Working Paper

Domestic Implementation of Baltic Sea Pollution Controls in Russia and the Baltic States

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Preface

What happens to international environmental agreements once they are signed, and how does the implementation of such agreements influence their effectiveness? These are the questions that motivate the IIASA project "Implementation and Effectiveness of International Environmental Commitments (IEC)." The IEC project is employing a variety of research methods; our core effort is devoted to 17 historical and comparative case studies.

In this study Alexei Roginko reports on how Russia and the Baltic states--Estonia, Latvia and Lithuania--have implemented their international commitments to clean up the Baltic Sea. Russia, especially St. Petersburg, is a major source of water pollution that flows into the eastern Baltic. Other IEC studies on protection of the Baltic focus on Poland and Sweden. This is also one of several case studies in which IEC examines the effects of the transition to a market economy on compliance with international environmental commitments.

An excerpt of this case study will appear in a book to be published by MIT Press in 1997. That book will also present the research framework and integrated conclusions of the IEC project.

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Acknowledgments

At the early stages of the current study a number of people facilitated access to primary sources of information and helped me to get an insight into the current state of HELCOM activities and the implementation of Baltic pollution controls in Russia. In particular, I am grateful to Vassily Rodionov (Helsinki Commission), Dmitry Zimin (Ministry of Environment, Russian Federation), Nikolai Sorokin, Valery Kulibaba and Tatiana Sokornova (Committee on Ecology and Natural Resources for St. Petersburg and Leningrad Region). I am extremely grateful for many thoughtful and very useful comments to various drafts of this paper provided by David Victor, Kal Raustiala and Ronnie Hjorth (IEC). The structure of the paper has been inspired by a research protocol developed by my Russian colleagues from the IEC project, Elena Nikitina and Vladimir Kotov. However, the author is solely responsible for any of the omissions and shortcomings of the current research report.

INTRODUCTION

Countries which have emerged after the collapse of the Soviet Union are now undergoing a painful process of transition to a democratic political system, more decentralized governance and a market economy. This process of economic and social transformation obviously affects the ways that these countries domestically implement their international environmental commitments. Many of these commitments have been adopted long before the current transition process had started and were initially implemented in a totally different economic and social situation. By tracing changes in implementation patterns over time we can identify what major modifications, if any, transition has brought into implementation picture, what was the impact of the former command-based Soviet regime on the implementation under transition, how has the transition changed the policies and regulatory activities of public authorities, affected the behavior of firms and individuals ("target groups") and the degree of compliance with international commitments.

Further on, the new independent states, while facing roughly similar economic and environmental problems inherited from the Soviet Union, are following different transition paths, experiencing varying degrees of economic collapse and employing different instruments and institutional structures (with a varying degree of success) in the process of implementation of international environmental commitments and in environmental management in general. Thus, a cross-country comparison between the patterns and mechanisms of implementation for the same environmental regime under transition can bring about informed judgments concerning the relative effectiveness of various domestic implementation mechanisms.

The above considerations explain the selection of the environmental regime for the current case study. The 1974 Helsinki Convention has been in force since 1980, i.e. during a reasonably long period of time to be able to look at evolutionary trends in implementation; moreover, the regime itself has progressed from technical and scientific cooperation to a "program strategy", linking environmental cooperation to economic reforms in the former Soviet republics and Poland. Since the collapse of the Soviet Union, implementation processes in Russia, Estonia, Latvia and Lithuania have been following separate paths — with many commonalties, but different nevertheless, which provides ample opportunity for cross-country comparisons. However, due to limited data availability, the emphasis of the current study is mainly on implementation in Russia; wherever possible, comparisons with the Baltic states have been introduced.

The paper is divided into four major sections. It starts by outlining major environmental issues the regime was intended to solve, the general framework of the regime in question*, its evolution over time, and primary national approaches to the regime. The major goal of this section is to evaluate the significance of the environmental problem covered by the international regime for the countries concerned, the importance of problem-solving at the

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* The regime under study includes not only the 1974 Helsinki convention itself, but also numerous non-binding recommendations produced by the Helsinki Commission (HELCOM), the decisions of the 1988 and 1990 Ministerial conferences, the Joint Comprehensive Programme adopted in 1992, and the provisions of the bilateral Russian-Finnish Action program for limiting water and marine pollution in the areas adjacent to Finnish-Russian border (1992). The paper does not analyze the implementation of the new 1992 Helsinki Convention, since it has not yet entered into force.

international level, and to assess national interests and approaches towards problem-solving and participation in the regime, especially their dynamics and changes in the period of transition.

The subject of the next section is the implementation at state level: it is looking at changes over time in public policy and governmental actions aimed at compliance with the requirements of the regime and at channeling the behavior of different actors within national arena to implement the Baltic environmental agreements domestically. The paper explores national programs adopted for the implementation of Baltic pollution controls in Russia and the Baltic states, as well as the evolution and effectiveness of major normative, legal, regulatory, organizational and financial mechanisms used by a state to interact with target groups in the course of domestic implementation. In particular, the section attempts to trace how newly-emerged market-based instruments to implement environmental policy, like pollution charges and taxes, are used for the transmission of incentives from rules, policies and programs to actual changes in the behavior of targets. Another emphasis of this section is on the impact of decentralization of authority, the uncertainty in the division of rights and responsibilities between regulatory subjects brought about by the transition, upon the translation of international commitments into domestic actions. Finally, the section explores in depth the importance of mobilization of domestic and international financial resources for implementing the Baltic pollution controls, and especially the role of external resource transfers, including the analysis of some reasons why the efficacy of such transfers is mixed.

The third section is looking at the behavior of major societal groups involved in the implementation of Baltic environmental accords — industry, courts, and environmental NGOs. It shows how the dispersion of actors, resulting from privatization of enterprises, has affected implementation; what impact did the public (federal and local) regulatory policies have upon the behavior of a key target group — defense industry; what was the role of legal and court action in the enforcement of new market-based, rapidly changing laws and regulations in the period of transition; and, finally, how important were public pressure and public participation for the implementation of the regime both in Russia and in the Baltic states.

The aim of the fourth section is to assess and evaluate the results of execution of national policies and programs on the implementation of the Baltic environmental regime in terms of a degree of compliance with the regime requirements (target attainment) and the consequences of the target groups' response for the physical problem at hand (problem solving). The section attempts to explain the dynamics and cross-country variance of national compliance both in Russia and in the Baltic states from the viewpoint of factors endogenous to the regime (public policies, resource transfers) and exogenous to it (economic collapse).

The concluding chapter summarizes the main findings of the study and outlines major trends in the domestic implementation of the Baltic environmental accords. Statistical annexes and graphs provide additional information on the status and costs of implementation and on the dynamics of pollution loads.

1. GENERAL FRAMEWORK: INTERNATIONAL REGIME AND NATIONAL INTERESTS

1.1. DESCRIPTION OF THE PROBLEM

1.1.1. Environmental setting

The Baltic Sea, with a surface area of about 400,000 km^2 and a volume of 21,000 km^3, is one of the largest brackish water areas of the world. The Baltic Sea is a very specific ecosystem because of its relatively high brackishness and almost permanent stratification (Leppäkoski, 1980). The shallow, narrow Danish Straits allow only a very slow water exchange between the Baltic and North Sea. As a result, water in the Baltic Sea has an extremely long residence time, in the order of 35 to 40 years, leading to accumulation of discharged pollutants in water, sediments and biota (Voigt, 1983). The risk of oxygen depletion, hydrogen-sulfide formation and benthic death is greatly exacerbated by over-fertilization (Nordic Council, 1989). In sum, the Baltic is now one of the most severely polluted areas of the world, and serious adverse effects of currently discharged pollutants into the ecosystem may be felt several generations from now (Rijsberman et al., 1990). Eutrophication and oxygen depletion in bottom layers are most vexing current problems.

The Baltic Sea is surrounded by nine countries: Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Poland, Germany, and Denmark. The land area of the Baltic drainage basin is 1.7 million km^2, containing a population of about 75 million people, almost one-hundredth of the world population producing about one-tenth of the global GDP (Table 1). Sweden and the former Soviet republics occupy over 60% of the basin's land area, but Poland's alone share of population is over 50%. While there is great disparity among the countries in size, greater convergence is apparent in levels of economic development, with strong similarities among the western democracies at a much higher level than the post-socialist states (Table 2). At the same time, more than five-fold gap in GDP per capita between the Nordic countries and Germany, on the one hand, and the former communist countries of the region, on the other hand, both results in serious environmental problems and creates impediments for their effective resolution by joint actions.

A significant portion of pollution is transported into the Baltic through the atmosphere - about 50% of total nutrient loads are input this way. Other major sources include industrial and municipal waste, the pulp and paper industry and agricultural runoff. Poland is the largest single polluter in the entire catchment area. Degradation of the Baltic Sea is currently occurring primarily from:

- poor treatment of municipal and industrial waste entering mainly from the Gulfs of Finland and Riga, and the Gdansk Bay;
- old pulp and paper mills using outdated sulfite-based technology and characterized by heavy discharges into water of organic substances or substantial emissions of SO_2, or both (Karelia, new Baltic states and Poland);
- destruction of solid and hazardous wastes without proper incineration (Russia and the countries of Eastern Europe);

- inputs of nitrogen (30 to 35 per cent of the total load) and phosphorus (about 10 per cent of the total load) with agricultural non-point pollution (Denmark, Sweden, Eastern European countries) (HELCOM, 1992).

Table 1

Land area and population distribution in the Baltic Region by country

Country	Total area, 1,000 km^2	Area in drainage basin, 1,000 km^2	% of country's total area in drainage basin	Country's share of total drainage area (%)	Population in drainage basin (1990), millions	% of country's population living in drainage basin, %	Population density in drainage basin (persons per km^2)
Denmark	43.1	31.1	72.2	1.8	4.4	86.3	141
Finland	337.0	301.3	89.4	17.5	4.8*	96.0	16
Germany	356.9	23.6	6.6	1.4	3.3	4.2	141
Poland	312.7	311.9	99.7	18.1	38.0	99.9	122
Sweden	410.9*	391.5*	95.3	22.8	8.2*	96.5	21
Russia	17075.2	314.8	1.8	18.3	9.2	6.1	29
Estonia	45.1	45.1	100	2.6	1.6	100	35
Latvia	64.6	64.6	100	3.8	2.7	100	41
Lithuania	65.3	65.3	100	3.8	3.7	100	57
TOTAL		1721.2**			74.9		

Sources and notes:

1. Total area from the World factbook 1995/U.S. Government.
2. Drainage basin area and population from HELCOM, 1993a and Appendix 2.2 of Wesing, 1989.

* Figures refer to land area, from Appendix 2.2 of Wesing, 1989.

** Total figure includes also portions of territories of the Czech Republic, Slovakia, Norway, Belarus and Ukraine (over 92,200 km^2)

Table 2

Economic and population data for Baltic member countries

Country	GDP at purchasing power parity, 1994 (billions $US)	GDP per capita, 1994 ($US)	GDP real growth rate, 1994 (%)	Population 1995 est. (millions)	Population growth rate, 1995 est. (%)
Denmark	103.0	19,860	4,5	5.2	0.2
Estonia	10.4	6,460	4	1.6	0.5
Finland	81.8	16,140	3.5	5.1	0.3
Germany	1344.6	16,580	2.9	81.3	0.26
Latvia	12.3	4,480	2	2.8	0.5
Lithuania	13.5	3,500	-0.5	3.9	0.71
Poland	191.1	4,920	5.5	38.8	0.36
Russia	721.2	4,820	-15	148.2*	-6.0*
Sweden	163.1	18,580	2.4	8.8	0.46
TOTAL	2641.0			295.7	

Source: The World Factbook 1995 /U.S. Government.

* Official Russian data for 1994.

1.1.2. Regime description

The 1974 Helsinki Convention

The Convention on the Protection of the Marine Environment of the Baltic Sea Area (the Helsinki Convention) was adopted in Helsinki on 22 March 1974. It was signed by all seven (at that time) Baltic states - Denmark, Finland, German DR, FR Germany, Poland, Sweden, and the USSR.[1] The Convention finally entered into force after the last (West German) ratification on 3 May 1980. The current Baltic states signatory to the Helsinki Convention are: Denmark, Finland, Germany, Poland, Sweden, Russia, Estonia, Latvia, and Lithuania. Belarus, Ukraine, the Czech Republic, Slovakia and Norway also drain into the Baltic Sea, but they are not members to the Convention. The 1974 Convention became the first comprehensive regional marine environment protection agreement to address all sources of marine pollution, including the land-based ones.[2]

The 1974 Helsinki Convention sets an ambitious goal:

> "The Contracting Parties shall individually or jointly take all appropriate legislative, administrative, or other relevant measures in order to prevent and abate pollution and to protect and enhance the marine environment of the Baltic Sea area".

The Convention's Annex III also lists the goals which the Contracting parties shall endeavor to attain, and the criteria and measures they should apply, with regard to the prevention of land-based pollution. These include, e.g. appropriate treatment of municipal sewage, minimization of the polluting load of industrial wastes, employment of low-waste technologies, re-circulation and re-use of water etc. No intermediate objectives or timetables are provided, however, neither by the Convention nor by its Annexes for the attainment of these goals.

Similar to many other marine pollution control agreements, the Convention distinguishes, with reference to pollution from land-based sources, between hazardous and noxious substances. Hazardous substances (listed in Annex I to the Convention) are essentially banned. The list of hazardous substances currently includes DDT and its derivatives, PCB's and PCT's (polychlorinated terphenyls). With respect to noxious substances listed in Annex II (heavy metals, phenols, halogenated hydrocarbons, persistent pesticides, radioactive materials, oil and petrochemical wastes, etc.), the parties should require prior special permits (issued by national authorities) if they are to be introduced in significant quantities (waterborne) into the marine environment.

The Convention has established a permanent working body, the *Baltic Marine Environment Protection Commission* (HELCOM), comprising representation from all state parties and served by a small secretariat. In fact, HELCOM is the organizational nucleus of the environmental protection regime in the Baltic (Broadus et al., 1993). The Commission meets once a year in Helsinki. Each member country has one vote, and decisions of the Commission must be reached unanimously at all stages. The Commission's meetings are attended mostly by high-ranking officials from the national ministries concerned (nowadays the Ministries of

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[1] Sweden and the USSR have blocked the EC's becoming a member of the Convention (Haas, 1993).

[2] However, almost all the recommendations accepted by the parties to the Convention in the first five years after its entry into force, dealt primarily with pollution from ships.

Environment), and take place at the ministerial level only in exceptional circumstances. The preparatory work for the Commission's decisions and recommendations is done by the four major Committees of the HELCOM[3], their subcommittees, and *ad hoc* working groups or experts' groups which report to the committee in question.

The major "product" of the HELCOM activity are *recommendations* related to various aspects of monitoring, organization of research programs, as well as the prevention, control and abatement of pollution. The total number of recommendations issued since 1980 has exceeded 160; about one-third of their total number pertain to the problems of control and prevention of vessel-source pollution, 18 recommendations - to monitoring and reporting, and 63 — to the control of land-based pollution (see Table 3).[4] The greatest part of the latter (80%) have been adopted after 1990, which is indicative of the growing awareness of this major source of pollution. Examples of most important HELCOM recommendations for land-based sources are shown in Annex 1. Some of the recommendations adopted contain specific targets and timetables for their achievement, but, since none of them are amended to the text of the Convention, they are not considered legally binding, i.e. the Convention operates on a "voluntary" basis. However, since all of the recommendations are adopted by unanimous vote, they are considered to be at least "morally binding" (Rijsberman et al. 1990).[5]

Table 3

Subjects addressed in HELCOM recommendations and their implementation, 1980-1996

Subject	Number of recommendations	Recommendations reported as fully implemented by HELCOM	
		Number	Per cent
Monitoring and reporting	18	11	61
Measures urban & industry	49	1	2
Measures agriculture	14	1	7
Guidelines and requirements for reception facilities / shipping	50	29	58
Combating oil and other spills	18	10	56
Other	15	3	20
TOTAL	164	55	34

Source: HELCOM 1991a; HELCOM World Wide Web home page.

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[3] The Environment Committee deals with technical questions of environmental quality and oversees monitoring and data collection programs; Technological Committee formulates measures and standards for pollution control from a variety of land-based sources. Maritime Committee is responsible for the prevention of operational pollution from vessels and related maritime safety issues, and the Combating Committee is responsible for the prevention and combating accidental pollution caused by spills of oil and other harmful substances.

[4] Several recommendations have flowed between the North Sea and the Baltic, brokered by Denmark, Germany and Sweden which are parties to both regimes. With only minor phrasing changes, arrangements for offshore installations, mercury and cadmium emissions, and dumping practices for dredging spoils were initially adopted in the North Sea and subsequently adopted by HELCOM. Standards for oil emissions from refineries were first adopted by HELCOM and then transferred to PARCOM (Haas, 1993: 151).

[5] It is only the provisions of the Helsinki Convention itself that contain legally binding obligations for the states-parties. The HELCOM recommendations include mainly technological or environmental norms and standards which are used as "general guiding principles" for the implementation at the domestic level. "The purpose [...] of adopting a recommendation is to submit a certain question for the Contracting Parties for study and implementation, if accepted" (Doc. HELCOM 6/INF.9, cited by Hjorth, 1992).

The fact that all the HELCOM recommendations are adopted unanimously implies, at least in theory, that a recommendation adopted by the Commission will be implemented in all countries. In practice, however, there can be (and usually there are) considerable delays before recommendations are implemented (if at all).[6] Besides, many of the recommendations are vague, and for that reason it is not an easy task to determine whether or not they have been implemented (Hjorth, 1992: 216).

As can be seen from Table 3, the highest percentage of the recommendations implemented falls under the category of either operational vessel-source pollution prevention or combating oil or other spills at sea. This is explainable by the fact that these recommendations for the most part actually implemented the IMO standards or recommended measures, which were already agreed upon internationally and the countries were obliged to implement them domestically anyway, mainly in the framework of MARPOL 73/78 Convention. Implementation of recommendations on pollution monitoring, surveillance and reporting also fares relatively well, for it has been comparatively easy to achieve. Prevention of pollution from land-based sources laggs far behind, since it is obviously the most complex type of pollution to handle; in addition, the Helsinki Convention itself provides less detailed regulations concerning land-based pollution than for other fields. The only two recommendations (out of total of 63) on this subject reported as implemented were No. 3/2 (1982) on the elimination of discharges of DDT and No. 4/1 (1983) adding PCT's to the "black list" of the Convention.

This can hardly be considered as a success, moreover so that DDT has already been previously classified as a banned substance in the Annex I (Broadus et al., 1993). On the other hand, the situation may not be so hopeless, since HELCOM considers a recommendation "fully implemented" only if all the member countries have reported it as such. Therefore, in order to understand the real state of affairs with HELCOM's recommendations implementation, one has to look at country implementation reports the review of which has been provided by the Secretariat at the meeting of the Commission in 1988.[7] However, due to incompatibility in time frames and recommendations' classification, it is difficult to estimate which countries were more successful in implementing a specific type of recommendations.[8]

Regime institutional change

During the twenty years of its existence, the Baltic environmental protection regime has demonstrated its capability for adjustment over time. List (1990) describes the Baltic Sea protection regime as an evolutionary one, implying new organizational set-ups, new procedures and, above all, new rules.

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[6] To deal with the problems of implementation delays in the countries under transition, the HELCOM has endorsed in 1993 a differentiated approach in formulating the implementation timetables, i.e. offering to these countries extended implementation time limits to bring the discharges and emissions from existing enterprises in conformity with HELCOM Recommendations. However, no exemptions were made for new enterprises (*HELCOM News*, March 1993, No. 2, p. 4).

[7] Doc. HELCOM 9/3/1, analyzed by Hjorth (1992).

[8] In any case, during the period of 1980-1988 the Soviet Union has reported 14 out of the total of 18 land-based-oriented recommendations as "implemented", but these were mainly brief implementation reports (Hjorth, 1992: 247).

The common feature of almost all rules in the regime established by the Helsinki Convention is their *technical nature*. Foreseeing rapid changes in the underlying technical knowledge, the parties to the Convention wanted to keep adoption and adaptation of rules relatively easy. This was achieved by placing the technicalities to be regulated right from the start into annexes (and appendices thereto) to the Convention. These annexes, in turn, could be changed by a facilitated procedure not involving national parliaments. In addition, the whole recommendation system is itself a device for evolution in the regulative field.

The organization of HELCOM has also progressed over time. Since at the time of the Convention development there was no model of a body comprehensively dealing with the pollution of a sea area, the actors had to learn by doing, drawing only on the general knowledge about the international institution-building. Organizational differentiation has therefore occurred over the years, leading also to changes in procedures.

One of the major procedural innovations was the granting in 1988 of observer status not only, as had been practiced since 1980, to relevant intergovernmental organizations, but also to NGOs. Greenpeace International was the first to benefit from this procedural reform which reflects increased awareness on the part of the state actors of the importance of public involvement in marine pollution matters (List, 1990). Besides, representatives of other international NGO's (World Wide Fund for Nature, Coalition Clean Baltic etc.) are invited at Working Groups' meetings when appropriate and decided so by HELCOM (HELCOM, 1991).

However, a more significant procedural change with far-reaching consequences has been the introduction of *Ministerial Conferences*, the first of which took place in March 1988, borrowing a lesson from the North Sea regime. It was hoped that the influence of HELCOM on the domestic implementation would be enhanced and the political weight of the resolutions increased. The HELCOM recommendations carried too little authority and have not caused sufficient changes in the behavior of the member states. The "Declaration on the protection of the marine environment of the Baltic Sea Area" adopted at the ministerial level during the ninth meeting of HELCOM in 1988 called for a reduction of total discharges of listed pollutants (heavy metals, toxic chemicals and nutrients) in the order of 50 per cent as soon as possible, but not later than 1995 (HELCOM, 1988). However, the Declaration have provided neither for the measurement of the discharges' reduction nor for their distribution among the countries involved, nor even for the reference year; that, according to the experts' judgment, made its implementation highly debatable (Broadus et al., 1993).[9] The rather vague goal of 50% emissions reduction proposed in 1988 was somewhat clarified by the addition of a reference year, 1987, in the Ronneby Declaration of 1990, thus placing it on a par with the goals adopted by the North Sea Conference. Moreover, according to the Ronneby Declaration, biological treatment for nutrient removal should be installed not later than in the year 2000 (Baltic Sea Environment Conference, 1990).

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[9] According to Fitzmaurice (1992), the 1988 Declaration was meant to be merely a political act which would be non-binding. It was not even officially published in the Eastern European member states, probably because they would have been in any case unable to act in accordance with its provisions. Moreover, the Declaration was not registered under Article 102 of the UN. Charter. It was believed that its non-binding nature would guarantee a more sincere approach in determining generally the needs of the Baltic Sea and compliance with the Declaration.

The introduction of Ministerial Conferences has had several positive effects for the functioning of the regional marine pollution control regime. First, it allowed the Helsinki Commission to reduce the disadvantages of adoption of measures by consensus — the so-called "least common denominator" phenomenon. The publicity surrounding the ministerial meetings (in conjunction with increased environmental awareness at home) has made it more difficult for "laggard" countries (East European states, and to a certain extent Finland) to say no, because ministers were encountering new accountability at home. Moreover, environmental ministers in laggard countries could make stronger commitments at international meetings than they could otherwise get passed domestically, where they would be suppressed by their domestically stronger colleagues in other ministries (Haas, 1993: 173).

Second, the meetings of Ministers spearheaded a fundamental shift in approach: from a reactive approach based on assumptions of assimilative capacity to a proactive approach based on the principle of precautionary action. The 1988 Ministerial Declaration introduced the concept of "Best Available Technology"; the Ronneby Declaration of 1990 introduced the concept of "Best Environmental Practice" and the principle of precautionary action (Broadus et al., 1993).

By all means the most potentially significant regime change was the adoption of a new and revised legal instrument — the 1992 Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area, adopted in April 1992, which, upon eventually entering into force, will supersede the current agreement.[10] The new Convention contains major expansions in purpose (to prevent and eliminate pollution rather than just control or minimize it), in scope (such as inclusion of internal waters and the whole of the Baltic Sea catchment area), and in regulatory aggressiveness — such as invoking the precautionary and polluter pays principles, and shifting to a uniform regime for all substances by requiring the use of best available technology (BAT) and best environmental practices (BEP). New provisions for notification and for dealing with non-compliance have also been introduced. However, since the implementation of the new provisions will not be required until several years from now, they are not further analyzed in the current paper.

The Baltic Sea Joint Comprehensive Environmental Action Programme

In the late 1980s, HELCOM members have arrived to a joint conclusion on the expediency of cost-sharing on an international basis and using environmental investments funds where they can produce maximum environmental efficiency with minimal costs, namely in the countries of Central and Eastern Europe (CEE), where little pollution control has been done in the past.[11] Since the Nordic countries had already much higher costs of removal per unit of emissions' reduction, their total domestic expenditures for water pollution control have greatly

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[10] As of June 1996, the new 1992 Convention has been ratified by six states (Estonia, Denmark, Finland, Germany, Latvia, and Sweden) and the European Community. The ratification process is progressing, but three ratifications are still missing (*HELCOM News*, June 1996, No. 3: 3). In Russia, as has been explained by the Russian Environment Minister V. Danilov-Danilyan, the ratification process has been delayed because of the temporary halt in parliamentary activities; necessary ratification documents are being prepared by Minpriroda in cooperation with other ministries and organizations for consideration by the Parliament (HELCOM, 1994: 78).

[11] It costs increasingly more per unit to remove the remaining pollution: per unit of pollutant it becomes 16 times more economical to remove the first 80% of the pollution load as compared to the last 20%.

exceeded those of the CEE countries, with about equal (or even lower) overall environmental effectiveness. That is why, the HELCOM experts assumed, high investment efficiency in the post-communist countries of the region would have more positive effects on the state of the Baltic. This approach was further developed in several HELCOM recommendations, and represented an important starting point for the elaboration of the new action program for the protection of the Baltic environment.

The 1990 Ministerial Conference in Ronneby (Sweden) has adopted the Baltic Sea Declaration which called for the elaboration of a *Joint Comprehensive Environmental Action Programme (JCP)*, with the aim "to restore the Baltic Sea to a sound ecological balance" (Baltic Sea Environment Conference, 1990), and established an *ad hoc* high level Task Force.[12] To provide a basis for the concrete Action program and to outline priority fields of action, seven pre-feasibility studies financed by national governments through multilateral banks (acting as executing agencies), have been carried out.[13] Since strict priorities were essential to use the available funding with maximum cost-effectiveness, the pre-feasibility studies were designed to guide the investments by linking costs to the expected decreases in pollution. The findings indicated that there were 132 pollution "hot spots" of which 47 have been given "priority" designation.[14] Of the 132 "hot spots", 95 were located in the formerly centrally planned economies in the eastern and southern portions of the Baltic basin (HELCOM, 1992; HELCOM, 1993b), including 60 hot spots, or 44 per cent of the total, in the republics of the former USSR (see Annex 2)[15]. As has been acknowledged by Russia at the 1993 Gdansk Conference, pulp and paper mills, municipalities, management of hazardous wastes and agricultural activities in the St. Petersburg and Kaliningrad provinces contribute up to about 50 percent of anthropogenic load entering the Baltic Sea from the Russian territory and form a major part of the entire pollution load (HELCOM, 1993d: 39).

On the basis of pre-feasibility studies, supplemented by concrete national plans submitted by member states, the Task Force elaborated a proposal for the Action Programme. A draft JCP was submitted to the Diplomatic Conference, held at ministerial level at April 1992 in Helsinki. The Conference has endorsed the strategic approach and principles reflected in draft JCP and called for the establishment of a HELCOM Programme Implementation Task

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[12] In addition to the seven Baltic states, Norway, Czechoslovakia, and the EEC, the representatives of five international financial institutions (IFI) also participated in the Ronneby Conference. The latter included European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Nordic Investment Bank (NIB), the World Bank and Nordic Environment Finance Corporation (NEFCO).

[13] These studies addressed environmental issues, sources and magnitude of pollution loads, and options for pollution control and improved environmental management in especially polluted regions throughout the Baltic Sea catchment area - the Gulf of Finland, the Gulf of Riga and the Daugava river basin, Lithuanian coast and the Neman river basin, the Kaliningrad region, eastern Poland, the Oder/Odra river basin, and the North German Baltic coast. Special studies were also made of agricultural runoff, coastal wetlands, and the impact of the emissions into the atmosphere (HELCOM, 1993b).

[14] In the course of 1994-1996, eleven hot spots in Finland, Sweden and Germany (nine pulp and paper mills and two municipal) have been removed from the list, since the construction of water treatment facilities there has been completed and they complied with all HELCOM standards (*HELCOM News*, 1996, No. 3: 9).

[15] The percentage of "priority" hot spots designated in FSU is even higher: 26 of their total number, or 55 per cent, are located in the former Soviet republics.

Force (HELCOM PITF)[16] — to initiate, coordinate and facilitate the implementation of the Program. The HELCOM PITF was established and it finalized the JCP by the end of 1992.

The JCP approach has several novel features. First, the countries have developed *concrete national plans* which forced them to scrutinize the wide range of activities with an impact on the Baltic Sea environment. As a result, much was learnt about the scope and distribution of the environmental problems and their causes. Second, the Programme is a *joint* one, i.e. priorities for its implementation are, as far as possible, set *for the catchment area as a whole* and not only within a national context. Third, the Program, to the extent possible, is spelled in such terms so as to form the basis for consideration by the *new actors* — development banks as well as by other financing agencies, including those involved in bilateral assistance programs, regarding the financing of investments and other activities contained in the JCP (HELCOM, 1991b; *HELCOM News* 1994, No. 2: 3).

The JCP is supposed to strengthen the environmental management framework in each country, including environmental policy and legislation as well as a system of economic incentives. It will also give better possibilities to finance environmental investments. It helps all countries and institutions to focus these efforts and resources in a more effective way. At the same time, simultaneous and overlapping work can be avoided through the transparency created by the program (HELCOM, 1993d: 20).

The underlying strategy on which the Program is based consists of actions by each concerned government to carry out needed policy and regulatory reforms, capacity building, and investments to control pollution from point and non-point sources, safely dispose of or reduce generation of waste, and conserve ecologically sensitive and economically valuable areas. The success of the environmental strategy will depend on a series of national interventions that must compete with other national priority areas for allocation of human and financial resources, especially in the former centrally planned economies of the Baltic Sea region. The ultimate goal should be to comply with the environmental standards of the European Union or, where applicable, with other stricter standards (HELCOM, 1992; HELCOM, 1993c).

The May 1996 Baltic States Summit Meeting held in Visby (Sweden) has recommended that HELCOM should update and strengthen the JCP, as well as increase the pace of its implementation. Furthermore, the JCP should become an important element in the elaboration of Agenda 21 for the Baltic Sea Region. It has been emphasized that special attention should be given to water supply and the treatment of waste water in the St. Petersburg, Pskov and Kaliningrad areas, and the Vistula and Odra river basins. HELCOM has been called to develop an action program for phasing out discharges, emissions and losses of hazardous substances, including persistent organic pollutants (*HELCOM News*, June 1996, No. 3: 3).

To sum up, the Baltic Sea environmental protection regime has started by adopting the "technical-scientific" strategy, which was common for most contemporary international organizations in the field, and had three major tasks: research and information, formulation of

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[16] In addition to the signatories of the Convention, other countries of the Baltic Sea catchment area also participate in the Task Force, together with international financial institutions and a number of environmental NGOs, namely, World Wide Fund for Nature (WWF), Coalition Clean Baltic (CCB), Union of the Baltic Cities (UBC), and International Council for Local Environmental Activities (ICLEI).

principles for emission limitations, and specification of rules and procedures. In the bipolar security system which then existed in Europe, this strategy functioned well in the sense that cooperation was primarily technical and uncontroversial to the member states' security concerns. The regime has been evolving under the impact of a better scientific understanding of the problem, enhanced by public concern and publicized by the media: it has progressed from limiting emissions of substances included into the black and grey lists to identifying best available technologies for across-the-board cuts of those and more emissions from a variety of industrial branches or sectors (see Haas, 1993).

With the massive political changes occurring in Europe and the opening up of totally new conditions for cooperation by providing a context for East-West funding and technology transfer, a new "program strategy" has largely replaced the previous one, with its central characteristics being a strong economic component, linkage of environmental cooperation to economic reforms, the emphasis on long-term planning, and high-level political involvement. Overarching, action-oriented political programs are now applied to guide the activities of HELCOM, and their scope has been expanded by linking them to regional cooperation in other areas, such as industrial development, energy, transportation and agriculture. The number of actors involved has also increased dramatically with the inclusion of new member countries, international financial institutions, local-level authorities, private businesses and independent professional experts. The adoption of JCP has signaled a dramatic departure, in fact a regime change, from the form of cooperation characteristic of the 1980s (see Hjorth, 1992; Nilson, 1994; Ringius, 1995).

1.1.3. Importance of the problem for the country

For the former **Soviet Union** as a whole, environmental problems in the Baltic area were most probably of secondary importance, as long as pollution produced by heavy industry and municipalities had not noticeably affected its economic interests, particularly fishing[17] and recreation. Compared to other Baltic littoral countries, the percentage of the USSR total land area within the Baltic drainage basin was relatively insignificant (2.5%), with only 4 per cent of the country's total population inhabiting this area (Broadus et al., 1993: 49).

For today's **Russia**, which has lost most of the FSU Baltic coastline, these probably would have been of even lesser significance, if it were not for a strong transboundary impact of pollution generated particularly by St. Petersburg and a perceived need to demonstrate compliance with international obligations. Some observers have noted that in Russia still certain environmental problems were regarded as "first class" ones because they, for one reason or another, have attracted the attention of the West. Thus the significance of a problem

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[17] Although the Baltic Sea is comparatively unproductive (especially the eastern portions with the lowest salinity levels), there are commercially valuable fish stocks available for harvesting. In 1989, the Baltic republics produced an estimated 12.2 per cent of all Soviet fish and other ocean products (Yastrebova, 1990). The situation, however, started to change as the deterioration of the state of the Baltic environment began to detrimentally affect fishing. Pollution, together with overfishing, has most severely affected the state of cod stocks in the sea; a declining trend in salmon stocks has also been evident. In the eastern part of the Gulf of Riga, the concentration of heavy metals in fish tissues has been approaching maximum permissible concentrations (MPC), which could jeopardize commercial fishing in the area (Gosudarstvennyi doklad 1993, No. 23). In addition, numerous beach closures at Baltic resorts due to high pollution levels have been reported in the late 1980s.

is determined primarily by the response it causes abroad, and to a much lesser extent — domestically (see e.g. Minin, 1996).

The industrial (and polluting) potential concentrated in the Russian part of the Baltic catchment area is immense, with St. Petersburg alone being the heart of the Russian military-industrial complex, but lacking neither up-to-date municipal nor industrial water treatment for its more than 500 enterprises discharging waste waters to the Neva river through about 400 outfalls (Gosudarstvennyi Doklad, 1995, No. 31/95: 4).[18] Suffice it to say that according to the results of the Second Baltic Sea Pollution Load Compilation undertaken by HELCOM, Russian municipal sources (primarily those of St. Petersburg) in 1990 accounted for 74% of the total BOD_7 (organic matter), 70% of nitrogen, and 85% of phosphorus load on the Gulf of Finland (HELCOM, 1993a: 68).[19] In addition, the Neva river, itself only 74 kilometers long, collects water from a highly industrialized area little smaller than the area of Italy, encompassing the Leningrad, and parts of Novgorod, Pskov and Vologda provinces (Tsvetkov, 1990), accounting for 62% of BOD_7, 70% of phosphorus and 46% of nitrogen brought by rivers into the Gulf of Finland (HELCOM, 1993a: 64).

The newly independent Baltic republics obviously have a much higher "stake" in the Baltic Sea environment compared to the former USSR or Russia. Apart from peat and forest lands, their most valuable natural resources are fish from the Baltic Sea and coastal recreational resources, both under severe threat from pollution.[20] Moreover, public concern for the environment has been greatly enhanced by the fact that most environmental problems in these republics have been perceived as the result of economic mismanagement by Moscow under USSR, together with the expansion of heavy industry and political monopoly of the state resulting in ineffective environmental policies (see Eckerberg, 1994).

Estonia is noted for its especially high air pollution, due to the concentration of power plants in the northeastern part of the country, which account for three quarters of Estonia's total air pollution load. In fact, the emission of 140 kg per capita of sulfur dioxide in Estonia is probably the highest in the world, compared, for example, with 51 kg in Lithuania, 23 kg in Latvia, 30 kg in Finland and 12 kg in Sweden (UNCED/Estonia, 1992: 26). Also, agriculture is cited as the major source of water pollution, due largely to mismanagement of manure and fertilizer runoff into the rivers. The point-source load of Estonia is equivalent to about 35% of the total BOD_5, 30% of the total nitrogen and about 10% of the total phosphorus load on the Gulf of Finland, and the city of Tallinn with its pulp and paper mills is responsible for about a third of these figures (HELCOM, 1993b: 39). Other major pollution sources are related mainly

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[18] In 1990, about 60% of municipal wastewaters of St. Petersburg were treated biologically, and the remaining part has been discharged into the Gulf of Finland without any treatment. Industries in St. Petersburg purify about 60% of their wastewaters chemically, only 1% biologically, 9% mechanically, and 30% are not treated before discharging (HELCOM 1993a: 67, 71).

[19] With respect to industrial discharges, the corresponding Russian figures are much lower. It is explainable by the fact that in Finland, as a rule, the industries are situated outside the municipalities and have their own wastewater treatment plants, while in Russia and Estonia most of the industrial enterprises have their own local pre-treatment facilities which are connected to the municipal sewerage systems ((HELCOM, 1993a: 70).

[20] This observation is confirmed by interviews with Latvian environmental officials conducted by the Environmental Center for Administration and Technology in Riga: the results of the interviews clearly show that in the majority of cases water protection issues, and especially the protection of the Baltic Sea, have the highest priority among all the environmental problems in the country (ECAT, 1995).

to oil shale and phosphorite mining and refining in north-eastern Estonia, causing leakage of heavy metals and phenols into the rivers, and through them to the Gulf of Finland (Hiltunen, 1994: 19).

The capacity to purify industrial and urban wastewater is very limited: only 31 per cent of sewage water was treated in 1991 according to current standards, whereas 57 per cent was insufficiently treated and 11 per cent remained untreated (Eckerberg, 1994: 448). Many smaller cities and towns apparently have no water treatment at all. The Narva municipal treatment plant, designed to handle 70,000 cubic meters per day of waste, is actually processing up to 120,000 (Mazanov, 1991). Treatment plants in Tallinn operate at ten times the design capacity (In Order..., 1991).

In **Latvia**, the situation is equally bleak. Reports indicate that swimming has been banned at most seaside resorts, and the fishing industry was threatened. The public water supply in Riga, a city of about 1 million and, up until 1991, one without a wastewater treatment plant, is so contaminated that serious hepatitis outbreaks have occurred. Many of the industrial wastes flowing into the Lielupe River and ultimately the Gulf of Riga originate in Olaine, a center for chemical and pharmaceutical manufacturing. Ventspils, a major cargo transfer port, is another contributor to environmental degradation. Its oil and petroleum product export facility and associated port facilities create a significant pollution problem through unintended discharge of ammonia, petroleum, and potash (Canfield, 1993). About 45% of the waste water is inadequately treated or not treated at all, and about 30% of Latvian municipalities lack treatment plants (REC Bulletin, 1995, Vol. 5, No. 3).

In **Lithuania**, Kaunas, with a population of one-half million, has no primary sewage treatment plant; all industrial and residential waste enters the Neman and Neris rivers and is carried to Kursiu Lagoon and into the Baltic. The percentage of wastewater treated in accordance with the existing standards is the lowest among the three Baltic states — 75% (UNCED/Lithuania, 1992: 75). Beaches on Lithuania's Baltic coast were also closed to swimming during the summer of 1989 because of health risk concerns. The Klaipeda Petroleum Products Export Facility has been a source of increasing contamination of ground and harbor water through oil spills and improper ballast water-cleaning systems. In the case of Mazeikiai Petroleum Processing Plant, waste discharge from the water cleaning system, which is piped to the Baltic, has been dumped on the shoreline rather than carried 3 kilometers to sea as intended (The Ecological Situation..., 1989).

1.2. MAJOR NATIONAL INTERESTS AND APPROACHES TO THE AGREEMENT

Both at the stages of regime formation and its initial implementation, an important role in determining the Soviet position in Baltic environmental cooperation has been played by security interests, which generally overruled environmental interests in the hierarchy of Soviet foreign policy goals. The Soviet Union and its Eastern European allies were very distrustful towards any provisions or formulations that could imply limitation of their sovereignty (Füllenbach 1977: 230). That can probably explain the fact that practically the only binding obligations included into Convention referred to pollution from ships and that implementation of the Convention through the 1980s also mainly dealt with this issue, while the control of land-based pollution sources was virtually non-existent.

Similarly, the Soviet Union can be clearly held responsible for several important drawbacks of the Convention. One of them is the exclusion of internal waters from its sphere

of application, because of the country's over-sensitivity to sovereignty issues. This fact cannot be proved with absolute certainty, because the full proceedings of negotiations have never been made public, but many analysts and observers point to this very reason.[21] Clearly, the exclusion of internal waters hindered the control over implementation by the Helsinki Commission, since most of the land-based pollution sources discharge pollutants into internal waters.

The same "strict negative sovereignty" (Hjorth, 1992) approach has also resulted in differing interpretations of the first paragraph of Article 6 of the Convention ("Principles and obligations concerning land-based pollution"), which stated that the Parties should take appropriate measures to control and minimize the land-based pollution of the marine environment of the Baltic Sea. As a rule, Western countries understood it as meaning that these measures had to be applied to the discharges. At the same time, several scientists and administrators in the former Soviet Union held the opinion that minimization should be applied to the border of the territorial waters. It is obvious that pollution load discharged into the coastal zone is being reduced when transported through the territorial waters (see Lääne, 1995). However, there existed no ways or technical methods to measure and hence to control the pollution load transported through the border, which effectively eliminated any possibilities for the implementation of domestic obligations, since any information both on the volume of the discharges and the environmental quality has been classified ("for official use only").

Another limitation of the Convention, the fact that the Parties implement its provisions "without prejudice to the sovereign rights in regard to their territorial sea" within its territorial sea through its national authorities (Article 4(3)), can also be traced to the Soviet obsession with security issues. In fact, the provisions regarding national control in the territorial sea and non-application of the Convention to the military vessels were introduced by the Soviet delegation and adopted on its initiative (Lindpere, 1983: 36).

The same line of reasoning can probably serve as an explanation for the voting system adopted for the HELCOM meetings: the Western and neutral coastal states had preferred a system in which a proposal would be accepted by a two-third majority, instead of the unanimity that was finally introduced into the 1974 Convention (Füllenbach, 1977: 230).[22] The vehement opposition of the Soviet Union and the Eastern European member states to the EC membership in the Helsinki Convention was probably also based on strategic considerations. An extra member to the Convention could change the power balance between the three socialist states, three Western states, of which two were EC members, and one "neutral" party within the Soviet area of influence, Finland (Van der Weij, 1993: 28).

There are indications that the fear of improper use of the control functions by HELCOM, such as espionage, played a significant role in the Soviet concern about any sign of interference into its domestic affairs (Füllenbach, 1977: 230). It seems quite plausible that the

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[21] A Soviet decision-maker on the Baltic sea issues from *Minvodkhoz*, A. Izvolsky, cited by Van der Weij (1993), stated that the exclusion of internal waters was caused by Soviet fears for effects on security and the closedness of the Soviet Union. This point of view is indirectly corroborated by H. Lindpere (1983: 36), who writes: "Indeed, the USSR could not agree to such a proposal [to include internal waters into the Convention's area], since it could have resulted in the interference into the states' internal affairs".

[22] In the Gdansk Convention on the Living Resources of the Baltic Sea a two-third majority approach had been accepted by all parties. This is probably related to the fact that the issues within the Gdansk Convention were less sensitive and had little to do with the sovereignty of the parties (Van der Weij, 1993: 28)

Soviet military had a vested interest in the limitation of foreign observers to enter the Soviet territory. They were probably also unwilling to give much insight to foreign states into the exact emission figures, fearing that this knowledge could lead to information on Soviet military industries. It is even more plausible, however, that the protection of the so-called "security interests" has been quite often used as a disguise to classify (and hence to conceal from both domestic and international public) any environmental data, in order to cover the inadequacy of domestic pollution abatement efforts.

Still, the idea that the Soviet military had an important role to play in the discussion of the contents of the Helsinki Convention is supported by many developments from the fifties up to the first half of the seventies. The Soviet Eastern European allies had proposed to turn the Baltic into a "sea of peace" as far back as 1957 and reiterated it several times afterwards. According to List (1990: 108),

> "... the Soviet Union in particular, but the other Eastern states as well, could see international environmental protection of the Baltic as a continuation, in other fields, of the policy of "The Baltic — A Sea of Peace"... Although this policy originally was directed towards a different goal, namely ending NATO military presence in the area, it was not difficult to integrate the new task of environmental cooperation into this perspective."

That implies, in particular, that the Soviet policy-makers may have not regarded environmental cooperation in the Baltic Sea area as a new field of foreign policy, but rather just integrated it into their general security policies (Van der Weij, 1993: 32), or at least closely linked environmental cooperation to security in its narrow definition, emphasizing the general political advantages of cooperation in terms of peaceful coexistence. Environmental cooperation in the Baltic was viewed as a means of maintaining good relations with the West, but was never considered as binding the USSR to any obligations (Hjorth, 1992: 153-154).

In the early years of *perestroika*, the Soviet approaches and rhetoric have not changed much. Even in 1988, the Soviet Union was still reluctant to admit the existence of severe environmental problems in the Baltic area and to accept a more action-oriented strategy towards the issue; neither there were any hints in the Soviet delegation's statements that the USSR has not been able to cope with his own problems for financial or technological reasons (Hjorth 1992: 155).

However, by the end of the Gorbachev period, the major factor limiting the Soviet efforts towards the Baltic environmental improvement obviously became the financial one. Doguzhiyev, the then vice chairman of the Council of Ministers, under whose authority the State Committee on Nature Protection (*Goskompriroda*) fell, said in an interview that the Soviet Union was technically, scientifically, and morally ready to participate in the measures proposed at Ronneby, but that the financing of the measures forced the Soviet Union to re-orient its priorities (Doguzhiyev, 1990). In fact, that represented a thinly disguised acknowledgment that few financial resources can and will be allocated to environmental protection measures to improve the ecological situation of the Baltic Sea (see Van der Weij, 1993: 102).

Still, with the advent of *perestroika*, one progressive change in the Soviet approach towards the Baltic regime became evident: the Soviet Union had given up its position of strongly defending its national sovereignty, which had major consequences for the overall regime transformation. On the other hand, during the Gorbachev period, the priority of Baltic environmental cooperation in the overall Soviet (and later Russian) foreign environmental

policy has obviously decreased, particularly with the Baltic republics acquiring independence. After the Ronneby conference, in 1990 and 1991, the Soviet Union did not attend many subcommittee meetings and was not very active within HELCOM[23]; neither did it take any initiatives on international measures to protect the Baltic Sea from pollution. Harald Velner, the prominent Estonian scientist, who held many positions at HELCOM, has not received any instructions from Moscow during this period, which was quite unusual since he was still officially representing the Soviet Union (Van der Weij, 1993: 102).

For the former Soviet Baltic republics, however, the HELCOM activities played an important role in the process of their international recognition. This platform gave the Baltic republics some of their first possibilities to participate in international fora as independent entities. This was made possible by a progressive attitude of the Nordic countries, especially of Denmark and Sweden, which took several preparatory measures for future recognition.[24]

2. STATE LEVEL IMPLEMENTATION

2.1. NATIONAL PROGRAMS

As reported by the first Soviet national Report on the state of the environment for 1988, a program based on 1988 Ministerial Declaration was set up for the Baltic Sea region for the period up to 1996, encompassing about 500 of the most significant land-based sources of marine pollution and requiring an investment of 1.2 billion rubles.[25] Furthermore, in order to implement the Ministerial Declaration, treatment plants for municipal sewage were supposed to be provided for the main cities in the period of 1992-1993 (Gosudarstvennyi doklad, 1990: 167). These measures were contained in Goskompriroda Decree No. 4, adopted in January 1990, almost two years later (Van der Weij, 1993: 106). The 1989 Report says that in connection to the 1988 Declaration the Soviet ministries responsible for its implementation have made corrections to the corresponding plans (Gosudarstvennyi doklad, 1991: 233).

The above program has been incorporated within the larger State Environment Protection Program for 1991-1995, which had a special chapter on the Baltic region. Its relation to 1988 Ministerial Declaration can be clearly traced in the goal set which called for at

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[23] This compares unfavorably with the period of 1982-87, when the Soviet participation at HELCOM and Committee meetings was above average; during that period, the USSR had a total of 81 representations compared to e.g. 79 for FRG, 75 for Denmark, 66 for Poland and 43 for GDR (see Hjorth, 1992: 229-230). The same is true with respect to the number of initiatives presented at HELCOM and its commissions: the USSR has presented 192 initiatives compared to 108 presented by FRG, 96 by Denmark, 59 by Poland and 28 - by GDR (Hjorth, 1992: 236).

[24] After the Ronneby Conference, independent Baltic advisors were for the first time included into the work of HELCOM, specifically into that of the *ad hoc* High Level Task Force. Before that, the Baltic representatives had always participated as members of the Soviet delegation. True, through the status of experts the Baltic republics could receive information directly from HELCOM rather than through Moscow. At the same time, sending independent representatives to the Task Force was motivated mainly by political reasons. The rather inexperienced experts could contribute little to the activities of HELCOM or to the Baltic republics' environmental policy, which was not perceived as a high priority until real independence had been achieved. The fact that Baltic politicians could participate as independent experts was hoped to be a first step in the process of receiving recognition (Van der Weij, 1993: 105).

[25] Kolbasov (1990) cites a figure of 1.5 billion rubles.

least 50% reduction of organic compounds, nutrients and heavy metals loads into the Baltic compared to 1985 level (Gnatovskaya, 1991). However, with the deterioration of economic situation and the ensuing disintegration of the Union, this program has never been adopted.

In 1992, pursuant to signing of the framework bilateral agreement on environmental cooperation between Finland and Russia, a bilateral Action program for limiting water and marine pollution in the areas adjacent to Finnish-Russian border has been developed[26], and the corresponding domestic implementation program based on the federal government Resolution No. 332 (May 20, 1992) has been adopted. The reduction targets of the program, which concerned industrial, municipal, and agricultural waste water treatment, were based on HELCOM requirements and included the following agreed measures:

- 90% removal of BOD and total-P for communities larger than 10,000 inhabitants, no later than 1995;
- introduction of biological, chemical or bio-chemical waste water treatment from practically all pulp and paper mills by 1996;
- 50% reduction in discharges, as compared to 1987, from chemical, metallurgical, food, mining and other industries being comparable sources of pollution by 1995;
- 50% reduction in organic load from agriculture by 1996 as compared to 1987;
- an approximate 50% reduction in the phosphorus load from cattle farms by 1995 as compared to 1987 (BSEP, Vol. 2: 8).

For the city of St. Petersburg these measures would involve a 50-68% reduction of pollution load from the municipal WWTPs, the elimination of untreated water discharges by 1996 as well as for toxic waste utilization measures. To achieve these, the building or renovation of the four areal WWTPs in addition to improvements in the surface finishing plants and the sewerage system in St. Petersburg were envisaged (Hiltunen, 1994: 38, 54; Sorokin 1993a, 140-141).

In 1993, a draft National Action Plan for realization of UNCED decisions has been adopted in Russia (Natsionalnyi plan, 1993), containing a separate section (5.2.2) specially devoted to the Baltic Sea. The plan envisaged the development of a Federal program for environmental protection measures in the Baltic Sea basin, based on the provisions of JCP, the 1974 and 1992 HELCOM Conventions, the 1990 Ronneby Declaration and the 1992 bilateral Soviet-Finnish agreement. The major provisions of the proposed program, as outlined in the Action plan, were the following:

- to eliminate disposal of untreated and inadequately treated waste waters in order to achieve a 50 per cent reduction in the emissions of organic substances, nitrogen, phosphorus and heavy metals by 1995;
- to complete by 1994 the construction of water treatment plants and sewerage networks in St. Petersburg, Kaliningrad, Petrozavodsk, Pskov and other cities in order to achieve full biological water treatment. To start the construction of urban stormwater systems

[26] 'Action programme on the reduction of pollution and the implementation of the protection of marine environment in the Baltic Sea and in other areas close to the common borders of the Republic of Finland and the Russian Federation'.

connected to treatment plants, the construction of tertiary water treatment plants with water re-use and recycling;

- to complete by 1995 environmental protection programs in the forest and pulp-and-paper industries in Karelia, Leningrad and Kaliningrad provinces, providing for elimination of untreated waste water discharges and the reduction of atmospheric emissions;
- to develop and to introduce on a stage-by-stage basis environmentally safe agricultural methods, preventing negative impact upon water protection zones and the entry of livestock, fertilizer and pesticide run-off into water bodies;
- to develop methods of airborne and shipborne remote sensing control of the state of the marine environment to ensure rapid identification of pollution sources and undertaking pollution control measures;
- to take part in the establishment of a unified international system of control over the state of the Baltic Sea waters, in the development and execution of a joint program for ecological restoration of the Baltic Sea;
- to develop and introduce by 1995 on a stage-by-stage basis a system of environmental regulations for the Ladoga lake basin, taking into account natural and economic specifics of the region and international environmental quality standards.

As can be seen from the above, all these plans and programs adopted, following a tradition prevailing during the communist period, at best represented merely un-coordinated listings of investment needs for a number of specific projects, with specification of principles, scopes and priorities, as well as cost-benefit analysis and funding sources, totally missing. In fact, the above mentioned National Action Plan included 149 (!) "priority measures and directions for environmental rehabilitation", and it has been estimated that domestic resources could at best cover one-tenth of the required investment needs for its implementation (Maksimov, 1995). Currently, a new Russian federal program of JCP implementation based on the above provisions (required primarily to ensure a continuous funding process from the federal budget) is under development in Minpriroda, due to be adopted by the federal government in 1996.

In the Baltic states, no specific programs for implementation of JCP or the Helsinki Convention have yet been developed. A partial exception is Estonia, where a national plan for the protection of the Baltic Sea was adopted in 1991, shortly after independence; however, this plan was modeled after its Russian predecessors and lacked the specific priorities and funding sources (BSEP, 1994, vol. 2: 17). Also, Estonian bilateral cooperation with Finland is based on Action Programme on Limiting Water pollution, signed in 1993. The reduction targets in this agreements are somewhat less ambitious than the ones in a similar agreement with Russia (Hiltunen, 1994: 39). Still, in all three Baltic states national environmental strategies or programs, including short and medium-term action plans, are in various stages of drafting or development, usually with foreign (EU PHARE) assistance (see BSEP, 1994, Vol. 2).

2.2. NORMATIVE AND LEGAL MECHANISMS

The only *normative* governmental document adopted in the former Soviet Union following the signature of the Helsinki Convention was the Council of Ministers' Resolution No. 567 "On measures to strengthen the protection of the Baltic Sea basin from pollution"

(July 1976).[27] The Resolution envisaged a set of measures (meant for the implementation by the corresponding Union ministries) dealing primarily with combating vessel-source pollution in the Baltic (which the Soviet Union had to implement anyway in the framework of the MARPOL 73 Convention)[28], as well as stated that by 1985 the discharge of untreated industrial and municipal sewage into the rivers and other water reservoirs of the Baltic Sea basin had to be completely eliminated. It did not mention, however, to what extent the water had to be cleaned. Enterprises that discharged sewage into the municipal sewerage systems of cities had to eliminate these discharges by 1980. In 1981 the goal of total elimination was underlined by the 26th Communist Party Congress, and was integrated within the adopted "Guidelines for the economic and social development of the USSR for 1981-1985" (the eleventh five-year plan) (Efremov, 1982: 12-13).

In addition, in accordance with the then existing practice, all the Republics of the former Union located within the Baltic Sea catchment area, have adopted similar resolutions encompassing a wider set of enterprises and cities, where construction of land-based pollution abatement facilities was planned, financed from the Republican budgets.

The provisions of the 1974 Convention were reflected in a number of subsidiary normative documents adopted after the Convention entry into force.[29] No specific legal documents directly implementing the 1974 Helsinki Convention into domestic environmental legislation have been adopted neither in the Soviet Union nor in Russia. This is moreover true with regard to the Baltic countries which existed as independent states only since 1991, and where the whole of institutional and legislative framework is just evolving, with many environmental laws still being at various stages of drafting (see BSEP, 1994, Vol. 2).[30]

2.3. REGULATORY MECHANISMS

Historically, two major types of strategies for water pollution control have been known to be used in the world practice. The first kind of strategy is based on the control of the environment which receives discharged pollutants; the second one is oriented towards the control of pollution sources. Quite often, combinations of the two approaches are employed. Correspondingly, in the first case environmental quality standards are applicable, and emission (or technological) standards are used in the second case. The use of environmental quality standards has the advantage of minimizing environmental protection costs, because it is based on the self-purification (or accumulative) capacity of the receiving environment, and

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[27] *Sobranie Postanovleniy Pravitelstva SSSR*, 1976, No. 16, art. 81, pp. 290-296.

[28] The outfitting of tankers and other vessels with oily water separators, garbage containers, etc., as well as the construction of port reception facilities for oily wastes from ships. Pursuant to the Resolution adoption, a Regional scheme of environmental protection and rational use of natural resources in the Baltic coastal zone was developed.

[29] Regulations concerning intake of industrial wastewaters into municipal sewerage systems (1984), Instruction on the order of concordance and issuing of permits for special water-uses (1984), Manual on the prevention of pollution from ships (1979, 1986), Regulations concerning the prevention of pollution from ships (1984), Regulations concerning protection of coastal waters from pollution (1984), Regulations concerning the issuance of permits for dumping of wastes and other materials into the sea, registration of their characteristics and quantities, determining the place, time and method of dumping (1983) (Ministry of Ecology, 1992).

[30] It is only in Lithuania that a Law on special measures to control pollution of the Baltic Sea is currently being drafted (Stec, 1995).

technological capacities for minimizing pollution loads are not used to a full extent. The second type of strategy, on the other hand, minimizes pollution loads proceeding from economic and technological capabilities.

In the 1960s the Soviet Union, in an attempt to reduce expenditures for waste water treatment, has chosen the strategy of utilizing the self-purification capacity of the water environment.[31] This strategy served as a basis for building several deep-sea sewage outfalls for the cities of Tallinn, Kohtla-Järve, etc. (Lääne, 1992: 6). Moreover, this strategy was legalized by the USSR Water Code of 1970, according to which a discharge of waste waters was permitted, provided that the concentration of pollutants at a control cite did not exceed maximum permissible concentrations (MPC) established for sanitary protection of the water bodies.[32] Thus, the volumes of pollutants permitted to be discharged were calculated on the basis of MPCs, taking into account the effects of dilution, mixing and self-purification. However, in spite of the growing body of knowledge of these processes, and the use of contemporary theories of water treatment systems management, the state of the water environment in the USSR, including the Baltic basin, has continued to deteriorate.

One of the reasons was the difficulty of controlling the environmental quality standards in water bodies, which was both technically complicated and economically expensive. First, the standards were too numerous, and the resources for environmental monitoring were limited. Further, for the majority of pollutants having established MPCs (currently totaling 1345), reliable analytical control methods were absent. The MPC-based system did not take into account synergistic and/or cumulative effects of pollutants and therefore tended to under- or overestimate the cumulative impact of contaminants. Finally, the rates of developing new MPCs were clearly lagging behind the introduction of new chemical new substances (see Lääne, 1992: 61-62). In an attempt to rectify the situation, the system of "maximum permissible discharges" (MPD) for pollution sources has been introduced to complement the MPC-based system, and a manual for calculating MPDs for water environment has been published in 1982. This, however, has not changed the overall Soviet water pollution control system, and it is still based on environmental quality standards.

On the other hand, all other Baltic countries, except the Soviet Union and Poland, used the *emission* or technological standards which lead directly to the control of discharges from industries and municipal treatment plants (see Lääne, 1992: 7-10). Needless to say, these differences introduced significant difficulties into the work of HELCOM both at the regime formation and particularly at the implementation phase.

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[31] It has been based on the hypothesis of a limitless accumulative capacity of the world's oceans to accumulate, dilute and purify anthropogenic wastes, first developed by the US. scientists (see e.g. Bascom 1974) and further elaborated in the USSR (see e.g. Velner et al. 1965). This theory, however, has not proved to be practically feasible in the longer perspective: the smaller was the water body, the sooner its purification capacity became exhausted. In this situation, the only viable option was to reduce pollution loads to an economically justified minimum. This fact has forced most industrialized countries, including the USA, to switch in the 1980s from a "release and dilute" strategy to a pollution prevention strategy based on the emission or technological (BAT, etc.) standards.

[32] This provision provided a basis for developing "Rules on the protection of surface waters against pollution by sewage" of May 16 1974 and "Rules of sanitary protection of marine coastal waters" of December 31, 1974, replaced in 1988 correspondingly by "Sanitary rules and norms for the protection of surface waters from pollution" (No. 4360-88) and "Sanitary rules and norms for the protection of marine waters from pollution in the places of water consumption by population" (No. 4631-88).

Article 6(2) of the 1974 Helsinki Convention requires that

> "the Contracting Parties shall take all appropriate measures to control and strictly limit pollution by noxious substances and materials in accordance with Annex II of the present Convention. To this end they shall, *inter alia*, as appropriate cooperate in the development and adoption of specific programmes, guidelines, standards or regulations concerning discharges, environmental quality, and products containing such substances and materials and their use."[33]

Hence, one of the main problems which had to be resolved in the course of HELCOM work was how to reconcile the standards or regulations for discharges (emission standards) with environmental quality standards, since the establishment of unified water quality standards for all the Baltic Sea littoral countries was obviously impossible, because of significant differences existing in national regulatory mechanisms.

In 1978, a special Working Group on Criteria and Standards (WGS) was established within the HELCOM framework. WGS has been working for ten years, from 1978 to 1988, and in the course of this period representatives of the member countries have been trying without any apparent results to find the connecting links between the two different systems of environmental standards, after which WGS finally gave up, and the current HELCOM practical work is directed towards working out unified emission standards (Lääne, 1994). At the same time, several recommendations on limiting discharges from specific industries and municipalities, all establishing the emission standards, have been adopted by the HELCOM, usually under a pressure from Sweden, Finland and Germany.[34] There are no examples of environmental quality standards adopted by the HELCOM. In the Soviet Union, the implementation of the recommendations adopted naturally encountered serious obstacles because, according to the existing rules, the emissions were calculated on the basis of water quality parameters, but not on the basis of technical capabilities (Lääne, 1995).[35]

Further, Article 6(6) of the Convention required that the Contracting Parties adopted common criteria for issuing permits for discharges (i.e. emission standards). The discussions on this subject within WGS also lasted for a long time without any apparent success — for the reasons much the same as cited above. It was only in 1984 and in 1985, that the compromise approaches were developed and the first criteria for issuing discharge permits for oil refineries were adopted. Implementation of the agreed common criteria, however, was a totally different matter. In the West, where environmental legislation was mostly based on pollution prevention

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[33] The obligation to cooperate in the field of environmental quality standards has been introduced into the text of the Helsinki Convention under a strong pressure from the Soviet Union (Lääne, 1994).

[34] The most important of these recommendations were: # 5/1, regarding limitation of oil in stormwater systems; # 5/2 and 6/2, concerning restriction of discharges from oil refineries; # 6/3, concerning measures aimed at the reduction of mercury from chloralkali industry; and # 9/2, concerning measures aimed at the reduction of discharges from urban areas by using more effective methods in wastewater treatment (Lääne, 1995).

[35] One more problem related to incompatible environmental standards systems concerned the interpretation of Article 6(3), which required that Annex II substances should not be introduced into the marine environment *in significant quantities* without a prior special permit. Western countries understood the term "significant quantities" as the amount of pollutants over a certain limit emission value; the Soviet Union, on the other hand, deemed it as meaning the amount of pollutants which causes the rise of its concentration in the water body exceeding the water quality standards. Again, these disagreements can be traced to the Soviets obsession with security issues: the aim was to conceal the real pollution loads, since the pollutants' concentration in the marine environment is a function of several factors (see Lääne, 1995).

principle, and water pollution control — on the use of emission or technological standards, arising problems were related mostly to numerical values of these standards. In the Soviet Union, on the other hand, where legislation was based on environmental quality standards, implementation of fixed emission standards was impossible without changing the existing rules. The latter, however, have not been changed for political and economic reasons, and domestic implementation of HELCOM-developed emission and technological standards remained scarce at best.[36]

In the newly independent Baltic states, some movement away from the old Soviet system of environmental standards can currently be observed. Since March 1990, the Lithuanian government, for example, has announced its intention to upgrade environmental standards to the levels recommended by the European Union, and in January 1991 new regulations "On the Procedure for Determining Environmental Pollution Standards and the Issuance of Permits for the Utilization of Natural Resources" were enacted. They are generally based on international agreements, whereby two types of standards are distinguished: the maximum permissible emissions (MPE) and the temporary permissible ones (TPE). The latter have been still considered necessary due to the current difficulties in meeting the international obligations (UNCED/Lithuania, 1992: 107). In Latvia, the new system of environmental standards is expected to be developed in connection with the ongoing institution building project financed by PHARE (BSEP, 1994, Vol. 2: 32).

The new 1992 Helsinki Convention overcomes the problems of discordant systems of environmental standards by adopting, following the worldwide changes in environmental protection strategies, a significantly different approach to fundamental principles and obligations. To limit the pollution load into the Baltic, the new Convention stresses the need to use "precautionary principle" based on "best available technology" or "best environmental practices". It remains to be seen, however, how these principles would be implemented in practice.

2.3. ORGANIZATIONAL MECHANISMS

In the **USSR**, the department responsible for the national implementation of the domestic obligations under HELCOM was the Ministry for Land Reclamation and Water Management (*Minvodkhoz*). In 1971, the Interdepartmental Council on the Protection of the Baltic Sea against Pollution was established under the authority of *Minvodkhoz*. It assumed a coordinatory role in research and construction projects and prepared recommendations on the implementation of the Helsinki Convention (mainly with regard to vessels' equipment). In January 1976, the Council was succeeded by the Interdepartmental Commission on the Protection of the Marine Environment of the Baltic Sea, which became responsible for formulating the Soviet position within the HELCOM, for issuing proposals and recommendations on pollution prevention and mitigation measures with respect to the Helsinki Convention requirements and the coordination of the activities of the Union ministries and agencies (as well as the Republican Councils of Ministers in the region) involved (Nekrasova, 1984: 74-76). In theory, the Commission had the right to control the implementation of the

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[36] The HELCOM recommendations were translated into Russian and distributed to local environmental protection authorities with a remark "To take into account" (Lääne, 1995).

1974 Convention by the Soviet ministries and agencies, but in practice this right has hardly been ever used.

The Commission, however, was carrying out environmental impact assessments of large-scale industrial projects with possible adverse environmental effects in the area, such as the construction of ferry link in Klaipeda, phosphates mining in Estonia, etc. In the latter case the Commission's recommendations prevented the beginning of mining operations, while the project of ferry link has been modified in accordance with the recommendations (Ministry of Ecology 1992). An important decision has been taken to stop exploratory drilling for oil and gas on the continental shelf in the ecologically vulnerable area — the Kursiu Lagoon off the Lithuanian coast (HELCOM 1994: 76). In many cases the Commission produced recommendations concerning the introduction of up-to-date, mostly imported, technologies, but these, as a rule, were not complied with due to the lack of hard currency resources and the general inadequacy of the economic mechanism in the former USSR (Ministry of Ecology 1992). Overall, major efforts of the Commission prior to 1985 have been focused on the provision of environmental equipment for vessels operating in the Baltic, on the establishment of services for combating oil spills at sea and the installation of port reception facilities for oil residues and wastes from ships (HELCOM 1994: 76).

In 1988, the newly established *Goskompriroda* took over most of *Minvodkhoz* responsibilities. Currently, apart from the Ministry of Environment (Minpriroda), the Goskompriroda successor, three other agencies are participating in HELCOM activities — Federal service of hydrometeorology and environmental monitoring (*Rosgidromet*), Committee on fisheries (*Roskomrybolovstvo*) and the Department of marine transportation of the Ministry of transport.[37] According to the national UNCED report, the responsibility lies in the hands of "ministries, departments, and the organs of local self-government" (Natsionalny doklad, 1991: 233), which is obviously an extremely dispersed and unclear model of the division of responsibilities, especially taking into account the fact that only federal agencies responsible for water use and protection are currently numbering at least seven.[38]

It is nevertheless apparent that transformation has brought about a major shift of responsibilities to implement the Convention to a local level. A large degree of decentralization of authority has obviously occurred — both in Russia and in the Baltic states. In practice, in Russia today not only federal bodies, but local environmental protection committees, subordinated to Minpriroda (e.g. the Committee on Ecology and Natural Resources for St. Petersburg and the Leningrad Province - *Lenkomekologiya*), as well as local/municipal authorities bear a great deal of responsibility for implementing the agreement. However, this transfer of responsibilities has not been usually accompanied by a corresponding transfer of resources, implementation competence, and the establishment of the appropriate local infrastructure. Currently, responsibility for environmental management is divided between the subjects of Federation (province, *okrug*) and the Federation itself, which still concentrates the majority of management and control bodies with the only reason for their existence being to

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[37] In practice, however, financial constraints have recently reduced Russian participation in HELCOM sessions to a minimum of 2-3 persons.

[38] Apart from *Minpriroda* and *Rosgidromet*, these include *Roskomvod* (a successor to *Minvodkhoz*), *Roskomnedra* (State Committee on the Earth's Interior), *Minselkhozprod* (Ministry of Agriculture and Agricultural Products), and *Goskomsanepidndzor* (State Committee on Sanitary and Epidemiological Inspection).

justify the existence of the controllers themselves. The situation is exacerbated by an extremely unclear division of responsibilities between the local structural subdivisions of federal environmental and resource use bodies and the local/municipal authorities (see Bratashov, 1996).

Since the drainage basin of the Neva River and the Lake of Ladoga includes the territories of eleven provinces (*oblast*) of North-Western Russia, the state of the environment in the Gulf of Finland depends on the environmental protection activities in each of them. Due to "sovereignization" of Federation subjects, permanent re-organizations within the Federal Ministry, the lack of horizontal structures, and the absence of any attempts to establish such structures "from the top", *Lenkomekologiya* has attempted to assume a coordinative role in this field. With the support of Minpriroda, it has established a Coordination council of representatives of eleven North-Western provinces, functioning on the principle of consensus (Frolov, 1995: 6-7). Specialized working groups have been set up to coordinate the activities of inspection, analytical and expert assessment services. Proceeding from the basin management principle, the *Lenkomekologiya* has concluded bilateral agreements on coordinated actions with the North-Western regional committees on geology, fisheries and hydrometeorology, the Neva-Ladoga basin water management association, the Specialized marine inspection service, and other organizations and services (Frolov, 1994).

However, much less horizontal coordination is observed between the two seemingly obvious partners, the two Federation subjects sharing the common environment — the city of St. Petersburg and the Leningrad Province[39] — primarily because of the issues concerning the distribution of funding for environmental protection. The confusion in environmental administration within the region is exacerbated by a fierce struggle for power and jurisdiction between the two subjects of Federation, the outcome of which is still unclear.[40] *Lenkomekologiya* is supposed to service both subjects, and thus often finds itself in a precarious position.[41]

The vertical connections between various levels of government regarding program implementation seem to be very loose, which impairs the transmission of regulatory signals between them. The officials at *Lenkomekologiya* have repeatedly complained that the flow of information is predominantly one-way, i.e., bottom-top, and the federal ministry sends them back mostly orders and instructions. HELCOM documents and recommendations also reach St. Petersburg mostly via Moscow, and with great delays (Kulibaba, 1995). It is understandable, too, since the department of regional programs within the Ministry which is

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[39] The Leningrad Province has even established its own Ministry for Environmental Protection and Ecology, with a staff of 15 people.

[40] In September 1995, the St. Petersburg Mayor Anatoli Sobchak introduced a draft law to the city council which would incorporate the major suburban towns of St. Petersburg (Pushkin, Pavlovsk, Petergof, Kronshtadt, Lomonosov, and Kolpino) into the city, making them administrative districts of St. Petersburg and placing them under control of the Mayor's office (Whitmore, 1995). In January 1996, the city council has adopted a resolution on the unification of St. Petersburg and the Leningrad Province into a single federation subject. However, it is not clear which of the subjects would 'swallow' another one: the Governor of Leningrad Province is vehemently opposing unification, deeming it possible on one condition , namely that St. Petersburg would fall under the jurisdiction of the Province (Pipiya, 1996b).

[41] In practice, *Lenkomekologiya* primarily takes care of environmental protection inside the city, despite its responsibilities for both the city and the province (Hiltunen, 1994: 81).

responsible for overseeing the HELCOM activities has, apart from it, about 60 other programs within its mandate.

The situation is well illustrated by the monitoring issue. Still, in Russia every agency concerned with natural resource use has its own environmental monitoring system; however, by law all of them are required to regularly submit all monitoring data to the Federal Monitoring Center (under the Federal ministry) for processing and generalization, but not to the regional committees. This mechanism functions well from top to bottom, but appears not to work at all in the opposite direction: the ministry produces only generalized data, and thus the regional authorities are lacking the comprehensive view of the local environmental situation. In order to rectify this state of affairs, the St. Petersburg environmental authorities have established in 1994 a comprehensive regional monitoring system, which includes an Analytical and Information Center within *Lenkomekologiya* which is supposed to supply all the relevant information to the Federal Center, the St. Petersburg authorities, and to all participants of the system (Lenkomekologiya, 1994). It remains to be seen how it will function in practice.

Following independence, the **Baltic countries** had to reconsider completely their institutional structure for environmental protection. In all the three countries the old executive departments have been eventually transformed into Ministries of Environment, similar to many European countries, taking responsibilities for the overall management and control of environmental pollution and natural resources, including forestry and fisheries[42].

Compared to the Soviet period, decentralization of environmental management has occurred in all the three countries, too. Regional environmental protection departments (19 in Estonia, 9 in Latvia and 8 in Lithuania) are entrusted with issuance and enforcement of discharge and natural resource use permits, while in Estonia their functions include planning and management (in cooperation with the ministry) as well. However, coordination problems, a lack of a clear line of authority and of well-defined roles and responsibilities detrimentally affect the local environmental bodies' performance. For example, in Lithuania the Republican Hygiene Center is responsible for the enforcement of drinking and recreational water standards, but the coordination between the local environmental agencies and the former is hampered by the fact that the agencies are organized on the basis of eight regions, while the hygiene centers are organized on the basis of 44 municipalities and eight cities (BSEP, 1994, Vol. 2: 42). In Estonia, the quality of environmental boards in different counties and municipalities is reported to vary significantly: the boards in major cities have professional staff resources, but the rural areas are weakly staffed. More comprehensive environmental

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42 In Latvia and Lithuania, the environmental protection bodies were initially placed under the authority of their respective parliaments. This way, it was hoped, environmental control could become stronger than under the generally more Moscow-oriented government. It was felt that environmental concerns would otherwise be lost amid economic priorities and a yet to be reformed Soviet bureaucracy. The objective was to elevate these environmental authorities to ministerial rank once the privatization process has been completed (Eckerberg 1994: 464). In Latvia, the Ministry of Environmental Protection and Regional Development was established by merging the Environmental Protection Committee and the Ministry of Architecture and Building in 1993. In Lithuania, the Environmental Protection Department had a remarkable "veto power" over government decisions on environmental protection grounds. But this proved impossible to use and after much debate the Ministry of Environmental Protection was established. Now the Ministry can have a voice in government decisions, thus "strengthening the preventive function." Whether the voice in deliberations will have a net positive effect over the veto threat remains to be seen (Stec, 1995).

management occurs only in a few municipalities, such as Tallinn and Narva (Eckerberg, 1994: 465).[43]

In Lithuania, the ownership of municipal water and waste infrastructure has been recently (1995) transferred from the government to municipal water companies which have been established. In Estonia, the municipalities are to become shareholders in a new company AS Eesti Veevärk (Estonian Water Works) registered in 1993 (at present, about 60% of the municipalities have joined it) (SEPA, 1996: 14). However, there still exists a problem as to what belongs to whom: all infrastructure is state property, but the responsibility for physical planning, operating, maintaining and building WWTPs and water supply utilities rests with the municipalities, which forces them to raise user charges and spend tax money on rather big investments (BSEP, 1994, Vol. 2: 42). In principle, the municipal water companies are self-financed, but, as in Russia, in reality they have to rely on subsidies from local and central government for their investment.

In Estonia and Latvia, all the major activities directed towards implementation of JCP with respect to priorities and time schedules are presently related to the PHARE program and PHARE Management Units (PMU) in Tallinn and Riga correspondingly. The Estonian representative at HELCOM PITF is the head of the PMU office which functions as an administrative unit within the Bureau of international relations, Ministry of Environment (BSEP 1994, Vol. 2: 14). This arrangement facilitates significantly planning and coordination of JCP implementation in these countries.

Following the declarations of independence of the Baltic republics in the spring of 1990 and the establishment of their own national environmental protection bodies, an attempt has been made to compensate for the loss of inter-republican coordination by establishing the Baltic Sea Eastern Region Environment Commission (which included also the Ukraine and Belarus). However, the Commission never really functioned, since one of its major goals was to receive an official observer status within HELCOM. This became no longer necessary since as independent states all former Baltic republics could become full members, which was realized in early 1992 (Van der Weij, 1993: 104).

Still, there is a growing appreciation of the need for a closer cooperation in the protection of the environment and in coordination of their scarce resources in the issue field among the newly independent Baltic states. It has been evident in the emergence of a plethora of new bilateral agreements between the FSU and CEE states on environmental cooperation — between Russia and Lithuania on Kaliningrad (1991), between Latvia and Estonia (1994), between Lithuania and Belarus (1995), between Latvia, Estonia and Lithuania (1995), between Estonia and Poland (1995) and recently (January 1996) between Estonia and Russia — which include, but not limited to, the issues of Baltic environmental protection.

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[43] It should be noted that all initiatives aimed at strengthening local governments and the development of municipal services in the context of decentralization are actively supported by the international financial institutions. The World Bank is preparing the US$20 million Municipal Services Development Project in Latvia aimed at financing the priority investments in municipal services and technical assistance to municipalities (*ECN*, 1995, Vol. 3, No. 6). With the support from UNDP, the World Bank has established the Baltic Utilities Initiative which organized Water Supply and Sewerage Utilities Partnership Workshop, where the need for autonomous and self-sufficient public utilities has been emphasized.

2.4. FINANCIAL MECHANISMS

2.4.1. Financial requirements for implementation

The needs for investments in water pollution control in the Baltic region necessary to implement the JCP are immense and will dwarf the available funding. The expenditures for the 132 "hot spots" identified (including both point and non-point sources of pollution) are estimated to be some 10 billion ECU, including about 6.5 billion ECU for the 47 "priority" hot spots. The post-socialist countries of the region account for over 80% of the total investment needs: here, the investments required to rectify the environmental situation at "hot spots" are estimated at about 8.5 billion ECU. In Russia alone, total investments needs for the implementation of JCP have been assessed by HELCOM at approximately 1.5 billion ECU; of these, about 50% should come from the local sources (HELCOM, 1992). As can be seen from Table 4, the single country with the largest investment requirements is Poland: it accounts for 41 per cent of the total estimated investment needs. However, the needs of all the former republics of the USSR, taken together, exceed even Poland's figure. Of these, Estonia comes first[44], with almost 16 percent, and Russia second, with 14 percent of the total investment needs (see Annex 2).

Table 4

Baltic JCP: Summary of preliminary estimated investment costs for hot spots by country

Country	Costs, million ECU	Percent of total
Sweden	451.0	4.6
Finland	424.7	4.3
Russia (St. Petersburg Region)	1,077.8	11.0
Russia (Kaliningrad Region)	319.2	3.2
Russia, total	**1,397.0**	**14.2**
Estonia	1,555.0	15.8
Latvia	427.3	4.3
Lithuania	512.0	5.2
Belarus	31.0 (incomplete)	0.3
Ukraine	214.0	2.2
FSU, total	**4,136.3**	**42.0**
Poland	4,043.0	41.1
The Czech Republic and Slovakia	113.6	1.2
Germany	360.0	3.7
Denmark	312.5	3.2
Estimated Total	**9,841.1**	**100.0**

Source: HELCOM 1993b.

Although the Program implementation focuses largely on "hot spots", the implementation of the other JCP elements will also call for substantial financial resources. A summary of the preliminary cost estimates by the program elements, for all countries of the Baltic Sea catchment area, including both external and local sources of financing, is provided in Table 5.[45]

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[44] However, over two thirds of Estonia's estimated investment needs are required for the reconstruction of oil and shale power plants at Narva to reduce the atmospheric emissions of dust and SO_2.

[45] It should be noted that the funding for elements concerning policies, laws, regulations, institutional strengthening and human resource development, applied research, public awareness and environmental education are anticipated to be provided primarily by national and local governments, and only in some cases by foreign grants (HELCOM, 1993a).

The JCP is expected to be implemented in a phased manner over a period of at least twenty years, in order to keep pace with the gradually increasing capacity to mobilize financial resources and to pay for the recurrent costs of environmental management in the transforming economies. At the first phase (1993-1997), with a total cost of about 5 billion ECU, the efforts will be concentrated on creating policy environment and institutional arrangements, on limited investments in the highest priority projects, including mainly rehabilitation and expansion of the existing municipal and industrial wastewater plants in Poland and the republics of the former USSR, and on promoting private investment and initiative through incentive schemes. Reducing water pollution from 29 "hot spots" at this stage is expected to contribute to decreasing the overall annual pollution load by 300,000 tons in BOD_5, by 33,500 tons in nitrogen, and by 8,200 tons - in total phosphorus (HELCOM 1992; HELCOM 1993c).

Table 5

Summary of estimated costs by JCP programme element

Element	Phase I, millions ECU (1993-1997)	Phase II, millions ECU (1998-2012)	Total, millions ECU (1993-2012)
1. Policies, Laws and Regulations	5	5	10
2. Institutional Strengthening and Human Resources Development	70	140	210
3. Investment Activities			
A. Point Source Pollution			
- Immediate Support and Warning Systems	50		50
- Municipal Wastewater Treatment	1,000	2,000	3,000
- Combined Municipal and Industrial Wastewater Treatment	1,600	4,000	5,600
- Pulp and Paper Industry Environmental Control	400	1,000	1,400
- Environmental Control at Other Industries	300	1,000	1,300
- Solid and Hazardous Wastes Management	200	800	1,000
- Air Quality Management	460	1,200	1,660
B. Non-Point Source Pollution (Agricultural Runoff, Livestock Operations, Rural Settlements)	800	2,700	3,500
4. Management Programs for Coastal Lagoons and Wetlands	100	120	220
5. Applied Research	10	20	30
6. Public Awareness and Environmental Education	5	15	20
TOTAL	5,000	13,000	18,000

Source: HELCOM 1993c

The second phase of the JCP, with a total investment estimate of some 13 billion ECU, would be focused on developing specific investment projects for each of the remaining "hot spots", bearing in mind the attainment of the expected environmental and economic effects. The on-cite control over the JCP implementation is supposed to be carried out by groups of independent international experts, which should serve the purpose of improving domestic compliance.

The detailed cost structure of JCP implementation developed by HELCOM cannot, however, be regarded as a final one, and is subject to change. In fact, the 1994 status report on the priority hot spots financed by Denmark provided substantially different estimated costs of attaining the HELCOM discharge standards compared to 1991 pre-feasibility studies: in some cases the estimates have been reduced to reflect the lower local cost level, while at other hot spots increased cost estimates were attributed to the inclusion of additional work or access to more detailed studies of the problem (BSEP 1994, Vol. 1: 14). In St. Petersburg, for instance, the necessary environmental investments were considerably higher than estimated in 1991/92 due to the complexity of a complete extension and upgrading of the waste water treatment and especially collection scheme (BSEP 1994, Vol. 3). In some cases, poor expert advice from Western banks leading to excessive investment costs estimates has also been quoted (HELCOM 1993d: 186-187).

Some observers have also criticized the existing imbalance between the proposed investment activities for point and non-point sources and their respective contribution of pollutants to the Baltic Sea. The total estimated costs of JCP are distributed as follows: 78% to investment activities for point source pollution, 19% for investment activities for non-point sources, and 3% for the other five components of the program. It has been therefore suggested that the financing of activities that address non-point sources should be increased, since there was a real danger that the environmental benefits achieved by huge investments in WWTPs will be canceled out and negated by increased nitrogen loads from the agricultural and transportation sectors of the Eastern Baltic countries (HELCOM 1993d: 64, 67).

2.4.2. Financing Baltic environmental protection programs in the FSU republics

Even at the stage of JCP development, it has been widely understood that the availability and the quantity of funds, both local and foreign, is the main if not the only stumbling block to its speedy implementation. However, the experience of the past few years has clearly demonstrated that there is a constellation of factors that limit the mobilization, flow, and suitability of funds, and the capacity to effectively utilize them. Nearly every one of these factors or constraints is influenced directly or indirectly by the major economic and political reforms taking place in the post-communist countries of the region, as well as by the increasing competition for resources in potential donor countries caused by recession and persistently slow growth that limits the availability of financial assistance and private investment for financial improvements (see HELCOM 1993c: 21).

Domestic resources

As far as the actual amount of funds spent on Baltic environmental protection in the **former USSR** is concerned, the estimates are few and their reliability is questionable. According to one estimate made by the Russian Ministry of Ecology in 1992, overall Soviet expenses for this purpose have totaled 2.5 billion rubles by mid-1980s; of these, about one billion rubles were spent for pollution prevention from vessels and construction of port reception facilities, while capital investments into land-based facilities represented about 1.5 billion. However, more exact data on the expenses incurred cannot be provided because of the "imperfect system of calculation of capital investments in different industry branches" (Ministry of Ecology, 1992). Still, since the costs of construction of sewage treatment projects are much higher because of the volumes of polluted water involved, it can be safely assumed that most energy in the Soviet Union, as far as the implementation of the Helsinki Convention was

concerned, was spent on fulfilling the obligations dealing primary with ship-based pollution (Van der Weij, 1993: 36).

In **Russia**, with a transition to a market economy, the character of financing environmental programs has undergone radical changes, caused by major macroeconomic transformations and shifts in governmental financial and investment policies. Measures aimed at reducing the budget deficit prevented the use of budget sources for environmental financing. Federal budget funds were available only for the financing of some measures included into the state programs, like Chernobyl program, or into branch programs on protection and restoration of land, forestry and fish resources. Federal budget funds were also used for financing the activities of environmental ministries and agencies — Minpriroda, *Rosgidromet, Roskomzem, Roskomvod*, etc.

Since 1992, own funds of enterprises and organizations became the major source of financing capital investments. However, high inflation rates and lack of funds have prevented adequate allocation of resources for enterprises' development and reconstruction, and moreover for environmental measures. At the same time, the decline of investment activity in environmental sphere has been somewhat less rapid than in the whole of the economy. This can be accounted for by the stimulating impact of the introduced system of pollution charges, the active use of inclusion of sums spent on environmental investments into such payments, and by the increased responsibility of local authorities for the state of the environment (Gosudarstvennyi Doklad 1995, No. 15/96: 4).

Until 1993, no funds have been appropriated from the federal budget for JCP implementation in Russia. The diffusion of implementation responsibilities, has not been, until recently, supported by the flow of funds from the federal to the local levels. However, the allocation of 5.2 billion rubles in 1993 and some 20 billion rubles (about $10 m)[46] in 1994 has allowed to complete the construction of the second phase of the Northern WWTP in St. Petersburg, extending its daily capacity from 0.6 million to 1.25 million cub. m (corresponding to additional treatment for about 1 million inhabitants), where almost a third of the whole city waste water load would eventually be treated.[47] The overall expenditures for its construction amounted to about $77 m. The 1995 federal budget has allocated some $16 m for the upgrading of water treatment and sewerage systems in the whole of St. Petersburg area, including $13 m for dealing with the JPC hot spots (Frolov, 1994; HELCOM PITF, 1995b). The 1994 Hot Spot Review cites the figures of about ECU 30 million in investments already made during 1991-1994 into St. Petersburg priority hot spots[48], and ECU 200 million as the planned/forecasted investment volume for St. Petersburg. However, no matter how large these

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[46] Hereinafter, when providing dollar equivalents of ruble figures, the following approximate mid-year exchange rates for the corresponding years are used: 50 rubles/$ for 1991, 150 rubles/$ for 1992, 1,000 rubles/$ for 1993, 2,000 rubles/$ for 1994, 4,500 rubles/$ for 1995 and 5,000 rubles/$ for 1996.

[47] It has been initially planned to put the Northern WWTP in operation prior to the construction of the dam in the Gulf of Finland, but in the early 1980s, due to the lack of financing, its construction has been frozen. However, even its full-sized operation will not ensure the final solution of wastewater treatment problem in St. Petersburg: currently, about 1.3 million cubic meters of untreated waste water still flow into the Neva river daily. To resolve this problem, financing of a similar complex on the other bank of the Gulf of Finland should be increased (Pozdniakov 1994; *ZM*, 1995, No. 2: 1; *TEN*, May 1-15, 1996, Vol. 2, No. 9).

[48] The latest available source cites the figures of investments already made into renovation of water supply and water treatment infrastructure in St. Petersburg at ECU 80 M (SEPA, 1996: 18).

investments seem to be by Russian standards, they are still a far cry from the assessed investment needs to meet the HELCOM standards at four priority hot spots in the St. Petersburg area, which constitute about ECU 1,600 m (with ECU 540 m required only for sewers in St. Petersburg) as a minimum (BSEP, 1994, vol. 1: 5; see also Annex 2).

Apart from the federal budget, the domestic financial resources for the JCP implementation in the St. Petersburg area (namely, its municipal and "agricultural" parts) originate from the city of St. Petersburg, State Environmental Fund and the State Enterprise *Vodokanal* (St. Petersburg municipal water and sewerage works).[49] Since federal funds constitute only a small portion of the financing required, St. Petersburg has to regularly increase allocations from its own budget. The share of financing from the Federal environmental fund, although having increased somewhat, still remains very low — 1% of the total Russian environmental spending in 1992 and 2.4% in 1994 (Gosudarstvennyi Doklad 1995, No. 15/96: 4).[50] The major burden, especially for capital investment programs, has to be carried by the local budgets and own enterprises' funds.

Vodokanal, which has previously been dependent on funding from the City Council, is currently being partly financed by state subsidies, and partly by user fees; however, the latter part is increasing and it is expected that in the nearest future it will reach 100 per cent. In theory, the development of autonomous, self-financed water utilities should result in their more efficient operation, reduction of industrial and domestic water consumption and water losses; in addition, not only would this provide funds to recover operation and maintenance costs, but it may also determine the positive cash flow of the entire abatement projects, including their construction phase (see Stottmann, 1993). This, however, involves the increase of user fees to adequate levels, which in reality turns out to be more difficult than expected. In the past, industries in St. Petersburg, as elsewhere in Russia, have had to pay higher tariffs for their waste waters which represented almost half of all city sewage by volume. However, because production and corresponding sewage volumes have fallen drastically during the last five years, sewage from those industries today accounts only for 12 percent of all waste, and moreover, the tariffs are now too expensive for most enterprises to pay. That forced *Vodokanal* to eliminate, starting from March 1, 1996, the higher tariffs for industries (TEN, 1996, Vol. 2, No. 3), compensating this loss at the same time by an increase of user fees for domestic consumers by 30 per cent (Pipiya, 1996a). Predictably, that would bring about increased difficulties with fee collection and would hardly contribute to the attainment of *Vodokanal*'s financial self-sufficiency.

Compared to St. Petersburg, the situation is even more grave in Kaliningrad area, where, apart from a primitive mechanical treatment, WWTPs are virtually non-existent. The beginning of construction of the Kaliningrad combined water treatment facilities, which are now completed by about 50 per cent, dates back to 1976; by 1994, none of the 45 facilities under construction have been put into operation (*ZM*, 1993, No.17: 3). In 1994, out of the total sum of 25 billion rubles (1994 prices) supposed to have been allocated for the completion

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[49] *Vodokanal* of St. Petersburg is the largest water supply and sewerage enterprise in Russia, incorporating 18 subordinate departments with more than seven thousand employees (BSEP, 1994, Vol. 2: 6).

[50] However, one of the largest programs financed from the Federal environmental fund has been initiated in St. Petersburg: in 1993, 542.5 million rubles have been spent on the development and construction of a prototype environmental patrol vessel to be operated in the Gulf of Finland. In 1994, 2017 million rubles were appropriated for this purpose (Federalnyi Ekologicheskiy Fond, 1994).

of WWTP in Kaliningrad, actual disbursements from centralized funding sources provided only 2 billion. In addition, the general standard of the completed works, particularly of those from the previous construction periods, is so poor that it is doubtful whether these can ever be used effectively. Moreover, no investments have been planned, either from domestic or international sources (BSEP, 1994, Vol. 7: 15; see also Annex 2).

The most significant innovation in *financial mechanisms* introduced in the course of transformation in Russia was the system of pollution charges. All pollution charges paid by enterprises are supposed to go to environmental funds of various levels — 10% to the federal fund, and 90% — to the regional and local funds, divided in proportion of 30:60 between the two. However, not only the federal environmental fund was "consolidated" into federal budget both in 1994 and 1995, but the attempts to use earmarked resources from the environmental funds for purposes other than environmental protection at local levels are widespread. In theory, environmental funds are independent of regional authorities; in practice, they are quite often subordinate to regional administrations. As a result, financial resources frequently do not reach the funds, being spent for other purposes, and even if they eventually do, they are by that time devalued by inflation (see Golub and Strukova, 1995; Ledov and Zhukov, 1995).

Pollution charges are based on federal normatives of emissions and discharges, established for 198 polluting substances by Minpriroda. Above-limit pollution discharges are charged at a five-fold rate compared to within-limit discharges and are paid directly from the after-tax profit of a polluting firm. In practice, payments for the above-limit discharges account for about 80 per cent of the total sum (Fomin, 1995). At the same time, the system allows for a large degree of flexibility. Local authorities are empowered to increase or to reduce payments depending on the local environmental situation. In particular, for polluting firms located in the environmental disaster zones or in the *areas covered by international environmental agreements*, payments may be increased twice. However, it is only very recently (April 1996) that pollution charges in St. Petersburg have been increased by 100 percent. The decision was motivated by the necessity to increase revenues for city environmental construction projects (*TEN*, May 1-15, 1996, Vol. 2, No. 9). On the other hand, sums spent by enterprises for such priority environmental protection purposes can be deducted from pollution charges; in the Baltic Sea drainage basin the latter include water protection measures aimed at reducing the emissions of phosphorus, nitrogen, oil, heavy metals and other pollutants determined by HELCOM (Mamin, 1993).

However, this very flexibility has substantially decreased the effectiveness of this system. Local authorities more often than not used their right to reduce the amount of payments, usually limiting them to 7-10% of after-tax profits of a firm in order to prevent its going out of business, which produced little stimulating effect. To overcome this deficiency, a special resolution of the government passed in August 1992 provided that if pollution payments are equal to or exceed the amount of after-tax profits of an enterprise, local environmental control bodies and executive authorities are empowered to suspend or terminate the activities of an enterprise. The low efficiency, if not total inapplicability, of this measure was easily predictable (Kozeltsev, 1993). In addition, pollution charges normatives, despite their periodic adjustments, have been permanently lagging behind inflation (Mamin, 1993). In fact, if calculated in constant prices, the normative charges established for 1993 were several times lower compared to those in 1991 (Yablokov, 1993). As a result, the pollution charges, which account for just 0.1% of the consolidated federal budget revenues, are most often too low to play an important role in stimulating rational environmental management. This

drawback is being gradually rectified, however: in 1994, all charges have been increased by a factor of ten compared to basic charges, while the coefficient applied has been raised to 17 for 1995, and to 35 in 1996 (Gosudarstvennyi doklad 1995, No. 13/96: 11).

Still, despite its many deficiencies, the application of the "polluter pays" principle in Russia has clearly had a discernible effect on the behavior of polluting enterprises: today they have to take environmental standards into account when formulating production policies (Kozeltsev, 1993). An approximate sum of pollution payments in 1993 for an average-size pulp and paper mill amounted to no less than 1 billion rubles (about $1m), a sizable figure by Russian standards (Danilov-Danilyan, 1993). Even the defense industry, despite substantial economic hardships, has been forced to react promptly to the application of pollution charges. The huge *Kirovskiy Zavod* association in St. Petersburg which has been compelled to pay 2.5 billion rubles (about $1.3 m) for the above-normative discharges in 1994[51], had to complete the construction of its water treatment facilities (with a daily capacity of 88.5 thousand cubic meters) in 1995 within half a year after a 20-year long construction period (Sokornova, 1995). At the same time, the attempts to evade payments of pollution charges are widespread: during 1992 alone, arbitration courts in Russia have considered almost 6,000 claims to this effect and recovered 2.8 billion rubles (about $19 m) (Danilov-Danilyan, 1993)[52].

Similar to Russia, in the newly independent **Baltic states** the domestic economic situation is still too weak to allow for significant national investments into environmental infrastructure projects. As a result, the majority of the "hot spot" projects have experienced serious delays or have not even started. Even in Lithuania, where the construction of WWTPs at priority "hot spots" has been treated as a matter of state importance, and the 1993 and 1994 state budgets have allocated 3 per cent of the total government expenditures (about ECU 30M) for this purpose, they are at best able to cover only a few per cent of the total (HELCOM estimated) investments, and the need for additional financing is still evident. Moreover, these funds are being allocated on a "drip feed", year-by-year basis, and there is uncertainty as to whether and when funding will become available to complete unfinished long-term projects. This "stop-go" basis for project implementation has been raising overall costs; the municipalities also seem to receive less than the amount allocated to them (HELCOM, 1993d: 29-30; HELCOM, 1994: 70; BSEP, 1994, Vol. 2: 45). The situation is even less encouraging both in Latvia and Estonia, where the assigned state budgets for 1994 have allocated approximately ECU 0.77 M for the priority hot spots (out of the total environmental budget of ECU 2.2 million), which is even farther from national as well as international estimates of necessary investments (BSEP, 1994, Vol. 1: 7). Moreover, environmental outlays tend to decline, rather than increase, over time: in 1995, Latvia has spent about $ 36M, or 45 per cent less on environmental protection compared to 1994 (*TEN*, April 1996, Vol. 2, No. 8).

In general, state budgets are currently playing a minor role in financing environmental activities in the Baltic countries: they are at best at best sufficient to pay only the running costs of the central and regional administration. The actual funds available, based on a sample from

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[51] An immense sum of pollution charges in this case is explained by the fact that, in accordance with Resolution No. 459 of the St. Petersburg Mayor's Office (June 18, 1993), charges for the above-normative discharges, once registered by *Lenkomekologiya*, are levied for the period of the whole quarter (three months).

[52] Many enterprises are also attempting to delay payments as long as possible: e.g., *Kirovskiy Zavod* in St. Petersburg has paid its pollution charges for the second half of 1991 (172 thousand rubles) only in mid-1992, thus reducing their real value approximately three-fold — from about $3400 to $1150 (Sorokin, 1993a: 151).

Estonia, Latvia and Lithuania, are well below 1 ECU per capita (HELCOM 1993c: 36). The environmental funds, however, are significantly more important as the sources of financing compared to Russia, and this importance is increasing, since they represent virtually the only available (apart from the external assistance) source of funds for environmental investments (Eckerberg, 1994: 463).[53] The environmental funds were built on the principle that all natural resources are the property of a state, and their use is therefore subject to fee.

Consequently, economic incentives to implement environmental policy were introduced in all three countries. Taxes are levied, both on each ton of a polluting substance (the rate of which depends on the type of a pollutant), and on the use of state-owned natural resources (Eckerberg 1994: 463).[54] In Estonia, the system of pollution taxes, based on the 1990 law "On the system of Charges and Taxes in Nature Management", bears great similarity to the one employed in Russia. Pollution taxes are based on the amounts of a certain pollutant emitted to air, water and waste; taxes are further elevated by penalties if the permitted discharge levels are exceeded. Enterprises investing in environmental protection can obtain a tax reduction. If they reduce pollution by at least 25 per cent, they are relieved of taxes by 1.5 times the value of investments. The taxes are shared (50/50) between the state and regional budgets. Before 1991, the taxes amounted to about 1.2 million rubles annually, but in 1991 have increased to 56 million rubles due to the enlarged resource and pollution tax rates (UNCED/Estonia 1992: 36; BSEP, 1994, Vol. 2: 18).

The pollution taxes in Lithuania, in accordance with the "Law on pollution fees", are directly related to environmental standards. The funds obtained are used for environmental financing and amount to about 0.6 per cent of Lithuanian national income, or 1.2 per cent of the total budget expenditures. 70 per cent of the collected fees go to the municipalities and 30 per cent to the State Environmental Fund. Due to the limited resources, financial support for environmental protection projects in Lithuania is channeled primarily to constructing wastewater treatment plants, which is considered a national priority (UNCED/Lithuania 1992: 112). In order to raise funding for the five JCP "hot spots", a decree was passed in 1992 stating that the municipalities building WWTPs would subtract a specific amount from their "tax fees" in order to cover their construction costs. However, the municipalities tended to spend the saved money on more "urgent" needs (e.g. schools, salaries, etc.). Also, discharge permits in Lithuania set a uniform fee for over-the-limit pollution which is not adjusted to decreased discharges, thereby eliminating incentives to reduce pollution. Like in Russia, the effectiveness of the economic incentives system remains questionable as long as the tax rates are fixed and do not follow inflation rate; moreover, the size of pollution charges in various regions depends on the polluters' ability to pay.[55] Until now, there has been little evidence that

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[53] Estonia was the first of the three countries to establish an Environmental Fund as far back as in 1983. The State Environmental Protection Fund in Lithuania was created in 1988 (Eckerberg, 1994: 461).

[54] In Latvia, although taxes on natural resources and pollution are implemented in accordance with the new Law on natural resources taxation, the extent to which polluter pays principle and realistic user charges are applied is not clear. It has been reported, however, that a fee for water consumption and sewerage for the population of Riga was increased from 3.5 to 15 santims per cubic meter, while the fee for enterprises remains at 25 santims per cubic meter (HELCOM PITF, 1995c: 8).

[55] Presently, the inhabitants of Kaunas pay the lowest rates since the city has no waste water treatment facilities. Every municipality also has problems in collecting the fees. In 1993, Kaunas was capable of collecting only 12.5 Litas out of 20 million owed. Overall, only about 50 per cent of the expected income is collected (BSEP, 1994, Vol. 2: 46-47).

pollution taxes in Lithuania have actually had an impact on reducing emissions (BSEP, 1994, Vol. 2: 44-45; Eckerberg 1994: 464).

Still, despite the obvious inadequacy of domestic resources, several investment projects at hot spots in the three Baltic countries have taken place since 1991, and some have even significantly progressed. Among them are Haapsalu-Matsalu project and Tallinn WWTP in Estonia, Liepaja project in Latvia, as well as WWTPs in Kaunas, Vilnius and Klaipeda (Lithuania) (see Seeberg-Elverfeldt, 1995). Overall, during 1991-94 more than ECU 11 million have been invested in abatement projects in the three Baltic countries, financed mostly from local sources. This figure, however, should be compared to an additional investment of ECU 335 million required if the HELCOM recommendations are to be made in full, with ECU 100 M needed for sewers in Riga alone (see Annex 2). Of these, planned investments amount to approximately ECU 130 million, of which almost ECU 50 million have been pledged from international sources with a very significant grant element (BSEP, 1994, Vol. 1: 6-7). The need for a very significant external funding is moreover essential for Russia, where the imbalance between the investments required and already incurred is much greater.

External resources

The practice of JCP implementation in the post-communist countries of the Baltic since 1991 has demonstrated that due to the present constraints on the availability of local financing and the need for foreign exchange to fund the priority activities, the use of external financial resources for funding the JCP will remain at least no less important than local funding both in the short and medium-term. The principal external sources currently available include bilateral donors providing grants and concessional funding, loans provided by international financial institutions (IFI) and commercial banks, direct investments by foreign companies, and export credit guarantees.

Grant and concessional funding from the Commission of the European Communities (CEC) and bilateral donors has become in recent years a major source of support for environmental activities. At the early stage of JCP implementation, grant resources are of extraordinary value because they do not have to be repaid by the recipient; hence they represent the scarcest and the most important source of financing. These funding programs have largely focused on the provision of technical assistance and consultant studies, institutional strengthening and human resources development, and support for the acquisition and installation of monitoring systems and other specialized environmental equipment. In some cases, funding has been provided for small-scale demonstration projects or support for joint-venture investments in environmental technologies.

The *Commission of the European Communities* has served a key role in the G-24 process through coordination of economic assistance to the post-socialist countries, and through technical assistance in support of environmental management under the PHARE and LIFE programs. Under these programs, the CEC has committed 1 million ECU to Estonia, Latvia and Lithuania for 1992[56], and through the LIFE program support has been provided to establish two environmental centers for administration and technology (ECAT), one in St. Petersburg and one in Riga. Both projects are designed as twinning arrangements between the

[56] These figures are, however, dwarfed when compared to 75 million ECU provided by CEC to Poland's environmental sector in the same year.

municipalities of St. Petersburg-Hamburg and Riga-Bremen with EC co-financing (HELCOM 1993d: 56)[57]. PHARE grants are used for the co-financing (along with bilateral grants and loans from IFI) of the support of full-scale reconstruction of Tallinn WWTP, the preparation of the Haapsalu and Maatsalu Bays project (Estonia), three projects in Lithuania (Kaunas, Vilnius and Palanga WWTPs), as well as the Daugavpils project and a number of feasibility studies in Latvia.[58] The CEC programs require that goods and services, other than those from local sources, be obtained from the EC member countries (see SEPA, 1996: 14-16; BSEP, 1994, Vol. 2). The main focus of the PHARE program has been technical assistance, but during the last years its investment component has been growing. As regards EU assistance to Russia, it is distributed primarily through TACIS program; however, as distinguished from PHARE, environmental issues have not received a high priority in TACIS, and therefore only very few environmental EU-assisted projects (mainly related to energy issues) have been implemented in Russia (Berg, 1995: 11).

As recent practice has demonstrated, *bilateral donors'* grant or concessional funding from within the region, provided by Denmark, Finland, Germany, Norway, and Sweden represents today the most real source of financing for JCP projects' implementation, particularly at its earlier stages.[59] In 1991-1992, about 37% ($10M) of the total Finnish assistance to Russia and 40% ($8M) of the assistance to the Baltic states were allocated to the field of the environment. Of the finances reserved for environmental cooperation, 45% were allocated for assistance to the Baltic states and the rest to Russia (Hiltunen, 1994: 41). In 1993, Sweden dedicated about $37 million to measures within the JCP framework. The largest support within this program ($16 million) was provided to investments in wastewater treatment plants in Estonia, Latvia or Lithuania.[60] Sweden has also expressed its readiness to contribute about $7.4 million to a joint, voluntary trust fund, primarily for project preparation, but also for co-financing of investments and other projects (HELCOM 1993d: 44). Denmark in 1994 has allocated ECU 13.4 million for assistance to Central and East European countries in the four sector programs related to the environment; by the year 2002 this figure is expected to grow up to 0.25% of Danish GNP (HELCOM 1994: 56). In 1992 and 1993 Germany has allocated about $24 million each year for 150 consulting projects in the field of environmental

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[57] In March 1996, ECAT project in St. Petersburg has been terminated, and the new project in Kaliningrad has been started. However, the Russian part of the ECAT team in St. Petersburg has been officially transferred from its founders in Hamburg to the environmental administration of the Mayor's office. The city will now provide the main supervision over the center. ECAT has been successful in implementing many environmental projects and programs in 1993-1995, including supplying equipment for recovering spilled oil, aiding firms in reducing toxic waste, and a wide range of public awareness programs. (*TEN*, Mar. 16-31, 1996, Vol. 2, No. 6).

[58] PHARE environmental budgets in Latvia for 1992 and 1993 amounted to ECU 1.1 and 1.6 million, respectively, and the one in Lithuania has been increased in 1994 to ECU 1.6 million (BSEP, 1994, Vol. 2).

[59] To cite an example, all the pre-feasibility studies conducted to date have been financed from grant funds provided by Nordic governments. By the end of 1992, the Finnish government has spent $ 0.6 million; the governments of Denmark and Sweden, $ 0.8 million and $ 1.2 million respectively; and the expenditures of the Nordic Project Fund have been on the order of $ 0.4 million (Broadus et al., 1993). In 1993, the Danish environmental minister S. Auken has announced that Denmark will provide almost $ 5 million to the Action plan to be used for feasibility studies (HELCOM, 1993d: 16).

[60] In addition, $3.7 million was allocated to the agricultural sector in Estonia, Latvia, Lithuania, Poland and Russia for training and demonstration; $2.4 million - to measures to solve the problem of sludge dewatering and aeration of the sewage treatment process in Warsaw; $1.9 million - to institutional strengthening in Estonia, Latvia, Lithuania, Poland and Russia (HELCOM, 1993d: 44).

protection and nature conservation in Central and Eastern European countries (HELCOM 1994: 67).

As regards bilateral environmental assistance to the Baltic countries and North-Western Russia, there exists a certain "geographical division of labor" between the Nordic donor countries, built upon a long-term history of Nordic environmental cooperation. Although virtually every Nordic country is present in all of the FSU republics under study, Finnish aid is primarily concentrated in Estonia, Karelia, St. Petersburg and the Leningrad province, the Norwegian assistance is centered on the Kola peninsula, Sweden is most active in Latvia and Denmark — in Lithuania (Hiltunen, 1996: 98; Berg, 1995). Among the Baltic states, Estonia ranks first by volume of environmental assistance: it has received more international environmental support than Latvia or Lithuania (if the support to nuclear safety at Ignalina nuclear power plant is excluded) (Berg, 1995: 19). Overall, there is twice as much foreign investment in Estonia (particularly from Finland) as in Latvia and Lithuania combined (Eriksson, 1992: 53). The choice of recipient countries or regions is explained in some cases primarily by their geographic "upstream" or "upwind" location (Finland, Norway and Sweden), while in other cases other variables, such as types of projects, political situation, the influences of pressure groups (immigrants from the region), investment needs and, most often, an interest of domestic companies in transferring equipment or knowledge linked to such investments play a major role (see Berg, 1995: 47-49).

In Estonia, since 1991 Finnish support has been given to 44 different environmental projects; of these, two priority hot spots have received most of the Finnish attention: WWTP renovation project in Tallinn, where its first phase has been entirely supported by Finland ($5 M), and the reduction of emissions from the oil shale power stations in Narva, one of the major sources of air pollution in the whole of the Baltic Sea area ($3.4 M).Finland is also involved, together with Norway, Switzerland, EBRD, EU-PHARE and NEFCO, in the so-called "Municipalities project" by supporting the construction of WWTP in Pärnu. Sweden has participated in 15 projects, while Denmark and Germany have been represented by 7 and 5 projects respectively (Berg, 1995: 15-16, 58-60; BSEP, 1994, Vol. 2: 24).

In Latvia, grants from Sweden ($7.4 M) and Finland ($2 M) constitute the major part of the financing of the World Bank-led project in Liepaja which also includes nature conservation. Sweden has also contributed ($0.75 M) to the reconstruction of WWTP in Riga, and together with Germany is currently involved in providing technical assistance to solve the problem with drinking water pollution in this city (Berg, 1995: 22, 74-75; BSEP, 1994, Vol. 2: 38). The largest JCP project with external co-financing in Lithuania concerns waste water treatment in Klaipeda; it is led by the World Bank, but includes also Sweden (ECU 4 M) and Finland (ECU 1.6 M) as bilateral donors. Sweden also supports ($1 M), in cooperation with the EBRD and EU-PHARE, the construction of new WWTP and rehabilitation of sewers in Kaunas. The future for the WWTP in Vilnius is still uncertain, but a grant and a soft loan of $12.6 M will probably be provided by Denmark and support is also expected from EU-PHARE (Berg, 1995: 28; BSEP, 1994, Vol. 2: 48).

In North-Western Russia, Finland seems to be the most important bilateral donor. In St. Petersburg, three major collaborative projects can be distinguished: the renovation of the sewerage system in the Nevski Prospekt area ($0.5 M), hazardous waste treatment plant in Sosnovyi Bor and the reconstruction of South-Western WWTP (about $50,000), with more investments expected). Denmark is also involved in the St. Petersburg sewerage project; in addition, Denmark is supporting several other JCP projects — WWTP construction in St.

Petersburg suburb, Pushkin ($0.47 M), in Gvardeisk east of Kaliningrad ($1.35 M), in Pskov and in Novgorod ($0.9 M) (Berg, 1995: 132-133). The Novgorod project has been chosen by the joint Russian-Danish Commission on the environment as a demonstration (pilot) project (Gosudarstvennyi Doklad, 1994, No. 3/95). In addition, French government has provided a soft loan (first phase, ECU 20 M) for the financing of the new sludge incineration plant at the Central WWTP in St. Petersburg.[61]

Although exact numbers are not available, rough calculations of the amount of bilateral and multilateral environmental support (including loans) provided to the Baltic states and North-Western Russia (Murmansk Region excluded) seem to indicate that Russia has received a significantly smaller part of external environmental assistance compared to the one channeled to the Baltic states. Since the fall of the communist regimes, Estonia has received $97.6 M , Latvia — $32.9 M, Lithuania — $36.7 M (in addition, loans for about $30 M are at the discussion stage), while North-Western Russia — only $24.7 M of foreign environmental assistance.[62] This fact can probably be explained by a relatively high political and economic instability in the Baltic countries compared to Russia, as well as by political considerations.[63] Besides, enterprises and municipal facilities in Estonia, Latvia and Lithuania are somewhat better positioned towards buying foreign technology, since their domestic currencies are convertible.[64] Another factor is a different (compared to the Baltic states) attitude towards the use of imported technology prevailing in Russia: Russian officials have in various contexts repeatedly emphasized their preference for using Russian technology (generally less expensive and even occasionally more effective) to solve domestic environmental problems. Thus the condition to use imported technology coupled to foreign assistance has met more criticism in Russia than it has in the Baltic states (see Hiltunen, 1996: 100-101).

Under the terms of most bilateral agreements, the recipient country is generally expected to provide counterpart local currency funding, which is financed mainly with the earnings of the company or plant in question. In many cases barter deals have been used for financing foreign currency costs, but also funds from governmental and municipal budgets have been used. The projects are implemented using mainly local labor. Grant and concessional

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[61] The credit covers 85% of the signed contract, while the remaining 15% is considered as advanced cash payments. The credit line is based on a 8.5 year reimbursement period, with interest corresponding to 1.75% pr. month. However, to fulfill the conditions of such a credit line, the buyer also has to pay an insurance on political risk; the rate varies, but generally for Russia in the last years it has constituted 10-15% of the total amount (BSEP, 1994, Vol. 2: 10).

[62] Calculations are based on project data presented by Berg (1995). The data are incomplete and the amounts of foreign contributions to some of the projects are not available. Included is the environmental (both investment and technical) assistance to industry, water protection, waste management, agriculture and forestry, nature conservation and monitoring, as well as public administration (institutional) support. Support to energy sector, to the phasing out of ozone depleting substances and to nuclear safety sector is not included. Calculated figures differ from those shown in Annex 2, because the latter refer to investments only and have been compiled by HELCOM on the basis of information supplied by countries.

[63] Installing a sewage treatment plant, say, in Riga, which concentrates nearly one-third of Latvia's population would have greater positive political implications by attracting favorable publicity, than building a similar plant in e.g. Kaliningrad with a population of about 200,000 (see Löfstedt, 1995: 45).

[64] The problems related to financing the Russian share of the projects are especially grave in St. Petersburg, where the major part of investments needed for reducing pollution to the Gulf of Finland are municipal; for comparison, in Karelia the local enterprises are able to pay for environmental technology with natural resources, such as timber (see Hiltunen, 1996: 101).

financing from bilateral sources is normally conditional on special procurement procedures that tie its use to equipment, consultant services and training from sources within the donor country itself (HELCOM 1993c: 21, 40). That tends to underestimate the significance of domestic resources, and occasionally even leads to concealment of technical information by donors from their foreign partners (see Kaminskaité and Liubiniené, 1996: 116).

In addition, the provision of foreign environmental assistance to Russia has been hampered by an imposition of custom duties on the imported environmental equipment: according to Finnish sources, from one fourth to one third of the total Finnish appropriations for environmental assistance to Russia is spent on duties and other taxes, thus reducing the funds available for environmental investments and threatening to delay or jeopardize the implementation of several international programs related to the protection of the Baltic (*ZM*, 1995, No. 3, p.2).

Although the interests of the neighboring Nordic countries and Russia/Baltic states in reducing pollution are compatible in the sense that environmental problems affect all of them, there are, however, differences in priorities assigned to various environmental issues: for instance, in St. Petersburg most decision-makers emphasize the purification of drinking water[65], while the Finnish companies have generally focused their offers on cooperation in sewage treatment systems. The main reason for this is that the Finnish Ministry of Environment offered financial support to cooperation projects contributing to the improvement of the Gulf of Finland. Thus the interests of Finnish companies in improving the sewage system have not always been met with the corresponding enthusiasm in St. Petersburg. The same is also true of Estonia, where public attention is focused on the environmental issues caused by the Russian military or on groundwater pollution rather than on the pollution of the Baltic (see Hiltunen, 1994: 18-19). Quite often evaluations and conclusions produced by foreign experts did not adequately pertain to local conditions, or general background, since many other basic factors, including legislative ones, were not accounted for. As has been illustrated by several projects (e.g. pre-feasibility study of the Lithuanian coast and Nemunas river basin), conclusions and recommendations could become rapidly outdated because of rapid developments in political and economic situation, thus requiring new pre-feasibility studies before the implementation stage (see Kaminskaité and Liubiniené, 1996).

While immediately after the collapse of the communist system many donors introduced bilateral support programs, coordination with other donors was mostly very limited, and that caused problems in the recipient countries, e.g. different standards and technical solutions introduced by different donors, or limited capacity of the recipient countries to handle all the relations with the donors. Since then, some efforts have been made to develop the direct coordination between bilateral donors, and the best example is perhaps the common Finnish-Danish sewerage project in St. Petersburg (Berg, 1995: 52).

The funds of **international financial institutions** are lent at or near market terms, for frequently longer maturity with grace periods, than are available from other sources. Their effective use is contingent upon the willingness of the borrower to agree to service the resulting loans and to provide the state guarantees for repayment that some of these

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[65] The St. Petersburg water supply and sewerage company *Vodokanal* has signed a cooperation agreement with the French company *General des Eaux*, creating a new joint venture "Pure water for St. Petersburg" (Hiltunen 1994: 29).

institutions require by their statutes. Loans provided by the IFIs are normally restricted to the financing of foreign currency elements of a project; however, certain institutions such as the EIB are allowed to provide funding for local currency expenditures.[66] The procurement procedures of the EBRD and the World Bank are based on the principle of international competitive bidding (see HELCOM 1993c: 41).

The IFIs, above all the World Bank and the EBRD, have recently begun to act as coordinators or leaders of certain hot spot projects where investments are too large to be financed by one source only and where therefore several donors are engaged. This holds particularly true for major municipal projects cited above regarding treatment of mostly combined industrial and municipal waste water. A number of projects of this type are now under implementation/ preparation (e.g., waste water treatment and sewerage systems in Tallinn, Liepaja, Klaipeda and St. Petersburg), and these types of projects will probably become more common in the future (Berg, 1995: 52; Seeberg-Elverfeldt, 1995: 10).

A major program has been announced in May 1995 by the World Bank to finance seven projects, with a total cost of $240 million, to support the JCP. Of these, Lithuania and Latvia are undertaking two projects each, and Estonia, Russia, and Poland one each. Five projects have been approved by the Bank's Board of Executive Directors as of March 1996: the Liepaja project in Latvia (total cost — $21 M, IBRD loan — $ 4M), the Klaipeda project ($23 M and $7 M) and the Siauliai project ($22 M and $6.2 M) in Lithuania, the Haapsalu-Matsalu project in Estonia (total cost of $8 M) and environmental mitigation package for St. Petersburg (total cost of $20 M). In all these projects, as has been described above, IBRD has been acting as a coordinating agency among several bilateral and multilateral donors involved (World Bank, 1995; Berg, 1995; *ECB*, March 1996, Vol. 4, No. 5).

The World Bank activities in Russia, compared to other countries, have started only recently. Its project in St. Petersburg is a part of a larger Housing Project; it is short-term in nature and is aimed at strengthening water and waste water services to the northern part of the city, including the completion of the Northern WWTP (World Bank, 1995). However, currently the World Bank is in the process of finalizing a Sector Study for fresh water and waste water in North-Western Russia. Based on this study, a Water and Sanitation Loan is being prepared which will preliminary be directed towards four or five cities, including St. Petersburg and Kaliningrad, with investments starting in 1997 at earliest (SEPA, 1996: 13).

The EBRD, which was established with a specific purpose to distribute loans to investments in Central and Eastern Europe, has been somewhat less active in the environmental field compared to the World Bank. The first, and so far the only one loan to environmental infrastructure — the renovation of Tallinn WWTP ($26 M) — was approved in 1994. Like the World Bank, the EBRD has been, in some cases, acting as a coordinator of other donor activities — e.g., renovation of several municipal WWTPs in Estonian towns (Tartu, Pärnu, Rackvere, Sillamäe and others) (Berg, 1995: 16). Recently, however, the EBRD and the Vodokanal of St. Petersburg have entered into negotiations for preparation of the "St. Petersburg water sector development program" ($73.5 M) to improve the reliability and quality of drinking water in the city (*HELCOM News*, Jan. 1996, No. 1: 8). The EBRD is also preparing a $82 M Riga Environment project to finance short term priority investments in Riga

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[66] However, all EIB projects in Central and Eastern Europe (in no matter which sector) require the support and guarantee of the government of the country concerned (HELCOM 1993d: 108).

Waterworks (*ECB*, March 1996, Vol. 4, No. 5), and is involved in negotiations with Lithuanian authorities over the preparation of the Kaunas WWTP project.[67]

The Nordic Investment Bank (NIB) has not supported many projects in Central and Eastern Europe because of the credit risks, but to make it possible to provide loans to environmental sector in these countries, Nordic Environment Finance Corporation (NEFCO), a facility connected to NIB, has been created. NEFCO, according to its charter, should invest its funds only in commercially sound projects that have a Nordic counterpart (HELCOM 1993d: 48). Within the JCP, NIB has been primarily involved in pre-investment and feasibility studies for the hot spots of HELCOM PITF, serving as an executing agency since 1990, as well as in different forms of technical assistance. In Russia, most of these studies were connected to Finnish investment projects and financed through the Finnish Trust Fund in the bank (Berg, 1995: 41). In some cases, the involvement of foreign consultants has brought about considerable savings in project costs compared to initial estimates (see HELCOM 1993d: 98).

Overall, since the IFIs provide loans at basically market rates, rather than concessional funding, very few external commercial loans for JCP implementation (and environmental protection in general) have been accepted within the region with the objective of creating as little foreign debt as possible. It particularly applies to Russia, where the general opinion among the authorities is that they cannot afford to take foreign loans under the current loan conditions which are considered to be too strict (BSEP, 1994, Vol. 2: 11). As a result, in Russia the IFIs did not render adequate assistance in attracting investments for the Program implementation. As has been stated at the 1994 HELCOM session by the Russian Environment Minister Danilov-Danilyan, "it is obvious that such a restraint has been caused by recent socio-political instability in Russia itself" (HELCOM 1994: 78).

Several **special funding sources**, like debt-for-environment swaps and eco-conversion programs, have been the focus of much discussion among the Baltic Sea countries, due to their ability to convert financial liabilities into resources for environmental activities. In Russia, eco-conversion of Russian foreign debt is regarded as one of possible future directions for the implementation of some of the JCP projects and is undergoing a thorough examination at Minpriroda (*ZM*, 1995, No. 28: 2). Finally, the resources of the Global Environment Facility (GEF), although currently fully allocated to other projects, could also in the future provide a source of grant co-financing for priority environmental projects included into the Program, especially the management of Baltic coastal lagoons and wetlands (see *HELCOM News*, 1996, No. 1: 8).

To sum up, in spite of the good will and high-level political confirmation of the preparedness to support the JCP financially since the beginning of the Baltic Sea Environmental Initiative, little external financing has actually taken place until about 1994. Many investment proposals have been developed and feasibility studies conducted, but few have led to investments. The majority of these proposals tended to be oversized and costly, but their high costs bore no relation to the ability of municipalities to raise the funds to pay for them. In many cases, they did not coincide with the priorities of municipal governments and water enterprises. Municipal governments undertaking some of these proposals ran the risk of

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[67] The project, potentially envisaging a joint venture with Stockholm Water Company, has been slowed down due to a lack of local (state budget) resources which should constitute $45 M out of total of $60 M at the first phase, and $110 M out of $134 M at the second phase (see Seeberg-Elverfeldt, 1995: 12).

committing their scarce resources in costly ventures which could be achieved at much less cost (Stottmann 1993; *HELCOM News* 1993, No. 3: 3). Whatever foreign funding has been provided, it has been primarily oriented towards technical assistance, while the role of investment projects tended to be minimal.

More recently, however, the trend has started to change. With recipient countries demanding that studies should be followed by investments, the significance of investment projects has noticeably increased. Several donors (Finland, Sweden, Norway, EU-PHARE) are now turning to a more investment-oriented approach, while some of the big investment projects led by the World Bank or the EBRD have now reached the implementation stage (Berg, 1995: 49). While the bulk of international environmental assistance is still channeled to the countries of Eastern and Central Europe, there is also a distinct, albeit a slow trend towards shifting the emphasis in environmental support from the Baltic states to Russia. Still, possibilities to mobilize large-scale financial resources for JCP implementation on a multilateral basis had so far proved ambiguous. Apart from a few IFI-led projects, virtually the only practically available today, albeit an insufficient one, source of external funding for JCP hot spots in Russia and the Baltic states is still the financing through bilateral arrangements with Western nations. The donor countries are reluctant to commit themselves to large-scale projects in the situation of economic and political instability. In fact, for the time being only Finland (and to a limited extent Denmark) have provided tangible financial support to Russia for the implementation of the projects set up in the Program.

3. IMPLEMENTATION ON A SOCIETAL LEVEL

3.1. DISPERSION OF ACTORS AND DECENTRALIZATION OF CONTROL

One of the important changes that transition has brought into implementation picture in Russia and in the Baltic states was a significant increase in number and composition of target groups and the ensuing decentralization and dispersion of control powers and functions.

Privatization of former state-owned enterprises has, more often than not, resulted in their splitting up into smaller independent specialized firms. As a rule, these newly-emerged smaller specialized companies do not display any desire to take full responsibility for the costly and capital-intensive environmental infrastructure, like water treatment facilities, sewerage systems or waste dumpsites (and moreover to acquire them), nor are they planning any serious investments into environmental protection. In many cases, smaller privatized firms are unable to cover the costs of water treatment at "new" "private" WWTPs (in fact, mostly former smaller municipal ones), which results in huge "accidental" discharges into water bodies (Kulibaba, 1996). In the process of privatization itself, the State Committee for the Management of State Assets[68] does not take into account neither the environmental situation at a given enterprise nor the costs of environmental measures, nor does it provide for

[68] The State Committee for the Management of State Assets of the Russian Federation, together with its regional agencies and corresponding committees of all levels, is a federal agency set up to plan, organize and oversee the process of privatization. However, the division of responsibilities between the State Committee and another agency, the National Assets Fund, is unclear, which leads to continuous struggle over prerogatives between the two agencies.

"environmental rehabilitation" of the enterprises involved. "Thus, enterprises already privatized become more and more environmentally dangerous" (Fomin, 1995).

If previously environmental protection authorities in St. Petersburg had to deal with a single, albeit gigantic, industrial association *Kirovskiy Zavod* which ranked first among the country's defense industry enterprises in the volume of polluted wastewaters discharged (and accounted for 13 per cent of industrial discharges in St. Petersburg), today they have to control about 60 individual companies that emerged after the association formal dissolution. Similarly, the former *Izhorskiy Zavod* association is now represented by 11 independent enterprises. During the period from 1991 to July 1993 the number of registered 'environment users' has increased in St. Petersburg from 1081 to 1643, and in 1993 was growing at a rate of 3-4 per week (Sorokin, 1993a: 150-151).

Furthermore, one of potentially most difficult pollution control problems in Leningrad region (suburban) is the one of managing pollution from over 20,000 newly-emerged small private farms: environmental control mechanisms basically modeled after pre-existing ones (under 'real socialism') are ill-suited for the control of behavior of numerous small-scale addressees (Kulibaba, 1995). Similarly, there does not exist any legislative basis for such a control, nor there are sufficient resources for exercising it: the total St. Petersburg Lenkomekologiya staff numbers about 200 people (of these, only 6 people are involved in actual water sampling)[69], most of them grossly underpaid, with the ensuing very high personnel mobility and the acute equipment shortages (Sokornova, 1995)[70]. The mandate of specialized marine inspections (also subordinated to Minpriroda) has been limited to the territory of the port and to small-sized vessels because of the lack of technical means (the last specialized inspection vessel has been sold in 1995) (Kulibaba, 1995).

Thus, by increasing the number and character of relevant actors participating in the implementation process, by introducing instability and uncertainty in ownership rights and by reducing at the same time the role of the state (central and local) control authorities, transition has dramatically increased regulatory uncertainty and substantially weakened the ability to implement environmental policies.

3.2. PATTERNS OF ACTORS' PARTICIPATION

3.2.1. Industry

Regarding the participation of targets, the analysis seems to indicate that at the domestic scene in Russia it is virtually non-existent, at least at the policy-making stage. The crucial target group in the implementation process in St. Petersburg, the *defense* industry (about 70% of the city's industry is defense-oriented) has played, and is still playing, a very

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[69] Reportedly, the maximum amount of water samples possible to be taken and analyzed within one month is about ten, since every analysis takes about three days to complete. For comparison, *Kirovskiy Zavod* association alone has about 1600 sources of wastewater discharge. That is why currently only the most toxic sources are controlled at random. Previously, these sources were controlled by the industry's own laboratories, but their number has reduced more than twice since 1992 (Sorokin, 1995).

[70] In St. Petersburg, there are many privately owned laboratories, but they are, as a rule, far too expensive to be utilized by *Lenkomekologiya*. In 1995, 700 million rubles ($140, 000) has been allocated for this purpose (Sorokin, 1995).

passive role even in the implementation process, not to speak of participation in rule-making. Both federal and especially local laws and regulations provide for numerous tax and other privileges for enterprises investing in environmental protection: the value of the enterprise's pollution abatement facilities is deducted from a tax base for the purposes of estimating the tax on property of an enterprise. For all enterprises, up to 30 per cent of the profit tax can be spent on the construction of environmental infrastructure, instead of being remitted to the state. Similarly, pollution charges can be reduced by an amount spent on environmental protection. According to local regulations, the newly-established small enterprises (with fewer than 50 employees) were exempted from profit tax paid to the local budget for the period of two years, provided that they invest in environmental protection. Since 1994, this privilege has been substantially extended to cover all enterprises investing in water pollution abatement (Sorokin, 1993a; Sorokin, 1995).

However, the striking fact is that state-owned or even newly privatized large enterprises make very little use of any of these privileges. It is especially true of the defense industry: in 1994, only three defense enterprises in St. Petersburg have applied for a reduction of pollution charges by an amount of funds spent on environmental protection (Sokornova, 1995)[71]. The explanation is probably a psychological one — the defense industry, which for many years operated solely on governmental orders, outside of the sphere of market relations, just cannot get accustomed to make the necessary cost-benefit calculations. By comparison, the newly-emerged private companies have rapidly learned to make good use of these privileges, by establishing e.g. small subsidiary businesses which are exempted from the profit tax paid to local budgets for two years, provided that they invest (even if on paper only!) in environmental protection (Sorokin, 1995).

Still, despite the number of deficiencies, the application of tax incentives described above, together with the system of pollution charges, had a discernible stimulating effect on environmental investments in St. Petersburg and has positively affected the behavior of a key target group — industrial polluters. Several industrial WWTPs have been completed in 1994 in the St. Petersburg/Leningrad area, including the largest one at *Kirovskiy Zavod* (with expenditures totaling $630,000) and several WWTPs at pulp and paper mills at the total investment cost of about $700,000 (HELCOM PITF 1995b). As a result, after remaining at almost unchanging level for about ten years, in 1994 the share of environmental investments in St. Petersburg in the total volume of investments has increased to about 7 per cent, compared to the country average of 3.9 per cent and 2 per cent in the Leningrad province (Sorokin, 1995).

3.2.2. Courts

The role of courts in the implementation process has also been minimal: in fact, since 1994, arbitration courts in St. Petersburg quite often refused to accept environmental claims, one of the reasons being that they are over-burdened with other, more important, cases. Another reason is that the whole process of covering the environmental damages and paying fines became almost meaningless in a highly inflationary situation: in 1994, courts in St. Petersburg were recovering damages on suits filed in 1989, without any adjustment for inflation (which has reduced the real value of payments by a factor of at least 2000) (Kulibaba,

[71] The Frunzenski district authorities in St. Petersburg have even ordered all local enterprises to transfer 30 per cent of their tax on profit for the construction of municipal waste water collectors (Sorokin, 1995).

1995). And even if damages are assessed promptly by court action, they, as a rule, cannot be recovered[72]: most enterprises are officially insolvent (in practice, however, many of them operate through numerous subsidiary companies which bring profit, but cannot be held responsible for environmental violations).

The size of administrative fines prescribed by the current law on environmental protection of 1992 (which is under revision at the time of writing) for enterprises and organizations is laughable, ranging from 50 to 500 thousand rubles (roughly $10 to $100) per violation; obviously, fines like these can hardly be even felt by any company. Moreover, recovering administrative fines from legal persons is the task which is close to impossible. These fines are generally paid almost on a voluntary basis, since no court would accept claims to this end made by a local environmental protection committee. On the other hand, a polluter, at least theoretically, can appeal against a committee's decision in an arbitration court, and the court would consider his claim. Thus, the two sides are clearly unequal from a legal point of view (Fomin, 1995). Not surprisingly, fines for violation of the emission limits have little effect.[73]

In addition to fining the enterprises, courts can fine officials responsible for the violation (from three to twenty months' minimal salary), as well as private persons violating the emission limits (from one to ten months' minimal salary). The latter fines have been reported to have far greater effect, but are not believed to have any (or at best very little) effect when it comes to reduction of load from major polluters, since the size of fines (currently, from about $13 to $260) is still insignificant compared to the cost of implementation measures to meet the emission standards (BSEP, 1994, Vol. 2: 7).

Overall, even regardless of an obvious deficiency of a legal system for environmental protection in the period of transition[74] and the inadequacy of sanctions established by law, Russia finds itself in a very specific situation: a growing number of environmental offenses is accompanied by an atrophy and imbalance of the state control system and a slackening of court and legal reaction. Latent, unregistered environmental crime approaches, by some estimates,

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[72] Overall, in Russia in the course of 1994 general courts have assessed environmental damage inflicted on water resources at 360.5 billion rubles; at the same time, fines recovered from guilty amounted to only 1.4 billion rubles, while the sum of damage recovered constituted 12.8 billion (i.e., taken together, they covered less than 4 per cent of the total damage). Arbitration courts have sued firms for violations of environmental legislation for a total sum of 120 billion rubles, but managed to recover only 27.2 billion (23 per cent) (Gosudarstvennyi doklad 1995, *ZM* 15/96: 10-11).

[73] Sanctions envisaged by the still functioning Criminal Code (adopted in 1960!) for pollution of water basins are even more obsolete. In fact, the above mentioned fines established by the 1992 law on the protection of natural environment are much more stringent compared to Criminal Code penalties (Shirokov, 1994). Not surprisingly, criminal law is almost never applied to environmental offenses: 90 per cent of these are punished by administrative means (Sukharev, 1996). However, the new Criminal Code, entering into force on January 1, 1987, envisages tough sanctions for environmental crime if the latter has caused damage to human health or animals' death: fines up to 500 minimal wages (currently, over $6,000) or imprisonment up to 3 years.

[74] The 1994 Federal Report on the state of the environment concluded that "the legislative process in the field of environmental protection and regulation of the use of natural resources develops without any system...Today in the country hardly anybody knows exactly what federal laws and other normative acts of the federal level are required, and what laws are needed for the subjects of Federation and local self-government bodies". The laws themselves "contain too many provisions which are declaratory, lack addressees and are devoid of any regulatory legal significance" (Gosudarstvennyi doklad, 1995, No. 7/96: 8).

over 90 per cent of the total number of environmental offences, since most efforts are spent on countering violent and economic crime. The number of criminal lawsuits for most serious environmental offenses (especially air and water pollution) has decreased by 50-70 per cent compared to 1987 (see Zhevlakov, 1996; Sukharev, 1996). Every year, procurator's inspections reveal over 15,000 environmental offenses all over the country; while only about 5,000 persons get convicted (Timashova, 1996). Environmental offenses are still regarded as "insignificant", presenting little social danger, while the Law on responsibility for environmental offenses is still in the early stages of drafting. Such a "tolerance" stimulates negligence and irresponsibility among managers and entrepreneurs, reproducing a vicious circle of environmental impunity.

3.2.3. Environmental NGOs and public participation

Public environmental movements acquired a far greater importance in the former **Baltic republics** than in Russia itself because of a unique linkage that has developed there between environmental advocates and national independence movements in late 1980s. What began as local level environmentalist actions expanded to become ecologically grounded calls for national independence[75]. Following Gorbachev's shift to emphasize environmental issues in the wake of the Chernobyl accident, nascent Baltic NGOs concerned with the environment began to view these issues in the context of local control over national resources (Canfield, 1993). In various international fora, the Baltic Green organizations attempted to focus attention on the role played by the Soviet system in the degradation of natural resources. Often, actions were strongly oriented towards the Soviet Army and its threats to the environment, notably in Estonia and Lithuania (Eckerberg 1994: 468). A marriage of environmental and nationalist interests achieved in each of the Baltic states at the time of independence, in fact provided much of the reserves of mass support for the successful independence drives (Canfield, 1993)[76].

Within Europe, the Baltic states tend to associate themselves with the Nordic countries that lead Europe in environmental protection initiatives. Public participation there has enjoyed a strong tradition as an important component of environmental protection — in fact, Scandinavia is unparalleled in its public participation tradition. As one would expect, therefore, the Baltics are among the most active FSU countries in public participation initiatives, although such initiatives are still in the early stages (Stec, 1995).

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[75] The so-called "singing revolution" in Estonia began in 1988, with public groups protesting against plans to exploit phosphorus mines on the north-eastern coast of the country. The mining was stopped in 1991 due to the public opinion pressure (UNCED/Estonia, 1992: 15; Merisaar, 1995). The Latvian independence movement was born out of the Environmental Protection Club (VAK), which organized the first anti-government demonstrations in Latvia in 1987-88 to protest against the proposed Daugavpils hydropower station and the construction of a subway in Riga (Zilgalvis, 1992). In Lithuania, in late 1980s green organizations succeeded in gathering 1.5 million signatures on a petition to halt expansion of the Ignalina nuclear power plant, and successfully halted drilling for oil in the Neringa national park and in the Baltic Sea (Stec, 1995).

[76] Why the environmental movement became such an important force for democracy may be explained by its firm roots in the traditional culture. Feelings for nature are deeply embedded in the national heritage; in all of the Baltic countries, environmental consciousness is therefore connected to the preservation of the natural and cultural heritage (Eckerberg 1994: 468). Two other factors also contributed to the growth of the new environmental movement. First, the Baltic people disapproved of Moscow being the center for decision-making, which affected the management of industry and natural resources. Secondly, there was a growing recognition of the impacts of environmental pollution on public health (Wolfson, 1992).

A wide variety of environmental NGOs (ENGOs) has been formed in the Baltic states — in Lithuania alone the number of national ENGOs exceeds 30, in addition to numerous local organizations. The majority of national and many of the local NGOs cooperate with foreign and international ENGOs, which helps to raise the standards of domestic organizations, increasing their professionalism, sophistication and influence. Some national NGOs are members of different international networks and international NGOs — Coalition Clean Baltic, Friends of the Earth, etc. All of these ENGOs, however, face similar difficulties with financing (especially from domestic sources), with development of membership, and decreasing popularity (Vainius, 1995; Stec, 1995). Funding for public participation and NGO activities mainly comes from foreign NGOs, institutions and foundations, including PHARE programs, rather than from national and local funds (Blumberga and Ulme, 1995).[77] Since the struggle for independence, when environmental protection actions were a major part of a broader political movement, cooperation between ENGOs became relatively weaker, with few regular forums and joint actions organized nowadays (a notable exception being the open annual meeting of the Estonian Green Movement).

In 1990, green parties were founded in all three Baltic states from members of the environmental movement. Although they had only a few hundred formal members in each country, they still had a comparatively strong influence through their supporters within the parliamentary commissions and good relations with the media. Following independence, Green Party deputies were elected into all three countries' first parliaments.

Because they were formed as a protest against communism, the green parties in the Baltic states tend to be more "right-wing" and nationalistic compared to their counterparts in the West. They are more concerned with addressing their own national environmental problems rather than global environmental issues, and hope that market mechanisms will be able to solve these problems. Also, the greens have sought to keep out of political controversies other than those related to the environment, in order to avoid a further split. This has not been very successful, however. In 1992-1993 parliamentary elections, no green candidates were elected to parliaments in either country, and membership figures are declining as the staggering economic crisis puts increasing pressure on the political problems other than the environment (see Eckerberg, 1994).

In general, environmental movement in the Baltics still follows a somewhat traditional socialist-era path, with most ENGOs being nature clubs and the like, mainly concerned with traditional nature conservation activities, and to a lesser extent with environmental education. Only about one third of ENGOs, like Latvian VAK, aim at pollution prevention, development of public participation practices, raising public awareness of modern environmental protection problems, and tools to solve them. Areas of key importance, such as participation in the creation of environmental strategy, reviewing of environmental policy documents, drafting and

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[77] International institutions also try to distribute information related to financial support through the various organizations with whom they are working. The most successful organization in this respect is the US.-based ECOLOGIA, supported by the Moriah Fund, that offers training, funding and technical support to grassroots NGOs in FSU, providing them with small ($250 - $ 750) grants and publicizing its work through the independent environmental media. Another of ECOLOGIA's programs is a citizens' water quality monitoring network which provides NGOs with the equipment and training necessary to conduct accurate on-site tests for major water-bound pollutants, as well as radioactivity, in any river, stream or water body, thus hoping to put an end to a long tradition of government monopolization of environmental information (Vainius, 1995; *REC Bulletin*, 1995, Vol. 5 No. 2).

implementation of legislation, EIA, permitting, licensing process, international environmental programs are mainly not within the experience of grassroots NGO influence. A few business and consultancy NGOs have access to and are involved in these processes. Such areas as projects financed by IFIs, transboundary issues also require from interested NGOs developed professional skills, good access to information, constant and more professional work. Many NGOs do not have an understanding of and interest for those areas (see Vainius, 1995).

In all three Baltic countries, environmental protection schemes potentially provide good avenues for public participation and provision of information at virtually every stage of the environmental protection process (from the establishment of environmental policy to permitting and enforcement). Legal instruments for access to environmental information and public participation are provided in constitutions, laws on environmental protection and/or environmental impact assessment, and to some extent in other laws, such as regulating land use or nature conservation. These provisions, however, are so broad, that in many cases they are incapable of being translated into practice. The existing legislation provides few implementation mechanisms by which the public may influence individual decisions of governmental authorities, or take part in the establishment of environmental policy, laws or rules (Stec, 1995).

As an example, access to information and the right to know is one of the constitutional rights for public participation that is not adequately realized in practice: environmental laws do not clearly define when and how information should be made available to the public (Vainius, 1995; Blumberga and Ulme, 1995). Citizens can request information on environmental matters from the authorities, but procedures for such requests have not been established (Merisaar, 1995). Although the authorities are under a duty to inform the public about environmental problems, local observers claim that this does not routinely occur, and in fact access to environmental information depends greatly on the will of the authorities involved (Stec, 1995; Merisaar, 1995).

No laws or rules requiring public participation procedure in the drafting of laws or deliberations concerning them exist either at parliamentary or governmental level. Parliamentary commissions rarely hold public hearings on environmental laws and regulations; NGOs have been occasionally invited as experts in the field, but not representatives of the public (Blumberga and Ulme, 1995). Governments create paid, ad hoc committees to draft laws, and sometimes NGO representatives have been included, depending on personal contacts. There are few cases of public participation in legislation and rule making; hence the experience of the representatives of Estonian Green Movement (EGM) that participated in the drafting of the Order on EIA Procedure is considered to be very important. Estonian greens have also discussed the influence of joining the European Union on the environmental legislation with the Foreign Ministry (Merisaar, 1995).

At the local government level, however, public participation is more substantial. In Estonia, the public has sometimes been consulted or invited to the decision-making process, but only when that was demanded by the foreign finance source which provided loans for a particular project (Merisaar, 1995). In Lithuania, several forums for discussion of environmental projects have been organized by local authorities in different cities. MPs and locally elected officials meet with their electorate regularly, but in practice the public and NGOs are too passive to use this opportunity (Vainius, 1995).

Overall, regular cooperation or dialogue on environmental issues between ENGOs, the government and the parliament has not yet fully developed in any of the Baltic countries. Whatever cooperation does exist, it is based mainly on personal contacts. The public and NGOs are not involved in discussions at parliamentary and governmental level on international environmental programs and projects financed by international assistance programs or IFIs. In Lithuania, where relations between the green movement and the government have been reportedly the worst, the public has been repeatedly characterized as creating "problems" for the government (Stec, 1995; Vainius, 1995). This may be changing, however, as the Lithuanian Ministry of Environment has come forward with the initiative of signing "agreements of cooperation" with ENGOs, pledging to provide them with access to information, render them support in their activities and to examine their proposals and comments (*REC Bulletin*, 1995, Vol. 5, No. 3).

As regards access to courts, every citizen has a right to participate in court cases individually or through NGOs. However, in Estonia, for example, NGOs do not have the right to initiate a court case. In case of violations of environmental laws, only state inspectors or other state authorities have the right of standing, and only they can sue a person, provided that charges for causing the damage have not been paid (Merisaar, 1995). The courts are heavily overworked and legal proceedings take up to one year; thus, not only do people not want to become involved in proceedings, but the increase in the number of laws and regulations makes it too difficult for them to initiate proceedings without the help of a lawyer (Blumberga and Ulme, 1995). However, only limited legal assistance is available — lawyers in general are not familiar with existing environmental laws and not interested in environmental issues (Vainius, 1995). Overall, the courts have a low image in comparison to other state institutions, and citizens and NGOs do not generally view them as defenders of the average citizen — rather, they are perceived as instruments of the policy of the government and are rarely used by NGOs as a tool in public participation practice (Stec, 1995).

Thus, the use by the public of legal and other formal tools at its disposal has only slowly been gaining momentum. Many legal mechanisms remain unused or hardly used, perhaps in part because the public is more used to extra-legal approaches and has had success with them (Stec, 1995).[78] Therefore such non-formal tools as writing letters of protest, complaints and petitions, lobbying and demonstrations have been gaining in popularity. Some of them have been oriented towards the protection of the Baltic Sea and were quite successful. An example of such a successful public participation practice was the blockade of Sloka Paper Pulp factory built about 100 years ago, the greatest polluter of the Lielupe River and Yurmala City, when VAK demonstrators managed, after several daily blockades and with the support of the public opinion, to close down the factory until the reconstruction of the water treatment systems was completed (VAK, 1993). Also, an instance when public participation successfully influenced the decision-making process is the location of the oil terminal in Klaipeda in 1993, when the Lithuanian government finally called an "independent" commission to compile a comprehensive analysis of the case, including questions raised by NGOs. After a wide campaign in 1988-1990, using a variety of non-formal mechanisms and channels, NGOs (Atgaja) forced the central

[78] Also, public involvement in environmental protection activities related to business has become quite complicated due to the existing economic and social situation. In practice, it is simply risky to be involved in and to act against controversial businesses, because often they are related to Mafia groups, or sometimes business representatives defend their interests illegally — through corruption, threats or even violence (Vainius, 1995).

government and the parliament to confirm as areas of national importance the construction of biological water treatment plants in five main Lithuanian cities (Vainius, 1995).

An interesting initiative of Latvian VAK is the Green Tribunal. This project pursues a multi-faceted approach to environmental action, by providing information and gathering petitions on environmental matters, undertaking grassroots inspections of facilities, and organizing mass media campaigns until the operation of the specific source of pollution is stopped. On the legal side, the Green Tribunal also makes complaints to governmental officials in appropriate cases, and may seek recourse to the courts through the prosecutor or through a civil action (VAK, 1993; Stec, 1995).

Overall, the record of public participation in the Baltic states has been mixed. On the one hand, progressive legal mechanisms for public participation in environmental laws have been adopted; international cooperation with foreign organizations seems to be stable; ENGO representatives are more and more elected into local governments; relatively free access to media channels has been assured; discussions between NGOs and government on several important policy issues are under way; authorities are taking a more active role in trying to stimulate public involvement; several protests and petitions against environmentally harmful activities have brought positive results. At the same time, even where the procedures for public participation are in place, the public is exerting little pressure towards making use of the existing provisions; public participation in environmental law- and decision-making, as well as in the enforcement of laws, regulations and permits, is low; a lack of trust between the authorities and the public still exists; NGOs are not organized enough and their cooperation is insufficient, their interests being to great extent concerned with foreign contacts. In general, ongoing economic reforms, social and economic problems which are still dominating the agendas of politicians and ordinary citizens, have substantially decreased environmental awareness and the pressure for increased public participation on the part of the general public compared to the late 1980s. It is only a "small segment of society that continues to push for a more active role in decision-making" (Stec, 1995).

The latter trend is moreover evident in **Russia,** where economic reforms have proceeded with much greater pains, and economic hardships of the populace have been more pronounced. In the situation of a persistent economic crisis, core economic and social concerns other than the environment, like wages, prices and crime, understandably dominate the political agenda. While environmental issues consistently ranked very high — second or third — as public concerns in the years of perestroika, they have slipped to a 10th - 13th place in mid-1990s (Baiduzhiy, 1995). Letters concerning environmental problems account for less than 1 per cent of the total amount of letters received by the Russian government and the presidential administration (Gosudarstvennyi Doklad 1994, No. 4/1995: 12). Environmental issues are practically missing from the election programs of any of the major political parties or presidential candidates.

The degree of influence and the sheer numbers of environmental NGOs have also reduced dramatically compared to the late 1980s. In 1990, the number of environmental NGOs in the whole of the North-Western region of Russia has exceeded 130; by March 1992 it has reduced to 91, and currently most probably does not exceed 30 (Frolov 1995: 325). Apart from a decade-long fighting against constructing the dam in the Gulf of Finland, their Baltic protection-oriented activities are currently very few and not widely publicized. The Coalition Clean Baltic, currently the only collective ENGO member active at HELCOM, includes only one NGO from Russia ("Neva River Clearwater") which is involved in

environmental education of schoolchildren with the U.S. NGO's financial assistance. *Lenkomekologiya* has no cooperation with NGOs whatsoever (Sorokin, 1995), but is often subjected to a severe criticism from the St. Petersburg greens.

Another example is the Kaliningrad-based "Ecodefense!" group which has been active in opposing pulp and paper industry in the region (1991-1992), in collecting and publicizing information on WW2 chemical weapons dumped in the Baltic, and in collecting garbage from the coast and presenting it to the local authorities. It also regularly publishes a widely distributed electronic information bulletin "Ecodefense!".

In the absence of domestic sources of financial support, environmental NGOs in the Russian North-West, as well as in other parts of the country, tend to rely primarily on Western grants and financial assistance. Once this assistance stops for one reason or another, an NGO usually either drastically limits its activities, or dissolves completely.

Perhaps even more so than its Baltic neighbors, Russia has almost no experience with public involvement in any facet of governance, let alone environmental decision-making, and the very concept of public participation is virtually unknown neither among the general public nor among the public servants. Similar to the Baltic states, the existing legislation provides citizens and NGOs with the basic rights for public participation, including the rights to take part, to have access to information, to express opinions and to develop alternative solutions. The problem, however, lies with implementation: since legislation provides only general principles, but no direct mechanisms to encourage public involvement, the responsibilities of the government and the business sector with respect to access to information and moreover to decision-making are unclear (Ponizova, 1995).

One example is the development of the aforementioned (see para. 2.1) Russian National Environmental Action Plan. Started in the waning days of the Soviet Union, the Russian NEAP is a national environmental policy document that has been renamed and loosely modeled on the EAP that was adopted at Lucerne. There has been very little public involvement in the development of this document or its updated version. The government developed the first draft of the document in relative secrecy and then called public hearings where NGOs and the general public could comment. However, there was very limited access to the document itself, since only 500 copies were printed and distributed (mostly among the governmental agencies), so very few people beyond the government had the chance to read it before the hearings (Ponizova, 1995).

There are practically no instances of private citizens or NGOs using legal actions for upholding their right for a clean environment despite the fact that the 1992 Russian Law on the Protection of Natural Environment has granted citizens "the right to file lawsuits in court, demanding termination of environmentally harmful activities damaging the health and property of citizens, the economy, and the environment." One example, however, has set an historic precedent as Russia's first civil lawsuit concerning environmental pollution. The lawsuit filed in 1993 by the NGO "Russian Center for Environmental Law" from St. Petersburg with the assistance of the US. National Resources Defense Council, claimed that *Vodokanal*'s lack of adequate water and sewage treatment facilities violated key provisions of the Helsinki Convention. According to the Director of the Center for Environmental Law, *Vodokanal* was legally required to ensure adequate processing of 70 percent of the untreated water flowing through the Neva out into the Baltic Sea (Browning, 1993). Despite the fact that the case was

lost, it has signaled that Russian public, traditionally passive before government bureaucracy, has a growing awareness of such concepts as individual responsibility and "people power".

Overall, the relations between green NGOs and environmental protection authorities remain very strained, and the proper interaction between them is lacking. Despite the existing constitutional requirements, refusals to provide or to publish free, timely and authentic environmental information remain systematic. Measures are not taken to sanction violations of environmental legislation, public environmental control and public EIAs are hampered and interfered with by the authorities. NGOs have been continually demanding that citizens' constitutional rights to participate in the control of compliance with environmental laws were upheld, and the corresponding legal acts on public environmental control and public participation in EIAs were developed and adopted (Ecojuris, 1994).

Meanwhile, as has been recognized in the 1995 Report on the state of human rights in Russia, the attempts continue to take all EIAs under the control not only by the state, but, what is more dangerous, by the industry itself. Even at the All-Russian Congress on Nature Protection which was held in June 1995, delegations from many regions have been formed by regional administrations and consisted primarily of persons involved in distribution of environmental funds and having vested interests in environmentally dangerous enterprises (*LiveNet-Info*, Dec. 12, 1995, No. 209).

Concerning public participation, perhaps the most challenging task ahead for Russia, for the Baltics and for other FSU states is improving the transparency of decision-making and inculcating the practice of civil service in public authorities. The lack of transparency in decision-making can (and does) extend even within the government itself. The lack of openness contributes to a high level of corruption and arbitrary decisions - legacies of the last decade of Soviet power that stubbornly persist (Stec, 1995).

4. ASSESSMENT OF IMPLEMENTATION

4.1. PROBLEM SOLVING

With regard to environmental problem solving, a lack of reliable comparable data for any of the parts of the Baltic, and especially for its Russian coastal waters, prevents making any definite conclusions regarding the pollution dynamics. The available data are short-term, dating back only to 1988, which prevents careful examination of trends and making any definite conclusions regarding environmental quality. Still, the available information indicates that no clear-cut improvement trend can be observed in the state of the environment of the Neva River, the eastern Gulf of Finland, or the Kursiu Lagoon (Kaliningrad coast). Most recent environmental reports have classified the waters of the eastern Gulf of Finland as "dirty" or "very dirty" — one of the worst rating in the whole of the country (Danilov-Danilyan et al., 1994). In 1992, in the Neva estuary average phenol concentrations have increased up to 4-7 MPC, concentration of copper has reached 19 MPC, while those of lead and manganese have exceeded MPC (Gosudarstvennyi doklad 1993, No. 21).

A certain improvement, or at least a stabilization of hydrobiological situation has been observed in 1993, and the state of waters in the Neva estuary has been reclassified as "Class 3", or "moderately polluted". Still, phenols and copper compounds were detected along the whole course of the river, with concentrations frequently exceeding MPCs. Increasing nitrogen

concentrations have also been observed along the whole of Neva, although they have not usually exceeded MPC (Gosudarstvennyi doklad 1994, No. 24)[79]. The Federal Report on the state of the environment warned, however, that it was premature to make conclusions as regards the stabilization of pollution levels. Long-term systematic discharges of industrial and municipal wastes into Neva estuary have resulted in the accumulation of heavy metals (copper, mercury, lead, cadmium) in fish tissues at levels close to MPCs or exceeding the latter (Gosudarstvennyi doklad 1994, No. 27). The data for 1994 also indicate elevated average concentrations of nitrogen (1.8 MPC), phenols (3 MPC) and copper (4.4 MPC), while average concentrations of other heavy metals (manganese, lead and cadmium) have not exceeded the national standards (Gosudarstvennyi doklad 1995, No. 3/96).

At the 1994 anniversary HELCOM meeting, Russian Environment Minister V. Danilov-Danilyan has acknowledged that since 1988, the environmental situation and the impact of economic activities on the environment in the Russian part of the Baltic Sea have not changed significantly. Although a considerable reduction of pollution load has taken place with respect to BOD and oil products, discharges of phosphorus and nitrogen have remained practically at the same level; heavy metals content in the coastal waters also has not changed appreciably during the last years (HELCOM 1994: 76-77). In short, it is not possible to say that in the course of 1991-1994, when measures to implement the HELCOM recommendations have been undertaken in Russia, any definite improvement of the state of the Baltic coastal waters has occurred.

4.2. TARGET ATTAINMENT

Since until 1992 no information on any discharges has been published neither in the USSR nor in the Baltic republics, it is equally impossible to evaluate to what extent the Soviet Union has implemented its commitments, e.g. under the 1988 Ministerial declaration on the overall 50 per cent reduction[80] or the 1976 Council of Ministers' Resolution — to end all discharges of untreated municipal and industrial sewage by 1985. However, there are clear indications that neither of these goals have been reached by far. By mid-1980s, only 70% of the Soviet enterprises and cities affected have fulfilled their planned targets envisaged by the 1976 Council of Ministers' Resolution, although their completion was planned for the year of 1980[81] (Ministry of Ecology, 1992). Even more indicative of the grim implementation picture of both internationally agreed measures and national goals is the 1990 data on the state of municipal and industrial wastewater treatment in the city of Leningrad: about 60% of municipal

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[79] In the Kursiu Lagoon, some improvement of environmental quality has also been observed in the course of 1993. It was manifest in the increase of the dissolved oxygen, normalization of biogenic elements concentrations; however, phosphorus content in the waters of the lagoon has still exceeded MPC (Gosudarstvennyi doklad, 1994, No. 27).

[80] The 1988 Ministerial Declaration was regarded by the member countries mainly as a declaration of intent, and its significance seemed rather symbolic, since many of the exact pollution levels were not known. For the Soviet Union, moreover, its implementation reportedly did not prove to be so "difficult", because very little has been known on actual emission levels. Professor Harald Velner, a key player in the Soviet delegation to HELCOM at that time, pointed out that until 1988 scientists simply were not allowed to provide any data on sewage discharges, because the censorship agency Glavlit prohibited this (Van der Weij, 1993: 99).

[81] It should be noted that the fact that water treatment equipment has been constructed does not mean that this equipment actually operated. As is well known, many enterprises did not put this equipment into operation, since it just involved extra work and expenses, and control was generally lacking.

wastewaters were treated biologically, and the remaining part has been discharged into the Gulf of Finland without any treatment. Industries purified about 60% of their wastewaters chemically, only 1% biologically, 9% mechanically, and 30% were not treated before discharge (HELCOM 1993a: 67, 71). As a result, Russian municipal sources (primarily those of Leningrad) in 1990 accounted for 74% of the total BOD_7 (organic matter), 70% of nitrogen, and 85% of phosphorus load on the Gulf of Finland (HELCOM 1993a: 68).

Similar problems existed in other Baltic cities as well. Biological treatment, usually the second phase after mechanical treatment, has still not been finished for the city of Tallinn, while the construction started in 1968 and was scheduled to be completed by 1980 (Van der Weij, 1993: 108). By May 1991 only 5.6 percent of the total sewage of the city of Riga was treated. Riga had almost one million of inhabitants, almost one third of the total population of Latvia (NOPEF, 1991). According to a HELCOM report, in Lithuania 25 percent of sewage was not treated at all in 1990, of which some 90 percent came from the second largest city, Kaunas (NIB, 1992). In all these cases the Soviet Union obviously did not conform by the HELCOM recommendations. The implementation of internationally agreed measures was still very weak in late 1980s and in the early 1990s.

Table 6

Annual loads of major pollutants (tons) in St. Petersburg area controlled under Helsinki Convention and 1992 Russian-Finnish Agreement

Substance	1988	1989	1990	1991	1992	1993	1994
St. Petersburg							
Total BOD	53500	52500	51400	48800	42550	51796	48044
Suspended solids	61410	73430	63300	68000	66390	85369	68587
Surfactants	1373	1019	472	513	321	397	345
P total	3491	2237	3315	2755	3433	5427	2145
N total	19580	17723	20039	17814	16070	19653	18304
Oil	1740	1620	1690	1590	1280		
Phenols	0.20	0.09	0.41	0.53	3.48		
Copper	98.1	108.9	92	88.9	68.69	66	30
Leningrad Region							
Total BOD	24210	14170	9490	8404	6970	6771	5499
Suspended solids	23750	15820	12740	13095	11790		
Surfactants	173.6	174.8	154	150.4	126.3		
P total	1639.3	1319.6	1564.4	1494.9	1845.5	1228	810
N total	4440.3	4592.4	4821.2	5280.4	4871.6	3931	3176
Oil	180	150	180	200	160		
Phenols	4.6	4.1	4.8	5.3	4.8		
Copper	6.7	5.6	6.2	4.5	4.2		
SPB area, total							
Total BOD	77710	66670	60890	57204	49520	58567	53543
Suspended solids							
Surfactants							
P total	5130.3	3556.6	4879.4	4249.9	5278.5	6655	2955
N total	24020.3	22315.4	24860.2	23094.4	20941.6	23584	21480

Sources: Sorokin 1993a, Sorokin 1993b, HELCOM PITF 6/2/3.

In Russia under transition, as the available statistics for St. Petersburg area and all of priority hot spots indicate, a declining trend in most major pollutants' loads has been observed over the course of the past 4-5 years. By 1994, compared to 1990, loads of organic substances

(BOD total) in the whole of Leningrad province have declined by 12 per cent, those of nitrogen — by 14 per cent, the loads of phosphorus — by 39 per cent[82], and the loading of copper (in St. Petersburg proper) — by 67 per cent (see Table 6). The total volume of polluted waste waters has also declined, albeit insignificantly. The overall picture does not change substantially when reviewing HELCOM statistics (which include all the priority hot spots in Russia), except that BOD decline is larger, which clearly reflects differences in data reported. What is more important, however, is the fact that for all three polluting substances (i.e. BOD, phosphorus and nitrogen), the 1994 loads and even the planned ones (i.e predicted when the planned remedial works are implemented) still several times exceed the loads required to meet the HELCOM recommendations (see Annex 3, Fig. 1-3).

HELCOM data for Latvia and Lithuania (Annex 3, Fig. 4-6) indicate that, at least for BOD and especially nitrogen, the decrease of pollution loads from priority hot spots since 1991 has been even greater than in Russia: indeed, Lithuanian nitrogen loads in 1994 have already been lower than required by HELCOM standards. Although no strictly comparable data for Estonia are available, statistics of total water polution load in this country reveal the same, and even more ponounced, trend: since 1991, BOD loads here have declined almost eight-fold, phosphorus loads — 2.5 times, and nitrogen loads — 2.3 times (Ministry of the Environment of Estonia, 1995: 54).

It has been widely acknowledged that whatever implementation of the Helsinki Convention has occurred in Russia (see e.g. HELCOM 1994: 76-77) and in the Baltic states (see BSEP, 1994, Vol. 2) since 1991, it has predominantly been co-incidental, owing mainly to a drastic decrease of production levels both in industry (especially in military-related industries) and agriculture, the latter being particularly significant from the viewpoint of the markedly reduced application of fertilizers and pesticides.[83] HELCOM recommendations have already been met for the agricultural priority hot spots both in the Baltic republics and in Russia, but unfortunately only because of the sharp decline in agricultural activities (BSEP, 1994, Vol. 1: 5)[84]. The situation is different for the majority of the municipal and industrial hot spots, where already executed and planned abatement measures do not meet the HELCOM recommendations. However, improved wastewater treatment has markedly contributed to implementation in some cases, such as the completion of new WWTP in Riga in 1992 (BSEP, 1994, Vol. 2: 39) and the upgrading of Tallinn WWTP (BSEP, 1994, Vol. 2: 25)[85].

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[82] A sharp increase in the loads of phosphorus in 1993 compared to previous years was explained by a lack of funds for the import of floculants used for silt management at WWTPs (HELCOM PITF, 1995b).

[83] The production of chemical fertilizers has dropped in Latvia from 180,000 tons in 1990 to 31,000 tons in 1992, and Soviet imports of fertilizers and pesticides have drastically declined. The Estonian use of mineral fertilizers in 1992 has been cut in half since 1985 and the consumption of pesticides decreased to the amounts comparable to those found in many Western countries (Kaasik 1994). By 1994, the number of farm animals have almost halved compared to 1991 (BSEP, 1994, Vol. 1: 6).

[84] The scale of economic collapse has been tremendous: during 1989-1995, GDP in Estonia has declined by 28.7 per cent, Latvian GDP — by 46 per cent, GDP in Lithuania — by 58.1 per cent, and Russian GDP — by 50.1 per cent (data from World Bank Database).

[85] The extension of Tallinn WWTP in the period of 1986-92 has resulted in significant reductions of the BOD_5, nitrogen and phosphorus load to the Baltic Sea. Effluent data from the beginning of 1994 indicates that the HELCOM goals are already met as regards BOD_5 and phosphorus, while the goal of nitrogen reduction is almost met as well (BSEP, 1994, Vol. 3: 9).

One of the side effects of the current situation is that some of the pollution problems which were deemed most important in the process of development of JCP and choosing the priority hot spots are now obviously acquiring a much lesser priority. For instance, effluents from several pig farms in Leningrad Region which were chosen as priority hot spots have now reduced dramatically because the number of pigs has fallen by an order of magnitude — so that *Lenkomekologiya* even informally proposed to delete these from the list of hot spots (similarly to how it has been done with the nine pulp and paper mills in Finland and Sweden).[86] However, the situation in Russia is obviously totally different from the one in Scandinavia, where compliance has been caused by technological change (implementing HELCOM recommendations), and not by production decline.

As far as the St. Petersburg industries and municipal sources are concerned, many of them have practically achieved the 50 per cent reduction target required by 1988 Ministerial Meeting, without complying with virtually any of HELCOM recommendations — partly because of production decline, and partly because many industries do not operate at all for a good part of the year. It is impossible to estimate at the moment to what extent the decrease of pollution loads in St. Petersburg was due to industrial decline, and to what extent can it be attributed to pollution abatement efforts within the framework of JCP and bilateral Russian-Finnish agreements (increasing WWTP capacity and switching sewage floodgates to the St. Petersburg sewage network system). However, the latest data made public by the Russian Minister of the Environment V. Danilov-Danilyan indicate that while industrial production in the city has declined by about 50 percent over the course of the last five years, the reduction of water pollution loads during the same period was in the order of 10 per cent only (*TEN*, Apr. 16-30, 1996, Vol. 2, No. 8). Thus, even allowing for a degree of generalization, it can be safely assumed that water pollution loads have been declining at a much slower rate compared to industrial production, and if it were not for a tremendous production decline, pollution levels during the same period would have most probably increased rather than fallen.

It would be unfair to say, however, that no real progress has been achieved in the implementation of Helsinki committments in Russia. In St. Petersburg, reportedly, the untreated water discharges today account for about only 20% of the total as compared to 40% in 1990. This has been achieved primarily through switching the large part of sewage floodgates (about 40 per cent of the total of 490) to the centralized St. Petersburg sewage network, and the completion of the second phase of Northern WWTP with the efficient capacity of 650 cubic meters daily, financed from the federal budget (Kulibaba, 1995). It can be assumed with high probability that without the need to implement international commitments these investments would not have occurred, or would have been of a substantially lesser scale.

Still, the progress in overall Russian implementation pattern would depend, apart from St. Petersburg, upon the situation in Kaliningrad, which for a number of reasons in the nearest future can become a much "hotter" hot spot compared to St. Petersburg. First, WWTP in Kaliningrad, apart from a primitive mechanical treatment, are virtually non-existent. The beginning of construction of Kaliningrad combined water treatment facilities, which are now completed by about 50 per cent, dates back to 1976; by 1994, none of the 45 facilities under construction have been put into operation, and no investments have been planned either. The

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[86] See footnote 14.

River Pregola has the worst water quality parameters in the whole of the Baltic catchment basin. Second, this is a comparatively rapidly and aggressively developing "special economic zone" with two operating pulp and paper mills (supplying 48 per cent of the total pollution load) and the largest port at the Russian Baltic coast, currently being expanded. Furthermore, the region has an intensive agriculture on low fertile polder lands which for natural reasons are lacking geochemical barriers for pollution, like forests. All these factors make the attainment of HELCOM requirements in Kaliningrad highly questionable in the foreseeable future (Kulibaba, 1995).

The newly independent Baltic states, especially Estonia and Latvia, seem to have fared slightly better compared to Russia, due partly to a better economic situation (and hence better mobilization of domestic resources) and partly to a bigger share of external financing received. As was mentioned above, both in Latvia and Estonia pollution loads have decreased significantly since 1991 due partly to the introduction of the new WWTP in Riga completed in 1992 and the implementation of the first phase of the upgrading of Tallinn WWTP, and partly to reduced industrial and agricultural output. In Lithuania, despite the allocation of about 5% of the 1994 state budget expenditures for the expansion of water treatment facilities, comparatively little progress in wastewater treatment has been achieved. In all three countries, however, plans for concrete measures to reduce pollution loads at virtually all municipal priority hot spots are at an advanced stage or under implementation. Consequently, a significant reduction of the pollution load can be expected following implementation of these plans: BOD_5 is expected to be reduced by about 75 per cent, while nitrogen and phosphorus loads — by approximately 40 and 60 per cent respectively (BSEP, 1994, Vol. 1: 6).

CONCLUSIONS

The Baltic Sea environmental protection regime has started by adopting the "technical-scientific" strategy which had three major tasks: research and information, formulation of principles for emission limitations, and specification of rules and procedures. In the bipolar security system which then existed in Europe, this strategy functioned well in the sense that cooperation was primarily technical and uncontroversial to the member states' security concerns. In fact, in the 1980s participation in the regime was more important for the Soviet Union than actually achieving environmental goals, moreover that the latter have been formulated rather loosely. At that period, a decisive role in determining the Soviet approach towards Baltic environmental cooperation has been played by security concerns, which generally overruled environmental interests in the hierarchy of Soviet foreign policy goals. This approach explained many of the drawbacks of the 1974 Convention, and, most importantly, the lack of any binding obligations concerning pollution from land-based sources. Consequently, major Soviet implementation efforts were focused on the control of pollution from ships, while the so-called "security interests" has been often used as a pretext to classify, and hence to conceal from the public, any environmental data, in order to cover the inadequacy (or inexistence) of domestic pollution abatement efforts.

Massive political changes occurring in Europe and especially in the Soviet Union, reconsideration of its national interests and foreign and security policies, increased openness and access to environmental data not only changed the overall Soviet approach to the regime, but have opened up totally new conditions for cooperation by providing a context for East-West funding and technology transfer. A new "program strategy" of Baltic cooperation has largely replaced the previous one, reflected primarily in the development and adoption of JCP,

with the aim "to restore the Baltic Sea to a sound ecological balance". Based on a joint implementation principle, the JCP has adopted an approach of using environmental investments where they can produce maximum environmental efficiency with minimal costs, namely in the countries of Central and Eastern Europe.

The central characteristics of JCP were a strong economic component, linkage of environmental cooperation to economic reforms, the emphasis on long-term planning and high-level political involvement. In addition to enlarged geographical scope, the number of actors involved has also increased dramatically with the inclusion of new member countries, international financial institutions, environmental NGOs, local-level authorities, and private businesses. The adoption of JCP has signaled a dramatic departure, in fact a regime change, from the form of cooperation characteristic of the 1980s.

In spite of the increased possibilities for cooperation and a perceived need to demonstrate compliance with international commitments, the priority of Baltic environmental issues in the overall Soviet (and later Russian) foreign environmental policy in the early 1990s has noticeably decreased, particularly with the Baltic republics acquiring independence and Russia losing much of its Baltic facade. For the newly independent Baltic states, however, HELCOM activities played an important role in the process of their international recognition, providing them with some of their first possibilities to participate in international fora as independent entities.

Already in the waning years of the USSR, the availability of *domestic resources* and the ability to mobilize them became the critical factors limiting the Soviet, and later Russian, efforts towards the implementation of the Baltic pollution controls. Staggering economic crisis has prevented the allocation of any funds for this purpose from the federal budget until 1993, and enterprises had to rely primarily on their own very limited funds for financing capital investments, including the environmental ones. Periodic allocations from local budgets did not significantly alter the general picture. Municipal water and sewerage works still have to rely, at least partially, on state subsidies to supplement user fees. Several national plans and programs adopted, following a tradition prevailing during the communist period, at best represented merely un-coordinated listings of investment needs for a number of specific projects, with specification of priorities and funding sources totally missing.

Despite the fact that economic incentives to implement environmental policy (pollution charges and taxes) were introduced both in Russia and in the Baltic states, the effectiveness of this system remained questionable as long as the tax rates, despite their periodic adjustments, were lagging behind the inflation rate. In addition, earmarked resources from the environmental funds have been widely used at local levels for purposes other than environmental protection. As a result, pollution charges, accounting in Russia for just 0.1% of its consolidated federal budget revenues, have been too low to play an important role in stimulating rational environmental management. Some effects, however, have been noticeable: at least the polluting enterprises, even the defense industry, have to take environmental standards into account when formulating production policies.

In view of a huge imbalance existing between the investments required for the implementation of HELCOM recommendations and the already incurred ones (ECU 30M vs. ECU 1,600M for Russia and ECU 11M vs. ECU 335M for the Baltic states), the need for very significant *resource transfers* is paramount for JCP implementation. However, in spite of a high-level political confirmation of the preparedness to support the JCP financially, little

external financing has actually taken place until about 1994. Many investment proposals have been developed, but few have led to investments. Whatever foreign funding has been provided, it has been primarily oriented towards technical assistance, while the role of investment projects tended to be minimal. Moreover, Russia received a significantly smaller part of external environmental assistance compared to the one channeled to the Baltic states, the fact obviously influenced by a relative political stability of the latter.

More recently, however, the trend has started to change. With recipient countries demanding that studies should be followed by investments, the significance of investment projects has noticeably increased, and some of them have reached the implementation stage. There is also a distinct, albeit a slow tendency towards shifting the emphasis in environmental support from the Baltic states to Russia. The IFIs, above all the World Bank and the EBRD, took on the role of coordinators of several hot spot projects where investments are too large to be financed by one source only and where therefore several donors are engaged. However, as the IFIs provide loans at basically market rates rather than concessional funding, very few external commercial loans for JCP implementation have been accepted within the region, and especially in Russia, with the objective of creating as little foreign debt as possible. Thus possibilities to mobilize large-scale financial resources for JCP implementation on a multilateral basis had so far proved ambiguous. Apart from a few IFI-led projects, virtually the only practically available today, albeit an insufficient one, source of external funding for JCP hot spots in Russia and the Baltic states is still the financing through bilateral arrangements with Western nations. At the same time, the donor countries are still reluctant to commit themselves to large-scale projects in the situation of economic and political instability. In fact, for the time being only Finland (and to a limited extent Denmark) have provided tangible financial support to Russia for the implementation of the projects set up in the Program.

One of the major changes that transformation, both in Russia and the Baltic states, has brought into environmental regulatory policies was a *decentralization* of authority, a shift of implementation responsibilities to regional and local levels. However, in a country where "parades of sovereignties" and "wars of jurisdiction" are commonplace, and the division of rights and responsibilities between regulatory subjects, both vertically and horizontally, is far from clear, that could not but detrimentally affect the translation of international commitments into domestic actions. One of the most graphic examples is the situation in St. Petersburg region, where a single control and regulatory environmental agency, *Lenkomekologiya*, is servicing the two subjects of Federation, the city of St. Petersburg and the Leningrad province, who have been fiercely struggling for power, resources and funding between themselves. Coordination problems, a lack of a clear line of authority and of well-defined roles and responsibilities plague the local environmental bodies' performance in the Baltic states as well.

By introducing new patterns of private ownership of capital, transformation has also resulted in decentralization of addressees of public policy, radically changing their numbers and composition. As the current case study demonstrates, privatization has affected implementation in at least two ways: first, by preventing the acquisition by the newly-emerged smaller specialized companies of costly and capital-intensive environmental infrastructure, like WWTPs (and sometimes even the ability to use it), and second, by dramatically increasing the number of relevant actors, which, besides other effects, substantially complicated the exercising of control and enforcement functions by environmental authorities. The latter problem is exacerbated by a lack of resources and legislative basis for the control of a large numbers of small actors.

A critical role in poor enforcement of environmental regulations has been played by legal and court action, or rather by its almost total absence. Being over-burdened with other, more important, cases, arbitration courts in Russia have refused to accept claims for environmental damages. The process of recovering them and paying fines became almost meaningless in the inflationary situation. Even when sanctions for environmental offenses were applied, they were clearly inadequate to change the behavior of polluting enterprises. Inherited from the Soviet system was the attitude towards environmental offenses as "insignificant", presenting little social danger, the fact which stimulated negligence and irresponsibility among managers.

As distinct from the Nordic countries, little public pressure exists in Russia for the implementation of Baltic environmental controls. Russia has almost no experience with public involvement in any facet of governance, let alone environmental decision-making, and the very concept of public participation is virtually unknown neither among the general public nor public servants. The influence and the numbers of green NGOs have reduced dramatically compared to the late 1980s; the relations between them and environmental authorities remain very strained, and the proper interaction between them is lacking. Even in the Baltic states, where environmental movements are far more important than in Russia because of a unique linkage that has developed there between environmental advocates and national independence movements in late 1980s, public participation in environmental law- and decision-making is practically missing, NGOs are not organized enough, while social and economic problems have substantially decreased environmental awareness and the pressure for increased public participation on the part of the general public.

Overall, the impact of state regulatory policies upon the behavior of target groups and domestic implementation has been mixed. While a number of tax and other incentives for environmental investments have been developed by federal and especially local authorities, they have rarely been used by state-owned, especially defense, enterprises; on the other hand, the newly-emerged private companies made use of tax privileges without actually making environmental investments. Application of pollution charges, paid directly from profit, has had, at least in some important cases, a more stimulating effect. By mid 1990s, the proportion of environmental investments in St. Petersburg, after remaining practically unchanged for about ten years, has grown considerably compared to the country average and even the Leningrad province.

That, however, has not yet been translated into implementation of Helsinki commitments. Despite a declining trend in most major pollutants' loads observed over the course of the past 4-5 years in St. Petersburg area, compliance with obligations made at the 1988 Ministerial Conference has been predominantly co-incidental, owing mainly to a drastic decrease of production levels both in industry and agriculture. Many of St. Petersburg industries and municipal sources have practically achieved the 50 per cent pollution load reduction target without complying with virtually any of HELCOM recommendations. While it is impossible to estimate at the moment to what extent the decrease of pollution loads in St. Petersburg was due to industrial decline, and to what extent can it be attributed to pollution abatement efforts within the framework of JCP, it is clear that pollution loads have been declining at a much slower rate compared to industrial production, and if it were not for a tremendous economic collapse, pollution levels during the first half of the 1990s would have most probably increased rather than fallen.

ABBREVIATIONS AND ACRONYMS

EBRD	European Bank for Reconstruction and Development
ECAT	Environmental Center for Administration and Technology
ECB	*Environmental Cooperation Bulletin* (electronic bulletin published by ISAR)
ECE	Economic Commission for Europe (UN)
ECU	European Currency Unit
EIA	Environmental Impact Assessment
EIB	European Investment Bank (EU)
ENGO	Environmental Non-Governmental Organization
GEF	Global Environmental Facility
HELCOM	Helsinki Commission (Baltic Marine Environment Protection Commission)
IBRD	International Bank for Reconstruction and Development (the World Bank)
IFI	International Financing Institutions
NEFCO	Nordic Environment Finance Corporation
NGO	Non-Governmental Organization
NIB	Nordic Investment Bank
PHARE	Poland and Hungary Assistance to the Reconstruction of the Economy (EU)
PITF	Programme Implementation Task Force (HELCOM)
REC	Regional Environmental Center for Central and Eastern Europe
TACIS	Technical Assistance to the Commonwealth of Independent States (EU)
TEN	*Transboundary and Environmental News* (electronic bulletin published in St. Petersburg)
WWTP	Waste water treatment plant
ZM	*Zelionyi Mir* (Russian environmental weekly, Moscow)

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ANNEX 1

Major HELCOM recommendations concerning land-based sources of pollution

No.	Year	Subject	Measures to be taken	Reporting requirements
3/2	1982	Elimination of discharges of DDT	Use and production of DDT and its derivatives to be abandoned, they should not be marketed in the Baltic Sea states, transportation and storage with caution. Monitoring of DDT in sediments and organisms.	
5/1	1984	Limitation of oil in stormwater systems	Oily process, cooling and other waters from plants, service stations, workshops etc. need effective pollution control measures before connected to a stormwater system. Areas already connected to be investigated and appropriate measures to be taken according to the Recommendation.	
6/1	1985	Elimination of the use of PCBs and PCTs	PCBs and PCTs not to be produced from 1987; articles containing these substances not to be marketed since 1987. Exceptions can be granted for research, development and analytical purposes.	In 1985 and thereafter every 3 years
6/2	1985	Restriction of oil discharges from oil refineries	Provisions for new and existing oil refineries concerning cooling waters, collection of oily stormwaters and effective treatment. For new refineries oil content of the effluent should not exceed 5 mg/l (monthly average) and total discharge - more than 3 grams per ton of crude oil, processed. For existing refineries, same criteria are applied as from 1990.	Every 5 years
6/3	1985	Mercury from chloralkali industry	Best technical means to be used in industrial plants constructed after 1986; requirements for existing industrial plants in operation.	In 1986 and every 3 years
6/6	1985	Cadmium from land-based sources	Limitation of the use of cadmium in electroplating, pigments, stablizers. Development of methods to reduce cadmium content in phosphatic fertilizers and discharges from fertilizer production.	In 1986 and thereafter every 3 years
7/2	1986	Discharges from agriculture	Farming practices with regard to storage facilities, cultivation, animal husbandry, establishment of water protection zones and household and farm waste waters. Improvement of knowledge on agricultural practices and environmental problems as proposed. Information exchange.	In 1988
7/3	1986	Development of sewerage systems	Infiltration and exfiltration to be minimized in sewers, net infiltration not to exceed 100% of the dry weather flow (yearly average); separated sewerage systems recommended in the future.	In 1987 and thereafter every 5 years
8/2	1987	Pollution by pesticides from agriculture	Recommendations on safe use of pesticides, e.g. preventing pesticides run-off to water bodies, establishment of protection zones, use of aircraft, handling and storage of pesticides, washing of spraying equipment, disposal of containers etc. Alternative methods to control agricultural pests and weeds are proposed.	In 1988
9/2	1988	Effective methods in urban wastewater treatment	Urban wastewater is to be collected and treated before discharging into water bodies. Domestic sewage collected in a central sewerage system and treated in WWTPs loaded with more than 10,000 person equivalents should be treated by biological methods or equivalent, latest in 1998. Treatment should result (as yearly average) in at least 90% reduction of BOD_5, its maximum concentration in the effluent of 15 mg/l and total phosphorus value below 1.5 mg P/l.	In 1989 and thereafter every 5 years

9/3	1988	Nutrient discharges from agriculture	Efficient use of nutrients in farming practices. For environmental aspects approval is required for farms with livestock production above given size. Cultivated areas are to be kept green in autumn and winter where possible. Programmes to be developed to control and monitor the effects of the measures.	In 1989 and thereafter every 5 years
9/4	1988	Lead from combustion of leaded gasoline	Lead content in gasoline used as fuel for automobiles to be reduced considerably step by step and lead-free gasoline made available as soon as possible.	In 1989 and thereafter every 5 years
9/8	1988	Measures to reduce discharges from industry	Application of BAT recommended for industrial discharges where main pollution is due to nutrients or organic material; industrial discharges containing persistent organic substances or toxic metals are to be reduced and measures be evaluated for BAT.	In 1989 and thereafter every 5 years
11/2	1990	Management of stormwater	Prevention of deterioration of stormwater quality by taking measures at source of possible pollution. Measures recommended for treatment of stormwater collected from high traffic and heavily polluted industrial areas. The amount of stormwaters in combined sewer systems to be minimized. In areas with combined sewer systems, overflows should be limited to happen not more than 10 times a year.	
11/3	1990	Sulfite pulp and paper industry	Measures are recommended not to exceed values of listed determinants in kg/t ADP (Air Dry Pulp) from 1 January 1995, and re-evaluation of the values for further consideration. Methods for analyzing total nitrogen and maximum loads to be agreed upon within three years.	In 1997 and thereafter every 3 years
11/4	1990	Kraft pulp and paper industry	To reduce the load of chlorinated organic substances (AOX) so that not to exceed recommended values from 1 January 1995 (annual mean values of 2 kg of AOX per ton of air dry bleached softwood pulp and 1 kg of AOX per ton of air dry bleached hardwood pulp, or 1.4 kg of AOX per ton of the country's total production of air dry bleached kraft pulp). Oxygen consumption not to exceed 65 kg per metric ton of air dry bleached kraft pulp and phosphorus not to exceed 60 g per ton of air dry kraft pulp. Target year 2000 for mills in operation before 1 January 1989, for others immediately.	In 1997 and thereafter every 3 years
11/5	1990	Discharges from iron and steel industry	Total discharges from different types of processes not to exceed, after 1995, limit values given for SS, oil, zinc, lead, cyanide. Closed system required for at least 90% of process water and polluted cooling water. Re-evaluation of values in 1994.	In 1994 and thereafter every 3 years
11/7	1990	Air emissions from iron and steel industry	Dust emissions to be avoided or collected and filtered since 1 January 1995; fugitive emissions recommended to be avoided, types of filters and values for filtered gases are provided. Low emission coke cooling techniques to be used for new installations and for existing coke plants from 1995; emission of particulate matters in the combustion waste gas not to exceed 25 mg/m^3; waste gases to be captured and emission not to exceed 5 g per ton of coke. Total emissions to be monitored, measured or estimated and reported from 1992.	
13/10	1992	Phosphorus leaching and erosion from agriculture	Artificial fertilizers and animal manure should be applied according to the need of the crop. Proposals for implementation of this principle are given. Implementation in 5 years	In 1994 and thereafter every 3 years
13/11	1992	Farm waste discharges	Farm animal houses are to be designed in such a way as to minimize pollution of groundwater and surface waters. Storages to be constructed to safeguard against unintentional spillages. Effluents from preparation and storage of silage to be collected to storages for liquid manure. Containers for liquid manure and farm waste to be made of material not permeable for moisture. Implementation in 5 years.	In 1994 and thereafter every 3 years

13/12	1992	Managing freshwater ecosystems for retention of nutrients	Measures for improved retention of nutrients in freshwaters through programs for re-establishing wetlands and smaller lakes, plugging of drainage pipes in abandoned meadows, introduction of environmentally sound practices for weed mowing and maintenance of watercourses.	In 1994 and thereafter every 3 years
13/2	1992	Industrial connections and point sources other than households	Harm for municipal WWTPs caused by persistent, toxic or bioaccumulating substances must be avoided by pretreatment of such waste water using BAT; connections to be authorized and supervised.	In 1994 and thereafter every 3 years
13/5	1992	Principles for permits for wastewater discharges from industry	Procedures leading to issuance of permit and establishment of inspection and monitoring are recommended; data to be included in the application.	
13/7	1992	Ammonia volatilization from farm storages	Storage capacity must be sufficient, slurry storages are to be covered, ammonia volatilization from storages is to be prevented; programmes to be developed. Implementation in 5 years.	In 1994 and thereafter every 3 years
13/8	1992	Ammonia volatilization from field application of manure	Slurry applied on bare soil or to growing crops should be treated as recommended, urine to be applied using efficient equipment and solid manure is to be incorporated shortly after application. Implementation in 5 years.	In 1994 and thereafter every 3 years
13/9	1992	Nitrogen leaching from agricultural land	Application of mineral fertilizers and animal manure recommended according to the need of the crop. Utilization efficiency of animal manure is to be enhanced by measures recommended. Utilization efficiency of mineral fertilizers is to be promoted by integrated plant production. Green fields to cover 50% of the agricultural land, or the highest possible percentage with respect to climate and soil conditions. Implementation in 5 years.	In 1994 and thereafter every 3 years
14/2	1993	Discharges and emissions from production and formulation of pesticides	For plants producing or formulating more than 5 t/a of active substances, limit values and test advice are provided for waste waters discharged after treatment. Pretreatment of waste waters required if introduced to a joint biological WWTP. Dust emissions to atmosphere not to exceed mass concentrations of 5 mg/m^3 if the mass flow is 25 g/h or more. Measures are to be implemented by 1994 for new plants and by 1997 for existing plants.	In 1997 and thereafter every 3 years
14/3	1993	Discharges and emissions from glass industry	BAT to be applied and processes and techniques to be developed to collect and treat emissions; hazardous substances to be substituted. Using of filters as agreed; limit values for dust concentrations, lead , arsenic and NOx in air emissions are provided. Recirculation of process waters required and limit values of Pb, As, Sn and F are given for discharges to water bodies or to municipal WWTPs. Measures to be implemented by 1994 for new plants and by 1998 for existing plants.	In 1997 and thereafter every 3 years
14/4	1993	Ammonia volatilization from animal housing	Overall excretion of nitrogen by livestock is to be reduced by the use of high quality and well-composed fodder and advanced feeding systems, by developing feeding tables and systems (to be applied in 5 years). Emitting surfaces are to be reduced by removing the manure from the stables to an outside storage as quickly as possible. Standards to be set for drying of poultry manure as quickly as possible after excretion in housing systems (where it is feasible, within 5 years).	In 1997 and thereafter every 3 years
14/5	1993	Batteries containing heavy metals	Substitution by less hazardous batteries; recovery or safe disposal of used batteries. Legislation needed regulating labeling according to international standards and collection of used batteries. Safe disposal and legislation to be implemented in 1994.	In 1997 and thereafter every 3 years

16/10	1995	Discharges and emissions from production of textiles	Measures to reduce pollution load, including BAT, limit values for discharges into water bodies and municipal WWTPs, toxicity tests, limit values for emissions into the atmosphere and analytical methods. Implementation by 1998 for new plants and by 2000 for existing plants.	In 2000 and thereafter every 3 years
16/11	1995	Pesticides from agriculture, forestry and horticulture	Use of pesticides in agriculture, forestry and horticulture as recommended and agreed by FAO in 1985. Recommended actions include application technology, establishment of protection zones, handling and storage of pesticides, exchange of information, BEP, education, and development of alternative methods.	In 1997 and thereafter every 3 years
16/4	1995	Emissions into the atmosphere from pulp and paper industry	The emissions of NOx, as a yearly average for each Party's emissions from recovery boilers and lime kilns not to exceed the listed values agreed. Emissions of gaseous sulfuric compounds not to exceed 1.0 kg S/t of pulp produced for kraft pulp and 1.5 kg S/t for sulfite pulp. Emission limits to be re-evaluated in two years.	In 1997 and thereafter every 3 years
16/5	1995	Requirements for discharging of waste water from chemical industry	Requirements as agreed (related to volume of effluent, COD, AOX, heavy metals, toxicity of the effluent and analyzing methods) to be applied to chemical industries producing waste water discharged into waters or municipal sewerage systems. The requirements and limit values are to be implemented for new plants by 1996 and for existing plants by 2000. Reconsideration of the requirements in 1998, especially nutrients and TOC.	In 1997 and thereafter every 3 years
16/6	1995	Discharges and emissions from metal surface treatment	Measures as agreed to be taken to reduce the volume of waste water discharged from metal surface treatment, to control and minimize noxious substances in waste waters. The use of chlorinated solvents is to be avoided as far as possible, and if not possible, the agreed requirements are to be met. Re-evaluation of limit values in three years.	In 1997 and thereafter every 3 years
16/7	1995	Waste water management in the leather industry	Basic principles (BAT, water treatment, limit values for chromium, chemical oxygen demand and total nitrogen) to be applied to leather industry plants discharging into water bodies or municipal sewerage systems. The limit values are to be implemented for production units newly constructed or reconstructed by 1996, and for existing units by 2000. Re-examination of limit values in 1998.	In 1997 and thereafter every 3 years
16/8	1995	Emissions into atmosphere and discharges into water from incineration of household waste	Agreed actions of BEP and BAT to be applied in waste minimization, handling and incineration. The actions refer to waste minimization and recycling, dangerous materials, waste collection and separation, open-air incineration and waste incineration processes. Re-examination of the requirements and limit values in 1999.	In 2000 and thereafter every 3 years
16/9	1995	Nitrogen removal at municipal sewage water treatment plants	Municipal WWTPs located in areas sensitive to nitrogen should be equipped with nitrogen removal according to the agreed stipulations, where values for concentration or for percentage of reduction are applied. Results of assessments which have evaluated areas as being sensitive or non-sensitive should be reported every three years.	In 2000 and thereafter every 3 years

Source: HELCOM World Wide Web home page

ANNEX 2

Baltic Sea Environmental Action Programme: Status of Activities at and Preliminary Costs of Hot Spots in Russia and the Baltic States

HELCOM No./ Priority hot spots (X)	Site name	Aim	1991 HELCOM Estimated Investment Cost, Million ECU			Allocated/Reserved Resources, Million ECU			Incurred Investments, Million ECU*[a]	Planned Investments, Million ECU*			HELCOM Invest. (1994), mln. ECU*	Addit. Invest. (mln. ECU)*	Reasons for changing cost estimates*	Schedule/Comments/Status C - Already constructed*; P - Planned Investments*; F - Financing Sources
			Local	For.	Total	Local	For.	Total		Loc. %	For. %	Total				
	RUSSIA															
14	Syasstroi	To develop the capacity of existing treatment facilities at pulp & paper plant	16.50	17.52	34.02											1993-1997; technical assistance underway
15	Volkhov	Renovation of the existing WWTP at aluminium plant	0.75	2.07	2.82											1993-1997; no technical assistance
18/X	St. Petersburg	To connect municipal discharge sewers to WWTP; construction and renovation of collectors	116.8	32.2	149.0	96.7	26.6	123.3	25.0			145.0	540.0	395.0	The complexity of sewer connections	1993-1997 C: Approx. 50% of interceptors and sewer connections implemented. P: Feasibility study prepared by OTV, France (1994). F: Finland, Lenvodokanal, Federal Ecological Fund
19/X	St. Petersburg (Urban) (3)	Municipal WWTP	75.0	175.0	250.0				N.A.			47.8	560.0	512.2	N-removal not included in 1991	? C: Biological capacity at approx. 50% of needs; P: Feasibility study prepared by OTV (1994). F: International/local. French loan for sludge incineration.
• 20/X	St. Petersburg (Suburban)	Development of suburban municipal WWTP (biological treatment)	125.1	33.9	159.0				N.A.			2.0	110.0	108.0	Reason unknown	1993-1998 C: Biological capacity at approx. 70% of needs. P: Feasibility studies carried out by OTV (1991) and Krüger (1993). F: Federal and local govt., WB, Finland (details tbd)
21	St. Petersburg	Chemical and biological phosphorus removal at municipal WWTP	25.6	12.4	38.0		8.0	8.0								1993-1997
22	St. Petersburg	To decrease effluent heavy metal load of WWTP from metal plating industry	160.2	43.1	203.3	30.0	123.0	153.0								1992-2001 F; Local-City Administration, Federal Ecological Fund
• 23	St. Petersburg	Incineration, treatment and transportation of hazardous waste, upgrading the existing landfill	77.9	70.5	148.4							2.4[b]				1993-1997; technical assistance underway
• 24/X	St. Petersburg Region	Livestock farms water treatment action program; introduction of dry manure wastes farming technologies	56.3	37.0	93.3				N.A.			N.A.	60.0	60.0	Load reduction	1993-1997 C: Minor treatment facilities constructed. Regression in livestock farming. P: Feasibility study is being prepared by Plancenter and NIKA. F: Internat./Local. To be clarified.

49/X	Sovetsk	Construction of a unified WWTP for pulp and paper mill	1.0	2.5	3.5				N.A			7.7	20.0	12.3	Lower capacity of WWTP, lower unit prices due to higher local input	1993-1997 C: 60% of civil works for new biol. WWTP completed. P: Official plan: Compl. of oversized biol. WWTP. Assumption in present study: Compl. of mech. WWTP. **Feasibilty study required.** F: **No financing sources identified. Identification process not initiated.**
50/X	Neman	Construction of WWTP for a pulp and paper mill	1.5	3.2	4.7				N.A.			1.08	2.7	1.62	Lower capacity of WWTP, lower unit prices due to higher local input.	1993-1997 C: No civil works for new biol. WWTP completed. P: Official plan: Compl. of biol. WWTP. Assumption in present study: Compl. of mech. WWTP. **Feasibilty study required.** F: **No financing sources identified. Identification process not initiated.**
67/X	Kaliningrad	Renovation of municipal sewage system, finalizing construction of WWTP	30.0	20.0	50.0				N.A.			14.0[c]	35.0[c]	21.0[c]	Lower WWTP capacity, lower unit prices due to higher local input. Excl. renovation of paper mill in 1994.[c]	1993-1997 C: 70% of civil works for new biol. WWTP completed. P: Official plan: Compl. of oversized biol. WWTP. Assumption in present study: Compl. of mech. WWTP. **Feasibilty study required.** F: **No financing sources identified. Identification process not initiated.**[c]
68	Kaliningrad, Pulp & Paper No. 1	Renovation of industrial WWTP	0.5	1.0	1.5											1993-1997
69	Kaliningrad, Pulp & Paper No. 2 (4)	Renovation of industrial WWTP	30.0	152.0	182.0											1993-1997
70	Kaliningrad	To establish special industrial wastes handling site and incineration	7.5	5.0	12.5											1993-1997
71	Kaliningrad Oil Bunkering Station	Development of oily water treatment plant and techn. equip. of the oil terminal														1993-1997
72	Kaliningrad	Reduction of discharges from agricultural point sources, utilization of manure	35.0	5.0	40.0											1993-1997
	SUBTOTAL		759.7	612.4	1372.0	126.7	157.6	284.3	25.0			220.0	1327.7	1110.1		

Russia/Poland

73/X	Vistula Lagoon	Management Programme	15.0	5.0	20.0											F: EU-PHARE, WWF, details tbd

Estonia

25/X	Narva	Reduction of SO_2 and dust emissions of the oil shale power plant	839.3	232.1	1,071.4	0.58	2.30	2.88	3.0 (20% local)	-	-	-	95.0	95.0	Operational costs not included into 1994 costs	C: Significant decrease in energy production. Pilot project implemented, supported by Finland. P: Refurbishment feasibility study by IVO International (1994). F: MOE Finland, A.Ahlström, Eesti Energia Corp.
26	Kohtla Järve	Reconstruction of municipal WWTP	65.9	54.5	120.4	0.03	0.12	0.15								Phase I: 1992; Phase II: ?
27	Kehra	Reduction of pollution in pulp & paper industry	2.7	3.2	5.9											? No technical assistance
28/X	Tallinn	Municipal biological water treatment	75.8	17.8	93.6	18.6	29.3	47.9	N.A.	40	60	30.9	19.1	19.1	Load reduction	C: Biological treatment of major part of wastewater. P: Several studies carried out by EBRD, PHARE and Finland. F: EBRD loan, budget of Tallinn, Finland, EU-PHARE; financing plan prepared..
29	Tallinn	Reduction of pollution in pulp & paper industry	1.1	1.8	2.9											?
30	Gulf of Finland	Reduction of agricultural runoff and ammonia emissions	60.0	5.0	65.0		0.17	0.17								? F: Nordic Investment Bank

•	31	Haapsalu	First phase of improvements to Haapsalu water and wastewater systems	12.0	13.0	25.0	1.6	3.52	5.12								1995 - 1998 F: MOE, Municipality of Haapsalu (local); Sweden, Finland, WB (foreign)
•	32/X	Matsalu Bay	Actions to reduce municipal runoff, development of a management plan	25.0	5.0	30.0		1.44	1.44	N.A.			0.5	0.8	0.3	Different scope	1995 - 1998 C: Management plan for wetlands completed in 1994; P: Elaboration of a management plan for a catchment area; data and tools tbd. F: Swedish EPA (main), EU-LIFE, EU-PHARE, Finland, WB (foreign), MOE, government (local).
•	33/X	Pärnu	Reconstruction of municipal WWTP	4.0	14.0	18.0		0.02	0.02	0.4	30	70	1.19	3 64	2.46	Changed design load	1994 C: Biological plant completed in 1990. Sewers needed. P: Study funded by EBRD. Swedish and Finnish studies. F: Planned improvements to be mainly locally financed; EBRD potential source.
•	34	Paide	Reconstruction of municipal WWTP	2.6	1.5	4.1											?
•	35	Vohma Meat Combine	Reduction of industrial pollution	2.3	1 4	3.7											?
•		Gulf of Riga	Sustainable agriculture, focused on demonstration, education and information	94.0	11.0	105.0		0.3	0.3								1994-1997
		SUBTOTAL		1184.7	360.3	1545.0	20.81	37.17	57.98	3.4			32.59	118.54	116.86		
	Estonia/Latvia																
•	37/X	Gulf of Riga management	Realization of a management plan to ensure sustainable development (municipal)	15.0	5.0	20.0	0.01	0.09	0.10	N.A.			N.A.	N.A.			1990-2010 C: Reference is made to relevant priority hot spots. P: 15 potential projects set up. F: Council of Nordic Ministers, MOE Norway, PHARE/WWF, BITS (Sweden), local sources tbd.
	Latvia																
•	38/X	Sloka	Reduction of pollution load from pulp & paper mill	0.0	72.0	72.0		0.01	0.01							Not hot spot any longer	F:Sweden
•	39/X	Latvbiofarm (Olaine)	Reduction of water and air pollution from pharmaceutical industry	0.0	19.0	19.0				0			0	0.6	0.6	Regression in production	C: Biol. waste treatment. Air purification by scrubbers/ condensators P: No plans since future existence of enterprise is uncertain
•	40/X	Agriculture/ Livestock (non-point)	Introduction of management programmes to reduce agricultural non-point runoff	180.0	20.0	200.0	94.0	11.0	105.0	0			0	6.0	6.0	Regression in farming	1996-2000 C: Fertilizers application reduced by approx. 50% since 1989 due to production decrease. P: Pilot project for sustainable agricult. development based on 1993 Swedish study. F: Grants from MOE Sweden
•	42/X	Riga WWTP Phase II	Construction of second stage of WWTP with capacity 100,000 m^3/day	12.5	50.0	62.5	1.4		1.4	N.A.	100		15.0	100.0	85 0	More need for sewer rehabilitation (70% of total)	1993-1999 C: Biol. WWTP completed in 1992. Supplementary works needed. P: Swedish preparation study for WWTP upgrading in 1994. F: MOE Sweden, Min. of Public Economy, Switzerland.
•	43	VEF Plant (Riga)	Reduction of pollution from galvanic shops	tbd	tbd	tbd											? No technical assistance
•	44	RER Plant (Riga)	Reduction of pollution from galvanic shops	tbd	tbd	tbd											? No technical assistance
•	45	Riga	Reduction of pollution load and waste minimization in industry	tbd	tbd	tbd											? No technical assistance

•	46/X	Daugavpils	Construction of WWTP with biological treatment	7.8	31.0	38.8		0.3	0.3	0			0	30.0	30.0	Changed load	1996-2000 C: Mechanical WWTP without sludge processing. P: PHARE-funded feasibility study to be carried out in 1994-95. F: Financing possibilities to be evaluated.
•	48/X	Liepaja WWTP	Completion of the construction of the second stage of WWTP	10.0	15.0	25.0	4.24	12.56	16.80	0	30	70	9.0	35.9	26.9	More need for sewer rehabilitation	1995-1999 C: Biol. WWTP for approx. 75% of connected urban areas. P: Extension of WWTP, renewal of sewers etc. included in feasibility study (PHARE 1994). F: NEFCO, WB, EU-PHARE, WWF, Sweden, Finland, local sources.
		SUBTOTAL		210.3	207.0	417.3	99.64	23.87	123.51	0			24.0	172.5	148.5		

Lithuania

•	41/X	Siauliai WWTP	Construction of WWTP and sewerage system	15.0	10.0	25.0	2.0	0.18	2.18	2.0			11.25	19.125	7.875	Lower WWTP capacity, lower unit prices due to higher local input	1996-2000 C: 30% of civil works for new biol. WWTP completed. P: Completion of new WWTP. **Feasibility study required before funding.** F: PHARE, BITS, EIB & possibly WB. **No funding agreements finally identified.**
•	51/X	Kaunas WWTP	Construction of WWTP and sewerage system	50.0	35.0	85.0	11.0	26.0	37.0	6.0	69	31	35.0	58.0	23.0	Lower WWTP capacity, lower unit prices due to higher local input	1993-98 C: 50% of civil works for new for new mech. WWTP completed. Feasibility study completed. P: Completion of new mech./biol. WWTP with biol. nutrient removal. F: PHARE, BITS, EBRD and Stockholm Water Company.
	52	Amalg Azotaz	To construct station for trapping contaminated subterranean water and WWTP at fertilizer plant	0.0	35.0	35.0	0.02		0.02								1) 1993 2) ? F: Azotas Plant
•	53	Kedainiai	Reconstruction of municipal WWTP	3.6	2.4	6.0											?
	54	Kedainiai (industrial)	Modernization of crude oil combustion process	tbd	tbd	tbd											?
	55	Panevezys (municipal)	Reduction of pollution load to the Baltic Sea	3.6	2.4	6.0											?
	56	Panevezys (food industry)	Introduction of new technological schemes	tbd	tbd	tbd											?
•	57	Marijampole (municipal)	Reduction of pollution load	15.0	10.0	25.0											?
•	58	Alytus	Reconstruction of municipal WWTP	8.0	5.0	13.0	3.0		3.0								1991-1995 F: State budget
•	59/X	Vilnius/ Grikiskes	Construction of biological WWTP	24.0	21.0	45.0	28.4	8.6	37.0	2.0	26	74	14.1	19.7	5.6	Lower WWTP capacity, lower unit prices due to higher local input	1995-1999 C: 80% of civil work for extension to biol. WWTP completed. Feasibility study completed. P: Completion of biol. WWTP F: PHARE, Danish EPA, Danish soft loan
•	60/X	Agriculture/ Livestock	Demonstration programs to reduce non-point agricultural runoff	180.0	20.0	200.0				0			0	6.0	6.0	Regression in farming	? Application of fertilizers reduced by over 50%. F: Sweden, U.S. EPA, details tbd
	62	Mazeikiai	1) Reconstruction of oil refinery; 2) WWTP construction	tbd	tbd	tbd	0.42		0.42							No relevant data available	1993 1) Trade and development agency
•	63/X	Klaipeda	Completion of municipal WWTP construction	16.0	11.0	27.0	5.44	12.96	18.4	0.5	32	68	9.3	17.5	8.2	Lower WWTP capacity, lower unit prices due to higher local input	1995-1998 C: 60% of civil works for new biol. WWTP completed. Feasibility study completed. P: Completion of biol. WWTP. F: PHARE, BITS and WB.

•	64	Cardboard factory	Reduction of pollution load	11.0	19.0	30.0	0.28		0.28								?
•	65	Palanga	Construction of biological WWTP	tbd	tbd	tbd	1.2		1.2								1993-95 F: Lithuania State Budget
		SUBTOTAL		326.2	170.8	497.0	51.76	47.74	99.5	10.5			69.65	120.33	50.68		
	Lithuania/Russia																
•	66/X	Kursiu Lagoon	Development of a coastal management program	20.0	10.0	30.0		0.96	0.96	N.A.							1995-1998 F: EU-LIFE, EU-PHARE, WB, WWF, EUCC, Min. Env. Prot., local govt.
	Belarus																
	47	Daugava River basin (tbd)	Reduction of municipal pollution load	tbd	tbd	tbd											?
•	61	Grodno	Establishment of a control system for water supply and sewage	tbd	tbd	tbd	0.05	35.45	35.5								1992-2000 F: Possibly state budget, foreign investments
•	93	Brest	Reduction of municipal pollution load	20.0	11.0	31.0											?
	Ukraine																
•	94/X	Lvov	Reduction of municipal pollution load by 30%	133.0	81.0	214.0	4.0		4.0	0.9			56.0	151.0	95.0	Scaling down of original WWTP reconstruction plans	? C: Two mech./biol. WWTPs in bad need of maintenance P: No feasibility study, no fixed plans. Sludge is top priority + maintenance. F: Practically no local/national funds available
		Total (incomplete)		2,683.9	1,462.4	4,146.3	302.97	302.88	605.85	39.8			402.24	1890.1	1521.1		

• - Updated information received by February 12, 1995

N.A. - data not available

tbd - to be determined

* Only for priority Hot Spots, based on 1994 Hot Spot Review

[a] All incurred investments are 100% local, except where otherwise indicated

[b] Planned appropriations for 1995 from the Federal budget (HELCOM PITF 6/2/3, 31 May 1995)

[c] Figures and comments refer to the sum of Hot Spots No. 67-69

Sources: HELCOM PITF 1995a, BSEP 1994, Vol. 1

ANNEX 3

Previous, Present and Planned Pollution Loads at Priority Hot Spots in Russia and the Baltic States

Hot Spot HELCOM No.	Site name	Aim	Load 1991 (t/y)			Load 1994 (t/y)			Planned Load (t/y)*			HELCOM Load (t/y)**			Comments
			BOD_5	N	P	BOD_5	N	P	BOD_5	N	P	BOD_5	N	P	
	Russia														
18	St. Petersburg	To connect discharge sewers to WWTP	46,500	6,700	1,300	39,500	6,300	1,300	30,600	4,800	1,000	0	0	0	Part of connections to be implemented
19	St. Petersburg (Urban) (3)	Municipal waste water treatment	5,800	12,300	1,000	9,600	9,000	3,900	11,900	10,800	4,100	8,300	6,600	800	Increase capacity of biological treatment
20	St. Petersburg (Suburban)	Development of suburban municipal WWTP	2,690	1,240	149	2,500	1,170	130	2,500	1,170	130	2,000	1,600	200	Upgrading with biological treatment
24	St. Petersburg Region	Livestock farms water treatment action programme	33,800	3,500	600	16,200	1,850	300	16,200	1,850	300	8,000	900	150	
49	Sovetsk	Reduction of pulp & paper industrial pollution load	35,000	3,310	52	10,000	300	50	5,000	300	50	330	260	33	Complete mechanical WWTP-part
50	Neman	Reduction of pulp & paper industrial pollution load	5,300	2,700	14	650	110	1	300	110	1	90	72	9	Complete mechanical WWTP-part
67/68/69	Kaliningrad	Reduction of municipal and industrial pollution load	47,000	2,640	510	29,450	2,950	620	15,000	1,000	300	1,640	1,340	164	Complete mechanical WWTP-part
	SUBTOTAL		176,090	32,390	3,625	107,900	21,680	6,301	81,500	20,030	5,881	20,360	10,772	1,356	
	Estonia														
25	Narva Power Plants	Reduction of SO_2 and dust emissions	-	15,300	-	-	9,000	-	-	N.A.	-	-	N.A.	-	Air pollution
28	Tallinn WWTP	Reduction of pollution load	12,300	3,300	240	1,090	870	40	1,640	1,100	110	1,640	1,300	164	Upgrading to HELCOM standards
32	Matsalu Bay	Management programme	1,622	3,314	32	N.A.	N.A.	N.A.	1,100	1,000	40	11,940	9,500	1,164	No relevant data available
33	Pärnu WWTP		310	145	32	170	55	7	160	50	6	82	66	2	Upgrading to HELCOM standards
	SUBTOTAL		14,232	22,059	304	1,260[a]	9,925[a]	47[a]	2,900	2,150[a]	156	13,662	10,866[a]	1,330	
	Estonia/Latvia														
37	Gulf of Riga***	Management programme	75,000	150,000	3,500	N.A.	90,000	3,000	N.A.	90,000	2,000	N.A.	90,000	2,000	

Latvia

38	Sloka	Reduction of pollution load from pulp & paper mill												Not Hot Spot any longer
39	Latbiofarm	Reduction of water and air pollution	604	217	1.5	100	84	0.8	200	150	2	90	72	8	
40	Agriculture/ Livestock	Reduction of non-point agricultural runoff	Insig.	40,000	800	Insig.	20,000	300	Insig.	20,000	300	Insig.	20,000	400	HELCOM standards are met
42	Riga WWTP Phase II	Reduction of pollution load	26,300	5,300	1,300	15,300	4,000	1,070	2,100	1,680	210	2,100	1680	210	Upgrading to HELCOM standards
46	Daugavpils	Reduction of pollution of Daugava River and the Gulf of Riga	2,900	250	46	2,900	250	46	218	174	22	218	174	22	Upgrading to HELCOM standards
48	Liepaja (3)	Reduction of pollution load of the Baltic Sea	2,030	520	80	1,380	400	54	300	240	30	300	240	30	Upgrading to HELCOM standards
	SUBTOTAL		31,834	46,287	2,227.5	19,680	24,734	1,470.8	2,818	22,244	564	2,708	22,166	670	

Lithuania

41	Siauliai		3,000	920	92	700	440	73	220	400	60	220	175	22	New biological WWTP
51	Kaunas	Reduction of pollution load	16,500	3,300	180	11,300	2,550	310	4,350	2,230	43	930	740	93	New mech./chem. WWTP
59	Vilnius/ Grikiskes		10,000	2,800	240	8,250	2,600	211	1,200	2,300	200	1,200	960	120	New biol. WWTP (<100% capacity)
60	Agriculture/ Livestock	Agricultural runoff programme	Insig.	105,000	6,050	Insig.	33,750	5,750	Insig.	33,800	5,750	Insig.	52,500	3,000	
63	Klaipeda	Reduction of pollution load to the Baltic Sea	4,100	1,200	130	3,200	930	110	660	670	50	660	400	50	New biol. WWTP
	SUBTOTAL		33,600	113,220	6,692	23,450	40,270	6,454	6,430	39,400	6,103	3,010	54,775	3,285	

Lithuania/Russia

66	Kursiu Lagoon***	Management programme	160,000	25,000	4,000	140,000	30,000	3,000	120,000	30,000	2,500	120,000	25,000	2,500	

Ukraine

94	Lvov	Reduction of pollution load by 30%	71,000	8,300	1,680	64,000	7,700	1,550	64,000	7,700	1,550	2,700	2,100	270	Sludge disposal

	Total (incomplete)		**561,756**	**398,296**	**22,029**	**356,290**	**224,309**	**21,823**	**277,648**	**211,524**	**21,254**	**162,440**	**215,679**	**11,411**	

* Predicted load when planned remedial works are implemented

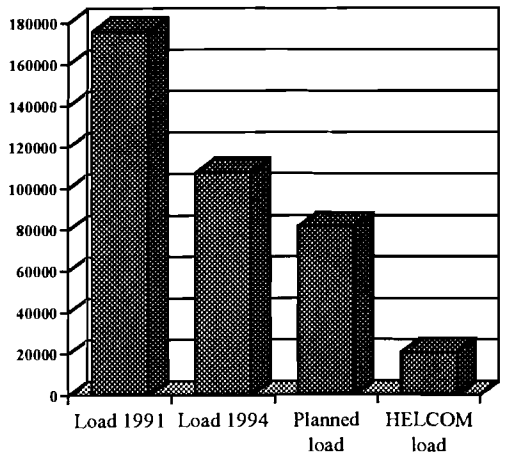
** Predicted load when HELCOM recommendations are met

***Load received from the catchment area

[a] Excluding Narva Power Plant

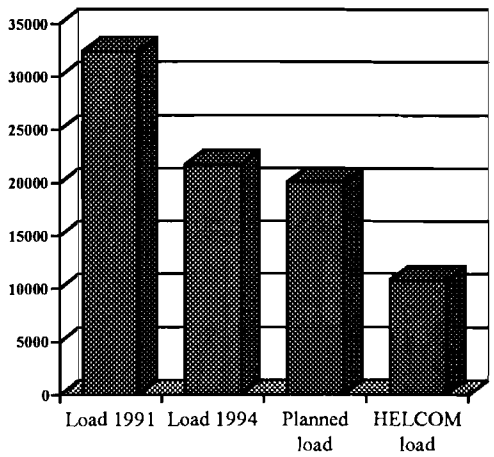
Source: BSEP 1994, Vol. 1.

Fig. 1. Current and planned loads of BOD5 at priority hot spots in Russia (t/y)*



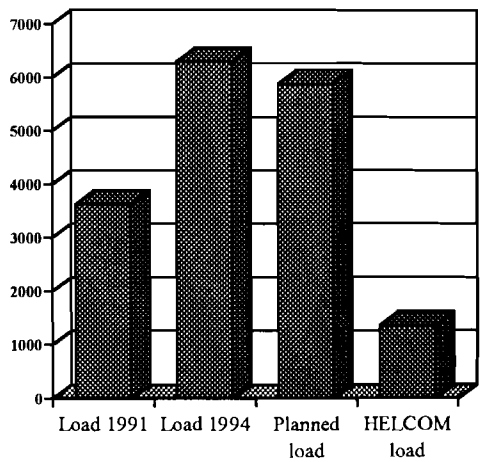
*Excluding the Cursiu Lagoon Program

Fig. 2. Current and planned loads of nitrogen at priority hot spots in Russia (t/y)*



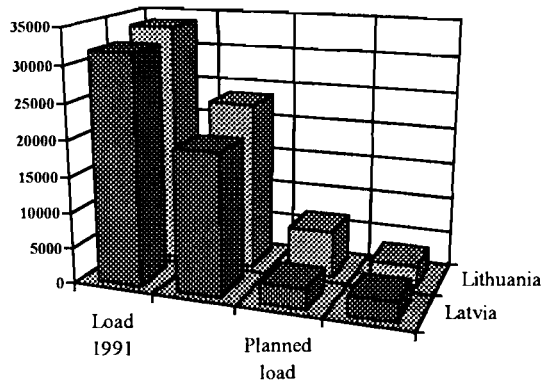
*Excluding the Cursiu Lagoon Program

Fig. 3. Current and planned loads of phosphorus at priority hot spots in Russia (t/y)*



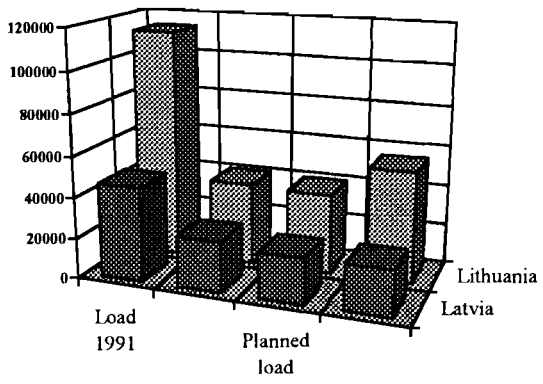
* Excluding the Cursiu Lagoon Program

Fig. 4. Current and planned loads of BOD5 at priority hot spots in Latvia and Lithuania* (t/y)



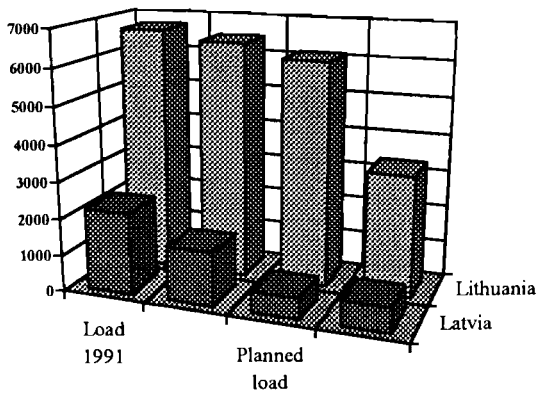
* Excluding the Gulf of Riga and Cursiu Lagoon Management Programs

Fig. 5. Current and planned loads of nitrogen at priority hot spots in Latvia and Lithuania* (t/y)



* Excluding the Gulf of Riga and Cursiu Lagoon Management Programs

Fig. 6. Current and planned loads of phosphorus at priority hot spots in Latvia and Lithuania* (t/y)



* Excluding the Gulf of Riga and Cursiu Lagoon Management Programs