

Hazardous Substances and the Helsinki and Barcelona Conventions: Origins, Results and Future Challenges

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Executive Summary

Regional sea cooperation both in the Baltic region under the Helsinki Conventions and the Helsinki Commission (HELCOM), and the Mediterranean region under the Mediterranean Action Plan (MAP) and the Barcelona Convention, started in the mid-1970s. At that time, both regions lacked any pre-existing multilateral institutions to which environmental advocates could turn, and new ones had to be built from scratch. Under the new institutions, administrative Secretariats were established. Over the years, the activities of these Secretariats have grown in size and scope. While the HELCOM Secretariat has continued to be only administrative centre, several additional issue-specific administrative centers have been set up under the MAP.

Cooperation was initially directed at establishing collaborative frameworks for multilateral technical and scientific work, and policy making. In the Baltic case this meant trying to overcome the cold war East-West divide, while Mediterranean cooperation occurred in the face of North-South, Arab-Israeli, and Greek-Turkish tensions. The first cooperative efforts took place under great environmental uncertainty, and a major task during the early phase was to generate commonly accepted technical and scientific environmental knowledge as a basis for political cooperation. This typically occurred through interaction and dialogue among scientific, environmental activist, and policy making communities, generating environmental assessments that examined and summarized prevailing scientific and technical understanding of particular issues.

More recent cooperation has focused on formulating joint technical and scientific standards and policy goals, and pushing domestic implementation of these commitments to improve regional environmental quality. Over time, both regions have created a wide set of joint rules and standards on hazardous substances. Extensive HELCOM environmental assessment reports and pollution compilation reports show signs of clear environmental quality improvements in the Baltic Sea over the past two decades regarding hazardous substances, although there are remaining problems of high concentration levels of some monitored hazardous substances. There are also indications of problems with unknown substances. Mediterranean compliance and implementation is generally more difficult to assess due to a lack of reliable environmental data on hazardous substances in the Mediterranean Sea, as well as on state implementation measures. It is, however, generally believed that much less has been achieved in the Mediterranean than in the Baltic, and existing Mediterranean data point to continuing problems with several hazardous substances.

The last section of the paper discusses seven major interconnected challenges for future management of hazardous substances in the Baltic and Mediterranean regions: (i) encouraging ratification; (ii) engendering implementation and building state capacities; (iii) financing cooperation and implementation; (iv) improving data availability, quality and comparability; (v) strengthening existing regulations and incorporating new issues, (vi) assessing and achieving environmental improvements; and (vii) coordinating international management of hazardous substances.

1. Introduction

Many multilateral institutional responses to environmental threats have been set up over the past 30 years at both global and regional scales.¹ Several of the regional institutions focus their environmental efforts on regional seas, where the management of hazardous substances is often central. This paper examines actions on hazardous substances taken in two of these regional seas institutions. The first is cooperation in the Baltic region under the two Helsinki Conventions and the Helsinki Commission (HELCOM). The other is cooperation in the Mediterranean region under the Mediterranean Action Plan (MAP), and the Barcelona Convention and its associated Protocols. Both these cooperation arrangements have been formalized in international law through treaty negotiation, and have experienced over 25 years of multilateral environmental protection efforts.

For the purpose of this paper, hazardous substances broadly are substances that are persistent in the environment, are liable to bioaccumulate in living organisms, and are toxic to wildlife and humans. The persistence, bioaccumulation and toxicity criteria, however, should not be seen as exclusive. Parties to both Baltic and Mediterranean cooperation may deem a substance to be hazardous even if it does not fully meet all the criteria for toxicity, persistence and bioaccumulation if there are other grounds for concern, such as suggestions of endocrine disruptive functions or damage to immune systems.

One group of hazardous substances is a sub-set of human-made organic substances. Some of these are used as pesticides and industrial chemicals with emissions originating from a wide range of sources, including agriculture, manufacturing, and use of goods. Some hazardous organic substances can also be generated as by-products of production, waste incineration, and combustion. A second group of hazardous substances is heavy metals, which are naturally occurring trace elements in the environment, and essential nutrients for living organisms. Metals can also be pollution problems, however, with increasing concentrations and exposures. Anthropogenic sources of metal pollution include mining, industrial production, combustion processes, and waste incineration.

This paper is structured as follows: Section 2 examines activities in the Baltic region, followed by a study of activities in the Mediterranean region in section 3. Both of these sections begin with a general presentation of the institutional and organizational framework for regional cooperation. This is followed by a more specific examination of early and ongoing multilateral efforts regarding hazardous substances. In section 4, compliance and implementation in the Baltic and Mediterranean are assessed, respectively. Section 5 looks at future challenges for hazardous substance management in both regions.

¹ This paper has been written under the Swedish research program New Strategy for Risk Management of Chemicals (NewS). The authors gratefully acknowledge the financial support of NewS. Christine Füll, Kaj Forsius and Klaus Hagebro at HELCOM have been most helpful in providing very valuable information, explaining actions under HELCOM, and giving comments on our work. Help and comments have also been given by Gunnar Bengtsson, Stephen Blinn, Noelle Eckley, Margareta Stackerud, Ramon Guardans, Fouad Abousamra, Joan Albaiges, Eda Andresmaa, and Jana Simanovska. The views expressed in the paper are solely those of the authors.

2. The Baltic Sea and the Helsinki Conventions

The Baltic Sea area comprises the Baltic Sea proper, the Gulf of Bothnia, the Gulf of Finland, and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.43'N. Covering an area of about 370,000 square kilometers, the Baltic Sea is one of the world's largest brackish water basins. Approximately 85 million people live and work in the Baltic Sea catchment area. Much of the human activity has been shown to result in negative environmental and human health effects throughout the Baltic region. Regional Baltic Sea cooperation aimed at abating some of these negative effects has been most concerned with increased levels of nutrients, decreased oxygen levels, threats to biodiversity, and increased levels of hazardous substances (Stanners and Bourdeau, 1995; European Environment Agency, 1998). This cooperation has taken place mainly under the auspices of the 1974 and 1992 Helsinki Conventions and HELCOM.²

This section examines Baltic regional sea cooperation under the two Helsinki Conventions and HELCOM. Subsection 2.1 gives a brief introduction to Baltic regional sea cooperation. It outlines the main multilateral agreements that guide cooperation, and present the organizational structure under which cooperation takes place. Subsection 2.2 is further divided into two parts. Subsection 2.2.1 outlines early Baltic actions on hazardous substances, and 2.2.2 presents ongoing Baltic actions on hazardous substances.

2.1. Background: Baltic Environmental Cooperation

The 1974 Helsinki Convention was negotiated among all seven of the Baltic littoral states (at that time) as a response to growing scientific and public concern about the state of the Baltic Sea environment.³ The Convention entered into force in May 1980 after ratification by all seven states, and was the first regional multilateral agreement limiting marine pollution from both land-based and sea-based sources, whether air-borne or water-borne. The Baltic Sea protection regime initially operated across the ideological and strategic divide between East and West, and also became a model for other regional environmental protection efforts (Haas, 1993; Hjorth, 1992, 1996; VanDeveer, 1997).

The 1992 Helsinki Convention updated the 1974 agreement, expanding the scope of multilateral cooperation and strengthening collaborative environmental policy in light of regional political changes, developments in international environmental law, and the creation of the 1982 United Nations Convention on the Law of the Sea.⁴ The 1992 Convention has been signed by all states bordering the Baltic Sea; i.e. Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russian Federation, and Sweden. The 1992 Convention, unlike the 1974 Convention, also allows for European Community membership, which became a Party in 1994. Following the ratification of all nine Baltic littoral states and the European Community, the 1992 Convention entered into force in

² Both the 1974 and the 1992 Helsinki Conventions are formally named the Convention on the Protection of the Marine Environment of the Baltic Sea Area. Other Baltic regional environmental and resource-related agreements include the 1962 Agreement on the Protection of the Salmon in the Baltic Sea and the 1973 Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and Belts.

³ The seven states were Denmark, the Federal Republic of Germany, Finland, the German Democratic Republic, Poland, the Soviet Union, and Sweden.

⁴ The full 1992 Convention text can be found at <http://www.helcom.fi/helcom/convention.html>.

January 2000. The Convention spells out several important general guiding principles for multilateral Baltic cooperation, such as the precautionary principle and the polluter pays principle, and that Parties should always apply best environmental practice and best available technology.

The first Helsinki Convention established the Baltic Marine Environmental Protection Commission, or HELCOM, in Helsinki as the authoritative decision-making body. HELCOM consists of delegates from all 10 Parties. All HELCOM decisions are taken by consensus under the principle of one Party, one vote. If all EU member states agree on a policy, the European Community cannot vote against it. HELCOM, with the help of a small administrative Secretariat also located in Helsinki, began operation on an interim basis immediately after the signing of the 1974 Convention. HELCOM meets at least annually, occasionally at the ministerial level. The Ministerial Conferences generally garner regional media attention and result in announcements of common goals in the form of Ministerial Declarations. As such, the Ministerial Conferences have been important in driving work forward, setting interim and long-term goals for common actions (Haas, 1993).

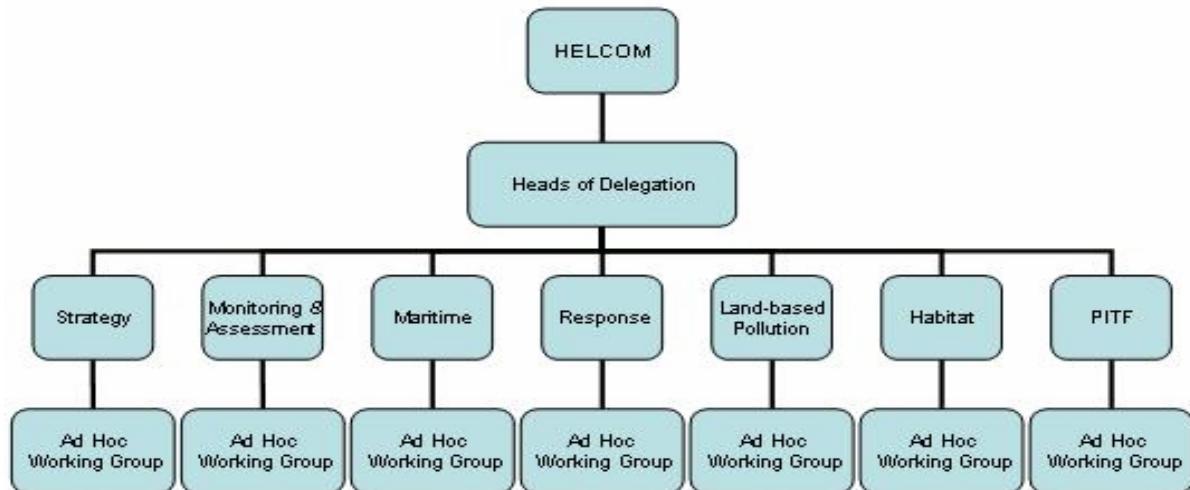
HELCOM is almost entirely dependent on financial contributions from the Parties. During the interim period (1974-1980), Finland and Sweden provided the resources necessary to support the maintenance of international cooperation. Their early sponsorship and continued support has been essential for the development of HELCOM. In theory, the costs of the Commission are shared equally among the Parties with Finland making an extra yearly contribution to support the Secretariat. In practice, the western Baltic states carried the brunt of the financial responsibilities for much of the 1980s and 1990s. Currently, Russia has a slightly decreased contribution, and the Baltic Republics have a contribution which is lower than the other countries.⁵ The European Community has a fixed (small) contribution.

The HELCOM organizational structure has changed over the past 25 years in response to changes in work focus. As cooperative efforts have expanded, HELCOM has developed into an important centre of both regional scientific and policy making activities (VanDeveer 1997). The work of the Commission is currently carried out by six Subsidiary Bodies and a Programme Implementation Task Force. Under the various Subsidiary Bodies, different ad-hoc Working Groups and Project Teams can be established (see figure 1).⁶ Most of the day-to-day HELCOM activities are highly science and technology intensive work, and participants in the various HELCOM sub-groups generally have specialized scientific and technological education and professional experience.

⁵ Generally, transition states, however, pay the entire cost for their own participation and contribute resources to the meetings and workshops that are held in their countries.

⁶ In addition to the ten HELCOM Parties, PITF membership includes Belarus, the Czech Republic, Norway, Slovakia, Ukraine, the Council of Europe Development Bank, the European Bank for Reconstruction and Development, the European Investment Bank, the Nordic Environment Finance Corporation, the Nordic Investment Bank, the World Bank, and the International Baltic Sea Fishery Commission.

Figure 1: HELCOM Organizational Structure



- The Strategy Group monitors and assesses implementation progress. It also seeks to develop coherent HELCOM policies and strategies, as well as works to improve the involvement and support from both private and public business organizations and financial institutions.
- The Monitoring and Assessment Group identifies and quantifies anthropogenic discharges and activities with regards to their effects on the marine environment.
- The Maritime Group works to prevent pollution from ships from both operational discharges and accidental pollution.
- The Response Group seeks to ensure quick international and national responses to maritime pollution incidents.
- The Land-based Pollution Group identifies point sources and diffuse sources of land-based pollution, proposes actions, and promotes investment activities to reduce emissions and discharges.
- The Nature Conservation and Coastal Zone Management Group, or the Habitat Group, promotes ecosystem approaches to the management of coastal and marine natural resources and foster coastal zone management plans with the aim to conserve and protect natural habitats, biological diversity and ecological processes.
- The Programme Implementation Task Force (PITF) coordinates the implementation of the Baltic Sea Joint Comprehensive Action Programme (JCP), which was established in 1992 and updated in 1998. JCP focuses on investment activities for the upgrading of point-pollution and non-point pollution sources and develops management plans for coastal lagoons and wetlands.

In addition to the Ministerial Declarations, the main HELCOM policy instrument is the Recommendations that are issued by HELCOM. The Recommendations focus on both environmental policy content and regulatory practice, and on technical and scientific monitoring and assessment practices. The Recommendations are developed in the various HELCOM Subsidiary Bodies and Working Groups, which make "recommendations" on common technical, scientific and policy standards and procedures to the HELCOM meetings that unanimously decide whether a Recommendation should be issued. HELCOM Recommendations are not legally binding, but because they are developed jointly among all Parties and each Party *de facto* has veto power, the adopted Recommendations carry considerable moral and political weight, and Parties are expected to fully incorporate Recommendation stipulations into their domestic legislation. So far, approximately 200 different HELCOM Recommendations have been formulated, 134 of which are currently valid. Over time, Recommendations have tended toward greater stringency and precision, and over 60 HELCOM Recommendations supersede or supplement earlier, less stringent, or less specific, ones.

Like most international environmental arrangements, the Helsinki Conventions make implementation the responsibility of the Parties themselves. Some states use domestic Baltic Sea committees or HELCOM offices to implement HELCOM decisions whereas others make it the overall responsibility of the Ministry of the Environment to coordinate domestic implementation with other relevant ministries. The first Helsinki Convention contained some minor provisions for reporting by the Parties to HELCOM on domestic pollution, and Article 16 of the 1992 Convention assigns Parties with a more clear obligation to report to HELCOM on domestic implementation. HELCOM reports on domestic implementation have been elaborated since 1986. In recent years, HELCOM officials have become more explicit about which Recommendations and reporting requirements have been implemented by states. However, HELCOM (like most international environmental Secretariats) does not conduct any independent reviews of ground-level compliance and implementation in member states besides the data that are reported by the member states.

HELCOM actively seeks to establish common scientific and technical standards as a basis for policy making. Throughout the 1970s and 1980s, however, HELCOM met with (at best) limited success in establishing common criteria. Among the most serious impediment to establishing common standards was differing approaches to environmental policy and regulation among the Parties (Laane, 1995). The western Baltic countries relied on emission standards of specific substances or point sources. By the 1980s, these emissions standards were often based on determinations of the best available technology. In contrast, eastern Baltic countries used environmental quality standards which specified maximum average pollutant levels for areas surrounding emissions sources. Throughout most of the HELCOM's history, differences between emission standards and environmental quality standards were unresolved. The 1992 Convention does not require

emissions standards. However, many recent HELCOM Recommendations set emissions standards while none apply environmental quality standards.⁷

HELCOM undertakes both extensive periodic Baltic environmental assessments and major pollution load compilations, designed to generate data on the Baltic environmental quality, and function as a basis for policy making by highlighting areas that are in need of greater technical, scientific and political attention. The fourth major Baltic assessment, covering 1994 to 1998, was presented in the summer of 2001, and was the result of efforts of over 150 experts from all Parties (HELCOM, 2001b). The latest pollution load compilation was presented in 1998 (HELCOM, 1998a). In addition to these large periodic assessments, HELCOM Subsidiary Bodies produce smaller ad hoc assessments on a regular basis. The years of HELCOM assessment activity has improved the state of knowledge about the Baltic regional ecosystem and many of its processes and constituent organisms. It has also significantly increased and maintained Baltic regional assessment capacity for marine pollution and protection issues, improving monitoring, data collection and calibration (Farrell, VanDeveer and Jäger, 2001).

In addition to the ten HELCOM Parties, HELCOM activities also include a number of governmental, inter-governmental, and non-governmental observers. Observers lack the right to vote on final decisions, but are encouraged to inject information as they see fit. HELCOM periodically reviews the contributions of the observers, and only those observers that take an active interest in the work of HELCOM and its subsidiary bodies get renewed observer status. Currently, observers to HELCOM include two states with territory within the Baltic Sea catchment area, 13 inter-governmental organizations, and 19 non-governmental organizations (NGOs).⁸

⁷ This may change in the future as the EU Water Framework Directive includes the elaboration of Ecological Qualities Objectives. However, such measures will be added to emissions standards, not replace them.

⁸ The HELCOM observers are: States: Belarus and Ukraine (occasionally officials from the Czech Republic, Slovakia, and Norway are invited to participate). Inter-governmental Organizations: Baltic 21 – An Agenda for the Baltic Region; Council of Europe Development Bank (CEB); Intergovernmental Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS); Intergovernmental Oceanographic Commission (IOC); International Atomic Energy Agency (IAEA); International Baltic Sea Fishery Commission (IBSFC); International Council for the Exploration of the Sea (ICES); International Maritime Organization (IMO); Oslo and Paris Commission (OSPAR); United Nations Economic Commission for Europe (UNECE); United Nations Environment Programme (UNEP); World Health Organization - Regional Office for Europe (WHO/EURO); and World Meteorological Organization (WMO). Non-governmental Organizations: Alliance for Maritime Regional Interests in Europe (AMRIE); Baltic Farmers' Forum on Environment; Baltic Ports Organization (BPO); Baltic Sea 2008; the Baltic and International Maritime Council (BIMCO); BirdLife International; Coalition Clean Baltic (CCB); Conference of Peripheral Maritime Regions of Europe – Baltic Sea Commission (CPMR); Baltic Sea Commission, European Chlor-Alkali Industry (EURO CHLOR); European Dredging Association (EuDA); European Fertilizer Manufacturers Association (EFMA); European Sea Ports Organization (ESPO); European Union for Coastal Conservation (EUCC); Greenpeace International; International Association of Oil and Gas Producers (OGP); International Council for Local Environmental Initiatives (ICLEI); International Network for Environmental Management (INEM); Union of the Baltic Cities (UBC); and World Wide Fund for Nature (WWF International).

2.2. Baltic Cooperation on Hazardous Substances

The 1974 Helsinki Convention is unique in its comprehensive coverage of pollution sources rather than pollutants (Haas, 1993). The Convention regulates pollution from both land-based and sea-based sources, and commits states to prohibit dumping in the Baltic. In this capacity, the 1974 Conventions was a first attempt to take multilateral actions on hazardous substances across the Baltic region. In 2002, more than 20 Recommendations are relevant with regard to hazardous substances. Recommendation 19/5 (discussed below) is the most important one.

2.2.1. Early Baltic Actions on Hazardous Substances

Regulating hazardous substances, the 1974 Helsinki Convention employed the use of so called "black" and "grey" lists outlined in annexes. Parties committed to "counteract" the airborne and waterborne introduction into the Baltic of substances on the black list; DDT (dichlorodiphenyl trichloroethane) and its derivatives DDE and DDD, PCBs (polychlorinated biphenyls), and PCTs (polychlorinated terphenyls). Parties should "strictly limit" pollution of substances on the grey list. Substances on the grey list included mercury, cadmium, arsenic, lead, chromium, copper, nickel, zinc, polycyclic aromatic hydrocarbons (PAHs), and "persistent pesticides." This use of black and grey lists is consistent with the 1974 Convention for the Prevention of Marine Pollution from Land-based Sources and the 1972 London Dumping Convention. With the use of such lists in these early conventions and numerous subsequent accords, black and grey lists emerged as a common work method in many international environmental agreements.

By the early 1980s, after the 1974 Convention had entered into force, HELCOM began to amass a limited number of environmental and organizational successes. At that time, HELCOM also issued the first Recommendations on hazardous substances. Recommendations from 1982 (Number 3/2), 1983 (Number 4/1), and 1985 (Number 6/1) targeted the gradual phase-out of DDT, PCBs, and PCTs. Recommendations from 1985 (Numbers 6/3, 6/4, and 6/6) and 1988 (Number 9/4) aimed to reduce emissions and discharges of mercury, cadmium, and lead. Annex 1 lists all HELCOM Recommendations relevant for the management of hazardous substances (with the exception of 19/5, see below).⁹

However, despite actions taken, the HELCOM Parties in the latter part of the 1980s believed that the anthropogenic impact on the Baltic Sea through hazardous substances was still intolerable high. As a result, the Parties in the 1988 Ministerial Declaration on the Protection of the Marine Environment of the Baltic Sea Area declared an intention to initiate further provisions for reducing discharges from point sources of hazardous substances based on best available technology. It was also recognized that any effective actions had to include non-point sources as well. To achieve this objective, the ministers decided to aim at a substantive reduction of discharges of each of the hazardous substances that were most harmful to Baltic ecosystems in the order of 50% of the total discharges as soon as possible but not later than 1995.

The figure of 50% was largely arbitrarily. It was not based on any preceding measured concentrations in the environment, and a specific list of substances listed to

⁹ All valid Recommendations are listed on <http://www.helcom.fi/helcom/recommendations.html>.

which the reduction goal would apply was not yet finalized. Working towards the 50% reduction goal, and trying to clarify it, the Working Group on Criteria & Standards for Discharges of Harmful Substances to the Baltic Sea conducted a revision of the existing system for handling harmful substances. This revision resulted in two outcomes. The first was a draft list of 46 priority hazardous substances that were deemed to require immediate action. Secondly, the substance list was supplemented with a list of principles for national programs to achieve the 50% reduction goal for the identified substances. The draft list was endorsed by the HELCOM Technological Committee in October 1990, and was adopted by HELCOM in February 1991. HELCOM further endorsed the inclusion of Lindane to the priority list at its meeting in February 1993, in total making it 47 priority substances identified for the 50% reduction goal by 1995. See Annex 2 for a list of all 47 substances.

Implementation of the 50% reduction goal progressed in the early and mid-1990s, but with some difficulty. Reported data from states varied based on sampling, analytical and calculation methods, which made it very difficult to compare data from different countries. Also, most states were unable to set a 1987 baseline for most of the selected substances for measuring emission reductions. The final implementation report, which was presented at 1998 Ministerial Conference, concluded that despite efforts by all the Parties, the overall nation-wide 50% reduction target had not been reached for the 47 substances (HELCOM, 1998b).

2.2.2. Ongoing Baltic Actions on Hazardous Substances

Because the general goal of the 1988 Ministerial Declaration had not been reached, HELCOM decided to continue with its efforts towards the 50% reductions. At its meeting in March 1998, HELCOM specified more detailed targets, aimed at the most cost effective solutions, to be implemented not later than 2005 and reviewed provisionally in 2003. To that end, HELCOM at the meeting adopted Recommendation 19/5 on hazardous substances. Recalling the 1996 Kalmar Communique of the Council of the Baltic Sea States for the development of a new Action Programme, the objective is to prevent pollution of the Baltic by continuously reducing discharges, emissions and losses of hazardous substances towards the target of their cessation by the year 2020, with the ultimate aim of achieving concentrations in the environment near background values for naturally occurring substances and close to zero for human-made synthetic substances.¹⁰

A Project Team on Hazardous Substances was created under the HELCOM Land-based Pollution Group in 1998 with the purpose of acting towards the implementation of Recommendation 19/5. Funding for the Project Team was provided by the European Community, Sweden and HELCOM to run the implementation project until December 2002. The Project Team consists of members from all Parties and representatives from three NGOs; the European Chemical Industry Council (CEFIC), the European Chlor-

¹⁰ The Council of the Baltic Sea States (CBSS) was established in 1992 by the Foreign Ministers of Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Russia, Sweden, and the European Commission. CBSS meets annually and serves a forum for cooperation and coordination among the Baltic states, seeking to achieve a democratic development in the Baltic region, a greater unity between the member countries, and to secure regional economic development. More information about the CBSS can be found at <http://www.baltinfo.org>.

Alkali Industry (EuroChlor), and the World Wide Fund for Nature (WWF). The aim of the Project Team includes the identification of sources, pathways and fate of hazardous substances; surveying domestic and international legislation and market situations; and the initiation and promotion of the development of different policy instruments aiming at cessation of emissions, losses, and discharges by substitution and/or minimized used.

Recommendation 19/5 lists in Appendix 2 some 280 hazardous substances with individual CAS-numbers as potential substances of concern to be considered by HELCOM. Out of these, 43 substances were selected for immediate action, i.e. targeted for cessation of emissions, losses and discharges. Some targeted substances can still be used in closed systems, whereas others, like PCBs, should be phased-out altogether. The shorter list of 43 was based on previous work within HELCOM, as well as actions in other fora such as the Oslo-Paris Commission (OSPAR).¹¹ In addition, HELCOM still required member states to continue the work on the 47 substances that had earlier been targeted for the 50% reduction goal, which was partly overlapping with the new list of 43 substances under Recommendation 19/5.

At its first meeting, in October 1998, the Project Team decided to further cut the priority list of 43 substances to 35 substances based on data availability; eight substances were excluded as Parties lacked any available data that could serve as a basis for reduction measures. Dioxins were added in 2001. The currently selected 36 substances are listed in table 3. To proceed, the Project Team designed a pilot program to assess the effectiveness of the implementation of the 1988 Ministerial Declaration with regards to the selected substances, and also reasons that implementation problems had been encountered. The Project Team has been striving to improve coverage of data reporting (see e.g. HELCOM Project Team on Hazardous Substances, 2002a). To that end, the Project Team constructed a questionnaire that was submitted to all Parties. The Parties were required to report national figures on changes in discharges, emissions and losses of the identified substances in the Baltic catchment area for the late 1980s and the late 1990s, respectively. They were also required to describe planned measures and activities for implementation.

¹¹ More information on OSPAR can be found at <http://www.ospar.org>.

Table 1: Hazardous Substances Selected for First Action under HELCOM Recommendation 19/5.

| No. | CAS Number | Substance | Group |
|-----|-------------|-------------------------------------------------------------|-------------|
| 1. | 85535848 | Chlorinated paraffins, short chained | Alkanes |
| 2. | 9016459 | Nonylphenolethoxylate & degradation/transformation products | Phenols |
| 3. | 104405 | Nonylphenol, 4- | Phenols |
| 4. | 1336363 | PCB | Industrial |
| 5. | 7440439/n.a | Cadmium/compounds | Metals |
| 6. | 7439921/n.a | Lead/compounds | Metals |
| 7. | 7439976/n.a | Mercury/compounds | Metals |
| 8. | 7782492/n.a | Selenium/compounds | Metals |
| 9. | Organotin | Organotin Compounds | |
| 10. | 106934 | 1,2-Dibromoethane | Pesticides |
| 11. | 93765 | 2,4,5-T | Pesticides |
| 12. | 107131 | Acrylonitrile | Pesticides |
| 13. | 309002 | Aldrin | Pesticides |
| 14. | 140578 | Aramite | Pesticides |
| 15. | 319857 | beta-HCH | Pesticides |
| 16. | 57749 | Chlordane | Pesticides |
| 17. | 143500 | Chlordecone (Kepone) | Pesticides |
| 18. | 6164983 | Chlordimeform | Pesticides |
| 19. | 50293 | DDT | Pesticides |
| 20. | 60571 | Dieldrin | Pesticides |
| 21. | 72208 | Endrin | Pesticides |
| 22. | 144-49-0 | Fluoroacetic acid and derivates | Pesticides |
| 23. | 608731 | HCH | Pesticides |
| 24. | 76448 | Heptachlor | Pesticides |
| 25. | 118741 | Hexachlorobenzene | Pesticides |
| 26. | 297789 | Isobenzane | Pesticides |
| 27. | 465736 | Isodrin | Pesticides |
| 28. | 4234791 | Kelevan | Pesticides |
| 29. | 58899 | Lindane | Pesticides |
| 30. | 2385855 | Mirex | Pesticides |
| 31. | 4636833 | Morfamquat | Pesticides |
| 32. | 1836755 | Nitrophen | Pesticides |
| 33. | 87865 | Pentachlorophenol | Pesticides |
| 34. | 82688 | Quintozene | Pesticides |
| 35. | 8001352 | Toxaphene | Pesticides |
| 36. | | Dioxins | By-products |

In a first assessment of the data that was gathered through the questionnaire in January 2000, the Project Team found the submitted data to be insufficient for the intended assessments. As a result, the Parties were requested to review and improve the submitted information. At the meeting in March 2001, the Project Team found that available data still did not allow a final quantitative judgment whether or not the reduction goal of 50% was reached. However, by using more qualitative information, it was deemed likely that the 50% target was “largely reached,” although specific substances in specific applications were judged to be in need of further attention (HELCOM Project Team on Hazardous Substances, 2001a). This conclusion was based on information from each Party that the selected substances were no longer in use or subject to strict restrictions. Further, socio-economic changes since 1989 in the former communist countries have led to a significant decrease in agricultural and industrial production, thereby decreasing emissions and discharges. However, with growing economies in the future, emissions of hazardous substances may increase in these countries again. Also, emission of certain hazardous substances may also have increased despite declines in overall industrial and agricultural output. In addition, for some substances neither socio-economic development, nor reduction programs and investments in wastewater technology influence levels of environmental discharges. This is for example the case for diffuse sources of metals and releases of PCBs from equipment and waste. The final report of the current Project Team will be presented in late 2002.

3. The Mediterranean and the Barcelona Convention

The Mediterranean Sea is a large semi-enclosed sea with a total surface area of approximately 2.5 million km² and an 80 year water renewal time. Water enters from the Atlantic through the straits of Gibraltar, from the Black Sea through the Dardanelles, and the Suez Canal connects the Mediterranean with the Red Sea since 1869. Including islands, the Mediterranean coastline exceeds 45,000 km in length. It is shared by 20 states, and one projection suggests that population in the Mediterranean area can be expected to increase from 323 million in 1980 to 433 million in 2000 and 547 million by 2025 (UNEP, 1989). In addition, the Mediterranean attracts some 200 million tourists each year. The Mediterranean also serves as a major oil shipping area, accommodating 35 percent of sea oil transport despite constituting only one percent of the world ocean (Manos, 1991). As in the Baltic, many human activities result in environmental stresses and human health problems, such as high nutrient concentrations and eutrophication, increasing incidences of algal blooms, as well as high levels of hazardous substances (Stanners and Bourdeau, 1995; EEA, 1998). Regional multilateral cooperation to abate these problems has mainly taken place under the umbrella of the 1975 Mediterranean Action Plan (MAP) and the 1976 Barcelona Convention (amended in 1995).

This section examines Mediterranean regional sea cooperation under the MAP and the Barcelona Convention and its associated Protocols. Subsection 3.1 gives a brief introduction to Mediterranean regional sea cooperation. It outlines the main multilateral agreements guiding cooperation, and presents the organizational structure under which cooperation takes place. Subsection 3.2 is further divided into two parts. 3.2.1 describes

early Mediterranean actions on hazardous substances, and 3.2.2 presents ongoing Mediterranean actions on hazardous substances.

3.1. Background: Mediterranean Environmental Cooperation

When the first Mediterranean environmental protection agreements were developed in the mid-1970s, many states in the region lacked the expertise, equipment and administrative capacity for environmental monitoring, control and regulation (Boxer, 1991). However, concern among scientists and policy-makers mostly in Europe was mounting as a result of clearly visible and topical environmental problems such as oil pollution from tanker traffic. Beach closings, some due to disease outbreaks, demonstrated existing and potential economic costs of environmental degradation. To raise awareness and expand knowledge about pollution and its effects in the Mediterranean, several international initiatives were launched by inter-governmental organizations, including the Food and Agricultural Organization (FAO), the Intergovernmental Maritime Consultative Organization (IMCO), the World Health Organization (WHO), United Nations Environment Programme (UNEP), as well as NGOs such as the United Towns Organization and the International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM). These organizations sponsored international scientific conferences, workshops and reports, explicitly attempting to organize and codify regional scientific consensus about emerging environmental threats and needed research.

As a result of actions primarily taken by FAO's General Fisheries Council for the Mediterranean and UNEP, a multilateral agreement on the MAP was adopted by (at the time) all 16 Mediterranean states in 1975. Since then, the number of MAP Parties has increased to 21, all current states with a Mediterranean coast line, and the European Community. While Mediterranean cooperation has not been plagued with cold war East-West tension as in the Baltic case, it has meant trying to overcome highly difficult North-South, Arab-Israeli, and Greek-Turkish political tensions. The MAP remains the premiere regional multilateral initiative aimed at protecting and improving the environmental quality of the Mediterranean Sea, and broadly outlines legal, organizational and financial, and technical and scientific components of cooperation. Almost half of the Parties, however, have generally low participation rates in MAP activities (Skjærseth 1996, 2002).

The legal MAP component consists of the 1976 Barcelona Convention, which was amended in 1995 to incorporate new concepts in environmental governance based on the Law of the Sea and principles of sustainable developments, together with a host of associated Protocols. Scientists at the time of the negotiations of the Barcelona Convention generally believed that the Black and Mediterranean Seas form a single watershed. However, when the Convention was developed, states eliminated the Black Sea areas from coverage in the Convention, with little protest from UNEP, to keep the Soviet Union out of the regime (Haas, 1990). As a framework convention, the Barcelona Convention leaves all the specific anti-pollution commitments to the Protocols. To date, eight Protocols have been adopted, two of which have later been amended. Two of the more recent Protocols are replacements for earlier Protocols. The different Protocols cover dumping at sea, emergency responses, pollution from land-based sources, specially

protected areas and biodiversity, offshore activities, and the transboundary transport of hazardous wastes (See table 2).

Table 2: List of MAP Legal Agreements

| Agreement | Adopted | In Force | Amended |
|----------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------------------------|
| Barcelona Convention | 16.2.76 | 12.2.78 | 10.6.95 (Not yet in force) |
| Dumping Protocol | 16.2.76 | 12.2.78 | 10.6.95 (Not yet in force) |
| Emergency Protocol | 16.2.76 | 12.12.78 | - |
| Land-based Sources Protocol | 17.5.80 | 17.6.83 | 7.3.96 (Not yet in force) |
| Specially Protected Areas Protocol | 3.4.82 | 23.3.86 | - |
| Offshore Protocol | 14.10.94 | - | - |
| Specially Protected Areas and Biodiversity Protocol (replaces the 1982 Specially Protected Areas Protocol upon entry into force) | 10.6.95 | - | - |
| Hazardous Wastes Protocol | 1.10.96 | - | - |
| Prevention and Emergency Protocol (replaces the 1976 Emergency Protocol upon entry into force) | 25.1.02 | - | - |

MAP Conventions and Protocols do not require full ratification for entry into force. Necessary ratification rates for entry into force vary from approximately one-third to three-quarters of all Parties.¹² However, as shown in tables 2 and 3, ratification of the amended Convention and the most recent Protocols have been slow, creating a legal patchwork of unevenly ratified agreements. In addition to the Protocols, the MAP has also developed a small number of Regional Action Plans to encourage sustainable development and the protection of individual species. As under HELCOM, full responsibility of implementation of the legal requirements is left to the individual Parties, but with available support from a host of MAP sub-organizations.

¹² The Barcelona Convention could also not enter into force until at least one of its Protocols had done so.

Table 3: Signatures and Ratifications of the Barcelona Convention and Its Protocols.

| Party | Barcelona Convention | | | Dumping Protocol | | | Emergency Protocol | | 2002 Emergency Protocol | |
|-----------------------|----------------------|------|------|------------------|------|------|--------------------|------|-------------------------|-----|
| | Sig | Rat | Amd | Sig | Rat | Amd | Sig | Rat | Sig | Rat |
| Albania | | 1990 | | | 1990 | | | 1990 | | |
| Algeria | | 1981 | | | 1981 | | | 1981 | 2002 | |
| Bosnia-Herzeg. | 1976 | 1992 | | | 1992 | | | 1992 | | |
| Croatia | 1976 | 1991 | 1999 | | 1991 | 1999 | | 1991 | 2002 | |
| Cyprus | 1976 | 1979 | 2001 | 1976 | 1979 | | 1976 | 1979 | 2002 | |
| European Com. | 1976 | 1978 | 1999 | 1976 | 1978 | 1999 | 1976 | 1981 | 2002 | |
| Egypt | 1976 | 1978 | 2000 | 1976 | 1978 | 2000 | 1976 | 1978 | | |
| France | 1976 | 1978 | 2001 | 1976 | 1978 | 2001 | 1976 | 1978 | 2002 | |
| Greece | 1976 | 1979 | | 1977 | 1979 | | 1976 | 1979 | 2002 | |
| Israel | 1976 | 1978 | | 1976 | 1984 | | 1976 | 1978 | | |
| Italy | 1976 | 1979 | 1999 | 1976 | 1979 | 1999 | 1976 | 1979 | 2002 | |
| Lebanon | 1976 | 1977 | | 1976 | 1977 | | 1976 | 1977 | | |
| Libya | 1976 | 1979 | | 1976 | 1979 | | 1977 | 1979 | 2002 | |
| Malta | 1976 | 1977 | 1999 | 1976 | 1977 | 1999 | 1976 | 1977 | 2002 | |
| Monaco | 1976 | 1977 | 1997 | 1976 | 1977 | 1997 | 1976 | 1977 | 2002 | |
| Morocco | 1976 | 1980 | | 1976 | 1980 | 1997 | 1976 | 1980 | 2002 | |
| Slovenia | | 1994 | | | 1994 | | | 1994 | 2002 | |
| Spain | 1976 | 1976 | 1999 | 1976 | 1976 | 1999 | 1976 | 1976 | 2002 | |
| Syria | | 1978 | | | 1978 | | | 1978 | 2002 | |
| Tunisia | 1976 | 1977 | 1998 | 1976 | 1977 | 1998 | 1976 | 1977 | 2002 | |
| Turkey | 1976 | 1981 | | 1976 | 1981 | | 1976 | 1981 | | |

| Party | Land-based Sources Protocol | | | Specially Protected Areas Protocol | | 1995 SPA & Biodiversity Protocol | | Offshore Protocol | | Hazardous Wastes Protocol | |
|-----------------|-----------------------------|------|------|------------------------------------|------|----------------------------------|------|-------------------|------|---------------------------|------|
| | Sig | Rat | Amd | Sig | Rat | Sig | Rat | Sig | Rat | Sig | Rat |
| Albania | | 1990 | | | 1990 | 1995 | | | | | |
| Algeria | | 1983 | | | 1985 | 1995 | | | 1996 | | |
| B.-H. | 1994 | | | 1994 | | | | | | | |
| Croatia | 1992 | | | 1992 | 1995 | | 1994 | | | | |
| Cyprus | 1980 | 1988 | 2001 | | 1988 | 1995 | 2001 | 1994 | 2001 | | |
| E.-C. | 1980 | 1983 | 1999 | 1983 | 1984 | 1995 | 1999 | | | | |
| Egypt | | 1983 | | 1983 | 1983 | 1995 | 2000 | | 1996 | | |
| France | 1980 | 1982 | 2001 | 1982 | 1986 | 1995 | 2001 | | | | |
| Greece | 1980 | 1987 | | 1982 | 1987 | 1995 | 1999 | 1994 | | 1996 | |
| Israel | 1980 | 1991 | | 1982 | 1987 | 1995 | | 1994 | | | |
| Italy | 1980 | 1985 | 1999 | 1982 | 1985 | 1995 | | 1994 | | 1996 | |
| Lebanon | 1980 | 1994 | | | 1994 | | | | | | |
| Libya | 1980 | 1989 | | | 1989 | 1995 | 1999 | | | 1996 | |
| Malta | 1980 | 1989 | 1999 | 1982 | 1988 | 1995 | 1997 | 1994 | | 1996 | 1999 |
| Monaco | 1980 | 1983 | 1996 | 1982 | 1989 | 1995 | | 1994 | | 1996 | |
| Morocco | 1980 | 1987 | 1996 | 1983 | 1990 | 1996 | | | 1999 | 1997 | 1999 |
| Slovenia | | 1993 | | | 1993 | | | 1995 | | | |
| Spain | 1980 | 1984 | 1999 | 1982 | 1987 | 1995 | 1998 | 1994 | | 1996 | |
| Syria | | 1993 | | | 1992 | | | 1995 | | | |
| Tunisia | 1980 | 1981 | 1998 | 1982 | 1983 | 1995 | 1998 | 1994 | 1998 | 1996 | 1998 |
| Turkey | | 1983 | | | 1986 | 1995 | | | 1996 | | |

The MAP organization structure is more diverse and decentralized than that of HELCOM. MAP was originally administered by the UNEP Regional Seas Office in Geneva during which time the first Barcelona Convention and the first two Protocols were created. As MAP activities increased, a separate MAP Coordinating Unit, or MAP Secretariat, was set up in 1979, and moved to Athens in 1982. The MAP Secretariat is charged with the organizational responsibility of coordinating regional activities under the MAP. It is also partly the Secretariat for the subsequent agreements. Most of the time of the MAP's small staff time is spent planning meetings and administering cooperative scientific research programs. In addition, the Programme for the Protection of Coastal Historic Cities, established in Marseille in 1987, provides Parties with technical support and training in the field of historic site protection. The Mediterranean Commission on Sustainable Development, set up in 1996, is a think-tank for promoting policies on regional sustainable development. Finally, the Parties have also established six Regional Activity Centres (RACs) over time to coordinate regional activities around separate priority issues:

- (i) The Marine Pollution Emergency Response RAC helps Parties to build up national response capabilities for major marine pollution incidents (Malta, 1976).
- (ii) The Blue Plan RAC uses a systemic and prospective approach to regional environment and development issues using various observation and evaluation tools (Nice, France, 1977).
- (iii) The Priority Actions Programmes RAC promotes integrated coastal management to alleviate problems in urban coastal areas (Split, Croatia, 1980).
- (iv) The Specially Protected Areas RAC aid Parties to protect and manage areas that are under legal protection and draw up domestic biodiversity conservation strategies (Tunis, Tunisia, 1985).
- (v) The Environmental Remote Sensing RAC observes the Mediterranean marine and terrestrial environment through remote sensing and multidisciplinary cooperation, as well as provides training and technical assistance to Parties (Palermo, Italy, 1993).
- (vi) The Cleaner Production RAC promotes the reduction of industrial waste and disseminates tried-and-tested cleaner production techniques (Barcelona, Spain, 1995).

Since its inception, Mediterranean environmental cooperation has relied heavily on various UN agencies and a number of international scientific organizations. UN bodies contribute expertise, staff and logistical support and financial resources to MAP activities. Traditionally, environmental NGOs have been little more than passive

observers. In recent years, however, MAP officials have embarked on a campaign to increase NGO involvement at international, national and local levels.

The Parties established a Trust Fund to finance MAP activities, to which they are supposed to contribute \$10 million per annum. The MAP budget has remained relatively flat in recent years, increasing from 5.45 million US\$ in 1990 to 6.89 million in 1993 (UNEP, 1991; Raftopoulos, 1993). The 1996 figure was 6.75 million (UNEP, 1995). In none of these years did Parties contribute the pledged 10 million per year. Because MAP funding is based on the national income of member states, the combined contribution of France, Italy and Spain constitutes about 85 percent of the money paid into the Fund by states (Haas, 1990). The scientific component receives the lion's share of MAP funding. Implementation remains poorly funded, with resources spread thinly in the decentralized regime. In contrast to the Baltic regime, the MAP lacks highly active sponsor states that are committed to the regional implementation of common international environmental commitments.

The scientific component of the MAP to a large extent consists of the Coordinated Mediterranean Pollution Monitoring and Research Programme (MEDPOL), which lies under the joint administrative jurisdiction of five UN agencies; WHO, FAO, United Nations Educational, Scientific and Cultural Organization (UNESCO), World Meteorological Organization (WMO), and the International Atomic Energy Agency (IAEA). MEDPOL has developed through three phases. The first pilot phase 1975-1980 focused on developing the program by setting up research centers and training of scientists, although a few minor research projects were also carried out. The second phase, 1981-1995, aimed to provide regular assessments of sea-water quality, and generate information on compliance and implementation of the Convention and the Protocols. The current third phase has an even stronger focus on compliance and implementation monitoring. MEDPOL programs currently include participants in over 140 laboratories around the region to promote the development of scientific and technical information relevant to the Protocols, and to build up consistent time-series of data on the sources, pathways, levels and effects of pollutants in the Mediterranean Sea. MEDPOL is widely credited with helping to enhance the quality and quantity of scientific research across much of the Southern Mediterranean (Haas, 1990; Kütting, 1994, 2000; VanDeveer, 2000). However, Kütting (2000) also notes that MEDPOL activities have only had a very limited effect on policy, that is, regional scientific cooperation has only a limited impact on regional policy making.

3.2. Mediterranean Cooperation on Hazardous Substances

The first Barcelona Convention contains highly general measures for Parties to combat pollution caused by dumping from ships and aircrafts (Article 5), ships (Article 6), exploration and exploitation of the continental shelf and the sea-bed and subsoil (Article 7), land-based sources (Article 8), and cooperate for dealing with pollution emergencies (Article 9). The Convention also calls on states to cooperate in monitoring (Article 10) and scientific and technical activities (Article 11). In 1995, the Parties amended 18 of the 21 Articles to the Barcelona Convention, committing to the full application of the precautionary principle, the polluter pays principle, best available techniques, and best environmental practices. The amended Convention covers the same general areas as the

first Convention, plus provisions on conservation of biological diversity (Article 10) and the transboundary movements of hazardous wastes and their disposal (article 11). Also the amended Convention does not stipulate any direct action on listed specific substances, but the article on land-based sources states that Parties should “draw up and implement plans for the reduction and phasing out of substances that are toxic, persistent and liable to bioaccumulate arising from land-based sources.” On the transboundary movements of hazardous substances, Parties should “to the fullest possible extent eliminate pollution of the environment which can be caused by transboundary movements and disposal of hazardous wastes, and to reduce to a minimum, and if possible eliminate, such transboundary movements.” It is under this general legal framework of the first and amended Barcelona Convention that more specific actions on hazardous substances have been taken.

3.2.1. Early Mediterranean Actions on Hazardous Substances

For the early Mediterranean management of hazardous substances, the Protocols on Dumping and Land-based Sources were of primary importance. The first Dumping Protocol commits states to ban the dumping of black listed wastes, and require permits from the competent national authority for the dumping of grey listed wastes, to be communicated to the MAP. Similarly, the first Protocol on Land-based Sources stipulates that Parties are required to eliminate land-based pollution of black listed substances, and strictly limit land-based pollution of grey listed substances. Both Protocols cover partly overlapping lists of substances. Hazardous black listed substances covered under both Protocols include organohalogen compounds, mercury, and cadmium. Grey listed substances in both Protocols include arsenic, lead, copper, zinc, beryllium, chromium, nickel, vanadium, selenium, antimony, pesticides not on the black list, and synthetic organic chemicals other than those on the black list. In addition, the Protocol on Land-based Sources more explicitly seeks to ban substances on the basis of toxicity, persistence and bioaccumulation, and substances that have been proven to exhibit carcinogenic, teratogenic and mutagenic properties. It also lists some additional grey-listed hazardous substances.

On the basis of the MEDPOL assessments in the 1970s and early 1980s, Parties agreed on thirteen “common measures” to combat a number of particular marine pollutants, including hazardous substances (see table 4). The common measures were intended to specify actions to be taken pursuant to the 1980 Protocol on Land-based Sources. In practice, most of these common measures are quite vague (Skjærseth, 1996, 2002). Based on a growing realization that the common measures provided insufficient coverage, Parties in a 1993 Ministerial Declaration stated the goal of reducing and phasing-out the inputs of the toxic, persistent and bioaccumulative substances listed in the Protocol on Land-based Sources to the marine environment (Civili, 2002).

Table 4: The 13 Common MAP Measures

| Common Measures | Adopted |
|----------------------------------------------------------------------------------------------|-----------|
| (1) Interim Environmental Quality Criteria for Bathing Waters | Sep. 1985 |
| (2) Interim Environmental Criteria for Mercury | Sep. 1985 |
| (3) Measures to Prevent Mercury Pollution | Sep. 1987 |
| (4) Environmental Quality Criteria for Shellfish Waters | Sep. 1987 |
| (5) Measures for Control of Pollution by Used Lubrication Oils | Oct. 1989 |
| (6) Measures for Control of Pollution by Cadmium and Cadmium Compounds | Oct. 1989 |
| (7) Measures for Control of Pollution by Organotin Compounds | Oct. 1989 |
| (8) Measures for Control of Pollution by Organohalogen Compounds | Oct. 1989 |
| (9) Measures for Control of Pollution by Organophosphorus Compounds | Oct. 1991 |
| (10) Measures for Control of Pollution by Persistent Synthetic Materials | Oct. 1991 |
| (11) Measures for Control of Radioactive Pollution | Oct. 1991 |
| (12) Measures for Control of Pollution by Pathogenic Micro-organisms | Oct. 1991 |
| (13) Measures for Control of Pollution by Carcinogenic, Teratogenic and Mutagenic Substances | Oct. 1993 |

Like in the case with the Barcelona Convention, some of the first Protocols were amended in the mid 1990s to incorporate developments in international environmental law and improved scientific and technical understanding of environmental issues. The amended 1995 Dumping Protocol prohibits all incineration at sea and dumping of wastes with some minor exceptions. None of the exceptions include any hazardous substances, which means that all dumping of hazardous substances is de facto banned under the Protocol. The amended 1996 Protocol on Land-based Sources continues to give priority to the phasing out of substances that are toxic, persistent and liable to bioaccumulate. Annex I of the Protocol lists 30 sectors of activity that should be prioritized when developing implementation plans. Several of these cover industrial and agricultural activities that are relevant in managing hazardous substances. The Protocol's Annex also lists priority categories of substances, although there are no specific deadlines for elimination. These include:

- Organohalogen compounds and substances which may form such compounds in the marine environment, specifically listing the 12 substances aldrin, chlordane, DDT, dieldrin, dioxins, furans, endrin, heptachlor, hexachlorobenzene, mirex, PCBs, and toxaphene;

- Organophosphorus compounds and substances which may form such compounds in the marine environment;
- Organotin compounds and substances which may form such compounds in the marine environment;
- Polycyclic aromatic hydrocarbons (PAHs);
- Heavy metals and their compounds;
- Biocides and their derivatives

To achieve the requirements in the Protocol on Land-based Sources, Parties have a general obligation to develop and carry out national and regional implementation programs containing timetables for implementation. Every two years they should submit reports regarding their measures taken, results achieved, and difficulties encountered. Parties are also required to develop monitoring programs aiming at assessing pollution levels and evaluate the effectiveness of implementation actions. The Protocol further stipulates that Parties should initiate technical and scientific cooperation, particularly focusing on inputs, pathways and effects of pollutants, as well as the development of abatement techniques.

The 1996 Protocol on the Transboundary Transport of Hazardous Wastes is the most recent Protocol on hazardous substances, and is a regional Protocol that draws heavily from the global 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.¹³ The Protocol on Hazardous Wastes stipulates that Parties take “all appropriate measures to prevent, abate and eliminate” pollution which can be caused by transboundary movements and disposal of hazardous wastes. Parties also have an obligation to “reduce to a minimum,” “and where possible eliminate,” the generation of hazardous wastes, as well as the transboundary movement of hazardous wastes in the Mediterranean. To this end, Parties have the right to individually or collectively ban the import of hazardous wastes. The Protocol also specifically stipulates that all Parties should take measures to prohibit the export and transit of hazardous wastes to developing countries, and Parties which are not members of the European Community shall prohibit all imports and transit of hazardous wastes. To ensure that the Protocol stipulations are followed, the Parties are required to submit annual reports on the generating and transfer of hazardous wastes within the Mediterranean region.

The Protocol on Hazardous Wastes covers a host of categories of hazardous wastes that are listed in Annex I, and wastes that possess any of the characteristics listed in Annex II. Categories of hazardous wastes listed in Annex I include waste substances and articles containing or contaminated with PCBs, PCTs, and PBBs. It also covers wastes containing copper, zinc, arsenic, selenium, cadmium, mercury, lead, furans, and dioxins. Annex II lists as hazardous characteristics, among others, substances or wastes that have adverse environmental effects by means of bioaccumulation and/or toxic effects upon biotic systems. In addition to the hazardous wastes and characteristics of annexes I and II, the Protocol covers wastes that are considered to be hazardous under domestic legislation

¹³ On the Basel Convention, see Krueger, 1999.

of an exporting, importing, or transit state. It is also valid for hazardous substances that have been voluntarily withdrawn or banned through government regulatory action in the country of manufacture or export for human health and environmental reasons.

3.2.2. Ongoing Mediterranean actions on Hazardous Substances

Early Mediterranean efforts on hazardous substances led to the development of a host of agreements and requirements. However, little ratification and actual implementation of these agreements was achieved based on only limited actions by the Parties and a lack of technical and scientific knowledge for taking effective implementation actions. To try and address these problems, the MAP Parties in 1997 set up the Strategic Action Programme (SAP) with the financial assistance of the Global Environment Facility (GEF). The general objective of the SAP is through domestic capacity building to aid the implementation of the amended Protocol on Land-based Sources by providing support to Parties for the formulation and implementation of national pollution reduction plans and targets (UNEP, 2001). Initial versions of the SAP focused on all the 12 organohalogen substances listed in the Protocol with some domestic 2000 targets that remain largely unfulfilled (Civili, 2002).

Currently, the SAP addressing pollution from land-based activities includes a focus on “industrial development,” under which broad goals for regional and national activities on hazardous substances are proposed, including gradually more stringent reduction targets for the years 2005, 2010, and 2025, respectively (UNEP, 2001). The long-term goal for 2025 for many of the targeted substances is complete phase-out of inputs into the Mediterranean Sea. Targeted substances include organic substances (e.g. PAHs, PCBs, HCB, dioxins, and furans), heavy metals (e.g. mercury, cadmium, lead, zinc, copper, and chromium), organohalogen compounds, and hazardous wastes. In the short term, the SAP among other goals attempts to outline a detailed process for initiating national emissions inventories and national environmental action plans. On the basis of the information produced by these processes, the SAP envisions more detailed national emissions and environmental quality goals in the future. It is hoped that the formulation of comprehensive National Action Plans to address pollution from land-based activities by late 2003 will be a major instrument for the implementation of the SAP (UNEP, 2001).

A continuing MAP problem is the lack of fulfillment of the Parties of the reporting requirements stipulated in the Barcelona Convention and its associated Protocols, including reporting on which domestic implementation actions that have been taken with regard to hazardous substances. Aware of the problem, the Parties since 1996 have been seeking to set up a more comprehensive reporting system on domestic implementation action (UNEP, 2002). The goal has been to develop a set of detailed guidelines for uniform domestic reporting on legal and administrative measures taken to help fulfilling the reporting requirements that are stipulated in the Barcelona Convention and the Protocols. In 2001, it was decided to launch a voluntary test of a newly developed reporting system. Seven Parties volunteered; Algeria, Croatia, Libya, Monaco, Spain, Tunisia, and Turkey.

The new reporting system is based on the decentralized structure of the MAP. A general part of the domestic report and that dealing with the Barcelona Convention

should be submitted to the MAP Athens office, MEDPOL, or other relevant RACs. Information on the Dumping Protocol, the Land-based Sources Protocol, and the Hazardous Wastes Protocol should be submitted to MEDPOL. Information on the Prevention and Emergency Protocol and the Offshore Protocol should be submitted to the Marine Pollution Emergency Response RAC, and information on the Specially Protected Areas Protocol should be sent to the Specially Protected Areas RAC. If these latest measures will improve the availability of implementation data, as well as stimulate further domestic implementation, remains to be seen. A complicating factor is that states are only required to report on those Protocols that they have ratified. This means that some states report on the old Protocols, while others report on the amended more stringent Protocols, making it difficult to make accurate domestic comparisons and coherent regional implementation assessments.

Parallel to the various ongoing MAP actions on hazardous substances, UNEP Chemicals in September 2000 launched the Regionally Based Assessment of Persistent Toxic Substances (RBAPTS) project to conduct a globally coordinated assessment process of regional assessments to measure damages and threats of persistent toxic substances. RBAPTS is not a MAP project, but MAP participates in the RBAPTS project, and RBAPTS may be able to generate valuable Mediterranean data on hazardous substances. The RBAPTS project will run for two years and is funded by the GEF in conjunction with several donor states. RBAPTS divides the globe into 12 regions. Each region will produce a region-specific assessment report that will be compiled into a global report, which is intended to help UNEP and GEF to identify priority issues and proposals for future action on hazardous chemicals, including differences in regional needs and priorities. Under RBAPTS, the Mediterranean is region number IV. Twelve of the Mediterranean states are GEF eligible: Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Lebanon, Libya, Morocco, Slovenia, Syria, Tunisia, and Turkey.

The Mediterranean RBAPTS project focuses on 22 substances that are listed in table 5. The project is hoped to generate several results including identification of regional PTS sources; regional emission transport patterns; regional environmental and human health effects; regional management capacity; and regional and global priority issues. The Mediterranean report (as well as all the other regional reports) will include generally available data and data obtained through country-specific questionnaires. The project is to a large extent based on web based communication. Regional meeting documentation, including the questionnaires, is available <http://www.chem.unep.ch/pts/>.

Table 5: The 22 Substances that are Under Consideration in the Mediterranean RBAPTS project.

| No. | CAS Number | Substance | Group |
|-----|------------|-------------------------------------------------------------|-------------|
| 1. | 309002 | Aldrin | Pesticides |
| 2. | 60571 | Dieldrin | Pesticides |
| 3. | 72208 | Endrin | Pesticides |
| 4. | 57749 | Chlordane | Pesticides |
| 5. | 76448 | Heptachlor | Pesticides |
| 6. | 50293 | DDT | Pesticides |
| 7. | 8001352 | Toxaphene | Pesticides |
| 8. | 2385855 | Mirex | Pesticides |
| 9. | 118741 | Hexachlorobenzene | Pesticides |
| 10. | 1336363 | PCBs | Industrial |
| 11. | | Dioxins | By-products |
| 12. | | Furans | By-products |
| 13. | | Hexachlorocyclohexanes | Pesticides |
| 14. | 115297 | Edosulfan | Pesticides |
| 15. | 85535848 | Chlorinated paraffins | Alkanes |
| 16. | 87865 | Pentachlorophenol | Pesticides |
| 17. | | Polybrominated biphenyls (PBBs) and biphenyl ethers (PBDEs) | Industrial |
| 18. | | Polycyclic aromatic hydrocarbons (PAHs) | By-products |
| 19. | | Phthalates | |
| 20. | | Nonylphenols (NPs) and tert-octylphenol (t-OP) | |
| 21. | Organotin | Organotin compounds | |
| 22. | | Organomercury compounds | |

Using a numerical scoring system, the regional assessment team gives scores for each substance on sources, environmental levels, ecotoxicological effects, and human effects on a scale from 0 to 2. “Score 0” indicates that a substance is of no concern. “Score 1” indicates that a substance has local concern. “Score 2” indicates that a substance has regional concern. In addition, the following five domestic factors are assessed: (i) the legal status of a substance; (ii) current domestic situation of the handling of a substance, specifying if a substance is still manufactured, used and/or exported; (iii) active domestic monitoring networks and existing domestic release inventories; (iv) available domestic data on stockpiles, or if a substance is still in service (i.e. PCBs in transformers); (v) domestic information about waste management practices (for pesticides and industrial chemicals) and abatement measures (for by-products), as well as information about existing programs on integrated pest management and technology transfer.

Ongoing Mediterranean assessments both under the SAP and the RBAPTS projects show many areas where there are large needs for further assessments. A literature survey under the Mediterranean RBAPTS shows uneven regional data

availability (GEF/UNEP, 2002). Some data exists on PCBs, DDT, PAHs, dioxins and furans. For other substances, there is much less information, and in some cases there are virtually no data at all. Some general emissions data are available from research laboratories through published literature and domestic control institutions. However, such data are plagued with large time gaps and geographical gaps, and often also based on different criteria for measurement and reporting. As a result, it is virtually impossible to make accurate and meaningful cross-sectoral and cross-country comparisons of emissions.

Since most people and industrial activity are on the European side of the Mediterranean, most hazardous substances uses and emissions are likely to come from Europe (GEF/UNEP, 2002). Studies indicate that particularly the western basin of the Mediterranean is a sink for hazardous substances, where atmospheric input dominates over river inputs (GEF/UNEP, 2002). Studies also show evidence of transcontinental transport between Europe, Asia and Africa across the Mediterranean basin. There are, however, important Mediterranean data gaps on emission transport patterns. In part, this is due to most Mediterranean countries lacking an adequate domestic monitoring system for hazardous substances. Knowledge of Mediterranean environmental and human health effects of hazardous substances is scarce and effects are not fully understood (GEF/UNEP, 2002). Some laboratory experiments have generated results on mainly individual marine organisms, but knowledge generated through field studies is very limited. However, existing regional information in combination with information generated in other parts of the world gives rise for serious concern.

4. Assessing Baltic and Mediterranean Compliance and Implementation

This section summarizes and assesses available evidence regarding the extent of regional and national level compliance and implementation of jointly formulated international treaty obligations and goals vis-à-vis hazardous substances in the Baltic and Mediterranean regions. As such, a distinction is made between compliance and implementation, which is central for analysis of the causal connections between environmental policies and environmental quality outcomes. Compliance refers to whether or not states adhere to or meet the provisions in international agreements. Environmental agreements generally both have procedural and substantive obligations (Porter, Brown and Chasek, 2000: 148-157). Procedural obligations refer to various administrative requirements that states are obligated to carry out under an agreement, such as information reporting on domestic activities. Substantive obligations consist of scientific, technical and policy measures that states are required to take, such as setting up a domestic monitoring system or initiate emissions reduction schemes. Implementation refers to specific measures taken by states pursuant to achieving compliance and meeting international procedural and substantive obligations (Victor, Raustiala and Skolnikoff, 1998).

Ideally, there should be high levels both of compliance and implementation, but it is possible to have compliance without implementation, or implementation without compliance. One important example of the former situation is found in the Baltic region.

The HELCOM countries with economies in transition appear to have met HELCOM goals for 50% emissions reductions for a number of substances. That is, they complied with the international commitment. This compliance, however, was achieved largely without explicit implementation efforts with regard to HELCOM obligations; emissions reductions were mostly achieved as a result of general domestic economic contraction and industrial restructuring. On the other hand, implementation without compliance can be seen in cases where proscribed measures were taken, but hoped for environmental outcomes were not achieved. To again take an example from the Baltic, cadmium emissions have declined substantially in accordance with HELCOM goals based on explicit implementation measures. However, cadmium concentrations appear to still be on the rise in some areas of the Baltic Sea. Actions to address these differing outcomes regarding compliance and implementation are likely needed to be quite different.

The subsections below discuss available evidence regarding compliance and implementation of regional hazardous substances policies in the Baltic region (section 4.1), and the Mediterranean region (section 4.2). Section 4.3 gives a brief comparison of Baltic and Mediterranean implementation efforts and results.

4.1. HELCOM Compliance and Implementation

With the collapse of the communist rule in Eastern Europe, efforts at technical, scientific and policy harmonization accelerated around the Baltic. The general consensus in the region that the Western member states had more effective environmental law and regulations made it easier for Western HELCOM members to push for more ambitious joint standards and goals. Furthermore, the willingness of the wealthier Western member states to invest resources in implementation and capacity building programs in the non-EU HELCOM states have added to HELCOM's success rates. There are, however, continuing data problems that make it difficult to measure compliance and implementation success in strict quantitative terms. Still, combining quantitative and qualitative data makes it possible to make a rough judgment of actions and progress. In the future, it is likely that a growing data base from the mid-1990s and onwards makes it easier to make more certain compliance and implementation evaluations.

4.1.1. Evidence of Compliance

Baltic generation and exchange of technical and scientific assessment information on hazardous substances is commonplace, expanding greatly after the political and economic changes in the eastern Baltic transition states in the early 1990s. HELCOM cooperation shows ample evidence of high procedural compliance among most of its member states as HELCOM Parties have generally adhered to the reporting requirements under Article 16 of the 1992 Helsinki Convention, including on hazardous substances. High procedural compliance generally makes it easier to assess levels of compliance of substantive obligations and implementation. As a result of elaborate HELCOM scientific environmental assessments and high procedural compliance by member states, there is typically enough information available to at least roughly assess Baltic regional and domestic substantive compliance and implementation. In general, agreement exists among Baltic officials and members of the regional scientific community that the Baltic

Sea would have deteriorated into a more polluted body of water -- with significant ecological and economic costs -- in the absence of HELCOM cooperation, including with respect to hazardous substances.

HELCOM cooperation on hazardous substances exhibits several positive signs of high compliance of substantive obligation. Over the last two decades, concentrations of hazardous substances such as DDT, PCBs, mercury, and cadmium have declined in Baltic marine mammals (HELCOM, 1998b, 2001b; Velner, 1989; Zmudzinski, 1989). These and other hazardous substances have been responsible for large regional impacts upon wildlife, ranging from interference with sexual characteristics to dramatic population losses. Falling Baltic concentrations of hazardous substances have been linked to health improvements in bird and mammal populations. For example, populations of grey seals, ringed seals, harbour porpoises and some bird species appear to be recovering slowly, primarily on the Northern side of the Baltic. In part, these declining environmental levels of hazardous substances and wildlife recovery have been the result of member state compliance of a series of overlapping HELCOM policy measures, also reducing human health risks (HELCOM Project Team on Hazardous Substances, 2001a and 2001b).

The first major HELCOM policy effort on hazardous substances was the 50% reduction goal formulated in the 1988 Ministerial Declaration, later determined to be applicable to 47 substances. Most HELCOM Parties failed to meet the 50% reduction goal on the selected 47 substances by the set target date of 1995 (HELCOM, 1998b). Based on continuing efforts by all Parties, the Project Team on Hazardous Substances, however, declared the 50% reduction goal "largely reached" in the 2001 (HELCOM Project Team on Hazardous Substances, 2001a). HELCOM admits that this conclusion is based on a certain amount of judgment, because of data gaps. For example, regional and national baseline data for the late 1980s on which to measure the 50% reductions are generally unknown for a number of the 47 substances. Nevertheless, the 50% reduction goal was determined to be achieved for 27 pesticides, at least three metals compounds (cadmium, lead, and mercury), and PCBs, based on a combination of available quantitative and qualitative data on regional production and use.

The second major HELCOM policy action on hazardous substances was the formulation of Recommendation 19/5 in 1998. Recommendation 19/5 set the goal to reduce discharges, emissions and losses of hazardous substances towards the target of their cessation by the year 2020, with the ultimate aim of achieving concentrations in the environment near background values for naturally occurring substances and close to zero for human-made synthetic substances. Under the guidance of the Project Team on Hazardous Substances, HELCOM is currently working towards this goal, focusing on 36 substances (see table 3) that are partly the same substances that were targeted for the 50% reduction goal under the 1988 Ministerial Declaration. Working in parallel on the 50% reduction goal and the cessation goal of Recommendation 19/5, the Project Team on Hazardous Substances also concluded in 2001 that 26 of the pesticides on the list targeted for 50% reductions are no longer in use (legally) in any of the countries in the Baltic region, though some uncertainties about this conclusion were expressed regarding the Russian Federation (HELCOM Project Team on Hazardous Substances, 2001a, 2001b, 2001c, 2002b). Thus, not only has the 50% reduction goal been "largely reached," but HELCOM has also taken an important step towards the cessation goal contained in

Recommendation 19/5. This conclusion assumes, however, that necessary measures will be taken by states to properly store and dispose of existing stocks of obsolete pesticides and industrial chemicals.

However, despite the policy actions that have been taken and the fact that Baltic environmental concentrations of most monitored hazardous substances appear to have decreased in the past 20-25 years, there are remaining problems. Marine mammals continue to exhibit reproductive disorders, indicating that levels of hazardous substances such as PCBs and dioxins are still causing problems (HELCOM, 2001b, 2001c). Dioxin and PCB levels were no longer decreasing during the 1990s, but it is currently unknown what the main input sources are. DDT has been banned in all countries around the Baltic since the 1970s. Levels have fallen considerably since then, but remain high in comparison to other seas. Organotin compounds (used in anti-fouling agents) are suspected to be behind damage to the reproductive organs of invertebrates observed in the Kattegat and the Belt Sea.

Baltic environmental heavy metals concentrations are generally stable or declining slowly, but still problematic locally around significant past and present point sources. Also, cadmium concentration in fish in central and Bothnian Bay areas of the Baltic have increased recently. The reason for this increase is not fully known, but may at least in part be due to a change of pH and/or oxygen concentrations, which can lead to releases of cadmium out of sediments. Lastly, recent HELCOM assessments express concerns about the possibility of as yet unknown hazardous substances. This is based on studies of fish showing that they are producing two to three times more detoxifying enzymes than previously, even though concentrations of known contaminants have fallen, indicating the presence of additional hazardous substances (HELCOM 2001b).

4.1.2. Evidence of Implementation

Implementation of HELCOM commitments – Convention obligations, Ministerial Declarations, and joint Recommendations – take place via three overlapping main channels or mechanisms. These mechanisms include HELCOM sponsored implementation efforts, state-driven domestic implementation efforts, and EU-driven efforts to harmonize national environmental law and regulation with that of the EU. This section of the paper begins with a discussion of the HELCOM-sponsored implementation programs. Next, because national implementation and EU harmonization efforts are so difficult to separate empirically in EU member and candidate states, these are discussed together. Bringing all three implementation mechanisms together, this section ends with a brief discussion of the recent and ongoing efforts to harmonize HELCOM obligations and Recommendations with EU law and regulation.

HELCOM Sponsored Implementation Efforts: Compared to many international environmental cooperation arrangements, HELCOM has rather extensive implementation review mechanisms (Victor, Raustiala and Skolnikoff, 1998). For example, member states are asked to provide periodic reports on their implementation of HELCOM Recommendations and state officials' response rate to HELCOM questionnaires regarding hazardous substances has been quite high (HELCOM Project Team on Hazardous Substances, 2001a, 2001b, 2001c, 2002b). Currently, HELCOM is attempting

to expand country specific implementation reporting to present domestic implementation information in a more transparent way to enable better and more easy assessment of progress in implementation of various Recommendations within each member state. HELCOM officials report that no member state has opposed these efforts. In this respect, the Project Team on Hazardous Substances has achieved a fair degree of success in monitoring and assessing domestic implementation in comparison to HELCOM's general level of detail in national implementation reporting. However, no comprehensive country specific reports on compliance and implementation of all HELCOM Recommendations have been produced to date.

In the last decade, HELCOM has become more proactive in its attempt to engender implementation of HELCOM recommendations. Ministers at a 1992 Diplomatic Conference adopted a resolution establishing a permanent Programme Implementation Task Force (HELCOM PITF) to initiate, facilitate, and coordinate the implementation of the Baltic Sea Joint Comprehensive Environmental Action Programme (JCP). The PITF consists of representatives from all of the Parties and representatives of Belarus, the Czech Republic, Norway, the Slovak Republic, Ukraine, CEB, EBRD, EIB, NEFCO, NIB, the World Bank and the International Baltic Sea Fishery Commission. JCP focuses on the most severely degraded areas in the Baltic Sea catchment area, or "hot spots," for action to address point and non-point pollutant sources in these hot spots. The hot spots range from single industrial facilities or factories to entire municipalities or agricultural regions. Hazardous substance emissions constitute major sources of pollution at many of the industrial and municipal waste water treatment hot spots. Following a joint selection process, all Baltic states originally contained at least 4 hotspots with 132 in total around the Baltic Sea.

The JCP covers six component areas of action: (1) policy, legal and regulatory reform; (2) institutional strengthening and human resources development; (3) infrastructure investment; (4) management of coastal lagoons and wetlands; (5) applied research; and (6) public awareness and environmental education (HELCOM, 1993). Financial resources for the cleaning up of the hot spots come from a combination of international and domestic sources. As part of this, local and national beneficiaries of these projects are required to share substantial portions of the costs, although there are numerous important international funding agencies (Seeberg-Elverfeldt, 1995).¹⁴ Of the international funding sources, bilateral assistance programs run out of Denmark, Finland and Sweden were by far the largest sources of international funding throughout much of the 1990s (Roginko, 1996). Since the adoption of the JCP, 34 hotspots have been removed from the list following the implementation of HELCOM requirements,

¹⁴ International funding sources include the World Bank, the Council of Europe Development Bank, the European Bank for Reconstruction and Development, the European Investment Bank, the Nordic Environment Finance Corporation, the Nordic Investment Bank, the EU (through the PHARE, LIFE, and ISPA programs), the World Wide Fund for Nature, as well as the governments of Finland, Sweden, Denmark, Germany, Switzerland, Canada, Netherlands, Norway, France, United Kingdom, and the United States. PHARE is the main EU programme for financial support for restructuring the post-Communist economies of Eastern and Central Europe. LIFE (the Financial Instrument for the Environment) is the EU fund for environmental investments within the EU, but some money can be spent in states on EU candidate countries. IPSA (Instrument for Structural Policies for Pre-Accession) is an EU programme that supports EU candidate countries efforts to harmonize with Community infrastructure standards, particularly in the transport and environmental spheres.

environmental clean-up and pollution reduction and mitigation efforts.¹⁵ In most industrial and waste water treatment plants hotspots, substantial hazardous substance emissions reductions must be achieved to delete a hotspot from the list. Evidence of these pollution reductions must be submitted to HELCOM and assessed prior to approval of proposals to delete individual hotspots. By encouraging clean-up and mitigation efforts at many of the Baltic region's largest pollution sources, the JCP has contributed to reductions in the levels of hazardous substances in the region. However, the JCP has focused almost exclusively on the hotspots, and has engaged in few broader efforts to encourage and facilitate HELCOM implementation in national law and regulation.

HELCOM Implementation and the EU: In recent years, there has been a growing interplay between HELCOM and the EU. One significant area of such interplay is in the increasingly overlapping membership between the two fora. Originally, Germany was the only HELCOM member state that was also a member of the European Community. Today, four of the nine HELCOM member states are also EU member states (Germany, plus Denmark, Finland, and Sweden). In addition, four HELCOM member states may become EU members in the near future (Estonia, Latvia, Lithuania, and Poland). Thus, within a few years, the Russian Federation is likely to be the only HELCOM member state that is not an EU member. In addition, the European Commission is a Party to HELCOM.

HELCOM implementation reviews show that, in general, those states that are members of both the EU and HELCOM have taken domestic actions on the hazardous substances covered by HELCOM before they were targeted under HELCOM (HELCOM, Hazardous Substances Project, 2001a, 2001b, and 2002b). These states are also thought to have generally higher implementation records regarding hazardous substances, in part, because they influenced many HELCOM standards, modeling them after pieces of their national legislation. Because these states often took earlier and relatively stringent actions vis-à-vis hazardous substances, they are often better able to offer evidence of implementation, as well (HELCOM, Hazardous Substances Project, 2001a, 2001b, and 2002b). In many cases, these states' domestic law and regulations on hazardous substances remain more stringent than HELCOM and EU standards, and these countries are often leaders on hazardous substances in both HELCOM and the EU.

Regarding EU candidate states, comprehensive "Environmental Performance Reviews" of Estonia (UNECE, 1996, 2001), Latvia (UNECE, 1998a, 2000a), and Lithuania (UNECE, 1998b, 200b) conducted under the auspices of the United Nations Economic Commission for Europe in cooperation with officials from all three countries demonstrate a dramatic growth of environmental law and regulation in these countries. The reports show that all three states have harmonized much of their environmental law with EU Directives across the many areas of policy covered by the environmental acquirits. Also Poland, with its wide range of serious and expensive pollution problems, has seen dramatic environmental policy reform and expansion in the last decade (OECD, 2000: 203-210; REC, 1996). These reports are all consistent with the finding of the annual reviews of progress toward harmonization conducted in accordance with the

¹⁵ Information on all hotspots can be obtained at the HELCOM website: www.helcom.fi.

ongoing EU accession negotiations.¹⁶ Lastly, aside from the drive toward EU membership, the dramatic domestic institutional reforms brought on by the transition toward democracy and away from Soviet style communism ushered in a wave of environmental policy reforms, and a wave of increased environmental awareness (Hjorth, 1998; Roginko, 1996).

The harmonization of environmental legislation in transition countries with EU environmental legislation will also in part have the side-effect of implementing many HELCOM Recommendations as EU legislation and HELCOM Recommendations overlap on large sets of issues. However, as a result of limited domestic resources and capacities, many of the specific regulations which will issue the detailed standards and procedures pursuant to the new laws are still under development in the candidate states. Both the UNECE and HELCOM reports illustrate the importance of EU and bilateral assistance programs in the EU candidate states in co-financing legal and regulatory development, organizational and staff capacity building, monitoring, and environmental research and assessment. As such, the four EU candidate countries in the Baltic region have benefited from their close geographic proximity to a number of the largest donors of bilateral assistance in the world (Denmark, Finland, Germany, and Sweden). Though a number of multilateral banks and EU assistance programs have been relatively active in the region in support of environmental projects and assistance, bilateral aid remains (by far) the largest source of foreign environmental assistance in the region (Roginko, 1996).

Looking at HELCOM and hazardous substances specifically, state responses to HELCOM questionnaires and various data gathering exercises demonstrate that Estonia, Latvia, Lithuania, and Poland often have taken domestic action after the substances were subject to HELCOM cooperation and regulations (HELCOM, Hazardous Substances Project, 2001a, 2001b, and 2002b). This suggests some success in the exportation of generally higher Western European standards on hazardous substances to post-communist countries. HELCOM reports also make clear that the four EU candidate countries had, in some cases, some advantages. For example, the former communist states had more comprehensive records concerning pesticides than many generally found in Western Europe. These records were much better for pesticides, however, than for industrial chemicals (HELCOM, Hazardous Substances Project, 2001b).

A number of cautionary notes regarding candidate country implementation must also be noted, however. First, emissions of hazardous substances and hazardous waste production fell in the past decade generally as a result of economic contraction and industrial restructuring (HELCOM 1998b). As such, future economic growth may reverse some of these emissions trends if environmental policy is not effectively implemented and enforced. This latter point raises a second area of concern. Namely, that some areas of public sector capacity in the EU candidate states where much national and local environmental policy and regulation must be monitored, administered, and enforced remain chronically low (Ecotech, 2001; OECD 2000). While this does not necessarily inhibit interstate cooperation, it certainly inhibits implementation of regional agreements (VanDeveer, 2002).

The Russian Federation is the only state in the Baltic region that is neither an EU member nor an EU candidate, and is by far the largest transition state in the region. The

¹⁶ See the “Regular Reports on Progress Toward Accession,” especially information in ‘chapter 22’ of each report, at <http://europa.eu.int/comm/enlargement/report2001/#Regular%20Reports>.

highly incomplete and ineffective Soviet measures regarding hazardous substances management is by now well known. As such, Russian officials are facing daunting tasks regarding monitoring and emissions data collection and estimates – to say nothing of facilities clean-up. Low levels of public-sector capacity in the Russian Federation impede the country's participation in regional environmental cooperation and national implementation. This problem is compounded by low and probably declining environmental policy capacity at the national level. In May of 2000 Russian President Vladimir Putin abolished his country's agency in charge of environmental protection, and the relationships between national, regional and local environmental authorities remain unsettled (VanDeveer, 2002). Further, the ability of domestic and international environmental NGOs to push for higher domestic environmental standards remains quite constrained in Russia, especially given the periodic imprisonment of environmental activists.¹⁷

In comparison to EU members and candidates in the region, Russian HELCOM reports tend to be quite vague regarding Russian policy and implementation measures taken. In addition, the reports generally have numerous gaps regarding data on substances use, sale, stocks and emissions (HELCOM, Hazardous Substances Project, 2001a, 2001b, and 2002b). Yet, available evidence suggests generally poor Russian implementation of HELCOM commitments. Further, HELCOM staff suggested that, by 2002, Russian implementation of HELCOM obligations and Recommendations appears to be more dependent on international assistance than other Baltic littoral states. At the same time, the Russian Federation has received substantially less international assistance – environmental and otherwise – on a per capita basis compared to the four EU candidate countries in the region (Roginko, 1996).

There are, however, some important on-going capacity building efforts in Russia relating to HELCOM and hazardous substances. In August 2001, Russia embarked on the EU LIFE Third Countries project “Development and Strengthening of the Regional Co-ordination of Council’s Activity on the Implementation of HELCOM Decisions in the Russian Baltic Sea Region”. The project is officially supported by HELCOM, and aims to build political and administrative capacity within the North-West Okrug in order to implement the 1992 Helsinki Convention and HELCOM Recommendations through transposition of commitments and regulations into regional environmental legislation and development of implementation programs.¹⁸ To that end, the project seeks to set up a HELCOM Implementation State Office under the Regional Department of the Ministry of Natural Resources, and to develop a forum for communication with local stakeholders and the public to aim implementation. An interim report of the project is due in late 2002.

Harmonizing HELCOM and EU Requirements: In accordance with EU law, HELCOM Recommendations may include higher standards than those in EU law and regulation

¹⁷ Whitmore, 1998: 68-73; and the Bellona Foundation web site at <http://www.bellona.no/e/rissia/nikitin>. See also, Environmental New Service (ENS), 2002, “Russian Jailed Over Black Sea Ammonia Terminal” September 5, <http://ens.com/ens/sep2002/2002-09-05-04.asp>.

¹⁸ The Russian Federation consists of seven federal Okrugs. The North-West Okrug has its administrative center in St. Petersburg and has borders within the Baltic Sea catchment area to Finland, Estonia, Latvia, Lithuania, and Belarus. It consists of 11 smaller regions, or oblasts. Several of these regions such as Leningrad, Pskov, and Kaliningrad are important Baltic pollution areas.

provided they do not interfere with the EU free market. This means that HELCOM can adopt Recommendations on, for example, stricter emission limits and other measures as long as they are not considered market obstacles. In practice, HELCOM policies do sometimes exceed those of the EU. For example, HELCOM parties have approved policies that articulate more detailed and specific limit values and requirements for application of pollution control measures (HELCOM, 2001a).

Recently, HELCOM completed a study assessing the compatibility of HELCOM Recommendations and EU and OSPAR requirements (HELCOM, 2001a). The report also looked at possible ways to rationalize HELCOM information reporting requirements with those of the EU and OSPAR, in an attempt to reduce the burden on state officials by streamlining reporting formats and standardizing many informational demands. The report offers a detailed analysis of obligations under the three multilateral fora, making numerous recommendations regarding changes that HELCOM Parties might make to bring HELCOM recommendations more into line with EU and OSPAR (without lowering any HELCOM standards). Parties followed a number of these recommendations at the 2002 HELCOM meeting. Seven of the twelve Recommendations adopted at the meeting -- HELCOM Recommendations 23/6-23/12 -- were largely consistent with the proposal of the harmonization report. Other suggested revisions are currently under review by HELCOM.

4.2. MAP Compliance and Implementation

Early MAP cooperation was important in stimulating joint technical and scientific activities, paralleled by over 25 years of formulating common policies. Like HELCOM agreements, most MAP agreements stipulate the regular reporting by states regarding implementation measures. However, in comparison to HELCOM, assessment of MAP compliance of substantive obligations and implementation is made extremely difficult by the fact that reporting by MAP Parties has been chronically low, and MAP Parties to a considerable degree have much lower fulfillment of procedural reporting obligations than the HELCOM Parties (Skjearseth, 1996, 2002). Furthermore, because many Parties have ratified only few of the Protocols, a significant number of states are not required to submit reports on several important requirements under Protocols that they have not ratified. As such, information about compliance of substantive obligations and implementation of the Protocols and common measures remains extremely scarce and, where it exists, quite uneven in coverage and quality.

Like the HELCOM discussion above, this discussion of MAP compliance and implementation begins with a presentation of evidence regarding compliance with MAP requirements, and proceeds to a discussion of implementation.

4.2.1. Evidence of Compliance

Generally speaking, the environmental accomplishments of international cooperation within the MAP regime seem to remain small and few in number (Kutting, 2001; Skjaerseth, 1996, 2002; VanDeveer, 2000). Regarding hazardous substances, the very limited information on ecological quality allows for few strong conclusions about compliance. For many of the substances listed in MAP Protocols and action plans, there

is almost no regional data on either emissions or concentrations. A 2001 study by the European Environment Agency (EEA) based on data gathered in 1999 demonstrates the striking lack of available data and knowledge about hazardous substances in the Mediterranean. Of the 38 hazardous substances related parameters in the EEA study, MEDPOL data about EU member states was available for an average of only 3 (or 8%) of these parameters (EEA, 2001). Similar data levels were reported for four non-EU states (Albania, Malta, Turkey, and Yugoslavia). Also the ongoing Mediterranean RBAPTS project found lack of regional data to be a serious problem (GEF/UNEP, 2002).

Some limited data on heavy metals, DDT and PCBs concentrations exists, however. Heavy metal concentrations can be high in localized coastal areas (EEA, 1999). Still, localized mercury concentrations appear to be declining in biota and (more gradually) in sediments. DDT is banned in all Mediterranean countries and no longer in any legal use. PCBs are banned in “open systems,” but allowed in “closed systems” such as transformers and capacitors, although also uses in closed systems are being phased out. In general, DDT and PCB concentrations in marine life forms fall well within the WHO guidelines, although high DDT concentrations have been found near the Rhone (France) delta. More troublesome is the data on urban wastewater treatment. Approximately 60% of urban wastewater remains untreated (EEA, 1999). Such high percentages of untreated waste are common on both sides of the Mediterranean Sea. This is true despite repeated studies suggesting that the human health and economic costs (particularly with regard to tourism) of poor sewage treatment exceed the costs of Waste Water Treatment Plants investments (EEA, 1999). Lastly, NGOs active in the region argue that little progress has been achieved on joint regional commitments to reduce persistent organic pollutants and heavy metals emissions or to establish monitoring systems for river quality.¹⁹

4.2.2. Evidence of Implementation

Similar to implementation of HELCOM commitments, implementation of MAP commitments -- treaty obligations and common measures, in particular -- takes place via three overlapping main channels or mechanisms. These mechanisms include (1) multilateral assistance programs such as those sponsored by MAP bodies, UNEP, the GEF, and multilateral development banks; (2) state-driven domestic implementation efforts; and (3) EU-driven efforts to harmonize national environmental law and regulation in EU member states and EU candidate states with that of the EU. This section begins with a discussion of the multilateral sponsored implementation programs. Next, because national implementation and EU harmonization efforts are so difficult to separate empirically, these are discussed together.

Multilateral Implementation Efforts: In general, the MAP lacks comprehensive programs for the implementation of the growing number of international commitments within the regime. The need for improved implementation is noticed, however, and calls for a better implementation scheme – many of them enumerating specific implementation goals – have been issued by individual MAP participants (UNEP, 2001) and, most recently, by the Euro-Mediterranean Ministers for the Environment in the 2002 “Athens Declaration.”

¹⁹ See Greenpeace Mediterranean “Risk” at <http://www.greanpeace.org.mt/barcon/index.html>

Yet, these are in large part merely calls for greater efforts at implementation by the Parties and other actors, and/or plans to launch much-needed monitoring, data gathering, environmental assessment, and national planning exercises. They constitute a laundry list of needed implementation measures and related timetables, but they offer little that is new in the areas of concrete financing and detailed implementation mechanisms. As a result, the MAP still remains quite some distance from actually launching a comprehensive regional implementation program. Further, since many of the Protocols have been amended, and none of these amendments have yet come into force, many of the joint commitments awaiting implementation remain in a state of flux.

International efforts to aid and monitor implementation require both human and economic resources. Staff and budgets for the MAP Coordinating Unit in Athens and the RACs remain very small and each organization's activities fall well short of the list tasked to it. For most of the 1990s, the MAP budget was well below the 10 million dollars states are supposed to contribute annually. To put these figures in perspective, one estimate of the MAP implementation costs in the four Mediterranean members of the EU (France, Greece, Italy, and Spain) totals almost \$20 billion -- and this figure does not include the costs of implementing other international environmental commitments, nor other expenses to be born by consumers (de Walle, et. al., 1993). Both the World Bank and the European Union (EU) have stepped up funding for Mediterranean environmental protection, but these funds represent only a small portion of the total economic development assistance given by these bodies in the region. For example, EU assistance to Mediterranean countries under the LIFE Programme and the Short- and Medium-Term Priority Environmental Action Programme (SMAP) includes funding for only a relatively small number of projects for environmental protection and public sanitation and drinking water provision.²⁰ Furthermore, none of the region's states is really pushing for a more serious regional implementation effort.

Regional environmental cooperation and implementation of MAP international commitments is constrained by very limited, often declining, state organizational capacity in many Mediterranean countries. States facing low levels of organizational capacity can not increase environmental protection. Such states often do not lack commitment to regional environmental goals; rather, they lack the ability to institutionalize and administer domestic and international environmental policy. The examples of Algeria, Egypt and Turkey are telling (Haas, 1990). Based on MAP generated scientific concern, all three countries participated in numerous MAP activities and initiated efforts to incorporate MAP lessons and regulation into domestic policy in the 1970s and 1980s. Such efforts included ratification of MAP agreements, passing of basic environmental laws, and the establishment of administrative bodies for pollution control. In the wake of stagnant or declining state environmental policy capacity, little environmental policy development or implementation has occurred in Algeria, Egypt, or Turkey since the 1980s. Meanwhile, environmental policy standards regarding hazardous substances and a host of other environmental issues have been on the increase. Few international assistance programs in the region currently attempt to address these problems and build national public sector administrative or implementation capacity. Rather, most capacity building programs focus only on the enhancement of technical capacity through activities such as education and training programs and equipment provision. However, merely

²⁰ For project-specific information, see <http://europa.eu.int/comm/environment/smap/whatis.html>.

increasing the technical skills of some individuals, or increasing their access to particular types of technology, will unlikely improve the general quality of scientific advice to policymakers (Miller, 1998). Nor will it automatically improve policymakers' capacities to act on such advice, or the effectiveness of policy outcomes (Grindle, 1997).

MAP Implementation and EU Harmonization: In recent years, there has been a growing interplay between MAP activities and the EU, including the probable growth in overlapping membership between the two fora, growing EU powers to enforce its environmental laws on its members and sanction their non-compliance, and growing financial and technical support of MAP programs by EU bodies. In addition, the European Commission is a Party to the Barcelona Convention and a number of its Protocols (see table 3). Unlike the Baltic region, no comprehensive attempt is being made by MAP staff or states to explicitly address these linkages and seek to harmonize MAP requirements with EU requirements. Like the HELCOM discussion above, this analysis of trends regarding national implementation of MAP requirements and EU harmonization around the Baltic region, categorizes states into three groups: EU members, EU candidates, and non-EU members/candidates.

Four states -- France, Greece, Italy, and Spain -- currently belong to both the EU and the MAP. While the EU is increasingly seen as a leader or 'pusher' in the area of environmental policy, its Mediterranean members are rarely the driving force behind efforts to raise EU environmental standards. Nor are these countries traditionally Europe's leaders with regard to hazardous substances management. As such, unlike the Baltic region, the Mediterranean region generally lacks strong national environmental leadership. Even the EU member states, the wealthiest Mediterranean states, have been slow to invest domestically in Mediterranean environmental protection. Throughout much of the 1990s, for example, state spending on environmental investments and policy implementation remained flat -- at times even declining -- in Greece, Italy, and Spain (VanDeveer, 1997). Nor have these states applied the polluter pays principle to the activities and economic sectors which often do great harm to the marine environment: tourism, transportation, agriculture, energy, industrial production, and fishing.

However, as EU officials' powers to enforce EU environmental law and regulation in its member states have increased in the last 10-15 years, EU member states have embarked on greater efforts to implement new requirements. With regard to hazardous substances management, EU requirements are considerably more detailed and specific than those under MAP auspices. As such, EU law and regulations -- not MAP requirements -- generally drive hazardous substances policies in France, Greece, Italy, and Spain. Goals associated with waste prevention and reduction in hazardous substances uses remain particularly challenging for these EU member states (OECD, 2000).

A growing group of Mediterranean countries have officially applied for EU membership or have officially expressed interest in preparing for application. The current Mediterranean candidates for membership are Cyprus, Malta, Slovenia, and Turkey. In addition, Albania, Croatia, and Bosnia officially aspire to join the EU. As with the Baltic region, EU law and regulation increasingly drives environmental policy development and implementation in the Mediterranean candidate states. For example, Cypriot and Maltese environmental policy development has accelerated dramatically in the last decade, as both countries prepared for EU application and accession negotiations (Ecotech, 2001;

Riolo, 1993; VanDeveer, 1997).²¹ Likewise, UNECE “Environmental Performance Reviews” demonstrate that Slovenian and Croatian officials have been rapidly harmonizing their respective countries’ environmental laws and regulations with those of the EU (UNECE 1997, 1999a, 1999b). Both countries have also established MAP offices within the structure of their environment ministries to help facilitate MAP participation, reporting and implementation (UNECE, 1997, 1999b; VanDeveer, 1997). The UNECE reviews of Slovenia and Croatia also demonstrate that law, regulation and monitoring programs related to hazardous substances (e.g. wastes, industrial emissions, etc.) have been expanded in line with EU requirements (UNECE, 1997, 1999a and 1999b). However, the reports suggest that both states’ inspection and enforcement capabilities remain quite limited. As such, the substantial reductions observed for some hazardous substance emissions in both countries likely remains largely a product of transitional economic restructuring, similar to the situation in the Baltic transition states.

Turkish relationship with the EU is longer than the other candidate countries, but fraught with difficulties. Most interesting from an environmental perspective, Turkish environmental policy development has closely paralleled the waxing and waning of Turkish (and EU) interest in Turkish EU membership. When Turkish officials have been actively pursuing membership and harmonization, environmental policy has tended to expand and become more stringent. When interest in the EU has waned, so too has official interest in environmental policy (VanDeveer, 1997). Albania and Bosnia illustrate that lagging and/or collapsing state capacity plagues environmental policy implementation around the Mediterranean. These states have, in many respects, more in common with a number of the non-EU member or candidates states in the Mediterranean basin. Not surprisingly, state organizational and administrative capacity has remained quite low in these countries vis-à-vis environmental policy as officials struggled to stave off state collapse and/or recover from it. Similarly, Lebanon, Algeria, and (at times) Yugoslavia have suffered from chronic state incapacity vis-à-vis environmental policy. Furthermore, highly undemocratic states such as Libya and Syria have not been pressured either domestically or internationally to improve environmental policy making and implementation.

Lastly, countries that are neither EU members nor seeking membership such as Egypt and Israel have some limited capacity to participate in MAP activities and formulate and implement environmental policy. Nevertheless, neither country has prioritized MAP implementation (see e.g. Weinthal, under review). Also, while countries across the southern and eastern Mediterranean coasts have played host to numerous international financed pilot programs and environmental clean-up and nature protection projects, there is little evidence to suggest that these programs have engendered much progress toward widespread national implementation of hazardous substances management policies.

²¹ For Cyprus and Malta, see chapter 22 of each of the “Regular Reports on Progress Toward Accession” at <http://europa.eu.int/comm/enlargement/report2001/#Regular%20Reports>.

4.3. Comparing Compliance and Implementation around the Baltic and Mediterranean

Institutionalized multilateral cooperation around the Baltic and Mediterranean seas has existed for a similar period of time, having emerged from a similar set of initial obstacles. The review contained here demonstrates that Baltic regional cooperation under HELCOM has achieved greater compliance and state-level implementation of internationally formulated regulations on hazardous substances than has Mediterranean cooperation under the MAP. These differences exist despite the fact that HELCOM's provisions regarding hazardous substances generally cover more substances and call for greater emissions reductions than MAP provisions. Thus, higher Baltic compliance and implementation cannot be explained by lower requirements – as is sometimes the case in international environmental cooperation arrangements (Victor, Raustiala and Skolnikoff, 1998).

The fact that HELCOM has come further in assessing both progress toward state implementation of joint commitments and the regional environmental and human health situations associated with hazardous substances, may in part explain HELCOM's greater implementation success. Social science research on the causes of higher and lower levels of implementation suggests that the existence of systems for implementation review within cooperation arrangements tends to increase parties' implementation rates (Victor, Raustiala, and Skolnikoff, 1998). Such implementation review can lead to increases in individuals states' knowledge and capabilities vis-à-vis implementation even as it serves to highlight (and potentially embarrass) instances of non-compliance and lack of implementation. As such, by successfully increasing collective knowledge and awareness about the state of regional environmental and human health factors, HELCOM activities have helped to increase domestic and international pressures on state leaders to act to ensure greater environmental protection. The use of such assessments has been much less in the Mediterranean.

Another possibly contributing factor to the comparatively high HELCOM levels of compliance and implementation is that the HELCOM scientific and policy activities are intimately linked, with much of HELCOM's scientific and technical assessment explicitly framed in terms of policy relevance. Baltic regional scientific assessments also often have ample effect on regional and domestic policy making. In contrast, there has been less connection between Mediterranean technical and scientific assessments, and regional and state level policy making, and MEDPOL research and assessment appears to have only very limited impacts on MAP policy making, particularly in the last decade. HELCOM also has a more developed system for reviewing compliance and implementation of previously formulated HELCOM policies, and link that to possible continued needs for additional policy making to achieve jointly set goals. This makes it easier for HELCOM to continuously “target” policy making for those areas where policy actions on hazardous substances are most needed. The MAP currently lacks any similar mechanism, and its on-going action programs do little more than set highly general future goals and support pilot programs.

Scientific and technical assessments, however, do not automatically transform into policy goals, no matter how elaborate they are. Such transformations are ultimately dependent on state actions. HELCOM activities remain driven largely by the western “leader states” Denmark, Germany, Finland, and Sweden. These countries often have

domestic legislation that is at least equal to (often more stringent than) that being decided under HELCOM. As such, these states often use HELCOM as a mechanism for raising environmental requirements and standards in the eastern part of the Baltic to their own domestic levels, including controls on hazardous substances. To that end, the western leader states have invested significant resources aimed at building public sector capacity in the post-communist countries and in helping to co-finance large environmental investments. Yet, it is not only the wealthier lead states around the Baltic Sea that have invested significant resources in environmental protection over the last decade. The growing use of pollution and resource taxes and fees in the post-communist states has produced significant public revenues for domestic environmental investments in these countries.

In contrast, there are no clear environmental leader states under the MAP that push for stringent joint policy measures or finance large regional projects and programs on hazardous substances. Much of the MAP action is instead driven by UNEP, an organization with very limited resources. There have also been much less multilateral and bilateral efforts in the Mediterranean on building capacity for environmental policy making and implementation in those MAP countries that have the weakest domestic structures. As a result, many MAP countries lack the domestic structures and knowledge necessary to take forceful implementation actions on hazardous substances. Countries both north and south of the Mediterranean have also to a much lesser extent than the Baltic states been using pollution and resource taxes and fees to generate public revenues for domestic environmental protection.

Lastly, it should also be noted that the Baltic region is home to a dense web of trans-national environmental advocacy networks that push domestic and international officials to increase environmental protection and awareness. This dense web of policy networks connects governmental, non-governmental and private sector actors, facilitating wide-spread regional exchange of information and policy collaboration, including on hazardous substances. Table 6 list a number of the major regional environmental advocacy networks in the Baltic region based on Gutner and VanDeveer, 2001. There are few, if any, similarly institutionalized and regionally comprehensive webs of organizations in the Mediterranean region on environmental issues.

Table 6: Regional Baltic Environmental Initiatives

| Regional Network | Website |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------|
| Baltic Sea Alliance | www.baltsea.net |
| Baltic Sea Regional On-Line Information Resources for Internet Access | www.baltic-region.net |
| Baltic Regional Environmental Dissemination System | www.beids.de |
| Baltic Sea Web | www.baltic.vtt.fi |
| The Baltic University | www.balticuniv.uadm.uu.se |
| Baltic Environmental Forum | www.bef.lv |
| The Baltic Sea Project | www.b-s-p.org |
| Baltic 21 | www.ee/baltic21 |
| BCCA – Baltic Sea Chamber of Commerce Association | www.ink.de/kiel/bc/ca.html |
| Coalition Clean Baltic | wwwccb.it |
| Council of Baltic Sea States | www.baltinfo.org |
| GRID Arendal | www.grid.no |
| Planning System for Sustainable Development | www.pssdtoolbox.net |
| Union of Baltic Cities | www.ubc.net |
| Vision and Strategies 2010 around the Baltic | www.vasab.org.pl |
| German Environmental Information Network | www.gien.de |
| European Wind Energy Association | www.ewea.org |

5. Taking Stock and Drawing Lessons: Seven Challenges Ahead

The analysis above suggests a host of future challenges for regional hazardous substances management around the Baltic and Mediterranean. Some of these challenges are region-specific, while others are valid for both regions. Also, some challenges are particular to the management of hazardous substances, while others are more general challenges to regional cooperation that have important implications for hazardous substances management, as well. In particular, seven major interconnected challenges are addressed:

- 1) Encouraging ratification
- 2) Engendering implementation and building state capacities
- 3) Financing cooperation and implementation
- 4) Improving data availability, quality and comparability

- 5) Strengthening existing regulations and incorporating new issues
- 6) Assessing and achieving environmental improvements
- 7) Coordinating international management of hazardous substances.

5.1. Encouraging Ratification

State ratification of a multilateral agreement is a sign of acceptance of internationally formulated commitments. It also typically signals that a state believes that an agreement covers an important issue. In contrast, uneven state ratification of connected international agreements creates an incomplete patchwork of legal obligations, and uncertainties about the commitment of the Parties. Looking at the Baltic region, it took seven years for all Baltic littoral states to ratify the 1992 Helsinki Convention as Russian Federation as the last HELCOM Party ratified the Convention in 1999. While this resulted in a successful entry into force of the Convention in January 2000, the experience creates hesitance about embarking on future revisions to the 1992 Helsinki Convention unless it is deemed fruitful by all Parties. As HELCOM Recommendations do not have to be ratified by the Parties, there is no need to initiate formal ratification actions on any of those. However, the gradually improving implementation rates for HELCOM Recommendation add evidence to arguments that, under certain circumstances, agreements that are not legally binding in a formal sense can have an important impact on state behavior (see also Victor, Raustiala and Skolnikoff, 1998).

Encouraging improved ratification remains a challenge for MAP cooperation. Compared to the Baltic region, Mediterranean regional sea cooperation is more organized around the creation of separate legal Conventions and Protocols that require individual signing and ratifications. Most of these agreements have low numbers of ratifications. Neither the revised Barcelona Convention, nor any of the most recent Protocol (including the revised ones), have entered into force, despite having been adopted six to seven years ago in 1995 and 1996 (with the exception of the new Emergency Protocol which was adopted in 2002) (see tables 2 and 3). This leaves MAP cooperation with a host of important legal obligations that yet have to enter into force, which creates a need for the Parties to initiate actions to ensure ratification of all agreements -- including those relevant for the management of hazardous substances -- as soon as possible as a sign of serious commitment to Mediterranean regional sea cooperation.

5.2. Engendering Implementation and Building State Capacities

Mere formal state ratification of international agreements, however, is not sufficient for effectively combating environmental and human health problems. For that to happen, Parties need to go one step further and initiate actual domestic implementation and policy changes. Such domestic implementation is a function of both intent and capacity to meet international agreements; that is, a state must both have the intention, and the relevant knowledge and financial and human capacities to implement an environmental commitment for implementation to occur (Grindle, 1997; Weiss and Jacobson, 1998; Victor, Raustiala and Skolnikoff, 1998). There are wide gaps in knowledge and implementation capacity across states in both the Baltic and Mediterranean regions. Over the past decade, both policy analysts and practitioners have paid greater attention to how

capacity can be enhanced, or built (see, e.g. Sagar, 2000). Capacity building refers to all efforts and strategies to increase the ability to and effectiveness of government performance. Public sector capacity is multifaceted, and includes financial, human, technical and scientific aspects. Capacity building efforts can focus on a number of actors, such as central government agencies, local municipalities, private firms, NGOs, and technical and scientific communities.

Lagging public sector environmental governance capacity remains a serious challenge across both regions (OECD, 2000; Ecotech, 2001). Yet, HELCOM-related activities have been successful in expanding scientific and technical capacities throughout the Baltic region. Actions by both HELCOM (sometimes together with the EU) and individual western HELCOM Parties have also been successful in expanding state policy making and administrative capacities in the Baltic transition states -- including for hazardous substances management -- since the early 1990s through multilateral and bilateral training and assistance programs (VanDeveer, 2000). The HELCOM experience thereby clearly demonstrates that international assistance aimed at institutional and organizational capacity building can work. In a next phase of capacity building in the Baltic EU candidate states, more focus on building domestic arenas for cooperation and knowledge creation among government agencies, industry organizations, and environmental organizations is likely to benefit additional implementation of controls on hazardous substances in these countries. Continued capacity building in the Russian Federation is also of special importance, and presents a major future challenge for Baltic hazardous substances management. Recent HELCOM-related capacity building activities in the Russian Federation show some promise, but there is a long and hard process before Russian implementation capacity is at par with that of the leading Baltic states. Such capacity building will, however, be necessary to improve Russian implementation in the short and medium term.

Also MAP-related activities have been successful in expanding regional scientific and technical capacities; however, Mediterranean scientific and technical advancements seem to have had less policy impact on MAP activities than Baltic scientific and technical advancements has had on HELCOM policies. Much less MAP attention has also been given to building administrative capacity for policy making and implementation among the Mediterranean states with the weakest domestic structures. Low state capacity in most of the African Mediterranean states remains a central hindrance to implementation of current regional environmental protection commitments. Dealing with these issues will be a major challenge in future MAP cooperation on hazardous substances. While little has happened in the southern Mediterranean countries, EU implementation assessment and support programs in EU member states (i.e. France, Greece, Italy, and Spain) and states seeking EU membership (i.e. Cyprus, Malta, Slovenia, and Turkey) have increased domestic implementation of controls on hazardous substances in these countries. This shows that international capacity building programs can make a difference in the Mediterranean region, if properly designed and carried out.

5.3. Financing Cooperation and Implementation

International cooperation and implementation invariably draw financial resources. Financing these activities constitutes continued challenges, particularly under the MAP.

International organizations and members states have to continue to address these issues, not least regarding aiding capacity building in the least affluent states in both regions. Some actions have already been taken to that end.

Shortly after the political and economic changes began to take place in the Baltic transition states in the early 1990s, special financial aid was available through HELCOM for countries with “economies in transition” to attend meetings and in other ways participate in HELCOM activities. Initially, all the former communist states applied for, and received, such aid. As of lately, all transition states but the Russian Federation have stopped utilizing such aid, and are solely relying on domestic resources. Despite recent economic improvements in the Baltic transition states, however, there is a continuing resource gap between the EU member states and the non-EU member states in the Baltic. Many transition states still have reduced financial contributions to HELCOM, and struggle to find enough domestic resources to participate in all HELCOM activities and fully implement HELCOM Recommendations. Trying to link financial support with implementation, HELCOM has partially successfully sought to organize formal implementation reviews that combine information gathering about domestic implementation with programs for financial support for improved implementation and capacity building. For example, the JCP and the HELCOM Programme Implementation Task Force attempt to connect potential donors and revenue generating mechanisms with particular ‘hot spots.’ Despite the relative success of HELCOM, however, JCP implementation has been slowed by difficulty in raising the needed funds, and there are clearly more to be done in this area around the Baltic (Auer, 2002).

The issue of financing cooperation, implementation and capacity building is even more challenging in the Mediterranean region where the MAP budget has remained quite limited and flat for many years. For example, through most of the 1990s, the MAP coordinating unit had a budget of less than \$10 million (most of which was spent on scientific and technical programs under MEDPOL). This amounts to less than 5 cents (US) for each of 200-plus million tourists visiting the Mediterranean each year. For the less developed countries along the Mediterranean’s southern and eastern shores, most notable environmental protection investments are co-funded by international donors. However, most of these are pilot programs and/or assessment and planning exercises. There is still a high need for more comprehensive capacity building efforts in these countries that will require financial resources from international sources.

5.4. Improving Data Availability, Quality and Comparability

Cooperation under HELCOM and MAP has successfully stimulated the regional production and dissemination of technical and scientific knowledge, and has also expanded and sustained regional environmental assessment capacities (Farrell, VanDeveer and Jaeger, 2001). Such assessment work has been instrumental as a basis for prioritizing issues and formulating joint policies, particularly in the Baltic region. Nevertheless, especially the Mediterranean region, but also the Baltic region, exhibit important data gaps regarding hazardous substances. As a result, improved regional implementation and environmental quality are likely to benefit from more research into

the chain of events from first release of emissions to effects on wildlife and humans in each region.²²

Future assessments thereby need to focus on engendering a more comprehensive understanding of how and where hazardous substances are used and released – and what quantities. Furthermore, the situation regarding disposal and/or storage of existing stockpiles and major sources of hazardous by-products will need attending to in each region. Domestic and regional monitoring efforts should continue to study multi-media transport across air, rivers, seas, and soil, and the resultant environmental and human concentration levels. Research on environmental and human health effects needs to try and improve our understanding of the short-term and long-term effects of exposure to hazardous substances to wildlife and humans. For comparative reasons, further standardization (or, at least, increased data compatibility) of research and assessment methodologies and reporting requirements will be needed. This would both facilitate the compilation of reliable regional state of the environment assessments, and cross-country comparisons.

5.5. Strengthening Existing Regulations and Incorporating New Issues

Despite those policy measures that have been taken and those environmental quality improvements that have been seen, particularly in the Baltic region, there are few signs pointing to that the problem of hazardous substances in the Baltic and Mediterranean will be solved in any near future, and there is a continuing need to cooperate further in both regions. Looking at HELCOM specifically, there are several important remaining challenges that need to be addressed. Activities need to continue on those substances that have already been prioritized under the 50% reduction goal of the 1988 Ministerial Declaration and the cessation goal under Recommendation 19/5. The HELCOM Pesticide report (Project on Hazardous Substances, 2001b), partly based on Holoubek et. al. (2003), identifies thousands of tones of obsolete, banned pesticides in all the five of the post-communist states, plus the area of the former East Germany. The report notes that these are of serious concern and their safe storage and disposal must be addressed as soon as possible.

Another HELCOM challenge relating to already prioritized substances concerns improved emission controls of by-products such as dioxins, furans and PAHs. Efforts in this area need to focus both on identifying stationary and mobile emission sources, and designing more effective emission reduction strategies and technologies. There is also a need to keep on expanding the list of prioritized substances under HELCOM and work towards their cessation. The substance scoping exercise that was undertaken in connection with Recommendation 19/5 identified some 280 substances that may be of Baltic concern. This long list was cut down to 36 priority substances for practical reasons. This, however, does not mean that the other substances are not of Baltic concern. As mentioned above, recent Baltic assessments of marine life indicates both old and new

²² On the Mediterranean, see Milagros Vega, *Ecotoxicology and other issues for the Mediterranean Seas*. Paper presented at the Policy Forum Management of Toxic Substances in the Marine Environment: Analysis of the Mediterranean and the Baltic, Javea, Spain 6-8 October, 2002.

problems with hazardous substances, including with unidentified toxins with endocrine disruptive effects.

Turning to the Mediterranean, ratification and implementation of the amended Barcelona Convention and the most recent Protocols and goals are a slow and difficult process. Much is needed before already agreed upon commitments are realized, even though many of the MAP agreements are more modest than the HELCOM agreements that have already been implemented. This means that Mediterranean efforts should focus primarily on implementing existing agreements, rather than trying to expand the list of common commitments, although that will be needed in the future in order to deal with all the hazardous substances that pose a threat in the Mediterranean region.

5.6. Assessing and Achieving Environmental Improvements

The level of commitment and resources dedicated to assessing environmental improvement associated with technical, scientific and policy measures taken can be used as an indicator of seriousness of state officials to improve environmental protection. Compared to many other multilateral environmental institutions, HELCOM has achieved great success in using periodic and systematic environmental assessments of pollution loads and the state of the environment as a basis for judging policy success and identify future priority areas. All of this activity, taken together, has increased the ability of public officials, NGOs, and researchers to assess progress toward environmental protection goals in the Baltic. It also appears to help sustain public and official attention over time, which is necessary as the effective management of hazardous substances requires long-term thinking and acting. HELCOM also has an impressive record of reviewing its treaty obligations and Recommendations and revising them as needed on the basis of careful assessments. Furthermore, the HELCOM Program Implementation Task Force and the jointly compiled JCP has created a list of hot spots, and helped guide co-financing toward the management of many of these hot spot, although there are remaining challenges to assessing the environmental and human health impact of various measures. Nevertheless, as discussed above, the existing HELCOM systems for implementation review may help to sustain HELCOM's growing success at encouraging and facilitating implementation, and should be given more attention in the future.

Around the Mediterranean basin, technical, scientific and political cooperation and institution building continue apace, but identifiable environmental improvements remain elusive. Progress regarding environmental protection is also hard to assess in detail as the Mediterranean region lacks extensive regional implementation review systems. Based on the positive experience under HELCOM and a few other fora regarding such reports, there are compelling arguments for improving efforts on using regional implementation reviews in the future will aid Mediterranean policy making and implementation toward improved regional environmental quality.

5.7. Coordinating International Management of Hazardous Substances

Baltic and Mediterranean cooperation on hazardous substances does not occur in a vacuum. Over the last decade, there has been a large increase in both global and regional

efforts in managing hazardous chemicals. Global efforts include various scientific and technical programs and policy making under UNEP, IFCS, IOMC, WHO, UNDP and other intergovernmental organizations. Recent global agreements include the 1998 Rotterdam Convention on Prior Informed Consent and the 2001 Stockholm Convention on Persistent Organic Pollutants (Krueger and Selin, 2002; Selin and Eckley, 2002). Northern regional forums, in addition to HELCOM and the MAP, that in part deal with hazardous substances, include the United Nations Economic Commission for Europe (UNECE) and the Convention on Long-Range Transboundary Air pollution (CLRTAP), OSPAR, and the EU.

While it is positive that more international forums are paying increased attention to hazardous substances, this development creates a need for paying more attention to coordination between forums to avoid costly overlapping, or even counterproductive, policy actions in separate forums (Krueger and Selin, 2002). In the future, both Baltic and Mediterranean cooperation need to connect more to other fora and investigate possibilities for coordination and cooperation. Priorities may differ across fora based on differences in economic development; agricultural and industrial production; and climatic, geographic and social conditions, but some issues and experiences will have validity across forums. One example of a connection between a global and regional agreement is the HELCOM efforts to encourage and facilitate implementation of MARPOL (international agreements regulating many kinds of marine pollution from shipping) agreements and standards in the Baltic region (Greene, 1998). Similarly, MAP participants chose negotiate a regional Protocol on Hazardous Wastes modeled closely after the Basel Convention on Hazardous Wastes, and the two will operate in tandem. Both regions also show clear regulatory overlaps with the Rotterdam Convention on Prior Informed Consent and the Stockholm Convention on Persistent Organic Pollutants.

There are also many cases of regional overlaps. Table 7 shows the overlapping membership to the EU, HELCOM, MAP, OSPAR, and CLRTAP (including the CLRTAP Protocol on Persistent Organic Pollutants). In the near term, it is likely that HELCOM and MAP overlaps with the EU will be of particular importance. Looking at HELCOM specifically, EU Directives are legally binding while the HELCOM Recommendations are not. This means that states that are members to both generally have a stronger incentive to implement EU Directives first, and then address further requirements in HELCOM Recommendations. That this is also the case in practice is indicated by communication with HELCOM participants. If HELCOM Recommendations and EU Directives are more or less identical, the only added value of HELCOM after Estonia, Latvia, Lithuania, and Poland become EU members is that HELCOM also includes the Russian Federation. In such a case, the future importance of HELCOM (given that Estonia, Latvia, Lithuania, and Poland become EU members) is thereby to a large extent dependent on that HELCOM Recommendations either go further than EU Directives in terms of the hazardous substances that are controlled and the reductions that are necessary, or that they cover technical, scientific and policy aspects of Baltic cooperation that falls outside the scope of the EU. The EU influence will also increase on MAP policy making and implementation if the Mediterranean candidate states become members, although not as dramatically as in the Baltic.

Coordination between international fora is also relevant for reporting purposes. Different fora often have their own separate reporting requirements. In order to avoid that

states are not subject to widely diverging reporting requirements that will strain sparse resources, efforts should be taken to ensure that reporting requirements are to the fullest extent possible harmonized across forums. Since the late 1990s, the EEA, European Commission, HELCOM and OSPAR participants have also shown greater interest in standardizing reporting requirements, monitoring systems and data gathering and calibration procedures, with the hope of simultaneously improving data quality and availability, and reduce the administrative burden on state officials. The EEA and HELCOM cataloged some of these challenges (see, e.g. EEA, 1997a, 1997b, 1998, 1999, 2001; HELCOM, 1998b, 2001b; HELCOM Project on Hazardous Substances, 2001a), and more work need to be done in this area. No similar efforts have been initiated in the Mediterranean region, but such issues will become more important with growing MAP overlaps with other regional and global fora.

Table 7: Overlapping Membership in the EU, HELCOM, MAP, OSPAR, and CLRTAP

| Parties | EU | HELCOM | MAP | OSPAR | CLRTAP ²³ |
|------------------------|-----------|--------|-----|-------|----------------------|
| Austria | ✓ | | | | ✓ |
| Belgium | ✓ | | | ✓ | ✓ |
| Denmark | ✓ | ✓ | | ✓ | ✓ |
| Finland | ✓ | ✓ | | ✓ | ✓ |
| France | ✓ | | ✓ | ✓ | ✓ |
| Germany | ✓ | ✓ | | ✓ | ✓ |
| Greece | ✓ | | ✓ | | ✓ |
| Ireland | ✓ | | | ✓ | ✓ |
| Italy | ✓ | | ✓ | | ✓ |
| Luxembourg | ✓ | | | ✓ | ✓ |
| Netherlands | ✓ | | | ✓ | ✓ |
| Portugal | ✓ | | ✓ | ✓ | ✓ |
| Spain | ✓ | | ✓ | ✓ | ✓ |
| Sweden | ✓ | ✓ | | ✓ | ✓ |
| United Kingdom | ✓ | | | ✓ | ✓ |
| European Community | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | | | | |
| Estonia | Candidate | ✓ | | | ✓ |
| Iceland | | | | ✓ | ✓ |
| Lithuania | Candidate | ✓ | | | ✓ |
| Latvia | Candidate | | | | ✓ |
| Norway | | | | ✓ | ✓ |
| Poland | Candidate | ✓ | | | ✓ |
| Russian Federation | | ✓ | | | ✓ |
| | | | | | |
| Albania | | | ✓ | | ✓ |
| Algeria | | | ✓ | | |
| Bosnia and Herzegovina | | | ✓ | | ✓ |
| Croatia | Candidate | | ✓ | | ✓ |
| Cyprus | Candidate | | ✓ | | ✓ |
| Egypt | | | ✓ | | |
| Israel | | | ✓ | | |
| Lebanon | | | ✓ | | |
| Libya | | | ✓ | | |
| Malta | Candidate | | ✓ | | |
| Monaco | | | ✓ | | |
| Morocco | | | ✓ | | |
| Slovenia | Candidate | | ✓ | | ✓ |
| Syria | | | ✓ | | |
| Tunisia | | | ✓ | | |
| Turkey | Candidate | | ✓ | | ✓ |

²³ The column listing CLRTAP membership does not show all CLRTAP Parties, but only those that are members to at least one of the other listed fora.

Annexes

Annex 1: HELCOM Recommendations relevant to hazardous substances (others than 19/5).

| Substances | HELCOM Recommendation | Brief description |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mercury | 6/3 - now 23/6 6/4 - (left unrevised) 13/4 - under revision 14/5 - under revision 16/6 - now 23/7 16/8 - (left unrevised) 16/10 – now 23/12 17/6 18/2 18/5 - now 23/4 20E/6 - now 23/11 | Chloralkali industry Reduction of Hg resulting from dentistry Scrap materials in the iron and steel industry Used batteries containing heavy metals Metal surface treatment Incineration of household waste Production of textiles Production of fertilizers Offshore activities Light sources and electrical equipment Waste water from the chemical industry |
| Cadmium | 6/6 - no longer valid 11/7 - under revision 13/4 - under revision 14/5 16/6 - now 23/7 16/8 - (left unrevised) 17/6 18/2 20E/6 - now 23/11 | Limitation of discharges of cadmium Iron and steel industry Scrap materials in the iron and steel industry Used batteries containing heavy metals Metal surface treatment Incineration of household waste Production of fertilizers Offshore activities Waste water from the chemical industry |
| Lead | 9/4 14/3 - under revision 14/5 16/6 - now 23/7 16/8 - (left unrevised) 17/1 18/2 20E/6 - now 23/11 | Combustion of leaded gasoline Glass industry Used batteries containing heavy metals Metal surface treatment Incineration of household waste Transport sector Offshore activities Waste water from the chemical industry |
| Other heavy metals | 11/12 14/2 - now 23/10 14/3 - under revision 16/7 - under revision 16/8 - (left unrevised) 18/2 20E/6 - now 23/11 16/10 - now 23/12 | Air pollution from ships Production and formulation of pesticides Glass industry Leather industry Incineration of household waste Offshore activities Waste water from the chemical industry Production of textiles |
| PCB/PCT | 6/1 under revision 16/10 - now 23/12 4/1 | Elimination of use of PCBs and PCTs Production of textiles Amendment of Annex I of the Convention |
| PCP | 16/10 - now 23/12 | Production of textiles |
| Nonylphenol/ ethoxylates | 16/6 - now 23/7 16/10 - now 23/12 | Metal surface treatment Production of textiles |
| PAH | 17/4 - now 23/9 | Hard coal cokeries |
| Dioxins | 13/4 - under revision 16/8 - (left unrevised) | Scrap materials in the iron and steel industry Incineration of household waste |
| Organotin compounds | 20/4 - under revision | Antifouling paints containing organotin compounds |
| Chlorinated organics (e.g. SCCP) | 16/6 - now 23/7 | Metal surface treatment |
| DDT | 3/2 - no longer valid | Elimination of discharges of DDT |
| Persistent, bioaccumulative, and toxic substances in general | 11/7 13/2 13/4 14/3 17/5 | |

Annex 2: Substances targeted for the 50% reduction by 1995 under the 1988 Ministerial Declaration

| Substances | | Water | Air | CAS-number |
|---------------------------------------------------|------------------------------------------------|-------|-----|------------|
| I. Metals and their compounds | | | | |
| | Mercury | + | + | |
| 2 | Cadmium | + | + | |
| 3 | Copper | + | + | |
| 4 | Zinc | + | + | |
| 5 | Lead | + | + | |
| 6 | Arsenic | + | + | |
| 7 | Chromium | + | + | |
| 8 | Nickel | + | + | |
| II. Organic substances other than biocides | | | | |
| 9 | Carbontetrachloride | + | + | 56235 |
| 10 | Chloroform | + | | 67663 |
| 11 | Trichloroethylene | + | + | 79016 |
| 12 | Tetrachloroethylene | + | + | 127184 |
| 13 | Trichlorobenzene | + | + | |
| 14 | Dichloroethane 1,2- | + | | 107062 |
| 15 | Trichloroethane 1,1,1- | + | + | 71556 |
| 16 | Xylenes | + | + | |
| 17 | Hexachlorobenzene | + | + | 118741 |
| 18 | Hexachlorobutadiene | + | | 87683 |
| 19 | Nonylphenolethoxylate | + | | |
| 20 | Dioxins | + | + | |
| 21 | Halogenated organic substances measured as AOX | + | | |
| 22 | PAH | + | + | |
| 23 | Tributyltin-compounds | + | | |
| 24 | Triphenyltin-compounds | + | | |
| 25 | Pentachlorophenol | + | + | 87865 |
| III. Biocides | | | | |
| 26 | Trifluralin | + | | 1582098 |
| 27 | Endosulfan | + | | 115297 |
| 28 | Simazine | + | | 122349 |
| 29 | Atrazine | + | | 1912249 |
| 30 | Tributyltin-compounds | + | | |
| 31 | Triphenyltin-compounds | + | | |
| 32 | Azinphos-ethyl | + | | 2642719 |
| 33 | Azinphos-methyl | + | | 86500 |
| 34 | Fenitrothion | + | | 122145 |
| 35 | Fenthion | + | | 55389 |
| 36 | Malathion | + | | 121755 |
| 37 | Parathion | + | | 56382 |
| 38 | Parathion-methyl | + | | 298000 |
| 39 | Dichlorvos | + | | 62737 |
| 40 | Copper-compounds | + | | |
| 41 | Zinc-compounds | + | | |
| 42 | Arsenic-compounds | + | | |
| 43 | Carbontetrachloride | + | | 56235 |
| 44 | Chloropicrin | + | | 76062 |
| 45 | 1,2-Dichloroethane | + | | 107062 |
| 46 | Hexachlorobenzene | + | | 118741 |
| 47 | Lindane | + | | 58899 |

References

- Boxer, Baruch, 1991. "Societal Contexts of Ocean Pollution Science: Cross-national Comparisons," *Global Environmental Change*, p.p. 139-156.
- Civili, Fransesco Saverio, 2002. "The Mediterranean Regional Approach concerning POPs in the Framework of the Barcelona Convention and the UNEP Global Plan of Action (GPA) for the Protection of the Marine Environment from Land-Based Activities". http://www.chem.unep.ch/pops/POPs_Inc/proceedings/slovenia/CIVILI.html (Downloaded August 20th, 2002).
- Ecotech (2001). *Administrative Capacity for Implementation and Enforcement of EU Environmental Policy in the 13 Candidate Countries*. DGENV Contract: Environmental Policy in the Candidate Countries and their Preparations for Accession. Birmingham, UK.
- European Environment Agency (EEA), 1997a. *Inter-Regional Forum: Second Meeting Report of the European Marine Conventions*. Technical Report no. 10. (Copenhagen: EEA).
- EEA. 1997b. *Data Collected with the Framework of the Regional European Sea Conventions*. Technical Report no. 3. (Copenhagen: EEA).
- EEA, 1998. *Europe's Environment: The Second Assessment*. Copenhagen.
- EEA. 1999. *State and Pressures of the marine and Coastal Mediterranean Environment*. Environmental Issues Series No. 5. (Copenhagen: EEA).
- EEA. 2000. *Marinebase: Database on Aggregated Data for the Coastline of the Mediterranean, Atlantic, North Sea, Skagerrak, Kattegat and Baltic*. Technical Report No. 58. (Copenhagen: EEA).
- Farrell, Alex, VanDeveer, Stacy, and Jäger, Jill, 2001. "Environmental Assessment: Four Underappreciated Elements of Design," *Global Environmental Change*, p.p. 311-333.
- Grindle MS, ed. 1997. *Getting Good Government: Capacity Building in the Public Sector of Developing Countries*. Cambridge, MA: Harvard Univ. Press
- Greene, Owen. 1998. "Implementation Review and the Baltic Sea Regime" in David Victor, Kal Raustiala and Eugene Skolnikoff, eds. *Implementation and Effectiveness of International Environmental Agreements* (Cambridge: MIT Press): 177-220.
- Global Environment Facility (GEF) and United Nations Environment Programme (UNEP), 2002. *Regionally Based Assessment of Persistent Toxic Substances Mediterranean Region: Minutes of the Second Regional Workshop on Assessment of*

(Eco)toxicological Impact of PTS and Transboundary Transport, 3-5 April 2002, Roma, Italy.

Haas, Peter M., 1990. *Saving the Mediterranean: The Politics of International Environmental Protection*. New York. Columbia University Press.

Haas, Peter M., 1993. "Protecting the Baltic and North Seas" in Peter M. Haas, Robert O. Keohane and Marc Levy (eds.) *Institutions for the Earth*. Cambridge. MIT Press, p.p. 133-181.

HELCOM, 1993. *The Baltic Sea Joint Comprehensive Environmental Action Programme*. Baltic Sea Environment Proceedings no. 48.

HELCOM 1998a. *The Third Baltic Sea Pollution Load Compilation*. Baltic Sea Environment Proceedings No. 70.

HELCOM, 1998b. *Final Report on the Implementation of the 1988 Ministerial Declaration*. Baltic Sea Environment Proceedings No. 71.

HELCOM, 2001a. *Harmonization of HELCOM Recommendations with EU Directives and OSPAR Decisions and Recommendations*. Final Report, March 2001.

HELCOM, 2001b. *Fourth Periodic Assessment of the State of the Environment of the Baltic Marine Area, 1994-1998*. Baltic Sea Environment Proceedings No. 82. (Helsinki: HELCOM).

HELCOM, 2001c. *Activities 2001: Overview*. Baltic Sea Environment Proceedings No. 84. (Helsinki: HELCOM).

HELCOM Project Team on Hazardous Substances, 2001a. *The Implementation of the 1988 Ministerial Declaration on the Protection of the Marine Environment of the Baltic Sea Area with regard to Hazardous Substances*. May 2001.

HELCOM Project Team on Hazardous Substances, 2001b. *The Pesticides Selected for Immediate Priority Action*. October 2001.

HELCOM Project Team on Hazardous Substances, 2001c. *Mercury: A Compilation of the Information Given by the Contracting Parties with the Focus on Legislative Situation, Current Uses, Stockpiles and Releases*. October 2001.

HELCOM Project Team on Hazardous Substances, 2002a. *The Down Stream User Approach: A Possibility for Data Collection*. March 2002.

HELCOM Project Team on Hazardous Substances, 2002b. *Guidance Document on Dioxins*. June 2002.

Hjorth, Ronnie, 1992. *Building International Institutions for Environmental Protection: The Case of Baltic Sea Environmental Protection*. Ph.D. dissertation. Linköping University, Department of Water and Environmental Studies.

Hjorth, Ronnie (ed.), 1996. *Baltic Environmental Cooperation: A Regime in Transition*. Linköping University, Department of Water and Environmental Studies.

Hjorth, Ronnie. 1998. "Implementation of Baltic Sea Pollution Commitments in Poland: A Review of the Literature" in David Victor, Kal Raustiala and Eugene Skolnikoff, eds. *Implementation and Effectiveness of International Environmental Agreements* (Cambridge: MIT Press): 639-658.

Holoubek, Ivan et al. 2003. *Persistent, Bioaccumulative and Toxic Chemicals in Central and Eastern European Countries: State of the Art Report*. Recetox. 3rd edition.

Krueger, Jonathan. 1999. *International Trade and the Basel Convention* (London: Royal Institute for International Affairs).

Krueger, Jonathan and Selin, Henrik. 2002. "Governance for Sound Chemicals Management: The Need For a More Comprehensive Global Strategy" in *Global Governance*, Vol. 8, p.p. 323-342.

Kütting, Gabriella, 1994. "Mediterranean Pollution: International Cooperation and Control of Pollution from Land-Based Sources", *Marine Policy*, Vol. 18, No. 3, p.p. 233-248.

Kütting, Gabriella, 2000. *Environment, Society and International Relations: Towards More Effective International Environmental Agreements*. London. Routledge.

Laane, Ain, 1995. "Political Impediments to Implementing International Waterway Agreements: The Example of the Baltic States". Paper presented at the 46th annual convention of the International Studies Association, Chicago IL, USA, February 21-26.

Manos, A. 1991. "An International Programme for the Protection of a Semi-Enclosed Sea: The Mediterranean Action Plan," *Marine Pollution Bulletin*, Vol. 23, p. 489.

Miller, Clark. 1998. Extending Assessment Communities to Developing Countries. ENRP Discussion Paper E-98-15, Kennedy School of Government, Harvard University.

Murphy, Craig. 1997. "Leadership in International Environmental Policy Making" in *Saving the Seas: Values, Scientists, and International Governance*. L. Anthea Brooks and Stacy D. VanDeveer, eds. (College Park, MD: Maryland Sea Grant Press).

OECD. 2000. "Environmental Performance Reviews (1st Cycle): Conclusions and Recommendations: 32 Countries (1993-2000)" OECD Working Paper on Environmental Performance (Paris: OECD).

Ozhan, Erdal. ed. 1993. *MEDCOAST '93: Proceedings from the First International Conference on the Mediterranean Coastal Environment*. Nov. 2-5, Antalya, Turkey, (Ankara: MEDCOAST Permanent Secretariat).

Gareth Porter, Janel Welsh Brown and Pamela S. Chasek. 2000. *Global Environmental Politics* Third Edition (Boulder: Westview Press).

Raftopoulos, Evangelos. 1993. *The Barcelona Convention and Its Protocols: the Mediterranean Action Plan Regime* (London: Simmonds and Hill Publishing).

Regional Environment Center (REC) for Central and Eastern Europe. 1996. *Approximation of European Union Environmental Legislation* (Budapest: REC).

Roginko, Alex, 1996. "Domestic Implementation of Baltic Sea Pollution Controls in Russia and the Baltic States," *IIASA Working Paper 96-91*. Laxenburg, Austria: IIASA.

Seeberg-Elverfeldt, Niels J., 1995. "'Hot Spotting' in Estonia, Latvia and Lithuania" *HELCOM News*, no. 1.

Selin, Henrik and Eckley, Noelle. 2002. "Science, Politics, and Persistent Organic Pollutants: Scientific Assessments and their Role in International Environmental Negotiations" in *International Environmental Agreements: Politics, Law and Economics* (forthcoming).

Skjærseth, Jon Birger, 1996. "The 20th Anniversary of the Mediterranean Action Plan: Reason to Celebrate?" *Green Globe Yearbook*, p.p. 47-53.

Skjærseth, Jon Birger, 2002. "The Effectiveness of the Mediterranean Action Plan" in Edward L. Miles et al. (eds.) *Environmental Regime Effectiveness: Confronting Theory with Evidence*. Cambridge. MIT Press, p.p. 311-330.

Stanners, D. and Bourdeau, P., 1995. *Europe's Environment: The Dobris Assessment*. Copenhagen. European Environment Agency.

United Nations Economic Commission for Europe (UNECE), 1996. *Environmental Performance Review for Estonia*. Geneva. United Nations.

United Nations Economic Commission for Europe (UNECE), 1997. *Environmental Performance Review for Slovenia*. Geneva. United Nations.

United Nations Economic Commission for Europe (UNECE), 1998a. *Environmental Performance Review for Latvia*. Geneva. United Nations.

United Nations Economic Commission for Europe (UNECE), 1998b. *Environmental Performance Review for Lithuania*. Geneva. United Nations.

United Nations Economic Commission for Europe (UNECE), 1999a. *Environmental Performance Review for Slovenia: Report on Follow-Up*. Geneva. United Nations.

United Nations Economic Commission for Europe (UNECE), 1999b. *Environmental Performance Review for Croatia*. Geneva. United Nations.

United Nations Economic Commission for Europe (UNECE), 2000a. *Environmental Performance Review for Latvia: Report on Follow-Up*. Geneva: United Nations.

United Nations Economic Commission for Europe (UNECE), 2000b. *Environmental Performance Review for Lithuania: Report on Follow-Up*. Geneva. United Nations.

United Nations Economic Commission for Europe (UNECE), 2001. *Second Environmental Performance Review for Estonia*. Geneva. United Nations.

United Nations Environment Programme (UNEP), 1989. *State of the Mediterranean Environment*. Athens. United Nations.

United Nations Environment Programme (UNEP), 1991. *Law of the Sea and the Mediterranean*. Nairobi. United Nations.

UNEP. 1995. *Report of the Ninth Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Mediterranean Sea Against Pollution and its Protocols*. UNEP(OCA)/MED IG.5/16. Athens: UNEP.

UNEP. 1996. *State of the Marine and Coastal Environment in the Mediterranean Region*. MAP Technical Reports no. 100. (Athens: UNEP).

United Nations Environment Programme (UNEP), 2001. *Operational Document for the Implementation of the Strategic Action Programme to Address Pollution of the Mediterranean Sea from Land-Based Activities (SAP)*. UNEP(DEC)/MED WG.183/6, 7 May 2001.

United Nations Environment Programme (UNEP), 2002. *Report of the Meeting on the New Reporting System of MAP*. UNEP(DEC)/MED WG.206/2.

VanDeveer, Stacy, 1997. *Normative Force: The State, Transnational Norms and International Environmental Regimes*. Ph.D. dissertation, University of Maryland, College Park, Md.

VanDeveer, Stacy, 2000. "Protecting Europe's Seas," *Environment*, July/August, Vol. 42, No. 6, p.p.10-26.

VanDeveer, Stacy, 2002. "Environmental Cooperation and Regional Peace: Baltic Politics, Programs and Prospects" In *Environmental Peacemaking*, Ken Conca and

Geoffrey D. Dabelko, Eds. (Baltimore: Johns Hopkins University Press/Woodrow Wilson Center Press)

VanDeveer, Stacy D. and Geoffrey D. Dabelko, eds. 2000. *Protecting Regional Seas: Developing Capacity and Fostering Environmental Cooperation in Europe*. Washington, DC: Woodrow Wilson Center.

VanDeveer, Stacy D. and Geoffrey D. Dabelko. 2001. "Its Capacity Stupid: National Implementation and International Assistance" *Global Environmental Politics*. 1(2): 18-29.

VanDeveer, Stacy D., Lisa Dipinto, Jane Marks, Robert Nairn, Robert Robertson, and Robert Wilder, "Coastal Ecology, Environmental Issues and Policy in Croatia" (Washington, DC: National Research Council, 1999).

Velner, Harold. 1989. "Baltic Marine Environment Protection Commission," in *Comprehensive Security for the Baltic: An Environmental Approach*, ed. Arthur H. Westing (London: Sage Publications).

Victor, David G., Kal Raustiala, Eugene B. Skolnikoff, eds. 1998. *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice*. Cambridge: MIT Press.

de Walle, F. B. et. al. 1993. *Environmental Conditions of the Mediterranean Sea: European Community Countries*. (Dordrecht: Kluwer Academic Publishers).

Weinthal, Erika. Under review. "Two Steps Forward, One Step Back: Israel's Implementation of Barcelona Convention and Mediterranean Action Plan"

Weiss, Edith Brown and Harold K. Jacobson. 1998. *Engaging Countries: Strengthening Compliance with International Environmental Accords*. Cambridge: MIT Press.

Whitmore, Brian. 1998 "The Reluctant Dissident" *Transitions*, May.

Zmudzinski, Ludwik. 1989. "Environmental quality in the Baltic region," in *Comprehensive Security for the Baltic: An Environmental Approach*, ed. Arthur H. Westing (London: Sage Publications): 46-53.