The Baltic Sea Area and Long-Range Atmospheric Pollution — How Regional Cooperation Fits Into the Larger Picture

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Recent development of international environmental law is characterized by a growing recognition of interdependence and of the necd for comprehensive approaches to solving environmental problems. At the same time, much of the existing international environmental law, in focusing on individual sources, pollutants, environmental media, or geographical areas, proceeds in a sectoral fashion. The author argues that sectoral approaches must seek to draw upon more comprehensive strategies. Using the example of atmospheric pollution of the Baltic Sea, she identifies the various levels of international activity that are relevant to the solution of regional problems. Atmospheric pollution of the Baltic is a problem affecting a regional sea. However, at least in part, it originates outside the region. Therefore, an exclusively regional approach to combating pollution cannot be successful. The author sketches the general development of the law of marine environmental protection. She then reviews international environmental law and cooperation in the Baltic region and provides a comparison with other regional approaches to marine pollution through the atmosphere. The author evaluates the Baltic approach in view of the special economic, ecological and political conditions in the region. She argues that much is to be gained by attempting "to fit regional cooperation into the larger picture." In the case of the Baltic Sea area this means that some benefits can be derived from customary law and global conventions which bind non-Baltic states where regional law cannot. First and foremost, however, the Baltic states must seek to influence the efforts made within the environmental protection regimes of the European Community and the Economic Commission for Europe. Only increased cooperation with these organizations and utilisation of existing resources and programs will lead to effective environmental protection for the Baltic Sea.

Les développements récents en droit environnemental international sont marqués par une prise de conscience : les problèmes environnementaux sont interdépendants et des solutions globales sont nécessaires pour y remédier. Cependant, le droit en cette matière se limite encore à une approche sectorielle qui met l'accent sur les sources ponctuelles de pollution, sur certains types de polluants, sur une forme donnée de propagation, ou sur des zones géographiques délimitées. L'auteure prétend que ces approches sectorielles doivent faire appel à des stratégies plus globales. Elle identifie les divers palliers d'activité internationale qui sont pertinents à une solution aux problèmes régionaux et présente à cette fin l'exemple de la pollution atmosphérique de la mer Baltique. On est ici en présence d'un problème touchant une mer régionale. Cependant, la pollution atmosphérique provient de l'extérieur de cette région, en partie du moins. Par conséquent, une initiative qui vise à combattre cette pollution mais qui demeure purement régionale est vouée à l'échec. L'auteure donne un aperçu général de l'évolution du droit international portant sur la protection des mers. Elle passe ensuite en revue le droit international de l'environnement et la coopération internationale dans la région de la mer Baltique et compare la situation qui y prévaut aux solutions qui furent adoptées dans d'autres régions aux prises avec un problème de pollution maritime causé par l'atmosphère. L'auteure évalue l'approche qui fut adoptée pour la mer Baltique à la lumière des conditions économiques, écologiques et politiques qui y règnent. Elle affirme qu'on a tout à gagner à essayer « d'intégrer la coopération régionale au tableau d'ensemble. » Dans le cas de la région de la mer Baltique, cela signifie qu'il est possible d'invoquer à profit le droit coûtumier et les conventions globales qui lient les États non baltes lors que la réglementation régionale est inefficace. Cependant les États baltes doivent chercher d'abord et avant tout à canaliser les efforts que la Communauté européenne et le Conseil économique de l'europe deploient dans le cadre de leurs mécanismes de protection de l'environnement. Seule une coopération accrue avec ces organisations et une utilisation des ressources et programmes déjà en place pourront assurer une protection efficace de l'environnement de la mer Baltique.

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Synopsis

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Introdnction

International environmental law has come a long way since the days when it had to borrow principles from other areas of international law or municipal law.[1] Not only has a set of customary rules developed from this heritage, the last two decades have also witnessed an increase in international agreements and innovative approaches.

The rapid development must largely be attributed to the increasing number and complexity of international environmental problems and our growing understanding of their implications. Beyond the customary rules, international environmental law developed in a problem-oriented and, consequently, a sectoral manner. For a long time environmental problems were perceived as self-contained and separable issues. International approaches, therefore, addressed them as individual problems. International action was commonly geared to deal with a given source of pollution or a particular pollutant, or focused on a certain medium (air, rivers, sea) or region.

However, it has become evident that ecological, economic, and political interdependence require integrated or coordinated approaches. The 1972 Stockholm Conference and resulting *Declaration on the Human Environment* paved the way for new international thinking.[2] The environmental crises of the past five years as well as the *Brundtland Report*[3] suggest that we may be at a turning

[1]In the former case, international environmental law drew from notions of territorial sovereignty and territorial integrity; in the latter case it drew, notably, from the maxim of *sic utere tuo ut alienum non laedas*; see M. Kloepfer, "Grenzüberschreitende Umweltbelastungen als Rechtsproblem" (1984) 99 Deutsches Verwaltungsblatt 245 at 252 & 254.

[2]UN Doc. A/Conf. 28/14, reprinted in (1972) 11 I.L.M. 1416 [hereinafter *Declaration on the Human Environment*].

[3]World Commission on Environment and Development (W.C.E.D.), *Our Common Future* (Oxford: Oxford University Press, 1987) [hereinafter *Brundtland Report*].

point. In the *Brundtland Report*, for example, we find the following passage on marine pollution:

> The oceans are marked by a fundamental unity from which there is no escape. Interconnected cycles of energy, climate, marine living resources and human activities move through coastal waters, regional seas and the closed oceans. The effects of urban, industrial and agricultural growth are contained within no exclusive economic zone; they pass through currents of water *and air* from nation to nation, and through complex food chains from species to species, distributing the burdens of development, if not the benefits, to both rich and poor (emphasis added).[4]

If we take advantage of our opportunities, we may now be able to accelerate the shift in emphasis from sovereign to common interests which is beginning to be noticeable.[5] The knowledge and the ideas — legal and other — have been around for a while.[6] Perhaps these seeds will finally find fertile ground. A change is needed from a policy based on the sectoral management of resources to what one writer has termed an "Earth Policy": the sustainable management of what is our *global* environment and what must be perceived and treated as such.[7]

However, these aspects are not the focus of this article. The above comments are merely intended to suggest the need to keep the overall picture in perspective and to ensure that any sectoral approach is compatible with it. This article proposes to explore how international law, given the continuing reality of decentralized environmental decision-making, addresses interdependence today. It hopes to show that, notwithstanding the need for comprehensive approaches, prudently coordinated sectoral protection measures will remain an indispensable element of international environmental management.

An example of regional cooperation which uniquely illustrates this point is environmental protection in the Baltic Sea area. The *Convention on the Protection of the Marine Environment of the Baltic Sea Area* of March 22, 1974[8] represents long-standing regional cooperation in protecting a marine medium. Recognizing ecological interdependence, the participating states chose a comprehensive approach and adopted a convention covering all types and sources of pollution. We will see further on, however, that ecological interdependence is not limited to the regional scope, but that pollution originating out-

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[4]*Ibid.* at 262.

[5]J. Brunnée, "'Common Interest' — Echoes from an Empty Shell? Some Thoughts on Common Interest and International Environmental Law" (1989) 49 Zeitschrift für ausländisches öffentliches Recht und Völkerrecht 791 [hereinafter "Common Interest"].

[6]See B. Ward & R. Dubos, *Only One Earth: The Care and Maintenance of a Small Planet* (London: A. Deutsch, 1972).

[7]E.U. von Weizsäcker, *Erdpolitik — ökologische Realpolitik an der Schwelle zum Jahrhundert der Umwelt* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1989) at 203ff.

[8]Reprinted in (1974) 13 I.L.M. 544 [hereinafter *Helsinki Convention*].

side a region can have an impact on its marine environment.[9] This creates the need to coordinate Baltic protection efforts with efforts external to the region. The Baltic region also illustrates economic interdependence, both among the countries and between the countries and their marine environment. Additionally, the Baltic region is a good example of cooperation between East and West and bears witness to the impact of East-West relations on cooperation. Finally, from a technical perspective, we find the range of "tools" provided by international environmental law — custom, treaty law, soft law, institutional cooperation — at work in the Baltic Sea area.

I. International Law and the Protection of the Marine Environment

The law of the sea has been shaped by the competing interests of coastal states and sea-going nations. This competition can be traced back to the famous dispute between John Selden and Hugo Grotius over the ideas of *mare clausum* and *mare liberum*.[10] The notion of the freedom of the high seas, as being open to all states for use and exploitation, remains a fundamental principle underlying the law of the sea. However, coastal state interests have been, quite literally, gaining ground. Technological development and resulting economic interests have led to a considerable expansion of coastal state jurisdiction into areas that were formerly part of the high seas. Environmental protection interests have recently reinforced the trend which can be described as a shift in emphasis from freedom to cooperative management and conservation.[11]

Maritime jurisdiction can, in principle, flow only from flag state or coastal state powers. This has had great impact on the law for the protection of the marine environment. As regards the high seas, environmental protection rules and their enforcement depend on the flag states' powers over their vessels, aircraft or marine structures, on the existing body of customary law, and on international agreements. Only the flag state is, usually, in a position to enforce any of these rules.[12] Environmental protection in areas under coastal state jurisdiction is derived from the coastal states' laws as well as from custom and international agreements. The extent of a coastal state's powers depends on whether it exercises them in its internal waters, territorial waters, exclusive economic zone, fishing zone, or over its continental shelf.[13]

International law deals with the protection of the marine environment on several levels: general, global, and regional. At the general level, rules are of a

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[9]J.W. MacNeill, *Environmental Management* (Ottawa: Information Canada, 1971) at 10-16.

[10]See R. Soni, *Control of Marine Pollution in International Law* (Cape Town: Juta, 1985) at 19ff.

[11]S.A. Williams & A.L.C. de Mestral, *An Introduction to International Law*, 2d ed. (Toronto: Butterworths, 1987) at 203.

[12]See M.N. Shaw, *International Law*, 2d ed. (Cambridge: Grotius Publications, 1986) at 317.

[13]For an overview see, *supra*, note 11 at 207ff.

rather basic nature and the result of balancing interests by interpreting the notion of the freedom of the high seas.[14] While the disposal of wastes or pollution as such may be a legitimate use of the high seas, it finds its limits in the interests of other states in the ocean's use.[15] In light of the present ecological condition of the oceans, it can be argued that serious pollution is no longer covered by the freedom of the high seas.[16] This limit is based on the *res communis* character of the oceans.[17] A similar argument can be derived from the more recent concept of "common heritage of mankind."[18] However, the question of whether there is customary law protecting the environment of spaces beyond national jurisdiction continues to be contentious.[19] Principle 21 of the *Declaration on the Human Environment* supports this idea:

> States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own natural resources pursuant to their own environmental policies, and the responsibility to ensure that acts within their jurisdiction or control do not cause damage to the environment of other states *or of areas beyond the limits of national jurisdiction* (emphasis added).

Principle 21 also encapsulates the generally accepted rules of customary international environmental law. These rules developed without reference to the marine environment and are strongly linked to a territorial element.[20] Two basic substantive rules can be identified. The first is the prohibition of transfrontier pollution causing serious damage in another state's territory.[21] The second is the principle of equitable utilization of a resource shared by two or more states.[22] State practice with respect to these concepts in a marine context is scarce, but the concepts are considered to be applicable to marine pollution.[23]

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[14]"General" is used here to describe rules not addressing specific marine pollution problems.

[15]*Abfallbeseitigung auf Hoher See — Völkerrecht und Recht der Bundesrepublik Deutschland* (Werkheft 31) by P. Ehlers & P. Kunig (Hamburg: Instituts für Internationale Angelegenheiten der Universität Hamburg, 1978) at 9.

[16]M. Tulokas, "The Baltic Sea and Pollution" (1981) 25 Scandinavian Stud. L. 205 at 210.

[17]*Supra*, note 10 at 135.

[18]See R. Wolfrum, "The Principle of the Common Heritage of Mankind" (1983) 43 Zeitschrift für ausländisches öffentliches Recht und Völkerrecht 312; A. Cassese, *International Law in a Divided World* (Oxford: Clarendon Press, 1986) at 376-92.

[19]Art. 19(d) of the International Law Commission's Draft Articles on State Responsibility point in this direction; see YBILC 1980 II (Part 2); *supra*, note 5 at 800ff; *supra*, note 10 at 69-72 & 142ff.

[20]On the development and scope of the existing customary rule, see J. Brunnée, *Acid Rain and Ozone Layer Depletion — International Law and Regulation* (Dobbs Ferry, N.Y.: Transnational Publishers, 1988) at 83ff [hereinafter *Acid Rain and Ozone Layer Depletion*].

[21]See *Trail Smelter Arbitration, United States* v. *Canada* (1941), 3 R.I.A.A. 1905 at 1907 [hereinafter *Trail Smelter*]; *United Kingdom* v. *Albania* (*Corfu Channel*), [1949] I.C.J. Rep. 4 at 22.

[22]See *Lac Lanoux Arbitration, France* v. *Spain* (1957), 12 R.I.A.A. 281 at 315, 24 Int'l L.R. 101.

[23]See A.E. Boyle, "Marine Pollution under the Law of the Sea Convention" (1985) 79 Am. J. of Int'l L. 347 at 366; *supra*, note 10 at 140.

The general treaty law has been equally conservative in its approach to the protection of the marine environment. The 1958 Geneva Conventions refer only to selected aspects of environmental protection. Articles 24 and 25 of the *Convention on the High Seas* address oil pollution and radio-active wastes.[24] Article 5 of *Convention on the Continental Shelf* deals with the protection of living resources from sea bed activities.[25]

Rather than on a general level, the development of marine environmental law took place through global and regional conventions and proceeded in a problem-oriented way. The conventions address either a particular pollutant or aim at the main sources of marine pollution: shipping, dumping, sea-bed activities, land-based activities, and atmospheric input.[26] The United Nations Environment Programme (U.N.E.P.) successfully sponsors the Regional Seas Programme which now comprises ten comprehensive regional approaches to marine environmental protection.[27] Six of these are formally operating and two are awaiting a sufficient number of ratifications.[28]

The 1982 United Nations *Convention on the Law of the Sea*,[29] which has not yet come into force, was intended to provide a comprehensive basis for the law of marine environmental protection. Not only did it seek to codify customary rules, it also attempted to cover all sources and types of pollution.[30] The *Law of the Sea Convention* imposes a basic obligation on states to protect and preserve the marine environment, to take all measures necessary to prevent, reduce and control marine pollution, and to ensure that activities under their jurisdiction or control do not cause pollution damage beyond areas where they exercise sovereign rights (article 194). Noteworthy is the *Law of the Sea Convention*'s attempt to create a slightly different balance of flag state and coastal state interests. It provides the coastal states with more extensive rule-making and enforce-

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[24]29 April 1958, 450 U.N.T.S. 82.

[25]29 April 1958, 499 U.N.T.S. 312.

[26]The wealth of agreements is beyond the scope of this article. Agreements and provisions relevant to this article will be discussed *infra*. For information on the existing treaties on marine environmental protection and for an exhaustive list see H. Hohmann, "Meeresumweltschutz als globale und regionale Aufgabe" (1989) 37 Vereinte Nationen 53.

[27]U.N.E.P., "Achievements and Planned Development of U.N.E.P.'s Regional Seas Programme and Comparable Programmes Sponsored by Other Bodies" U.N.E.P. Regional Seas Reports and Studies No. 1 (1982) at 41-43; see also *infra*, notes 117, 118 and accompanying text.

[28]N. Gebremedhin, "Lessons from the U.N.E.P. Regional Seas Programme" in A.H. Westing, ed., *Comprehensive Regional Security for the Baltic — An Environmental Approach* (Oslo: International Peace Research Institute, 1989) 90 at 90.

[29]U.N. Doc. A/Conf. 62/122 with Corr. 3 and Corr. 8; reprinted in (1982) 21 I.L.M. 1261 [hereinafter *Law of the Sea Convention*].

[30]B.A. Boczek, "Global and Regional Approaches to the Protection and Preservation of the Marine Environment" (1984) 16 Case West. Reserve J. Int'l L. 39 at 66 [hereinafter "Global and Regional Approaches"].

ment powers.[31] Most importantly, however, the *Law of the Sea Convention* creates a duty to develop rules on all sources of marine pollution. Previously, states only had the power, but not the duty, to regulate marine pollution.[32] Consistent with its aim to provide a framework for environmental protection, the *Law of the Sea Convention* does not specify the standards to be adopted. In some cases, however, it makes reference to accepted international rules and standards as a minimum level of regulation.[33]

Returning to the example of the Baltic Sea area, this article will now examine the interplay between the different approaches to marine pollution — global and regional, general and sectoral, customary and treaty-based.

II. The Case of the Baltic Sea Area

A. *The Ecological Situation*

The Preamble of the *Helsinki Convention* captures the main features of the problems facing the Baltic Sea area:

> BEARING in mind the exceptional hydrographic and ecological characteristics of the Baltic Sea Area and the sensitivity of its living resources to changes in the environment;
> NOTING the rapid development of human activities in the Baltic Sea Area, the considerable population living within its catchment area and the highly urbanized and industrialized state of the Contracting Parties as well as their intensive agriculture and forestry;
> NOTING with deep concern the increasing pollution of the Baltic Sea Area, originating from many sources such as discharges through rivers, estuaries, outfalls and pipelines, dumping and normal operations of vessels *as well as through airborne pollutants*; [emphasis added]

The Baltic Sea's "exceptional hydrographic and ecological characteristics" make it particularly vulnerable to pollution. Surrounded by the Baltic states of Denmark, Finland, Germany, Poland, Sweden, and the Soviet Union, the Baltic Sea's only connection with the North Sea is a channel between Denmark and Sweden. The channel's southern portion, the Kattegatt, is considered part of the Baltic Sea area.[34] The Baltic Sea is very shallow, with an average depth of only 52 metres, and consists almost entirely of continental shelf in its 415,000 square kilometre area.[35] Its water is brackish because the salt water flowing in from the

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[31]Boyle, *supra*, note 23 at 352.

[32]*Ibid.* at 351.

[33]*Ibid.* at 353ff; concerning atmospheric pollution see *infra*, notes 120-22 and accompanying text.

[34]D. Kimminich *et al.*, eds, *Handwörterbuch des Umweltschutzes*, vol. 2 (Berlin: Duncker & Humbrot, 1988) 141.

[35]T.D. Kaasik, "The Geography of the Baltic Sea Region" in Westing, ed., *supra*, note 28, 15 at 15; B.A. Boczek, "International Protection of the Baltic Sea Environment Against Pollution: A

North Sea is offset by fresh water inflow from a drainage area almost four times as large as the Baltic Sea itself.[36] The fresh water input results in a stratification of the sea water into a surface layer of low salinity and a bottom layer of saltier, heavier water.[37] Since the bottom layer is virtually sealed off from the surface, its oxygen content is naturally very low.[38] This phenomenon is enhanced by the fact that the turnover time for the water in the Baltic Sea is extremely long. An exchange of approximately 90% of its water through the narrow entrance to the North Sea is estimated to take 25 years.[39] The long turnover time and the low water temperatures of the bottom layer slow the process of natural decomposition of pollutants.[40]

While the Baltic Sea was considered clean until the mid 1960s, population density and increased industrial activity in its catchment area have contributed to its present state as one of the most polluted marine environments in the world.[41] Seventy-one million people, their industries, agriculture, forestry, shipping, and waste disposal result in a relentless input of enormous quantities of pollutants.[42] Eutrophication (the depletion of oxygen), accumulation of toxic substances in living and non-living components of the ecosystem, oil spills and other accidental discharges of hazardous or noxious substances are generally considered to be the most serious problems.[43]

The main portion of pollutant input into the Baltic Sea — about 80% — stems from land-based sources.[44] Due to the aforementioned low oxygen content of the sea water, the high input of nutrients is of particular concern.[45] Over the past few decades the water's oxygen content decreased to the point where, in several basin areas, the bottom water was oxygen depleted.[46] This is now being

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Study in Marine Regionalism" (1978) 72 Amer. J. Int'l. L. 782 at 784 [hereinafter "International Protection"].

[36]Kaasik, *ibid.* at 16.

[37]Nordic Council of Ministers, *Europe's Air — Europe's Environment*, Report to the Nordic Council's International Conference on Transboundary Air Pollution (Stockholm: Ministry of the Environment, 1986) at 67.

[38]L. Zmudzinski, "Environmental Quality in the Baltic Region" in Westing, ed., *supra*, note 28, 46 at 47.

[39]Kaasik, *supra*, note 35 at 19.

[40]A. Westing, "Environmental Approaches to Regional Security" in Westing, ed., *supra*, note 28, 1 at 9.

[41]*Supra*, note 38 at 47.

[42]*Supra*, note 40, at 3; see also B.A. Boczek, "The Baltic Sea: A Study in Marine Regionalism" (1980) 23 German Y.B. of Int'l L. 196 at 205ff [hereinafter "Baltic Sea"].

[43]E. Leppäkoski, "Man's Impact on the Baltic Ecosystem" (1980) 9 AMBIO 174 at 175; B. Hagerhall, "Saving the Baltic: A Race Against Mankind" (1990) 2 Our Planet 8.

[44]"International Protection," *supra*, note 35 at 787, and *supra*, note 38 at 48ff for a more comprehensive picture of the Baltic Sea's ecological situation.

[45]In order to illustrate atmospheric pollution problems in the Baltic Sea Area, this article focuses on eutrophication problems and the input of nitrogen and phosphorous.

[46]Nordic Council of Ministers, *supra*, note 37 at 66; O.E.C.D., *The State of the Environment 1985* (Paris: O.E.C.D., 1985) at 84; Leppäkoski, *supra*, note 43 at 174.

attributed to excess eutrophication resulting from the input of nutrients, notably nitrogen and phosphorous, into the Baltic Sea.[47] The depletion of oxygen eventually leads to the build-up of hydrogen sulphide, a poisonous gas which, dissolved in water, kills animals on the seabed and makes fish avoid the water.[48] The latter aspect is of considerable economic importance since, during eutrophication processes, the economically valuable fish fauna appear to be replaced by fish not traditionally used for food purposes.[49] In the 1960s and 1970s the area in which oxygen deficiency greatly altered bottom-living animal communities was assumed to comprise 25% of the entire Baltic Sea.[50]

More than 500,000 tons of nitrogen and approximately 50,000 tons of phosphorous yearly — stemming mainly from municipal, industrial, and agricultural sources — enter the Baltic Sea.[51] Fifty-five percent of the nitrogen and sixty-five percent of the phosphorous are thought to enter the Baltic via rivers, the remainder via the atmosphere.[52] This makes atmospheric transport a major source of nutrient input into the Baltic Sea.[53] Pollutants enter the sea as fallout in precipitation (wet deposition) or by way of sedimentation of aerosol particles and direct absorption of gases and particles by the water surface (dry deposition).[54] Swedish researchers believe that soil-blown dust and biogenic material such as pollen and spores are the major sources of atmospheric phosphorous.[55]

Atmospheric transport was found also to contribute to the input of heavy metals and organic substances into the Baltic Sea.[56] Data on the deposition of

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[47]Eutrophication becomes a concern when the number of plants, algae and other organisms rapidly increases and their subsequent decomposition results in a shortage of oxygen which, in turn, kills other plants and animals; see Zmudzinski, *supra*, note 38 at 50; Nordic Council of Ministers, *ibid.* at 65ff.

[48]Nordic Council of Ministers, *ibid.* at 68.

[49]Leppäkoski, *supra*, note 43 at 176.

[50]*Ibid.* at 177.

[51]Zmudzinski, *supra*, note 38 at 50. The National Swedish Environment Protection Board estimated the total input in the 1980s to be 1,197,500 tons of nitrogen and 77,300 tons of phosphorous; see Nordic Council of Ministers, *supra*, note 37 at 67. On industrial pollutant input in general see L. Bruneau, "Pollution from Industries in the Drainage Area of the Baltic" (1980) 9 AMBIO 145.

[52]Zmudzinski, *ibid.*

[53]Studies commissioned by HELCOM point to an array of invariables and estimate that the 1986 input of nitrogen ranges between 270,000 and 630,000 tons and the wet deposition of phosphorous is approximately 5,800 tons. See Baltic Marine Environment Protection Commission — Helsinki Commission, *Deposition of Airborne Pollutants to the Baltic Sea Area 1983-1985 and 1986, Baltic Sea Environment Proceedings No. 32* (Helsinki 1989) 2ff [hereinafter HELCOM No. 32]. Estimates of the National Swedish Environment Protection Board for the 1980s hover around 322,000 tons of nitrogen and 5,000 tons of phosphorous; see Nordic Council of Ministers, *supra*, note 37 at 67.

[54]H. Rodhe, R. Söderlund & J. Ekstedt, "Deposition of Airborne Pollutants on the Baltic" (1980) 9 AMBIO 168 at 168.

[55]*Ibid.* at 170.

[56]*Ibid.* at 171.

heavy metals are limited. But, for 1986 it was estimated that 35 tons of cadmium, 470 tons of copper, 1560 tons of lead, and 3400 tons of zinc were deposited on the Baltic Sea.[57] P.C.B. and D.D.T. input was considered the most severe pollution problem in the Baltic region.[58] In the late 1960s the concentrations of these substances in seals, birds of prey, and fish were up to ten times higher in samples from the Baltic than in samples from sea areas west of Sweden.[59] Due to the restriction in the use of these substances, however, concentrations had begun to decrease by 1980.[60]

In considering the following discussion of efforts to cooperate in the protection of the Baltic Sea environment, it is important to stress two aspects of the pollution scenario. Firstly, most pollutants — from vessels via dumping or from land-based sources — originate within the region. Secondly, the pollutants transported through the atmosphere originate, at least in part, in states other than the littoral states.

B. The Development of Environmental Cooperation in the Baltic Region

1. The East-West Dimension

Although the pollution problems in the Baltic Sea area had reached crisis dimensions by the 1960s, it was not until 1974 that the *Helsinki Convention* was adopted as a comprehensive cooperative effort at the regional level.

One must recall that for decades the Baltic region was at the crossroads of two hostile economic, political and military systems. Four of the littoral states (Denmark, Finland, the Federal Republic of Germany and Sweden) were democratic and their economies were capitalist and market-oriented. The other three (the German Democratic Republic, Poland and the Soviet Union) were socialist states with centrally-planned economies.[61] Economically, Denmark and the Federal Republic of Germany were tied into the European Communities. Finland and Sweden were part of the European Free Trade Agreement (E.F.T.A.), while the German Democratic Republic, Poland and the Soviet Union formed part of the Council of Mutual Economic Assistance.[62] Membership in competing military alliances compounded the fragmentation within the region. Denmark and the Federal Republic of Germany were part of the North Atlantic Treaty Orga-

[57]HELCOM, No. 32, *supra*, note 53 at 3, 7. The study points out that deposition levels of lead decreased from an estimated 2300 tons in 1983-1985, a phenomenon attributed to the reduced use of lead additives, see *supra*, at 7.

[58]Leppäkoski, *supra*, note 43 at 178, 179.

[59]*Ibid.* at 179.

[60]*Ibid.* at 180.

[61]U.J. Vesa, "Political Security in the Baltic Region" in Westing, ed., *supra*, note 28, 35 at 36.

[62]*Ibid.* at 37.

nization (N.A.T.O.), the German Democratic Republic, Poland and the Soviet Union belonged to the Warsaw Pact, while Finland and Sweden were neutral.[63]

Regional cooperation was thus hampered by post World War II tensions, with the smouldering German question being a major obstacle to meaningful environmental protection. In line with the western view, the Federal Republic of Germany refused to enter into any agreement to which the German Democratic Republic was a party, fearing that this might imply recognition of the latter as a sovereign state.[64] Relations between the two Germanies entered a new stage with Willy Brandt's "Ostpolitik," the diplomatic recognition of the German Democratic Republic, and the "Grundlagenvertrag" (*Treaty on the Basis of Intra-German Relations*) of 1972, intended to "normalize the intra-German relations."[65]

2. Cooperation and the Baltic Environment

The end of the political deadlock coincided with the Stockholm Conference's unprecedented call for international efforts to protect the environment. Finland initiated preparatory talks in 1973. By 1974 a group of government representatives and legal and technical experts had prepared a draft convention on the protection of the Baltic Sea environment.[66] The *Helsinki Convention* was adopted during a diplomatic conference hosted by Finland in March 1974 and entered into force in 1980.[67] It brought an end to a situation in which environmental protection efforts, apart from long-standing scientific cooperation, had been fragmented at best.[68] They had been scattered over a multitude of agreements which were merely bilateral, included only some of the littoral states, or addressed only one aspect of the pollution problem facing the region. These earlier agreements will be reviewed in the following pages.

a. Cooperation within the Baltic Region

Even fisheries issues had only been dealt with in various bilateral or subregional agreements.[69] They were not addressed in a more comprehensive fashion until the 1973 (*Gdansk*) *Convention on Fishing and the Conservation of the Living Resources in the Baltic Sea and the Belts*[70] which entered into force in 1974. This convention, which applies to all species of fish and other living

[63]*Ibid.*

[64]"Baltic Sea," *supra*, note 42 at 213.

[65]December 21, 1972, reprinted in (1973) 12 I.L.M. 16.

[66]B. Johnson, "The Baltic Convention" (1976) 25 Int'l & Comp. L.Q. 1 at 5.

[67]*Supra*, note 61 at 40.

[68]On the history of scientific cooperation see K. Voigt, "The Baltic Sea — Pollution Problems and Natural Environmental Changes" (1983) 33 Impact of Science on Society 413 at 415, 419.

[69]See "Baltic Sea," *supra*, note 42 at 210-13; "International Protection," *supra*, note 35 at 799.

[70]Reprinted in (1973) 12 I.L.M. 1291 [hereinafter *Gdansk Convention*].

resources, commits the parties to close cooperation to preserve and increase the living resources in the area. It establishes the International Baltic Fishery Commission to coordinate its implementation. However, the *Gdansk Convention* does not limit the parties' jurisdiction over territorial seas or fishing zones.[71]

Only a month prior to the adoption of the *Helsinki Convention*, in February 1974, Denmark, Finland, Norway, and Sweden signed the *Nordic Convention on the Protection of the Environment*.[72] The idea had originated in the Nordic Council in 1972 and the *Nordic Convention*'s aim was the harmonization of the Nordic countries' environmental protection legislation. To facilitate environmentally relevant administrative and judicial procedures, national boundaries were eliminated. National authorities in the state of origin have to consider environmental damage caused in the territory of another party and nationals of another party are not to be discriminated against when they seek access to these authorities or to the courts.[73] The *Nordic Convention* is relevant to the protection of the Baltic Sea environment in that it applies to the parties' continental shelves (Article XIII) and covers, according to Article I,

> the discharge of solid or liquid waste, gas or any other substance into watercourses, lakes or the sea and the use of land, the sea-bed, buildings or installations in any other way which entails, or may entail an environmental nuisance by water pollution or any other effect on water condition, sand drift, air pollution ....

b. Other Regional and Global Cooperation

Several global or regional treaties apply, in whole or in part, to the Baltic Sea and its pollution problems.[74] The 1954 *International Convention for the Prevention of the Pollution of the Sea by Oil* established "prohibited zones" of at least 50 miles from the coastlines where deliberate operational discharges by tankers were prohibited.[75] This Convention has been superseded by the *Convention for the Prevention of Pollution from Ships*[76] of 1973 which entered into force in 1983. It is wider in scope than its predecessor and covers all pollution arising from the navigation or operation of ships. It also establishes "special areas" in which rigorous rules prohibit all discharges of oil and a number of other particularly dangerous substances. The Baltic Sea is one of the designated "special areas."[77]

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[71]B. Broms, "Multilateral Agreements in the Baltic Region" in Westing, ed., *supra*, note 28, 62 at 62.

[72]19 February 1974, reprinted in (1974) 13 I.L.M. 591 (the *Convention* entered into force in 1976) [hereinafter *Nordic Convention*].

[73]See *Acid Rain and Ozone Layer Depletion*, *supra*, note 20 at 172-73.

[74]For an overview see Boczek, "Baltic Sea," *supra*, note 42 at 211-12.

[75](As amended) 12 May 1954, (1959) 327 U.N.T.S. 3, reprinted in (1972) 11 I.L.M. 267.

[76]2 November 1973, reprinted in (1973) 12 I.L.M. 1319 (the *Convention* and its Annex I entered into force in 1983; Annexes II and V in 1987 and 1989 respectively; Annexes III and IV are not yet in force) [hereinafter *MARPOL Convention*]; see Hohmann, *supra*, note 26 at 58.

[77]Hohmann, *ibid.* at 56.

The focus of early agreements on oil pollution is evident in a number of other conventions which address only this type of pollution.[78] The attention paid to oil pollution is also evidenced by the fact that, apart from radio-active waste and pollution arising from sea-bed activities, oil pollution is the only kind of pollution specifically mentioned in the 1958 Geneva Conventions.[79]

The pollution of the seas by dumping is covered in both a regional and a global convention. The *(Oslo) Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft*[80] of February 15, 1972 applies to the Northeast Atlantic, the Arctic and the Kattegatt while excluding the Baltic Sea proper. The global *(London) Convention on the Prevention of Dumping of Wastes and Other Matter*[81] of December 9, 1972 applies to the high seas and the territorial waters of its parties. Both conventions adopt the same approach of dividing substances into three lists. The disposal of substances listed in Annex I (black list) is prohibited. The dumping of Annex II (grey list) substances requires a permit from the relevant national authority. Substances listed in Annex III may be dumped under certain conditions with prior general permission.[82]

Finally, the *Convention for the Prevention of Marine Pollution from Land-Based Sources*[83] of June 4, 1974 also uses lists to categorize discharges from water courses, coastal establishments or outfalls, underwater sources and pipelines. While applying to the parties' internal waters, the *Paris Convention*, like the *Oslo Convention*, does not cover the Baltic Sea itself, but only the Kattegatt.[84]

C. *The* Helsinki Convention

1. General Aspects

The above account shows that, apart from the general rules of the Geneva Conventions and the customary rules discussed earlier, only the international

[78]*International Convention Relating to the Intervention on the High Seas in Cases of Oil Pollution Casualties*, 29 November 1969, 970 U.N.T.S. 212, reprinted in (1970) 9 I.L.M. 25; *International Convention for Civil Liability for Oil Pollution Damage*, 29 November 1969, 973 U.N.T.S. 3, reprinted in (1970) 9 I.L.M. 45; *International Convention on the Establishment of an International Fund for Compensation of Oil Pollution Damage*, 18 December 1971, reprinted in (1972) 11 I.L.M. 284.

[79]See *supra*, notes 24 & 25 and accompanying text.

[80]15 February 1972, (1974) 932 U.N.T.S. 3, reprinted in (1972) 10 I.L.M. 262.

[81]29 December 1972, reprinted in (1972) 11 I.L.M. 1294 [hereinafter *London Convention*].

[82]See Tulokas, *supra*, note 16 at 56.

[83]4 June 1974, reprinted in (1974) 13 I.L.M. 352 [hereinafter *Paris Convention*].

[84]See "Baltic Sea," *supra*, note 42 at 212; on the scope of the *Paris Convention* and its protocols see *infra*, notes 103-104 and accompanying text.

conventions addressing oil pollution, vessel source pollution and pollution by dumping were applicable to the Baltic Sea area prior to the *Helsinki Convention*. The special conditions in this region and the absence of rules addressing the foremost concern of pollution from land-based sources demanded cooperation that focused on the special needs of the region. The *Helsinki Convention* draws on the experience of the aforementioned agreements and adopts several features of their regulatory approaches. Their existence is also acknowledged in Article 21 according to which the parties' rights and obligations arising from earlier conventions are not affected. The *Helsinki Convention* only takes precedence if its provisions are more stringent.[85] It has frequently been hailed as the first comprehensive approach to marine pollution. However, as the following analysis will show, the price for a broadened scope may have been narrowed substantive provisions.

The *Helsinki Convention*'s geographical scope spans the entire Baltic Straits and the Kattegatt up to a line running between Skagern and Gothenburg (Article 1). The latter delimitation was chosen to match the "special area" designated under the *MARPOL Convention*.[86]

Article 4 outlines the extent of the *Helsinki Convention*'s applicability. It covers the water body and sea-bed as well as their living resources and other forms of life (article 4(1)). While the high seas are governed entirely by the *Helsinki Convention*, its implementation in territorial waters is the exclusive domain of the coastal states.[87] The *Helsinki Convention* does not apply to the parties' internal waters (article 4(3)), an aspect of some significance to the prevention of pollution from land-based sources.[88] The *Helsinki Convention*'s applicability is further limited by the exclusion of military vessels or aircraft (article 4(4)).

Within its area of applicability the *Helsinki Convention* addresses all possible types of pollutant input. Article 3 sets out the parties' fundamental obligation as one to "individually or jointly take all appropriate ... measures ... to abate and prevent pollution and to protect and enhance the marine environment." They are also called upon to "not cause an increase in the pollution of the sea areas outside the region." A further general rule is contained in article 5 which obligates the parties to counteract introduction of hazardous substances listed in Annex I (D.D.T.s and P.C.B.s).[89]

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[85]Tulokas, *supra*, note 16 at 215.

[86]See Johnson, *supra*, note 66 at 5, who points out that the entrances to the Baltic Sea are the national waters of Sweden and Denmark.

[87]Regarding the territorial seas currently claimed see B.A. Boczek, "The Baltic Region in its Historical Context" in Westing, ed., *supra*, note 28, 23 at 32.

[88]See *infra*, notes 99 & 180 and accompanying text.

[89]On the positive effect of this measure see Leppäkoski, *supra*, note 43 and accompanying text.

2. Vessel-Source Pollution, Dumping, Sea-Bed Activities and Spills

The *Helsinki Convention*'s approach to individual sources of pollution corresponds to the previously discussed agreements in that the *Helsinki Convention*'s rather general provisions are complemented by a series of annexes.[90] These outline in greater detail the measures to be taken regarding individual pollution sources and contain lists of hazardous and noxious substances. This approach has proven beneficial since annexes are easier to change or up-date than the Convention itself.[91]

The *Helsinki Convention*'s most extensive provisions are devoted to *pollution from ships*.[92] This can be explained by the large number of agreements existing prior to the *Helsinki Convention* and the fact that the *MARPOL Convention* had been adopted only a few months before. In fact, most of the *Helsinki Convention*'s provisions correspond to those applicable to special areas under the *MARPOL Convention*.[93] The significance of the adoption of *MARPOL* rules on a regional basis lies in the fact that, among the parties, the rules of Annexes III and IV of the *MARPOL Convention* are applicable although the annexes have not yet entered into force.[94] As a result, the Baltic Sea enjoys the world's most rigorous protection from vessel source pollution. The relevant provision is article 7 which commits the Baltic states to measures to protect the Baltic Sea from pollution by "deliberate, negligent or accidental discharge of oil, harmful substances other than oil, ... sewage and garbage from ships ... ."[95] Details are set out at great length in Annex IV and amount to an almost complete prohibition of oil and waste discharges, while the discharge of chemicals is, depending on their level of danger, permitted to a limited extent.

Article 9 of the *Helsinki Convention* prohibits *dumping from ships and aircraft*. Exceptions are made only in cases of emergency and regarding dredge spoils, which may be discharged with special permission and under the conditions set out in Annex V. This makes the *Helsinki Convention*'s rules more stringent than those of the *London Convention* to which they otherwise correspond.[96]

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[90]No reservations may be made to the *Helsinki Convention*; *supra*, note 8 at art. 25.

[91]*Infra*, note 124 and accompanying text.

[92]For a good overview see Johnson, *supra*, note 66 at 9-11.

[93]Tulokas, *supra*, note 16 at 218.

[94]Hohmann, *supra*, note 26 at 57; it should be noted that this effect extended to all of MARPOL's annexes until they entered into force between 1983 and 1989; see *supra*, note 76; it should further be noted that the rules in MARPOL's Annex III and IV currently apply to the ships of third states within the littoral states' territorial waters, see Tulokas, *supra*, note 16 at 219.

[95]Article 8 is specifically devoted to the abatement of harmful effects of pleasure craft activities; *supra*, note 8.

[96]"Baltic Sea," *supra*, note 42 at 217; Tulokas, *supra*, note 16 at 220-21.

Article 10 obligates the parties to take all appropriate measures to prevent pollution resulting from the *exploration of the sea-bed and its subsoil.* However, as one writer points out, these provisions are of limited practical value since the few projects taking place in the Baltic Sea area are confined to the extraction of sand or gravel.[97]

Article 11 and Annex VI of the *Helsinki Convention* further commit the parties to intensive cooperation in the *elimination and minimization of spills* of oil or other harmful substances.[98]

3. Pollution from Land-Based Sources Including Airborne Pollution

"Land-based pollution" is defined in the *Helsinki Convention*'s article 2(2) and means pollution of the sea caused by "discharges from land reaching the sea waterborne, *airborne* or directly from the coast, ... " (emphasis added). However, if the *Helsinki Convention*'s protection level regarding land-based pollution is already low, its provisions pertaining to airborne pollution are marginal.

The general obligation to counteract the introduction of Annex I substances from land-based sources (article 5) applies to atmospheric pollution as well. Article 6 and Annex II distinguish between land-based pollution in general, and airborne pollution. The contracting parties are to take all appropriate measures to control and strictly limit pollution by noxious substances listed in Annex II (article 6(2)). Accordingly, significant quantities of such substances as mercury, cadmium, lead, or radio-active materials may be introduced only with prior special permit (article 6(3)). By contrast, article 6(8) only requires the parties to "endeavour to use the best practicable means in order to minimize the *airborne pollution* of the Baltic Sea Area by noxious substances." In keeping with this requirement, Annex II declares its list of noxious substances valid only for waterborne introduction into the sea. Regarding airborne introduction, the Annex merely states that the parties "shall also endeavour to use the best practicable means to prevent harmful substances and materials from being introduced." This phrase lowers the protection level from harmful substances that is provided elsewhere in the *Helsinki Convention.* The relevant article 6(6) reads:

> To control and minimize pollution of the Baltic Sea area by harmful substances, the Contracting Parties shall, in addition to the provisions of Article 5 ..., aim at attaining and applying the criteria enumerated in Annex III ....

Annex III regulates the prevention of pollution from land-based sources in some detail but makes no further reference to airborne pollution. In light of the fact that land-based pollution is the main source of pollutant input into the Bal-

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[97]P. Ehlers, "Zehn Jahre Helsinki bereinkommen — Ein Bericht" (1984) 4 Natur und Recht 138 at 142.

[98]For an overview see Johnson, *supra*, note 66 at 11-12.

tic Sea, the protection level accorded by the *Helsinki Convention* is disproportionately low. This is not only a result of the extremely general nature of the provisions just reviewed. It must also be noted that considerable amounts of land-based pollution stem from the parties' internal waters which are excluded from the *Helsinki Convention*'s applicability.[99] At first glance this appears all the more odd in view of the detailed rules adopted regarding vessel-source pollution. However, it had already been suggested that the Convention could draw upon extensive practice in this regard and, therefore, operate in a relatively uncontentious area. Also, when dealing with pollution from ships, one deals with identifiable sources of pollution. By contrast, the realm of land-based pollution, notably if transported through the atmosphere, had received little previous attention.[100] In part, this must be attributed to the diffuse nature of atmospheric pollution and the difficulties in identifying its sources. Furthermore, the regulation of land-based pollution and atmospheric pollution is particularly sensitive to the parties' sovereign interests. Atmospheric pollution generally originates well inside the territories of the respective countries.

At the time of the *Helsinki Convention*'s conclusion, the Baltic region and other states were not addressing atmospheric pollution in a meaningful way. Awareness of the long-range effects of air pollution was just beginning to grow, mostly due to the Scandinavian concern about acidification problems.[101] As is well known, the economic interests of the states concerned constituted a major obstacle on the way from awareness to action. Curbing emissions was — and continues to be — a costly undertaking and governments are reluctant to impose such burdens on their economies. In the Baltic context the problem was compounded by the fact that Eastern Europe contributed a major portion of the atmospheric pollution but was — and remains — unable to afford abatement measures.[102]

4. Other Approaches to Airborne Pollution of the Marine Environment

In light of these factors, the *Helsinki Convention*'s approach to atmospheric pollution is not surprising and the mere fact that this source of pollution was included at all is laudable. This assessment is confirmed upon looking at other approaches to atmospheric pollution. All of the more detailed measures were initiated relatively recently, whereas early arrangements were quite similar to

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[99]Article 4(3) attempts to remedy this by calling upon the parties to ensure the purposes of the *Helsinki Convention* are fulfilled in these waters; *supra*, note 8.

[100]On subsequent action see *infra*, under Section 4.

[101]See *Acid Rain and Ozone Layer Depletion*, *supra*, note 20 at 9 & 82.

[102]On air pollution in the U.S.S.R. and Eastern Europe see J. McCormick, *Acid Earth — The Global Threat of Acid Pollution* (London: Earthscan, 1985) at 113ff; F. Painton, "Darkness at Noon" *TIME* (9 April 1990) 50; M. Simons, "Rising Iron Curtain Exposes Haunting Veil of Polluted Air" *The New York Times* (8 April 1990) 1.

the *Helsinki Convention*. This is true both in terms of their scope and their willingness to address atmospheric pollution as a part of pollution from land-based sources.

a. The Paris Convention

The *Paris Convention* calls upon the parties to "eliminate" pollution of the marine environment from land-based sources by substances on its "black list," and to "limit strictly" pollution by substances on its "grey list."[103] Discharges require prior approval by the appropriate national authority. In addition, the parties are to endeavour to forestall any new pollution from land-based sources.

Atmospheric pollution was included in the original *Convention* only in the definition of pollution from land-based sources. This situation will be remedied by the *Protocol Amending the Convention for the Prevention of Marine Pollution from Land-Based Sources* of March 26, 1986.[104] With the *Protocol*, the parties recognize that the *Paris Convention* does not contain provisions referring to the prevention of pollution of the marine area through the atmosphere. It will insert into the *Paris Convention*'s Article 3(c) a subsection "iv" which will read: "by emissions into the atmosphere from land or from man-made structures." The *Protocol* will enter into force when signed by all parties to the *Paris Convention*. It is open to other states as well, which would then also becomes parties to the *Paris Convention*.

b. The North Sea Ministerial Conferences

Regional cooperation with respect to the North Sea environment has recently focused on atmospheric pollution. Since the North Sea is covered by the *Paris Convention*, there is no special approach to its pollution from land-based sources. Cooperation is effected within the framework of ministerial conferences. During the Second International Conference on the Protection of the North Sea in 1987, the participants accepted the need to adopt specific measures regarding the input of pollutants via the atmosphere.[105] At this year's Third International Conference, the states committed themselves to reducing the atmospheric introduction of 17 substances by at least 50% by 1995 at the latest or by 1999 depending on the substance.[106]

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[103]See *supra*, note 83 and accompanying text.

[104]*Protocol* reprinted in K.R. Simmonds, ed., *New Directions in the Law of the Sea* (New York: Oceana Publications, 1988) at 29.

[105]Point XI, Ministerial Declaration of the Second International Conference on the Protection of the North Sea, London, 24-25 November 1987; text provided by the Minister for Environment, Conservation of Nature and Reactor Safety, Federal Republic of Germany.

[106]See *Umwelt — Informationen des Bundesministers für Umwelt, Naturschutz und Reaktorsicherheit* 3/90, 113.

c. The Barcelona Convention

The most elaborate approach to atmospheric pollution to date has been taken within the framework of the *(Barcelona) Convention for the Protection of the Mediterranean Sea Against Pollution* of February 16, 1976.[107] The *Barcelona Convention*, part of U.N.E.P.'s Regional Seas Programme, prohibits the discharge of black list substances. Discharges of grey list substances are to be strictly limited. The *Barcelona Convention*'s lists of substances are more comprehensive than those of the *Paris Convention* and the requirements regarding permits are more stringent.[108]

Article 8 of the *Barcelona Convention* deals with pollution from land-based sources. Atmospheric pollution is covered only in the most general fashion and is not specifically mentioned. The parties are to prevent, abate and combat pollution "caused by discharges from rivers, coastal establishments or outfalls, or *emanating from any other land-based source within their territories*" [emphasis added].

The *Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources*[109] to the *Barcelona Convention* focuses on land-based pollution without including specific rules on atmospheric pollution. However, article 4(1)(b) declares the *Protocol* and its obligations applicable to "pollution from land-based sources transported by the atmosphere, under the conditions to be defined in an additional annex to this protocol ... ."

Under the auspices of U.N.E.P. and the World Meteorological Organization (WMO), work in this regard has been under way since 1988 when an *ad hoc* meeting began to discuss the possible elements of an annex dealing specifically with atmospheric pollution.[110] In May 1990 a draft was submitted to the *Barcelona Convention* parties.[111] It applies to pollution discharged into the atmosphere affecting the *Athens Protocol* area from land-based sources within the parties' territories, particularly from the energy production, industry, transportation, and incineration sectors.[112] The draft further applies to discharges from vessels and

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[107]Reprinted in (1976) 15 I.L.M. 290 [hereinafter *Barcelona Convention*].

[108]Hohmann, *supra*, note 26 at 57.

[109]*Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources*, 17 May 1980, reprinted in (1980) 19 I.L.M. 869 (in force since June 17, 1983) [hereinafter *Athens Protocol*]; see Hohmann, *ibid.* at 59.

[110]Report of the *Ad Hoc* Meeting for the Preparation of the Annex IV of Land-Based Sources Protocol to the Barcelona Convention, Athens, 19-21 December 1988, U.N. Doc. U.N.E.P. (OCA)/MED WG. 6/1, (21 December 1988).

[111]Information kindly provided by A. Soudine, Senior Scientific Officer, Environment Division, W.M.O., Geneva: letter of May 24, 1990.

[112]*Airborne Pollution of the Mediterranean Sea from Land-Based Sources* (Annex IV to the *Athens Protocol*) U.N. Doc. U.N.E.P. (OCA)/MED WG. 12/5, (5 April 1990).

fixed man-made offshore structures.[113] The Annex designates several of the substances which the *Athens Protocol* lists in its Annex I and which the parties are required to eliminate under Article 5 of the *Athens Protocol.* They include organohalogen and phosphate substances, mercury, and radio-active substances.[114] Similarly, several of the Annex II substances are listed and must be strictly limited pursuant to Article 6 of the *Athens Protocol.* These encompass zinc, copper, lead, inorganic phosphorous and substances enhancing eutrophication.[115] The parties are also called upon to develop common guidelines regarding the height and location of chimneys, lead content in gasoline and the efficiency of particulate matter filters in coal-fired power plants.[116]

d. U.N.E.P. and the Regional Seas Programme

Several other of the U.N.E.P. Regional Seas Conventions deal with atmospheric pollution as an aspect of land-based pollution, but are far less advanced than the *Barcelona Convention.*[117] Other Regional Seas Programme Conventions address the matter separately from land-based pollution in a very general article calling on parties to "take all appropriate measures to prevent, reduce and control pollution in the Convention area resulting from discharges into the atmosphere from activities under their jurisdiction."[118]

U.N.E.P. has also devoted special attention to marine pollution from land-based sources outside the Regional Seas Programme. However, the "Montreal Guidelines on the Protection of the Marine Environment Against Pollution from Land-Based Sources" limit themselves to including atmospheric pollution in the definition of land-based pollution.[119]

e. The Law of the Sea Convention

The *Law of the Sea Convention* of 1982 devotes two provisions of its Part XII exclusively to marine pollution via the atmosphere.[120] Under article 212(1), states "shall", within the airspace under their sovereignty or with regard to vessels or aircraft under their flag or registry, adopt national laws and regulations

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[113]See art. 2, *ibid.*

[114]See art. 3, *ibid.*

[115]See art. 4, *ibid.*

[116]See art. 5, *ibid.*

[117]See art. 6 of the *Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution,* April 24, 1978, reprinted in (1978) 17 I.L.M. 511; and art. 6 of the *Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment,* Jeddah, 14 February 1982, U.N. Doc. U.N.E.P./GC/INF/II/Rev.1 (1985) 191.

[118]See, *e.g.*, art. 9 of the *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, Noumea,* 25 November 1986, reprinted in (1987) 26 I.L.M. 38.

[119]Guidelines reprinted in (1985) 14 Env. Pol. & L. 77.

[120]*Supra,* note 29.

regarding "pollution from or through the atmosphere." In doing this, states are to take into account, *inter alia*, internationally agreed upon rules and standards. According to article 212(3), they are to "endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control such pollution." With regard to enforcement, article 222 obligates the states to enforce their own rules and standards and to adopt laws and regulations to implement the international standards established pursuant to article 212(3).

As one writer suggests, the *Law of the Sea Convention*'s rules of reference regarding atmospheric pollution are rather weak.[121] In adopting their own laws, the states need only "take account" of international rules and standards but are not obligated to adopt them. By contrast, national rules pertaining to vessel-source pollution, sea-bed activities or dumping must conform to certain minimum standards derived from the international level.[122] In the same vein, states are not required to establish international rules on atmospheric pollution, but must only "endeavour" to do so.

This overview shows that in departing from approaches similar to that of the Baltic region, considerable progress has been made toward recognizing and abating atmospheric pollution of the marine environment.

5. HELCOM's Role in Enhancing Cooperation

Commenting on the *Helsinki Convention*'s vague provisions on pollution from land-based sources, one writer suggested in 1981 that the *Convention*'s success and significance would largely depend on future cooperation and the role played by the Helsinki Commission.[123] Indeed the Commission's powers and functions in this regard are of considerable importance and the Commission has actively enhanced regional cooperation. Its work has been quite successful despite its limited regulatory powers. According to article 13(d) the Commission, based in Helsinki, can define pollution criteria and objectives for pollution reduction, particularly with a view to the prevention of pollution from land-based sources. Its advisory powers, outlined in article 13(b) and (c), include the authority to review the *Helsinki Convention*'s contents and to recommend amendments to both the *Helsinki Convention* and its annexes, as well as the lists of substances.

This latter power is of great significance because, under the conditions of article 24(1) and (2), the Commission itself may adopt amendments to the annexes and substance lists. It communicates these amendments to the parties

[121]Boyle, *supra*, note 23 at 354.

[122]See articles 211(2), 208(3) & 210(6), *Law of the Sea Convention* and *supra*, note 33 and accompanying text.

[123]*Supra*, note 16 at 216-17.

and they are considered to be accepted unless a party objects in writing within a certain period of time. These decisions must be taken unanimously with each contracting party having one vote pursuant to article 12(5).

Other HELCOM duties include the continuous observation of the *Helsinki Convention*'s implementation (article 13(a)), the promotion of additional protection measures (article 13(e)), the exchange of scientific information and the promotion of research (article 13(f)). HELCOM is assisted in these functions by three permanent committees — the Scientific-Technological Committee, the Maritime Committee and the Combating Committee — as well as temporary working groups.[124]

What has HELCOM done regarding airborne pollution of the Baltic Sea? Before answering this question one must consider the rules and remedies available to the area covered by the *Helsinki Convention* from external sources. Only when this setting is known can activities within the region be adequately evaluated and further measures suggested.

6. Rules and Cooperation Outside the *Helsinki Convention* and Their Effect on Airborne Pollution of the Baltic Sea Area

a. Customary Law

The rules of customary law mentioned earlier do not provide an adequate answer to the issues at hand.[125] The rule prohibiting transfrontier pollution causing damage to another state's territory does not protect the high sea areas of the Baltic Sea from atmospheric input. Some of these areas, however, are particularly threatened by eutrophication. Even in the limited area of the Baltic states' territorial waters there are several problems in the rule's application. The rule protects only from "serious damage."[126] There is considerable evidence that atmospheric introduction of phosphorous and nitrogen cause serious eutrophication.[127] Yet scientists also caution that there are invariables in their research and data.[128] A second problem would, therefore, arise from the need to establish a steadfast link between emissions and effect.[129] A third aspect, closely connected to the second, is the difficulty of attributing a specific portion of the damage to a given country. The conclusion must be that the aforementioned customary rule is too general to provide the finely tuned solution the Baltic pollution problems

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[124]See H.A. Velner, "Baltic Marine Environment Protection Commission" in Westing, ed., *supra*, note 28, 75 at 75-76.

[125]See *supra*, notes 19-21 and accompanying text.

[126]See *Trail Smelter*, *supra*, note 21; Principle 21 of the *Declaration on the Human Environment*, *supra*, note 2.

[127]*Supra*, note 47 and accompanying text.

[128]HELCOM No. 32, *supra*, note 53 at 3, 7, 11.

[129]See, *supra*, note 20 at 136.

require. This is confirmed by the fact that states have never relied solely on customary rules but, at the most, have used them as a starting point for elaborate treaty-based cooperation.[130] The situation with regard to the high seas is even more uncertain since there is not even agreement as to the existence of customary rules protecting states beyond national jurisdiction.[131]

b. The Law of the Sea Convention

The *Law of the Sea Convention* does not remedy this situation since its provisions on airborne pollution create no significant new obligations.[132] Therefore, even if the *Law of the Sea Convention* were in force, it would not significantly benefit the protection of the Baltic Sea against airborne pollution. Its protection levels are not higher than those already anchored in the *Helsinki Convention.* The only change which would arise from its application would be that extra-regional states could be held to the aforementioned loose obligations. The *Law of the Sea Convention* confirms the pattern found in the other agreements previously analyzed: the marginal protection of the marine environment against the pollution from land-based sources and via the atmosphere is out of proportion to the significance of these sources.

c. The Paris Convention

At the regional level, the only marine-oriented treaty of possible relevance is the *Paris Convention* which was discussed earlier. Its significance for the Baltic Sea Area is marginal since, at best, it covers the entrance to the Baltic Sea.[133]

d. The 1979 E.C.E. Convention for Long-Range Transboundary Air Pollution

One must, therefore, turn to agreements that specifically address long-range air pollution. The only multi-lateral approach to this problem is the 1979 United Nations Economic Commission for Europe (*E.C.E.*) *Convention on Long-Range Transboundary Air Pollution.*[134] As a result of its membership, this convention is of interest to the solution of atmospheric pollution problems in the Baltic. The contracting parties to the *E.C.E. Convention* include all the countries in Eastern and Western Europe whose emissions could affect the Baltic Sea.[135]

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[130]*Ibid.* at 268.

[131]*Supra*, note 19 and accompanying text.

[132]*Supra*, note 21 and accompanying text.

[133]*Supra*, note 84 and accompanying text.

[134]13 November 1979, reprinted in (1979) 18 I.L.M. 1442 [hereinafter *E.C.E. Convention*].

[135]On membership as of September 15, 1989 see Executive Body for the *Convention on Long-Range Transboundary Air Pollution*, United Nations Economic Commission for Europe, Annual Review of Strategies for Air Pollution Abatement, UN ECE Doc. ECE/EB.AIR/R.40, (September 26, 1989) at 15 [hereinafter EB.AIR, Annual Review].

The *E.C.E. Convention*, in force since 1982, provides a framework that establishes broad obligations and cooperative mechanisms, but leaves specific emissions reductions and the choice of substances to protocols.[136] The parties commit themselves only to "endeavour to limit and, as far as possible gradually reduce and prevent air pollution including long-range transboundary air pollution" (article 2). They are to "develop without undue delay policies and strategies which shall serve as a means of combating air pollution ..." (article 3) and exchange information in this regard as well as increase their research cooperation (articles 3, 7, 8). This approach, which allows the parties to commit themselves gradually to limited obligations, has proven successful.

In the 1985 *Helsinki Protocol*[137] the parties agreed to a 30% reduction of sulphur dioxide (SO_2) emissions by 1993.[138] Nineteen states have become party to the *Helsinki Protocol*, which entered into force in September 1987. Inherent in the "flat-rate percentage reduction approach" and the chosen baseline year of 1980 are several problems as to the *Helsinki Protocol*'s effectiveness.[139] Nonetheless, it has led to an overall reduction of sulphur emissions and several parties have committed themselves to exceeding the reduction rates required by the *Helsinki Protocol*.[140]

The 1988 *Protocol to the 1979 E.C.E. Convention on Long-Range Transboundary Air Pollution (Sofia Protocol)*,[141] which is not yet in force, addresses nitrogen oxides (NO_x) emissions. However, while it provides for the option of emission reductions in the future, it is weaker than the *Helsinki Protocol* in that it requires the parties only to freeze their emissions at the levels of a base year of their choice (article 2(1)).[142] Yet, ecologically speaking, it could turn out to be far more effective than its sulphur counterpart. For the first time, the *Sofia Protocol* adopts the concept of "critical/target loads" as the basis for emission reductions (article 2(3)). Emissions must be reduced until acceptable deposition or concentration values are achieved and the national reduction rates depend on the sensitivity of the area its emissions affect.[143]

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[136]*Supra*, note 20 at 184-85.

[137]*Supra*, note 135 at 15.

[138]*Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution, on the Reduction of Sulphur Emissions by at least 30%*, in *Executive Body for the Convention on Long-Range Transboundary Air Pollution*, UN ECE, 3rd Sess., Doc. ECE/EB.AIR 18, Annex I, (August 6, 1985) [hereinafter *Helsinki Protocol*].

[139]A. Fraenkel, "The Convention on Long-Range Transboundary Air Pollution: Meeting the Challenge of International Cooperation" (1989) 30 Harvard Int'l L.J. 447 at 470.

[140]*Ibid.* at 471.

[141]*Protocol to the 1979 E.C.E. Convention on Long-Range Transboundary Air Pollution*, Concerning the Control of Emissions of Nitrogen Oxides or Their Transboundary Fluxes, 31 October 1988, reprinted in (1989) 28 I.L.M. 212 [hereinafter *Sofia Protocol*].

[142]*Supra*, note 139 at 473.

[143]Personal communication with Dr. Hans Martin, Director, Air Quality and Inter-environmental Research Branch, Atmospheric Environment Service, Environment Canada, (March 30, 1990).

The choice of substances regulated under the protocols reflects the intention of the contracting states to counteract widespread acidification of the environment. Only recently has the E.C.E. also begun to take into consideration volatile organic compounds (VO_x).[144] While such E.C.E. efforts are certainly beneficial to the Baltic Sea area, they do not provide the much-needed strategy against eutrophication. It remains to be seen whether this will be changed by the *Sofia Protocol* and its "critical loads" approach. In any event, action geared toward curbing emissions of eutrophication-enhancing substances could be initiated by the Baltic member states of the E.C.E.. All Baltic states have signed and ratified the 1979 *E.C.E. Convention* and have at least signed its protocols.[145] It must, nonetheless, be cautioned that the usefulness of E.C.E. action to the Baltic may be hampered by the E.C.E.'s need to accommodate North American interests as well.[146] This is true with respect to the compromises necessary to satisfy the interests of the United States.[147]

Currently, the E.C.E. activities of greatest significance to the Baltic States are those involving the monitoring of air pollution and its effects. The E.C.E. funds the European Monitoring and Evaluation Programme (E.M.E.P.) which measures the concentration of various substances in the atmosphere and calculates the transport and deposition of air pollutants (articles 2-4 of the *E.M.E.P. Protocol*).[148] The network now consists of 95 sampling stations in 24 European countries, several of which include NO_x and VO_x in their measuring activities.[149]

e. The European Communities

Finally, activities of the European Communities (E.C.) are relevant to the Baltic since two of the Baltic states — Denmark and Germany — are members of the E.C. [150] Not only are these states bound by E.C. law regarding air pollution, they can also represent the Baltic cause in the E.C. [151] This aspect is not to be underestimated since the Federal Republic of Germany is an influential member of the E.C.

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[144]*Ibid.*

[145]Poland, which has not signed the *Helsinki Protocol*, is an exception. See, *supra*, note 135 at 21.

[146]The United States and Canada are members of the E.C.E. See, *supra*, note 20 at 175.

[147]On the impact of the U.S. position on the negotiation of the *Sofia Protocol*, see *supra*, note 139 at 472-73.

[148]*Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution, on Financing the Monitoring and Evaluation of Air Pollutants in Europe (E.M.E.P.)*, 28 September 1984, reprinted in (1985) 24 I.L.M. 484 [hereinafter *E.M.E.P. Protocol*].

[149]*Supra*, note 139 at 460.

[150]See, *supra*, note 20, at 162ff.

[151]*Ibid.* at 166ff; O. Lomas, "Environmental Protection, Economic Conflict and the European Communities" (1988) 33 McGill L.J. 506 at 519ff.

In the *Single European Act* of 1987, the E.C. inserted articles 130 R-T into the E.E.C. Treaty.[152] These provisions provide the E.C. with explicit environmental powers. Pursuant to article 130 R (4), the E.C. will take action related to the environment with respect to the extent to which objectives can be better attained at the E.C. level than at the level of individual member states.[153]

Among the stated priorities of the E.C. are the fight against air and marine pollution and the prevention of the transfer of problems from one part of the environment to another.[154] In its Fourth Environment Action Programme (1987-1992) the E.C. departs from the strictly sectoral approach to environmental protection and promotes "multimedia" pollution controls.[155] Consistent with this approach is the E.C.'s goal of reducing land-based pollution via, *inter alia*, atmospheric transport.[156] It is also noteworthy that the E.C. wishes to strengthen its participation in the protection of regional seas and in particular its role under the *Helsinki Convention*.[157]

f. The Nordic Convention

The *Nordic Convention*'s usefulness in addressing the issues which are the focus of this article is limited. The main reason is that it aims at providing remedies to individuals in cases where it is possible to identify the causes of pollution.[158]

7. Recent Action on Airborne Pollution under the *Helsinki Convention*

Meanwhile, HELCOM has indeed seized the initiative and built on the basis of possible reductions of atmospheric pollution provided in the *Helsinki Convention*. HELCOM's activities fall into three categories: action regarding the monitoring of atmospheric pollution and data collection, recommendations on emission reductions and the suggestion of changes to the *Helsinki Convention* itself.

a. Monitoring and Data Collection

Outside the scope of HELCOM, research on atmospheric pollution of the Baltic was well under way in the 1970s.[159] HELCOM itself has focused on

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[152]"Annex: E.E.C. Fourth Environmental Action Programme (1987-1992)" Off'l J. European Communities (7 December 1982), No. C 328/43.

[153]*Ibid.* at C 328/44.

[154]"Council Resolution," *ibid.* at C 328/2.

[155]*Ibid.* at C 328/18.

[156]*Ibid.* at C 328/24.

[157]*Ibid.* at C 328/37.

[158]*Supra*, note 72; see, *supra*, note 20 at 174.

[159]See, *supra*, note 54 at 173.

research and monitoring of atmospheric pollution of the Baltic Sea since the mid 1980s. It set up an *ad hoc* Group of Experts on Airborne Pollution of the Baltic Sea Area (E.G.A.P.).[160] E.G.A.P. functions as advisory body to the Scientific-Technological Committee on matters related to monitoring and assessment of airborne pollution.[161] In particular it is to (i) compile data on deposition and atmospheric concentrations of pollutants related to the Baltic, (ii) set up and run a network of stations and collect data on a national basis, (iii) select and recommend the use of appropriate models for the construction of deposition fields as well as numerical models for the evaluation of the pollutants' origin, and (iv) take advantage of ongoing international activities. Also, E.G.A.P. advises the Scientific-Technological Committee on the need for reduction measures and on the preparation of an inventory of substances deposited in significant quantities.[162]

Monitoring activities pursuant to the framework adopted by HELCOM have already yielded the first results. An evaluation report based on data provided by all Baltic states for 1983-1986 has just been published.[163] By now all Baltic states have also provided data for 1988 and are about to provide data for 1989.[164] With its Recommendation 11/1 HELCOM adopted a new framework for the monitoring of airborne pollution loads.[165] In confirming the Baltic states' commitment under Article 6 of the *Helsinki Convention* to "endeavour to use best practicable means to minimize airborne pollution" and Article 16 on cooperation in research and monitoring, HELCOM expressed its desire to limit the pollution of the Baltic Sea by the atmospheric transport of harmful substances. It recommended that each Baltic state should have at least one monitoring station at sea and set out minimum requirements for the monitoring process. Nitrogen compounds have a prominent position in this regard.

HELCOM has also increased its cooperation with other international organizations. In the fall of 1989 the Commission and the E.C.E. entered into a Memorandum of Understanding to enable cooperation with regard to data on airborne pollution.[166] In this regard HELCOM has moved beyond the Paris

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[160]See *e.g.* the Seminar on Diffusivity, Transport and Deposition Processes of Atmospheric Pollutants to the Baltic Sea; held in conjunction with the Third Meeting of the *ad hoc* Group of Experts on Airborne Pollution of the Baltic Sea Area (E.G.A.P.) of the Baltic Marine Environment Protection Commission — Helsinki Commission, Neubrandenburg, 7-8 May 1986 [unpublished].

[161]See Baltic Marine Environment Protection Commission — Helsinki Commission, Seventh Meeting of the Group of Experts on Airborne Pollution of the Baltic Sea Area, Helsinki, 24-27 April 1990, E.G.A.P. 7/10, Annex 2 [hereinafter HELCOM, Seventh Meeting].

[162]*Ibid.*

[163]See HELCOM No. 32, *supra*, note 53.

[164]*Supra*, note 161 at 5.

[165]*Ibid.*, Annex 4.

[166]*Ibid.* HELCOM Annex 6; and Steering Body to E.M.E.P., Executive Body for the Convention on Long-Range Transboundary Air Pollution, UN ECE, 13th Sess., Doc. ECE/EB.Air/GE. 1/14 at 8 (15 September 1989).

Commission which is only preparing such cooperation.[167] Under the Memorandum, the E.C.E. authorized international centres of E.M.E.P. to enter into separate agreements with HELCOM concerning the collection, storage, processing, evaluation and reporting of data on airborne pollution in the Baltic Sea area. HELCOM has already entered into such an agreement with the Norwegian Institute for Air Research.[168]

Though it has no formal links with the Paris Commission and the Group of Experts on the Scientific Aspects of Marine Pollution (G.E.S.A.M.P.), HELCOM takes note of relevant activities of these bodies.[169]

The next evaluation of data on airborne pollution is scheduled for the autumn of 1991. It is to be prepared in cooperation with E.C.E. experts and is to include emissions from ships.[170] Monitoring will be based on modelling using both deposition and meteorological data as well as emission data from different sources.[171] On the basis of these results, HELCOM will be advised regarding further reduction of air pollution from the diverse sources, taking into account the action and plans of other international organizations.[172]

b. Recommendations Related to the Reduction of Airborne Pollution

Apart from activities related to monitoring, HELCOM has begun in the last two years to address airborne pollution of the Baltic Sea by adopting recommendations aimed at reducing emissions from various sources.[173] The recommendations use a branch-by-branch approach and address different sectors contributing to land-based pollution via the atmosphere. Recommendation 9/4 of February 15, 1988 calls for the reduction of emissions of lead from the combustion of leaded gasoline. Recommendation 11/7 of February 14, 1990 concerns measures aimed at the reduction of emissions to the atmosphere from the iron and steel industry.[174] On the same day HELCOM adopted Recommendation 11/11 on measures to reduce the emission of harmful chlorofluorocarbons

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[167]*Ibid.*

[168]*Supra*, note 161, Annex 7.

[169]*Ibid.* at 2.

[170]Information kindly provided by Ambassador Pertti Harvola, Legal Department of the Ministry of Foreign Affairs, Helsinki, Finland, letter of June 21, 1990.

[171]*Ibid.*

[172]*Ibid.*

[173]*Ibid.*

[174]See in this context Baltic Marine Environment Protection Commission — Helsinki Commission – Report of the Third Meeting of the Working Group on Reduction of Industrial Discharges (RID), Lübeck, Federal Republic of Germany, 14-18 May 1990, RID 3/10 [hereinafter HELCOM/RID, Third Meeting].

from ships and Recommendation 11/12 on the reduction of air pollution from ships.[175]

c. Revision of the Helsinki Convention

Finally, and perhaps most importantly, HELCOM has undertaken to consider revision of the *Helsinki Convention* itself and thus to attempt to remedy some of the shortcomings mentioned earlier. An *ad hoc* Group for the Revision of the Convention met for the first time at the end of June 1990.[176] Four aspects of the revisions under consideration are of particular interest in the present context. The first is the introduction of more legally-binding technical provisions on the prevention and control of land-based pollution (including airborne pollution).[177] The second aspect — the implementation of the "best available technology" to reduce land-based pollution — will also receive attention. In this context, it is noteworthy that the Working Group on Reduction of Industrial Discharges recently suggested a definition of this term as used in Article 6(1) of the *Helsinki Convention.*[178] The proposal focuses on "the latest stage of development" and lists a number of criteria to determine whether it represents the "best available technology." These are (a) comparable processes, facilities and technologies, (b) technological advance and change in scientific knowledge, (c) economic feasibility, (d) time limits for application, (e) nature and volume of the effluent concerned and (f) the precautionary principle. The latter is of particular interest since the working group's specification reads:

> action should be taken when there is reason to assume that certain damage or harmful effects on the living resources of the sea are likely to be caused by discharged substances, even where there is no scientific evidence to prove a causal link between discharges and effects caused by nutrients and by substances considered to be harmful ....

Consistent with this latter aspect of the contemplated revision is the fact that a commitment to the precautionary principle as such is also considered by the working group.[179]

Finally, the changes considered also touch upon the application area of the *Convention.* The *ad hoc* group is to look into the possibility of an enlarged applicability to cover internal waters and the entire catchment area of the Baltic

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[175]See in the latter context related E.C.E. activities, Executive Body for the Convention on Long-range Transboundary Air Pollution, U.N. E.C.E., 7th Sess., Doc. ECE/EB.AIR/20, December 20, 1989, Annex II.

[176]*Supra*, note 170.

[177]See Baltic Marine Environment Protection Commission — Helsinki Commission — Eleventh Meeting, Tasks of the HELCOM *ad hoc* Group for Revision of the Convention, Helsinki, 13-16 February 1990, HELCOM 11/14, Annex 28 [hereinafter HELCOM, Eleventh Meeting].

[178]*Supra*, note 174, Annex 5.

[179]*Supra*, note 177.

Sea.[180] While this is of no direct relevance to airborne pollution, it is mentioned here because it would address one point of criticism and would make the *Helsinki Convention* match the *Paris Convention*'s scope in this regard.

Conclnsion

The Baltic approach to airborne pollution of the marine environment has evolved considerably since the adoption of the *Helsinki Convention* in 1974. The *Helsinki Convention*'s provisions in this context — especially when compared to those on other sources — leave much to be desired. It was also pointed out that this is hardly surprising given the time of the *Helsinki Convention*'s conclusion and the characteristics of airborne pollution. Economic aspects, scientific uncertainty and, therefore, lack of precedents for cooperation explain why the *Helsinki Convention*, could not realistically achieve more at the time.

The progress of cooperation in the Baltic can be evaluated by way of a comparison with efforts under the *Barcelona Convention*, the other centre of activity concerning atmospheric marine pollution.

The *Helsinki Convention* was in many ways a model for the 1976 *Barcelona Convention.*[181] However, with regard to atmospheric pollution the latter took a different path from that of the Baltic agreement. It started out in a more general fashion than the *Helsinki Convention* but, with the 1980 *Athens Protocol*, moved beyond its counterpart. Atmospheric pollution is specifically mentioned and receives the same treatment as any other land-based pollution: Annex I substances must be "eliminated" and Annex II substances must be "strictly limited." Accordingly, the Mediterranean approach, unlike the *Helsinki Convention*, does not distinguish between airborne and other land-based pollution. The *Athens Protocol* does, however, leave the exact delimitation of the duties of the parties (specification of substances) to the annex which is currently in the drafting process. It remains to be seen whether the rather ambitious annex will meet with the approval of the parties to the *Convention.*[182]

The *Helsinki Convention*, by contrast, seemed to start out in a more specific manner than the *Barcelona Convention.* In reality, as was suggested earlier, the already weak rules on land-based pollution were further qualified with respect to airborne pollution. A double qualification — the parties only have to "endeavour" to use the "best available technology" — provides states with escape routes on two levels.

Unlike the *Barcelona Convention*, the *Helsinki Convention* does not work by way of protocols. Its obligations arise directly from the *Helsinki Convention*

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[180]*Ibid.*

[181]"International Protection," *supra*, note 35 at 812.

[182]A. Soudine has expressed doubts that this will occur. See *supra*, note 111.

and are specified through annexes. Furthermore, HELCOM, in a recent action, has chosen a different approach to that of the Mediterranean states. Instead of addressing atmospheric pollution in a comprehensive fashion, it adopted a branch-by-branch approach (for example industry, gasoline, ships). It is a matter of opinion whether this approach is ideal. It may facilitate negotiations and the adoption of solutions tailored to the sector in question. Nonetheless, one should consider whether this approach should not at least be complemented by an overall air pollution strategy. One option would be the adoption of a list of priority substances to be addressed in all sectors.

A commendable feature of HELCOM's action is its three-tier approach to atmospheric pollution. Its strategy on monitoring and data collection is excellent and tackles the aforementioned problem of uncertainty. International experience has shown that extensive research and monitoring are indispensable steps on the way to effective cooperation, not only because they chip away at the "excuse" of uncertainty, but also because they map out the "where" and "how" of remedial action. In this context the Baltic states may want to follow the E.C.E. mapping efforts for the critical loads approach. Perhaps this can contribute to the solution of the eutrophication problems.

HELCOM's recommendations concerning airborne pollution follow the aforementioned branch-by-branch approach and address narrow issues of an arguably less contentious nature. The recommendation regarding the iron and steel industry focuses only on dust emissions and is limited to stating that they "should be avoided."[183] The recommendation regarding air pollution from ships calls for only the "limiting" of this pollution "as soon as possible."[184] The recommendations on lead content in gasoline and chlorofluorocarbon emissions from ships address issues which had already been dealt with internationally.[185] Furthermore, all of these recommendations must be seen in light of the limited obligations of the parties under the *Helsinki Convention* which requires only that they "endeavour" to take steps. This is certainly not comparable to the duty envisaged in the *Barcelona Convention* to "eliminate" and "strictly limit" the emissions of certain substances.

HELCOM's initiative to revise the *Helsinki Convention* acknowledges the need "to bring the Convention with Annexes in line with the development since 1974."[186] The introduction of more legally binding technical provisions in the field of prevention and control of marine pollution could address some of the above criticism and introduce more specific rules along the lines of the *Athens Protocol*. In any event, it is to be hoped that the planned revision will bring a

[183]*Supra*, note 174.
[184]*Ibid.*
[185]*Ibid.*
[186]*Supra*, note 177.

stronger commitment to the reduction of airborne pollution. Such a commitment would give more weight to Baltic requests for indispensable external support. Perhaps the Baltic states could also re-assert their leadership in regional marine management they claimed with the *Helsinki Convention.*

Action regarding the use of "best available technology" could remedy the "double qualification" aspect. If the criteria of "nature and volume of effluent" and the "precautionary principle" (the latter also as a general rule) were accorded adequate weight, the notion of "best available technology" could set higher standards with respect to the abatement of nitrogen and phosphorous emissions.

Throughout this article, reference has also been made to the need to fit Baltic cooperation into the larger picture. The World Commission on Environment and Development has set out three imperatives for ocean management:

> The underlying unity of the oceans requires effective global management regimes.
>
> The shared resource characteristics of many regional seas make forms of regional management mandatory.
>
> The major land-based threats to the oceans require effective national action based on international cooperation.[187]

All three of these aspects find support in the Baltic context. The protection of the marine environment requires global efforts on several counts. At a practical level there is a need for coordinated research, data collection and exchange of experience. There are also certain geographic areas and kinds of pollution that call for a global approach; the high seas and pollution from ships, for example, are to a considerable extent outside the reach of effective regional cooperation.[188] In turn, combating pollution from land-based sources requires a regional approach tailored to the number of states concerned and the features of the regional problem.

Action at the global level could facilitate these and any other cooperative efforts by promoting certain minimum standards. This could be achieved by the 1982 *Law of the Sea Convention*, either once it enters into force or as customary law. Such global standards could also alleviate the problem of potential trade imbalances currently making environmental protection measures unattractive or impossible for individual states.

Similarly, the global promotion of ideas, such as sustainable development or the limitation of sovereign interests in favour of common interests, can only benefit regional cooperation. They can influence regional interaction, particularly if they crystallize into customary law.

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[187]*Supra*, note 3 at 264.

[188]See, *supra*, note 30 at 45, 53.

Realistically, however, such developments can only be expected to improve the frame of reference for regional action. It has already been shown that broad customary rules are not sufficient for the adequate management of complex environmental problems.[189] This is the point at which regional approaches become indispensable. They can be tailored to the needs of a region. As a result, they are likely to be more effective because of the increased homogeneity of interests and the greater incentive to act.[190]

At the same time, as the Baltic example illustrates, regional approaches must be coordinated with those of neighbouring regions or larger settings. One might describe it as a system of "superimposed regions," beginning with the core region (in this case, the Baltic), and ranging over a larger setting (E.C.E. action on air pollution), to a global setting (regarding vessel-source pollution or perhaps issues such as climate change).

Such "inter-regional" cooperation is beneficial to the Baltic because it can draw on the experience and resources of larger settings. It is also inevitable because problems such as air pollution cannot otherwise be tackled.

Nonetheless, regions such as the Baltic must develop their own strategies, in order to be, at least, in a position to attempt to influence E.C. or E.C.E. activities with a view to the needs of the Baltic. HELCOM is well on track in this regard. While it may not be an entirely realistic option, it should also be pointed out that the *Helsinki Convention* is open to accession by other states (article 26). It would accordingly be possible for the states contributing to airborne pollution in the Baltic to join the regional states in their effort to reduce this kind of pollution. Finally, concerning effective national action, a reporting system could perhaps enhance the implementation of the *Helsinki Convention.*[191]

In conclusion, one might add that conditions for more effective cooperation in the Baltic Sea area are improving. Environmental cooperation in the region has long suffered from the difficulties inherent in East-West relations. The recent dramatic changes in these relations coincide with the public acknowledgement by the East of serious environmental problems and the need for immediate action and assistance. In the Soviet Union, for example, ecological activism is on the rise and the Soviet government has signalled its commitment to protecting the global environment.[192] Recent Soviet support for environmental protection is all the more promising in light of the shift in its international legal doctrine toward "new thinking." One aspect of this new

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[189]*Ibid.* at 40.

[190]*Ibid.* at 53.

[191]This type of system is also among the suggested revisions to the *Helsinki Convention.* See, *supra*, note 177.

[192]See D. Thompson, "The Greening of the USSR" *TIME* (2 January 1989) 68; G. Garelik, "The Soviets Clean Up Their Act" *TIME* (29 January 1990) 46.

approach is the recognition of international interdependence and of the priority of global problems such as the protection of the environment.[193]

An additional boost for Baltic cooperation may come from the unification of the two Germanies. It not only removes a source of tension in the region, but also creates an even more influential proponent of environmental protection.

The link between East-West relations and environmental protection, it should be noted, is by no means a one-way connection. The importance of environmental protection and cooperative resource use for regional security has long been recognized.[194] And, should East-West relations ever deteriorate again, well-established environmental cooperation may prove to be invaluable.

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[193]V.S. Vereshchetin & R.A. Myullerson, "New Thinking and International Law" (1988) 3 Sovetskoe Gosudarstvo i Pravo 3 [translated for the Parker School of Foreign and Comparative Law by L. Kreynin & R. Taylor]; for a critical assessment of the Soviet approach to international law, see G. Ginsburgs, "Soviet International Law and Baltic Environmental Protection" paper presented at the International Conference on Ecology and Law in the Baltic Sea Area, Riga, 27-31 August 1990 [unpublished].

[194]See S. Lodgaard, "Confidence Building in the Baltic Region" in Westing, ed., *supra*, note 28, 99 at 103.