have to some extent formulated performance indicators for the fisheries control.

For example, **Denmark** has listed 24 performance indicators, of which eight describe requirements for the control of fishery, e.g. requirements for the implementation of a risk based control strategy.

In **Estonia**, the performance indicators include indication of the number of discovered infringements and damage done to the environment.

Table 14. Formulation of performance indicators for the fisheries control

Denmark	Estonia	Finland	Lithuania	Russia	Sweden
Yes	Yes	Yes	Yes	Yes	Yes

Box 11

Performance indicators for fisheries control in Denmark

The Danish Directorate of Fisheries is using performance indicators to ensure adequate control of fishery. The performance indicators are described in a contract between the Danish Directorate of Fisheries and the Ministry of Food, Agriculture and Fisheries. The contract from 2007 lists 24 performance indicators, of which eight describe requirements for the control of fishery, e.g. the requirements for the implementation of the new control strategies for the commercial and recreational fisheries, requirements according to the EU rules for the control of fishery (e.g. benchmarks for the control of cod in the North Sea, Skagerrak and the Baltic Sea), the requirements for a new Unit for Risk Evaluation and Control Campaigns.

Box 12**Performance indicators for fisheries control in Estonia**

The Environmental Inspectorate has set the following performance indicators: number of infringements, damage done to the environment, and the percentage of reported landings in Estonia that have been subjected to control. The Environmental Inspectorate also evaluated its work performance on the basis of achievement of its annual work plan.

Risk based fisheries control

61. According to EU regulations, the fisheries control should be risk based. The parallel audit reviewed whether the fisheries control is risk based. The audit showed that three countries (**Denmark**, **Finland** and **Sweden**) have to some extent implemented risk based fisheries control. However, in general, the risk based control is not performed in a systematic and comprehensive way, and the effect of the risk based control is not measured and documented.

In **Denmark**, the Danish Directorate of Fisheries has started the implementation of a risk based fisheries control strategy in 2007. However, the Danish Directorate of Fisheries has not yet fully developed and implemented fisheries monitoring systems supporting the risk based fisheries control strategy. Moreover, the effect of the new risk based fisheries control strategy has not yet been measured, and it has not been documented that the control executed is consistently risk based.

In **Estonia**, the elements of risk assessment involved in the Environmental Inspectorate's planning of control are not documented. Still, risk factors based on the control experience of past years, have been discussed during the preparation of the annual work plans.

In **Sweden**, the Board of Fisheries is currently developing a more systematic risk analysis procedure where biology, economy and discovered/suspected infringements are variables which will determine which vessels to target with inspections. When the system is implemented, the Swedish Board of Fisheries and the coast guard will be able to perform more efficient fisheries control on shore and at sea.

Table 15. Risk based fisheries control

Denmark	Estonia	Finland	Lithuania	Russia	Sweden
Yes	Partly	Yes	Partly	Partly	Yes

Box 13**Risk based fisheries control in Denmark**

The Danish Directorate for Fisheries started the implementation of a risk-based control strategy in 2007.

The main purpose of the changed control strategy is to increase control in the areas where the risk of infringements is largest.

To support the implementation, a separate organisational unit (the Risk-unit) has been established to support the implementation. The Risk-unit is preparing information for risk-assessment and control campaigns.

The Risk-unit has identified some of the risk factors, but is yet to make a system available to the fisheries inspectors to aid them in the selection of areas for control. The fisheries inspectors may include the risk factors in their work but it is not a systematic and documented practise.

The Danish Directorate of Fisheries has not yet fully developed and implemented fisheries monitoring systems supporting the risk based fisheries control strategy.

Moreover, the effect of the new risk based fisheries control strategy has not yet been measured, and it has not been documented that the control executed is consistently risk based.

Box 14**Risk based fisheries control in Lithuania**

The Lithuanian Department of Fisheries in the Baltic Sea prioritise the fishing control on the basis of previous year's experience and an evaluation of risk related to control of fisheries. The Lithuanian fisheries fleet is mostly oriented towards cod fishing and because Lithuania's cod fishing quota is quite small, fisheries control is primarily focused on cod fishing. The risk of being detected during illegal fishing of cod is very high.

Box 15**Risk based fisheries control in Sweden**

A basic form of risk analysis has been applied by the Board of Fisheries and the Coast Guard between 2001 and 2005. This early form of risk analysis has been based on direct observations of suspicious individual vessels. The Board of Fisheries is currently developing a more systematic risk analysis procedure in which biology, economy and discovered/suspected infringements are the variables determining which vessels to target with inspections.

During 2007 and the first half of 2008, preparations have been made to develop an IT-based system for the management of the new risk analysis procedure. A fleet and fish stock based risk list has been produced ranking the biological consequences of different infringements and the probability of infringement. The development of the IT-system will start in the autumn of 2008 and when the system is running, the Swedish Board of Fisheries and the Coast Guard will be able to perform more efficient control on shore and at sea.

The fisheries control strategy covers illegal fishing (unregistered landings) and discards

62. The parallel audit reviewed whether the fisheries control strategy covers illegal fishing (unregistered landings) and discards. The audit showed that the fisheries control strategies of the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**) cover illegal fishing and discards. The audit also showed that illegal fishing is a general problem.

In **Denmark**, the fisheries control strategy includes a campaign called "operation illegal fishing" the purpose of which is to prevent systematic selling of illegal fish. The Danish Directorate of Fisheries and the Danish Tax Council conducted a joint risk analysis before the

campaign was launched in order to identify the companies which were potentially most likely to break the rules and to ensure identification of significant cases relating to illegal fishing.

In **Estonia** the Environmental Inspectorate is more focused on fish processing enterprises and on increasing landing control to reduce the risk of illegal fishing. Also VMS (Vessel Monitoring System) data is compared with logbook data.

In order to control cod landing in the Klaipėda Seaport efficiently, the **Lithuania** fishing authorities in 2008 decided to inspect minimum 30 percent of all landings of cod. The Baltic cod may only be unloaded in a specific area of the Klaipėda Seaport, and first selling and buying of this fish may be conducted only in the first auction of fishery products, which is established next to the special landing area. The purpose of these measures is to increase the control of the decreasing cod stock resources.

In **Russia**, the implementation of the illegal fishing control strategy laid down by the Federal Veterinary and Phytosanitary Monitoring Service administration involved cross-checking the data of official catch statistics with the vessels' fishing logs and checking bills of lading for sold fish products and relevant veterinary documents.

In **Sweden**, the Board of Fisheries targets illegal fishing through administrative controls in collaboration with the tax authorities. VMS data and landing controls are also used to this end. Discards are measured for scientific purposes only.

Table 16. The control strategy covering illegal fishing (unregistered landings) and discards

Denmark	Estonia	Finland	Lithuania	Russia	Sweden
Yes	Yes	Yes	Yes	Yes	Yes

Box 16
Illegal fishing (unregistered landings) in Denmark

In Denmark, the Directorate of Fisheries and the Tax Council co-operate on a campaign called "operation illegal fishing" the purpose of which is to prevent systematic sales of illegal fish. The campaign was successfully run in 2006 and 2007 and has been continued in 2008.

The Directorate of Fisheries and the Tax Council conducted a joint risk analysis before the campaign was launched in order to identify the companies which were potentially most likely to break the rules, and to ensure identification of significant cases relating to illegal fishing. The risk analysis included information on knowledge of local conditions, companies which changed ownership frequently, and information received from third parties regarding possible inconsistencies.

Based on the risk analysis, restaurants, wholesalers, detailers, and fishing vessels selling fish directly to the consumers were picked out for control. The control included check of company accounts and documentation of fish bought and sold.

Between 2006 and 2008, the Danish Directorate of Fisheries and the Danish Tax Council have performed 64 controls and 15 of these revealed infringements.

Box 17
Illegal fishing (unregistered landings) in Estonia

In Estonia, the scope of illegal catches has not been estimated, but the Environmental Inspectorate evaluates the extent of illegal fishing in open sea to be marginal. The volume of proven illegal catches is not entered into the Fisheries Information System. The Environmental Inspectorate is more focused on fish processing enterprises and on increasing landing control to reduce the risk of illegal fishing.

Box 18**Illegal fishing (unregistered landings) in Finland**

In Finland, illegal salmon fishing is a problem, but the extent is not estimated.

Box 19**Illegal fishing (unregistered landings) in Lithuania**

Cod fishing in the open Baltic Sea is very profitable and therefore the control of illegal fishing is focused on this species. Compared to illegal fishing of other species, cod catches are at high risk of being impounded.

Lithuania has only one seaport in Klaipėda. This seaport has a pier for vessels fishing in the Baltic Sea, and a division of the Fisheries Control is located there. In order to control cod unloading in the Klaipėda Seaport efficiently, the Lithuania fishing authorities in 2008 decided to inspect minimum 30 percent of all landings of cod.

Taking into consideration the EU's experience within preservation of cod resources and strengthening of control with the selling and buying of fishery products, the Ministry of Agriculture approved areas for unloading of fishery products and first selling and buying in the Klaipėda Seaport. The Baltic cod may only be unloaded in one area of the Klaipėda Seaport, and first selling and buying of this fish may be conducted only in the first auction of fishery products, which is established next to this area. The purpose of these measures is to increase the control of the decreasing cod stock resources.

No instances of catch retentions were recorded during the years 2006 and 2007.

Box 20**Illegal fishing (unregistered landings) in Russia**

The Federal Security Service (FSS) has not registered unloadings or discards that have not been accounted for. The issue of illegal fishing in the Baltic Sea is therefore not of current importance to the Russian Federation.

The implementation of the illegal fishing control strategy laid down by the Federal Veterinary and Phytosanitary Monitoring Service administration involved cross-checking the data of official catch statistics with the vessels' fishing logs and checking bills of lading for sold fish products and relevant veterinary documents.

Box 21**Illegal fishing (unregistered landings) in Sweden**

The Swedish Board of Fisheries targets illegal fishing through administrative controls in collaboration with the tax authorities. VMS (Vessel Monitoring System) data and landing controls are also used to this end. Discards are measured for scientific purposes only.

In 2006, the European Commission made an estimation of the differences between controlled and uncontrolled landings of cod. The estimated underreporting calculated on the basis of a sample was approximately 21.5 percent. Also, during 2007, the European Commission claimed that the Swedish fishermen were responsible for unreported landings of cod amounting to 17 percent of the quota (calculated on the basis of a sample, indicating the difference between reported and unreported landings). The difference was later downsized to 8 percent when the European Commission had accepted additional calculations of cod landings from the eastern Baltic cod stock by the Board of Fisheries. As a consequence, the Swedish Board of Fisheries reduced the cod quota for 2007 by 8 percent.

The organisation of fisheries control activities

63. The parallel audit reviewed to which extent the organisation of the fisheries control activities is centralised (e.g. in a single central control office) or decentralised (e.g. several regional control offices). The audit showed that generally the six countries (**Denmark**, **Estonia**, **Finland**, **Lithuania**, **Russia**, and **Sweden**) perform the fisheries control activities through regional offices but activities are coordinated by a central control office. However, there are differences in the organisation of the fisheries control activities due to for instance the extent of the territorial waters and coast line subject to control.

In **Sweden**, the fishermen are generally permitted to land catches in all ports. This creates problems for the inspectors since the Swedish coastline is quite long. Exceptions are made from the general rule for landings of threatened species, such as cod. The Swedish Board of Fisheries is responsible for controls on land and the Swedish Coast Guard for control at sea. However, there is a lack of regularity in the exchange of information between the Coast Guard's inspectors at sea and the Board of Fisheries' inspectors on land. There are no procedures facilitating information sharing between the inspectors at sea and the inspectors on land. It is not certain that the inspectors performing landing controls are aware that a ship has already been inspected at sea during the same fishing trip. Communication between the authorities is further curbed by the fact that they use different IT-systems for registration of infringements.

Box 22

Decentralisation of fisheries control in Denmark

The fisheries control in Denmark is managed by a central government agency, The Danish Directorate of Fisheries. The part of the Danish Directorate of Fisheries, which is responsible for monitoring the control system, is the Division for Fisheries. The control in the Baltic Sea is performed by the Inspectorate of Fisheries East which reports to the Division for Fisheries. The Inspectorate of Fisheries East is furthermore divided into three local offices located in Jutland, Sealand and Bornholm. These local offices are responsible for the planning and implementation of the control procedures, including psychical controls. The personnel employed at the local offices also perform administrative tasks.

Box 23

Decentralisation of fisheries control in Estonia

The Environmental Inspectorate is the main body responsible for the surveillance of the Estonian fishery domain. The fisheries control is one of three control areas of the Inspectorate. The fisheries control powers are vested also in the National Police Board (The Police Prefectures), the National Board of Border Guard, the Veterinary and Food Board and the Estonian Tax and Customs Board in accordance with their respective authority. The Environmental Inspectorate has signed an agreement of co-operation with the majority of the institutions mentioned above. The agreement with the Veterinary and Food Board includes a co-operation to intensify the control of fishermen and fish processing plants; the agreement with the Estonian Tax and Customs Board regulates a co-operation on prevention, detection and suspension of infringements of the law; the Border Guard shall participate in verification of compliance with fishing rules. The agreements specify the level of communication between institutions, the principles for carrying out joint control, means of control etc.

Since April 2008, the structure of the Environmental Inspectorate includes the headquarters (located in Tallinn) and four regional offices: North, East, South and West. The day-to-day monitoring activities are organised and performed by the fisheries divisions of regional offices. The primary activities are managed and co-ordinated by the headquarters.

Box 24**Centralisation of fisheries control in Russia**

According to Russian legislation, the control is centralized and independent from the other federal executive authorities' decisions. Protection of the biological sea resources and the control conducted by government in the 26th sub-district of the Baltic Sea were carried out by the boundary bodies of the FSS of Russia, and the functions of control and supervision within the sphere of protection, reproduction, and habitat, have been assigned to the territorial administrations of the Russian Federal Service for Veterinary and Phytosanitary Supervision.

Box 25**Decentralisation of fisheries control in Sweden**

In Sweden, the Board of Fisheries is responsible for controls on land and the Coast Guard is responsible for controls at sea.

The Department of Fisheries Control is located at the Swedish Board for Fisheries in Gothenburg. The landing control is divided into two sections; one for the West coast and another for the South and East coasts.

The headquarters of the Swedish Coast Guard are located in Karlskrona but the operative control activities are planned and performed by regional offices having their own command centres and command structures. The Coast Guard's headquarters make sure that the yearly alignment between the regional offices is performed.

The Board of Fisheries has the overall responsibility for the controls, but the Swedish Coast Guard is responsible for part of the planning and implementation. The co-operation between the two authorities is mainly facilitated by their shared Centre for Fisheries Control located in Gothenburg.

However, there is a lack of regularity in the exchange of information between the Coast Guard's inspectors at sea and the Board of Fisheries' inspectors on land. There are no procedures facilitating information sharing between the inspectors at sea and the inspectors on land. It is not certain that the inspectors performing landing controls are aware that a ship has already been inspected at sea during the same fishing trip. Communication between the authorities is further curbed by the fact that they use different IT-systems for registration of infringements.

In **Sweden**, the fishermen are generally permitted to land catches in all ports. This creates problems for the inspectors since the Swedish coastline is quite long. Some exceptions from the general rule are made for landings of threatened species, such as cod. Landings of larger quantities of cod are only allowed in certain designated ports. The frequency of landing controls seems to be too low during weekends. In 2007, only four landing controls were performed during weekends in spite of the fact that about 10 percent of all landings (3,445 in total) were made during weekends.

The authority and resources of the control authorities

64. The parallel audit reviewed whether the authority and resources (size, expertise, training, surveillance systems and funding) for the fisheries control staff is sufficient. The audit showed that in the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**), a major obstacle for the fisheries control is a lack of effective fisheries monitoring systems supporting a risk based fisheries control. In general, the six countries use a mix of up-to-date surveillance vessels, airplanes and monitoring systems. However, there are some differences between the countries, for instance the fisheries surveillance in **Denmark** and **Finland** is not performed by airplane, and the surveillance vessels in **Russia** and most of the border guard vessels in **Estonia** are not modernised.

In all six countries, the fisheries control staff also perform other control activities. Generally, however, this does not materially affect the control of fishery.

In **Sweden**, there are gaps between the authority of the Swedish Board of Fisheries and the Swedish Coast Guard regarding fisheries control.

Table 17. The authority held by the fisheries control authorities is sufficient

Denmark	Estonia	Finland	Lithuania	Russia	Sweden
Yes	Yes	Yes	Yes	Yes	Partly

Box 26**Fisheries control resources and vessels in Denmark**

In Denmark, the fisheries control in the Baltic Sea is conducted by the Inspectorate of Fisheries East, which is divided into three local offices in Jutland, Sealand and Bornholm. In 2007, staff of the three local offices was reduced by 31 percent, resulting in fewer controls being carried out than in the past. In 2007, the local offices spent 52 percent of their time on control which was slightly less than in 2005 and 2006. Still, the biggest change in 2007 was the reduction in staff number.

The Danish Directorate of Fisheries disposes of two surveillance vessels to conduct control in the Baltic Sea. "Havternen" is a new surveillance vessel which has been operative since February 2007. The surveillance vessel is 19.6 meters long. It is mainly used in the western Baltic Sea because it does not have the same sea-capabilities as the larger surveillance vessels. The other surveillance vessel "Havørnen" is much larger with a length of 30.9 meters. It is mainly used in the eastern Baltic Sea around the island of Bornholm. Havørnen is also part of the SAR (search and rescue operations) at sea, but it has not performed SAR missions at a level which has reduced its availability for fisheries control.

Box 27**Fisheries control resources and funding in Estonia**

In Estonia, the management of the Environmental Inspectorate considers the proportion of fisheries inspectors adequate, but according to an analysis made in 2007, there is a need for eight to ten more fisheries inspectors. The labour turnover rate is rather high in the Environmental Inspectorate and the training period for new employees is one year with a mentor.

The Environmental Inspectorate disposes of 13 motorboats and a helicopter (operated by the Border Guard) for fisheries control in coastal sea areas. From November 2008 the Environmental Inspectorate has newly build a 23,7 metres long surveillance vessel for open sea fisheries control, which started with its regular control operations from the beginning of 2009. The border guard's surveillance vessels and airplane can be used for emergency surveillance at open sea. According to the Environmental Inspectorate the new vessel improves the surveillance capability at open sea remarkably.

Also several border guards' surveillance vessels are available for the fisheries control at open sea. However, the average age of these vessels is more than 30 years and the vessels' engine resource is limited, which does not cover full surveillance need especially in Estonian economic zone.

In open sea areas regular patrol flights for different surveillance activities (main task is surveillance of the pollution from the ships) provide also information for fisheries control.

Usage of VMS has improved the Environmental Inspectorate's knowledge of the activities of fishing vessels, and has thus supported the cross-checking of fishing data.

Box 28**Fisheries monitoring system in Russia**

Fishing vessels entering or leaving the exclusive economic zone of the Russian Federation are subjected to full inspections. This mechanism ensures 100 percent government control in the area of protection of water biological resources in the exclusive economic zone of Russia, eliminating violations of Russian legislation in this area.

Before a fishing vessel can sail into the exclusive economic zone of the Russian Federation to fish, it is subjected to border, customs and inspector control. The inspector control checks compliance with the requirements and terms of the catch permit, fishing gear and other technical means. When the necessary inspection is concluded, the inspector issues a permit to the captain allowing him to proceed to the fishery area. When the fishing vessel returns to a Russian port from the exclusive economic zone of the Russian Federation, it is subjected to border, customs and inspector control. In addition to the checks mentioned above, the inspectors also check the catch, respective data entries in the vessel's register, and whether there are any illegal or unaccounted catches on the vessel.

The Russian Federation uses the SSM system (Sectoral System of Monitoring Water Biological Resources and Supervision and Control of Fishing Vessel Activity). SSM is an information system facilitating collection and transmission of information about the state of water biological resources and operating activities of the fishing fleet. The information system is designed to enable the State Fishery Committee, its territorial bodies and organisations on lower levels to make strategic and operational decisions. Information about operating fishing vessels activities includes information on the location of fishing vessels at the time of reporting, size of catch, and other data on operating activities. This information is automatically transmitted from the fishing vessels to regional information centres, and then forwarded to the users of the system for further analysis.

Box 29**Authority vested in the control staff in Sweden**

There are some gaps in the authority of the Swedish Board of Fisheries and the Swedish Coast Guard regarding fisheries control. The Board of Fisheries does not appear to have the legal right to register or share suspicions against individual fishermen with the Coast Guard. The Board of Fisheries does not register information about suspicions of infringements related to individual fishermen since the Board perceives this as contradictory to the Secrecy Act. The Coast Guard does not have its own investigators of infringements of fisheries legislation, instead it has to leave investigations of infringements to the police.

The joint fisheries surveillance campaigns

65. The parallel audit reviewed whether joint fisheries surveillance campaigns are carried out through a coordination of several countries' control efforts. The audit showed that five countries (**Denmark, Estonia, Finland, Lithuania, and Sweden**) have performed fisheries surveillance in co-operation with other countries around the Baltic Sea. However, **Finland** has only controlled cod fishing in joint surveillance campaigns. **Russia** has not participated in any joint fisheries surveillance campaigns.

The overall objective of the campaigns was to ensure operational coordination of the joint control and inspection activities with other Member States as laid down in Council Regulation EC 1098/2007 establishing a multi-annual plan for the cod stocks in the Baltic Sea.

The participants in the campaigns found the knowledge sharing very valuable as they have all learnt much about the organisation of inspections and how infringements are handled in other Member States. The exchange of inspectors and joint inspections have raised qualifications and developed practical skills.

Table 18. Participation in joint surveillance campaigns

Denmark	Estonia	Finland	Lithuania	Russia	Sweden
Yes	Yes	Yes	Yes	No	Yes

Box 30**Denmark's participation in joint surveillance campaigns**

Denmark has taken part in four of six joint inspections and surveillance missions that have been performed in the Baltic Sea in 2007 with Member States from Germany, Poland, Sweden, Estonia, and Lithuania.

In the campaign, focus has been on monitoring and control of catches of cod in the Baltic Sea and on certain ports where landing of cod may take place. To ensure knowledge sharing between inspectors from the Member States involved, the inspectors have participated in as many campaigns as possible. The inspector from the inspected country has been in charge and the inspection has been conducted in accordance with the laws and rules of the EU Member States.

On land, the following items were checked; special fishing permits for cod, check of the notification given by fishing vessels, the weight of the landed fish, catch composition, catch recording (logbook and sales notes) and check of fishing gear. At sea, the following items were checked; special fishing permits for cod, check of the notification given by fishing vessels, check of gear and net rules, check of correspondence between fish on board and fish recorded in logbook, check of the VMS.

Inspections at sea disclosed several infringements related to gear requirements on board, and the inspections on land disclosed infringements related to logbook entries, i.e. catches recorded beyond the 8 percent tolerance level, the rules for notification of entry and departure from a fishing area and exceedings of the weekly catch quota. Some of the infringements were so severe that they were brought before the court and the offenders were heavily fined.

Box 31**Estonia's participation in joint surveillance campaigns**

Estonian inspectors have participated in joint control activities in Sweden (2005 and 2007), in Latvia (2005), in Denmark (2006) and in Finland (2007). Danish, Swedish, Lithuanian, and Latvian inspectors participated in joint controls in Estonia in 2006. Starting in 2008, co-operation among the Baltic Sea countries is coordinated in common annual plans.

Box 32**Lithuania's participation in joint surveillance campaigns**

Lithuania has organised exchange of inspectors, as well as joint inspections with Estonia, Poland, Sweden, and Germany in order to improve the control of fishing in the Baltic Sea. The main objective of the exchange programme is to control Lithuania vessels' landings in Member States' ports, to obtain knowledge of how the control of the first fish sale is performed by the neighbouring countries' fisheries control institutions, and to improve the co-operation with fisheries control institutions of the neighbouring countries around the Baltic Sea. The exchange of inspectors and joint inspections have raised qualifications and developed the practical skills of Lithuanian fisheries inspectors.

Box 33**Russia's participation in joint surveillance campaigns**

Currently, the Russian Federation and the countries in the Baltic region do not co-operate under any intergovernmental agreement on fishery in the Baltic Sea.

In 2005-2007, Russian vessels did not carry out any extraction of water biological resources in the European Union fishing zones of the Baltic Sea.

Entry of catches in logbooks and cross-checking of fisheries control data

66. The parallel audit reviewed whether the catches are entered in logbooks and the fisheries control data cross-checked. The audit showed that in the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**), the catches are entered in logbooks and the fisheries control data are to some extent cross-checked, e.g. catch entries are checked against sales notes. However, often the cross-checking of fisheries control data is not performed systematically and is not effectively supported by electronic fisheries information systems.

In **Denmark**, the Directorate of Fisheries is not performing cross-checks of fishery control data systematically, but electronic data checking is being developed to facilitate the process of cross-checking control data.

In **Estonia**, the Environmental Inspectorate has limited possibilities to make queries from the Fisheries Information System, but a new version of the Fisheries Information System is under development, which will make it possible for the control bodies to make more flexible data requests, and the Fisheries Information System will more easily be able to produce standard reports.

Table 19. Entry of catches in logbooks and cross-checking of fisheries control data

Denmark	Estonia	Finland	Lithuania	Russia	Sweden
Yes	Partly	Yes	Yes	Yes	Yes

Box 34**Cross-checking of fisheries control data in Denmark**

In Denmark, the Directorate of Fisheries mostly perform spot tests when cross-checking fisheries, e.g. by boarding fishing vessels or controlling fishing vessels in harbours or by running campaigns on specific items like, for instance the logbook. The Directorate of Fisheries is not performing cross-checks of fishery control data on a systematic basis.

The National Audit Office of Denmark has tested 25 fishing vessels which had reported three trips. The National Audit Office of Denmark cross-checked the following control data: catch records (logbooks and sales notes), the notification given by fishing vessels and information from the VMS.

The test showed that the Danish Directorate of Fisheries could increase the quality of the control, if a systematic approach to the cross-checking of fishery control data is implemented.

The Danish Directorate of Fisheries informed the National Audit Office of Denmark that cross-checking is a manual and therefore resource intense process. Electronic data checking is being developed to facilitate the process of cross-checking control data.

Box 35

Cross-checking of fisheries control data in Estonia

Until 2006, the Ministry of the Environment was responsible for the collection and cross-checking of fisheries data in the Fisheries Information System. The logbook data and first sale data were compared and the results of the cross-checking were forwarded to the Environmental Inspectorate.

In 2006, the responsibility for the administration and management of professional fisheries information was placed with the Ministry of Agriculture. Since then, it has been unclear where the responsibility for cross-checking of fisheries data is placed. According to the ministry of Agriculture, cross-checking is part of the fisheries control and should be the responsibility of the Environmental Inspectorate. However, the Environment Inspectorate considers it part of fisheries data managements which is performed by the Ministry of Agriculture. Moreover, the Environment Inspectorate's access to make enquiries in the Fisheries Information System is limited due to technical complications. From the beginning of 2006 to 2008, full cross-checks have not been performed. The Environmental Inspectorate performed the cross-checks on a case by case basis. From the beginning of 2008, the Ministry of Agriculture has prepared the cross-checks for the Environmental Inspectorate on the basis of special enquiries. Currently a new version of the Fisheries Information System is under development, which will make it possible for the control bodies to make more flexible data requests and the Fisheries Information System will more easily be able to produce standard reports.

Box 36

Cross-checking of fisheries control data in Finland

After unloading the catch, the fisherman has 48 hours to provide the required data to the regional Employment and Economic Development Centres. Return percentage is close to 100. First-time buyers of fish are required to lodge data with a joint database. Discrepancies between catch entries and these data will be followed up.

The control authorities (Employment and Economic Development Centres) have a joint database, which keeps a record of all catches, sales, control activities and warnings. Control data are cross-checked with other data in the database.

Box 37

Cross-checking of fisheries control data in Lithuania

In compliance with the Law on Fisheries of the Republic of Lithuania, the origin of fisheries products, legality of purchase, safety and quality is controlled by authorized institutions in all stages of production, processing, reprocessing, storing, transportation, buying and selling. Fisheries products from fishing vessels are unloaded in sites determined by the Ministry of Agriculture. Captains of fishing vessels are to inform the Fisheries Department minimum two hours before their vessel arrives at the Klaipėda State Seaport. The information must include time of arrival at the seaport, unloading site for fisheries products, estimated weight of the catch to be unloaded, broken down on species, and indication of the fishing zones where the operator has fished.

When the fisheries inspectors are controlling fishing at sea, they cross-check data on the actual volume of the catch with the data held in the registers. The inspectors pass on the data to the officer of the Fisheries Department who then registers all the information. Monitoring of fishing vessels requires verification by the Centre of Fisheries Supervision that the respective vessel is fishing in the appropriate fishing area, and other relevant data are being cross-checked.

Box 38**Cross-checking of fisheries control data in Russia**

In accordance with the fishery logbook regulations, the captain of the fishery vessel is obliged to write down the exact data of the catch composition and size. Violation of fishery logbook regulations is a violation of the current legislation and, consequently also a violation of administrative and other rules.

On the 15 and last day of each month, the official fishery statistics on fish catches are cross-checked against the data of fishing logbooks, bills of landing for sold fish products and relevant veterinary documents.

Box 39**Cross-checking of fisheries control data in Sweden**

All catches are to be registered in logbooks immediately after the catch has been hauled onboard. Logbook rules differ depending on the size of the vessel. Logbooks and sales notes must be submitted to the Board of Fisheries within 48 hours. Due to the fact that the data in the logbook are submitted after the landing, fishermen who want to exempt catches from documentation can do so. If a fisherman detects an approaching fisheries control vessel at sea, he will have plenty of time to enter the required data in the logbook before the control staff perform the control. If no control is performed it is also possible for the fisherman and the buyer to synchronize species and weight in the logbook and the sales note.

According to the Government's Budget Bill for 2008, the number of fishing trips that were cross-checked (with respect to catches, landings and sales) decreased from 69 percent in 2004 to 48 percent in 2006.

Application of administrative and criminal sanctions

67. The parallel audit reviewed the application of administrative and criminal sanctions. The audit showed that in the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**), the authorities apply both administrative and criminal sanctions against offenders of the fisheries regulations.

In **Lithuania**, the following administrative sanctions are applied for infringements of the rules governing commercial fishing in the sea: pecuniary penalties, confiscation of fishing gear, temporary restriction of licenses or the right to conduct commercial fishing. Control staff analyse data and impose penalties of varying sizes depending on the offence.

In **Denmark**, fisheries regulations allow the fisheries control authorities to legally fine the fisherman without involving the police and the court. This procedure can be applied when the infringement is undisputed.

In **Sweden**, the Board of Fisheries was authorised to apply administrative sanctions for minor fisheries infringements from 1 August 2008. Since the administrative sanctioning system is quite new, it has not been possible to evaluate its effect.

Table 20. Application of administrative and criminal sanctions

Denmark	Estonia	Finland	Lithuania	Russia	Sweden
Yes	Yes	Yes	Yes	Yes	Yes

Box 40
Application of sanctions in Denmark

In the period of the examination, 2005-2007, the number of infringements discovered in Denmark was relatively stable

2005	2006	2007
114	109	105

63 (19 percent) of these cases have not yet been decided, but 112 of the closed cases (34 percent) were closed administratively, 105 cases (32 percent) were decided without taking the fine to court and 48 cases (15 percent) were taken to court.

In Denmark, fisheries regulations allow the fisheries control authorities to legally fine the fisherman without involving the police and the court. This procedure can be applied when the infringement is undisputed.

The Danish Directorate for Fisheries is in general dividing sanctions into four categories:

- Administrative warning (always in writing)
- Withdrawal of fishing permit
- Administrative fine
- Legal fine

The Danish Directorate of Fisheries has guidelines defining the scope of administrative sanctions in particular regarding logbook infringements. This has been limited from the end of 2007, so that only missing logbook sheets and submission of logbook sheets after deadline may be fined administratively. All other logbook infringements must be decided by a legal fine, but not necessarily decided by the court (see above). The Danish Directorate of Fisheries operates with minimum fines in most of the infringement cases.

Typical infringements are:

- Unclear information on logbook sheet
- No logbook sheet
- Late submission of logbook
- Illegal by-catch
- Use of illegal gear or incorrect marking of gear
- Missing report on change of waters
- Missing report on port entry time

Box 41
Application of sanctions in Estonia

In addition to the pecuniary penalties or up to 3 years imprisonment (if a crime has been committed), renewal of the commercial fishing permit will be refused if a fisherman (having infringed the coastal fishery regulations) or captain of a vessel, already have more than one minor or criminal offence on their record.

Box 42 **Application of sanctions in Lithuania**

Sanctions for infringements of fishery regulations are stipulated in legal acts. The following administrative sanctions are applied for infringements of the rules governing commercial fishing in the sea: pecuniary penalties, confiscation of fishing gear, temporary restriction of licenses or the right to conduct commercial fishing. Control staff analyse data and impose penalties of varying sizes depending on the offence.

Sanctions in Lithuania for the period 2005-2007:

2005

8 violations of the Fleet Tracking System
2 violations of regulations governing coastal fishing
4 violations of requirements for entry of data in the fishing registers
2 violations of the regulations governing first selling and buying.

2006

2 severe violations of the fishing regulations
3 violations of the satellite fishing fleet monitoring system
8 violations of the regulations governing coastal fishing
1 violation of requirements for entry of data in the fishing registers
2 violations of the deadline for payment of commercial fishing charges
1 violation for submission of fishing documents after the deadline
2 violations of the regulations governing first selling and buying.

2007

3 violations of the satellite fishing fleet monitoring system
4 violations of vessel registration requirements
1 violation of the requirements to lodge financial and biological data, information about fishing sources and use of fish
8 violations of the regulations governing commercial fishing in the sea
6 severe violations of the regulations governing commercial fishing in the sea
2 violations of the regulations governing first selling and buying.

2008

No data available.

All the cases mentioned above were recorded and the violators were fined.

Box 43 **Application of sanctions in Russia**

According to Russian legislation, supervising bodies for offences in the field of fishery apply both administrative and criminal sanctions.

In 2005-2007, divisions of boundary managements of the Federal Security Service disclosed 1,323 infringements.

Violations in 2005-2007 primarily consisted in infringements of the regulations governing the catch permit, catch documentation, waste dumping, exceeding quotas, misrepresentation of catch size, application of unauthorised fishing gear and other.

The authorities either fined the offenders or initiated legal proceedings.

Box 44**Application of sanctions in Sweden**

The Swedish Board of Fisheries was authorised to apply administrative sanctions for minor fisheries infringements on 1 August 2008. The effect of the administrative sanctioning system is not known at this point since the system is quite new.

Severe infringements are investigated by the police and tried in public courts. The Swedish Board of Fisheries claims that the police authorities' investigation of violations of the fisheries regulations is not prioritized and it is common that the cases are dropped due to statutes of limitation. On the few occasions when a fisherman is convicted for having violated the fisheries regulations, the fine is often much lower than the value of the illegal catch.

Conclusion

68. The parallel audit showed that the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**) organise their fishing control differently. However, all six countries operate with elements of risk assessments, (e.g. unregistered landings), performance indicators and measurements of effect of fisheries control. In addition, they all have legal frameworks governing the fisheries control bodies, and requirements for sanctions in case of infringements of the legal regulation of fisheries in the Baltic Sea. Considering the need to establish a more effective fisheries control system in the Baltic Sea, it is crucial to implement more risk based control strategies and measure the use of fisheries control resources. Consistent and reliable data and performance indicators are essential and a prerequisite for effective fisheries control and evaluation of the effect of fisheries control strategies and the use of fisheries control resources. A major obstacle for the fisheries control is a lack of effective fisheries monitoring systems supporting a risk based fisheries control.

Catches are entered in logbooks and the fisheries control data are to some extent being cross-checked, catch registrations are, for example checked against sales notes. Often the cross-checking of fisheries control data is not done systematically and is not effectively supported by electronic fisheries information systems.

It is important to focus on development and implementation of electronic logbooks and support of cross-checking of fisheries control data by well functioning electronic fisheries information systems.

Finally, it should be emphasized that as there are major differences between the countries, for instance within the areas of expertise, training and control strategy, it is important that the Baltic Sea countries continue to work closely together, share knowledge, and build on and further develop the positive experiences gained within fisheries surveillance and control activities.

B. Quota regulation and structural policy

69. The parallel audit reviewed quota regulation and structural policy. The audit showed that the five EU Member States (**Denmark, Estonia, Finland, Lithuania, and Sweden**) generally regulate quotas and lay down structural policies in compliance with EU regulations. There are significant differences between the national quota regulations and structural policies.

In **Denmark**, new regulations effective as from January 2007, assigns quotas directly to each fishing vessel. The objective of the new regulation is to make fishing more efficient by giving the owner of the individual fishing vessel an opportunity to optimize the use of the vessel, the catch methods and income. The effect of the new regulation cannot be established at this point.

In **Estonia**, the fishing capacity is still exceeding the fishing possibilities. However, fishing is only the primary source of income for one third of all fishermen, while the remaining two thirds only rely on fishing to supplement their main income from pensions, agriculture, forestry or building activities.

In **Finland**, the fishing of several species could be increased, but there are not enough fishermen. As a result, the prices of domestic high-valued fish like pikeperch and whitefish have increased dramatically over the last years. The price of domestic pikeperch fillet now equals largely the price of beef fillet, which has traditionally been one of the most expensive food items.

In order to use fish quotas more efficiently, **Lithuania** is exchanging fish quotas with other countries.

For a description of quota regulations and structural policy in **Russia**, see the description provided by the Accounts Chamber of the Russian Federation in box 50. In the box, it is stressed that since 2006, Russia and the European Union define the status of major commercial species stocks in the Baltic Sea independently and upon the recommendation of ICES. They also identify Total Allowable Catches (TAC) for their own requirements and determine what needs to be done to control harvesting. Due to lack of agreement, international co-operation in the area of control and implementation of procedures on fisheries regulation was suspended. The EU fishery regulations and control procedures agreed for 2008 are only in a few areas in agreement with the Russian fishery rules.

It is further stressed in box 50, that in order to establish a sensible co-operation in the area of fisheries and conservation of aquatic biological resources in the Baltic Sea, the Russian Federation and the EU must step up and sign an agreement to co-operate in the area of fisheries and conservation of living marine resources in the Baltic Sea.

According to the Swedish Board of Fisheries' annual accounts for 2007, **Sweden** avoided exceeding the quotas partly because the Swedish Board of Fisheries swapped quotas with other Member States.

In Sweden, the individual fishing permits could to a greater extent be used as instruments of governing and thereby support achievement of the overall objectives set for the fisheries policy (namely sustainable exploitation of living aquatic resources and of aquaculture in the context of sustainable development, taking account of the environmental, economic and social aspects).

Also vessel permits could increasingly be used as instruments of governing to change the structure of the fishing fleet.

Since 2004, it is up to each member state to decide whether the fisheries sector shall be exempted or not from excise duties (in Sweden energy taxes and carbon dioxide tax) on vessel fuel. The fisheries sector's exemption from energy and carbon dioxide taxes contributes to lower the cost of increasing the fishing effort significantly. That counteracts one of the overall objectives of the Swedish fisheries policy, namely to reduce the fishing effort of certain vessels. The exemption counteracts also the national objective of promoting small-scale coastal fishery, as it in fact promotes large-scale trawl vessels. In certain fleet segments, direct and indirect financial support/state aid exceeds the value added, to a large extent due to the energy and carbon dioxide tax exemption.

In 2006, the Swedish government stressed the urgent requirement to introduce a discard ban. For instance, the Swedish Government referred to the fact that Denmark has had a discard ban since 2002. The Swedish Board of Fisheries has introduced a discard ban in the North Sea, Skagerrak and Kattegat as from January 1, 2009.

Box 45
Quota regulation in Denmark

New regulations have been implemented taking effect as from January 2007. The new regulations assign quotas directly to the owner of the individual fishing vessel. The annual quota for each vessel is calculated on the basis of the 2003-2005 reference period.

The quota assigned to a specific vessel can be used by the vessel or it can be assigned to a pool of quotas for one year at a time. Each participating vessel is then assigned a part of the pool. It is also possible to add up quotas for several vessels under the same ownership.

Trading of quotas takes place in fixed periods of the year.

The purpose of the new regulations is to make the fishing more efficient by giving the owners of the individual fishing vessel an opportunity to optimize the use of the vessel, the catch methods and income. The effect of the new regulations cannot be established at this point.

Box 46
Quota regulation and structural policy in Estonia

The Ministry of Agriculture manages the fishing quotas by issuing fishing permits to vessels (open sea fishermen) and fisherman's fishing permits (for inshore fishermen). Most of the EU quoted fish is landed by fishing vessels. The inshore fishermen catch only around one fourth of the entire herring quota.

Quotas for open sea fishermen are assigned in accordance with "historical fishing rights". The quotas are calculated on the basis of the operators' legal recorded catches during the previous three years. This quota calculation system is called the Iceland fishing system (as opposed to the "Olympic" system, which is more common in the Baltic Sea countries). The Iceland system does not require ongoing monitoring of the fishing quotas, as they are known to the fishing companies. If the quota is exceeded the respective company is fined.

The principle of "historical fishing right" is applied also to the inshore fishermen, and quotas are calculated on the basis of the nature and extent of legal fishing gear used in the previous three years. Fishing in the coastal zone is performed under the "limited Olympic system," which requires ongoing monitoring of fulfilment of quotas. The Ministry of Agriculture is monitoring the fulfilment of quotas on the basis of the data on catches lodged with the Fisheries Information System.

The Ministry of Agriculture and the Ministry of the Environment are entitled to suspend fishing if the quota has been fulfilled or the scientists recommend a suspension. Also the Environmental Inspectorate controls whether the fishing quotas are being complied with.

The fishing capacity of Estonia still exceeds its fishing possibilities. However, fishing is only the primary source of income for one third of all fishermen, while the remaining two thirds only rely on fishing to supplement their main income from pensions, agriculture, forestry or building activities.

In the 2004-2006 programme period, the measure "Modernisation and Renewal of Fishing Fleet" supported the introduction of selective fishing techniques, working conditions and occupational safety on the fishing vessels. The processing of fish and aquaculture products was supported to improve processing conditions, to introduce modern technologies and to reduce damage to the environment resulting from processing.

Box 47**Quota regulation and structural policy in Finland**

The European Commission regulates salmon fishing in the Baltic Sea, but national quotas are set by the European Commission and are quite high. In Finland, the average annual salmon catch represents 50 percent of the national quota. In 1996, Finland adopted strict regulatory measures for coastal salmon fisheries in order to save decaying stocks of wild salmon in the northern rivers Simojoki and Tornionjoki. The latter is one of the world's largest producers of Atlantic salmon. Current production of 0.5-0.8 million smolts provides the basis for an annual catch of 50,000-100,000 salmon in the Baltic Sea. As a result of the strict policy, the smolt density increased considerably. However, in 2004-2007, the scope of the measures was gradually reduced.

The National Audit Office of Finland has estimated the value of recreational fishing in the river Tornionjoki. The results indicate that the net benefits of recreational fishing are roughly eight times larger than the benefits of coastal fishing. The National Audit Office of Finland recommended that all salmon fishing should be permit-based, and part-time coastal fishermen should not be allowed to use professional equipment.

In April 2008, the Ministry of Agriculture and Forestry revised the decree on salmon fishing. Regulatory measures for coastal salmon fishing were to some extent made more rigorous. The regulations of offshore fishing were also made more rigorous in 2008, as the EU banned drift net fishing in the Baltic Sea. It is hoped that these gradual policy improvements will slowly reverse the current trend and increase the salmon production.

Box 48**Development of fisheries in Finland**

Fishing industries are being developed through national policy and the EU's Common Fisheries Policy. Both have as their objective the sustainable and multipurpose use of fish resources.

The Structural Programme for the Fisheries Industry and different regulatory means have been applied to achieve the objectives. About 15 million Euros is spent on developing fisheries in Finland every year. The EU is providing around half of this amount.

The development of basic production, i.e. fishing and fish farming, is hampered by numerous factors of which some are of domestic origin and others are related to the Common Fisheries Policy. For instance, the Common Fisheries Policy regulates the size of the Member States' fishing fleets. This is hardly necessary in Finland's case. Fishing could be increased for several species in Finland. But professional fishermen operating along the coast are not always granted permits to fish in under-fished private waters. The development of fish farming is hampered by the strict environmental permit system.

As a result of the problems related to the development of basic production, structural aid has mainly been allocated to fish factories and wholesalers, where investments have been possible. Some of the companies that have received aid are quite profitable, and their projects would probably have been implemented also without EU aid. The Finnish fish factories now have overcapacity. Factories that have received EU funding have been forced to close down as a result of changed market conditions.

The audit showed that aid measures do not play a key role in the development of fisheries. The fisheries administration resources should be focused more on promoting basic production, which would also contribute to ensuring jobs in the fish factories. The government should take steps to help commercial fishermen gain access to private waters and encourage fish farmers to establish their farms in areas well suited for the purpose.

Box 49**Quota regulation in Lithuania**

In the audit period, the capacity of the fishing fleet was larger than the assigned quotas. In order to use fish quotas more efficiently, Lithuania is exchanging fish quotas with other countries.

Box 50**Quota regulation and structural policy in Russia**

The Accounts Chamber of the Russian Federation has provided the following information concerning its assessment of the quota regulations and structural policy in Russia:

"The main objective of fishery regulations, designed to preserve biological resources, is to set quotas for total allowable catches (TAC). TAC is calculated for each marine species on the basis of authoritative research data on the number and biomass of the stock and forecast of changes in stocks. Ensuring conservation diversity of water biological resources and their ability for reproduction and sustainable livelihood is a mandatory condition of TAC. These requirements for preserving water biological resources were set by the UN International Convention on the Law of the Sea in 1982.

In order to improve government management of water biological resources in Russia, a new model for quota distribution has been introduced. Since 2004, users of water biological resources in the Russian Federation are awarded a share of the total volume of catch quota for a five-year period. The system of quota distribution was introduced for the benefit of quota users and to improve the social and economic welfare of fishermen in the regions. Legislative consolidation of fishermen's guaranteed access to water biological resources for five years provides the fishermen with an opportunity to plan ahead, for instance with regard to modernization of fishing vessels, onshore processing plants or introduction of advanced technologies for the processing of water bioresources.

Swapping quotas with other users takes place on the basis of an agreement. Quotas are withdrawn when the right to use water bioresources is terminated, and the quotas are sold on an auction organised by the Russian Fishery Agency. Many aspects of the new catch quota distribution mechanism still require further legal regulation, primarily with regard to exchange of quotas among users.

In compliance with the Gdansk Convention, the countries around the Baltic Sea established the International Baltic Sea Fishery Commission (IBSFC), which fixed the sizes of total allowable catches (TAC) at the annual meetings with the due consideration of ICES on internationally controlled species (cod, herring, sprat, salmon, etc.), distributed TAC, and established national quotas for aquatic bioresources catch. IBSFC's recommendations were mandatory for all Baltic Sea states and their international organisations. National fisheries regulations were in line with the IBSFC regulations on Fisheries in the Baltic Sea.

In 2006, the IBSFC ceased its activities due to the enlargement of the EU and this is the cause of the current problems related to conservation and rational use of aquatic biological resources stocks of the Baltic Sea.

Considering that major commercial fish stocks are transboundary and the fact that there are nine user countries, the prevention of illegal fishery requires coordination of evaluations of status of aquatic biological resources stocks and initiatives focused on ensuring long-term stable fisheries and conservation of Baltic Sea fish stocks.

Since 2006, Russia and the EU define the status of major commercial species stocks in the Baltic Sea independently upon the recommendation of ICES. They also identify TAC for their own requirements and determine what needs to be done to control harvesting. Due to lack of agreement, international co-operation in the area of control and implementation of procedures on fisheries regulation was suspended. The EU fishery regulations and control procedures agreed for 2008 are only in a few areas in agreement with the Russian fishery rules.

In order to establish a sensible co-operation in the area of fisheries and conservation of aquatic biological resources in the Baltic Sea, the Russian Federation and the European Union must step up and sign an agreement to co-operate in the area of fisheries and conservation of living marine resources in the Baltic Sea.

Throughout 2005-2007, Russia worked on the elaboration of a draft agreement to be entered by the EU and the Russian Federation; the agreement has not been signed as of today.

Since 2006, international co-operation in the field of conservation and rational management of living marine resources have not been implemented to their full potential and effect. The EU replaced the system of catch quota with a system of limited cod catch fishing effort; The EU also changed the requirements to fishing gear while fishing quotas and fishing restriction periods do not match the Russian fishery regulations.

The Russian Federation abide by the ICES recommendations on rational stock management and the keys for distribution of the total allowable catch between the EU and Russia applied in practice in 2004. However, the Russian fishery area in the Baltic Sea covers only about 3,000 square miles while fish stock is transboundary. This makes unilateral arrangements on fishing conservation and management futile.

In conformity with federal laws, Russia adopted numerous regulatory acts to govern fishing activities. However, an inadequate regulatory environment remains an obstacle to government supervision in the area of conservation of aquatic biological resources."

Box 51

Quota regulation and structural policy in Sweden

The number of active fishing vessels has increased slightly from year 2002 to year 2006.

The Swedish cod quota in Skagerrak has almost been halved between 2002 and 2008, but the capacity in the bottom trawler segment has been relatively stable during the same time frame. This development is an indication of the overcapacity of the Swedish fishing fleet.

Sweden's quota swapping has significantly increased during the last years, both in numbers and quantities. According to the Swedish Board of Fisheries' annual accounts for 2007, Sweden avoided exceeding the quotas partly because the Swedish Board of Fisheries swapped quotas with other Member States.

Since 2004, it is up to each member state to decide whether the fisheries sector shall be exempted or not from energy taxes. The fisheries sector's exemption from energy and carbon dioxide taxes contributes to lower the cost of increasing the fishing effort significantly. That counteracts one of the overall objectives of the Swedish fisheries policy, namely to reduce certain vessel segments' fishing effort. The exemption counteracts also the national goal of promoting small-scale coastal fishery, as it in fact promotes large-scale trawl vessels. In certain fleet segments, direct and indirect financial support/state aid exceeds the value added, to a large extent due to the energy and carbon dioxide tax exemption.

In 2006, the Swedish government stressed the urgent requirement to introduce a discard ban. For instance, the Swedish Government referred to the fact that Denmark has had a discard ban since 2002. The Swedish Board of Fisheries has introduced a discard ban in the North Sea, Skagerrak and Kattegat as from January 1, 2009.

Information on sustainable fisheries stock

70. The parallel audit reviewed the information on the impact on fisheries stocks of the quotas determined by the European Commission or other authorities. The audit showed that the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**) perform scientific investigations on sustainable fisheries stocks and provide this information to ICES.

Box 52

Information on sustainable fisheries stocks in Estonia

The Estonian Marine Institute of the University of Tartu is responsible for the performance of the monitoring and scientific investigation of the marine environment. Scientific investigation of fish stocks in the Baltic Sea, especially EU quoted species, is performed in co-operation with ICES. The objective of scientific investigations is to evaluate the condition of fish stocks pursuant to the international methodology laid down by ICES, and to develop unbiased non-political advice based on the data collected by the national programmes.

Assurance that the scientific work and monitoring data are valid and comparable to the data and work of other Member States is achieved by using the international monitoring methodology standard and by complying with the requirements of the data collection programme in the fisheries sector as stipulated in the European Commission regulations.

Box 53**Information on sustainable fisheries stocks in Russia**

Following fundamental international law standards for marine scientific research in the Baltic Sea, the Russian Federation annually provide nationwide estimates of the Baltic Sea fish stocks and fishing industry to ICES' Baltic Fisheries Assessment Working Group (WGBFAS). Since the IBSFC no longer exists, Russia independently identifies the status of the Baltic Sea commercial species fish stocks.

Due to the transboundary nature of stock distribution of major Baltic fishes, it is impossible and inefficient to carry out research in the area of fishery purely on a national basis. Research is therefore carried out jointly by experts from Russia and the Baltic Sea countries during annual meetings of the ICES WGBFAS. The latter summarizes the results of research stock testing, biological (fish weight by generation, maturity rate, gender composition) and fishery data (catch, fishery effort), provided by the Baltic Sea states (including Russia).

Thus, Russia carries out scientific research of the effect of fishery activity on the Baltic Sea fish stock in close co-operation with other countries. Total allowable catches and national quotas for Russia are elaborated on the basis of this research.

Box 54**Information on sustainable fisheries stocks in Sweden**

National scientists are working with ICES to develop unbiased, non-political advice based on the data collected by the national programmes. The ICES Advisory Committee is providing scientific advice in support of the management of coastal and ocean resources and ecosystems. It develops strategies and processes for preparation of advice, manage advisory processes, and create and provide counselling. Furthermore, the Advisory Committee provides input to the scientific strategic discussions on advisory research needs.

Member States shall ensure that primary data collected under national programmes are properly checked for errors by being subjected to appropriate quality assurance procedures. ICES works on the basis of scientific analyses, data provided from different countries, prepared in expert groups. The advisory process includes also peer reviews of analysis results before they can serve as basis for counselling.

Conclusion

71. The parallel audit showed that the five EU member States (**Denmark, Estonia, Finland, Lithuania, and Sweden**), in general regulate quotas and lay down structural policies in compliance with EU regulations. There are significant differences between the national quota regulations and structural policies. Sustainable and multipurpose use of fish resources are developed, supported and controlled by national fisheries policies and the EU's Common Fisheries Policy.

In order to establish a sensible and effective co-operation in the area of fisheries and conservation of fisheries stocks in the Baltic Sea, it is essential that the **Russian Federation** and the EU sign an agreement on co-operation in the area of fisheries and conservation of living marine resources in the Baltic Sea.

The audit showed that the six countries (**Denmark, Estonia, Finland, Lithuania, Russia, and Sweden**) perform scientific investigations on sustainable fisheries stocks and provide this information to ICES. It should be stressed that it is crucial for effective fisheries control and sustainable fisheries policy in the Baltic Sea that data are reliable and valid.

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List of abbreviations

BOOS	Baltic Operational Oceanographic System
BSAP	The Baltic Sea Action Plan
CFP	The European Union's Common Fisheries Policy
COMBINE	The Cooperative Monitoring in the Baltic Marine Environment
EC WFD	The EC Water Framework Directive
FFH Directive	The Fauna, Flora and Habitats Directive
FSS	The Federal Security Service of the Russian Federation
HELCOM	The Helsinki Commission (The Baltic Marine Environment Protection Commission)
IBSFC	The International Baltic Sea Fishery Commission
ICES	The International Council for Exploration of the Seas
IMO	The International Maritime Organization
ISO	The International Organization for Standardization
LOSC	The Law of the Sea Convention
NGO	Non-governmental organization
NOVANA	Danish National Programme for Monitoring of Water Environment and Nature
OSPAR	Co-operation to protect the marine environment of the North-East Atlantic
QUASIMEME	Quality Assurance of Information in Marine Environmental Monitoring in Europe
SAR	Search and Rescue
TAC	Total Allowable Catches
TBT	Tributyltin
VMS	Vessel Monitoring System
WGBFAS	The Baltic Fisheries Assessment Working Group
WWF	The World Wildlife Fund