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Establishing a Region for Ecological Cooperation in North America

The purpose of this work is to analyze the environmental and natural resources issues to determine whether there is sufficient justification to formally establish a region of international ecological cooperation in North America. The proposal is based on the conviction that this measure is urgently needed if the three continental North American countries (namely, Mexico, Canada, and the United States) are ever to be in a timely position to effectively deal with the great environmental challenges present within the region, as well as with those formidable ones already looming in the future which will unavoidably require their trilateral cooperative action. This conviction is substantiated by an identification of the environmental and natural resources issues which naturally and anthropogenically link the three countries. Careful consideration of these issues indicates that they must be dealt with not unilaterally, or even bilaterally, but by the concerted action of the three countries, and they must be dealt with immediately. It is precisely the result of this identification process which is offered as justification for the proposal.

A brief study is undertaken herein of the precedents of cooperation in other parts of the world which indicates a potential theory for the establishment of geographical regions for ecological cooperation. This theory is then applied to the North American region and an agenda of the necessary research tasks is proposed. The results of the research should put the three countries in a position to decide, on the basis of the best available data, whether the formalization of a region of ecological cooperation in North America is in fact sufficiently warranted and required. In this work, an attempt will be made to initiate such research as well as to identify the areas which will require further detailed study.

Great efforts are currently being undertaken to quickly complete the negotiations of a free trade agreement for the North American region. Important environmental concerns voiced by nongovernmental entities have become a part of those negotiations, and the governments find themselves pressured to address them at least in some measure. However, the central focus of the negotiations is free trade, with all the implications of

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that concept, and the environmental issues are simply not a natural part. Thus, there is concern that the environmental issues will suffer in the free trade bargaining process or they will only be dealt with as superficially and minimally as possible, and then only in order to quiet the opponents' voices for public opinion purposes. Regardless, a free trade agreement is not the place to deal with the environmental future of North America and, thus, that challenge will remain basically open.

This work has been undertaken at the International Transboundary Resources Center, which is a part of the University of New Mexico's Law School. In keeping with the Center's research tradition,¹ at the end of this work it is suggested that, if a case is effectively made here to prove the soundness of the proposal, the next step would be to exhaust the research agenda and to conclude with a draft model trilateral conventional instrument which Mexico, Canada, and the United States could then use to negotiate a trilateral treaty.

I. TOWARD A THEORY ON THE ESTABLISHMENT OF GEOGRAPHICAL REGIONS FOR ECOLOGICAL COOPERATION

Ever since the international community began to cooperate in the management and conservation of natural resources, and subsequently in the protection and preservation of the environment, practical considerations have dictated the need to divide the world into various specially-designed regions and sub-regions, notwithstanding the rapidly expanding network of strictly bilateral cooperation between neighboring States.

A. Precedents of Regional Cooperation

There are countless precedents in international State practice of alliances among groups of States, in different corners of the planet, with a common endeavor, most usually responding to the realization that only through international cooperation can individual national interests be taken care of effectively.² Examples of such regional or subregional schemes, as formalized through international conventional instruments, follow.

1. See A. Rodgers and A. Utton, *The Ixtapa Draft Agreement Relating to the Use of Transboundary Groundwaters*, 25 Nat. Res. J. 713 (1985); R. Hayton and A. Utton, *Transboundary Groundwaters: The Bellagio Draft Treaty*, 29 Nat. Res. J. 663 (1989); and A. Szekely, A. Utton, C. Pedrazzini, R. Shipman, U. Canchola, and W. Waggoner, *Transboundary Hydrocarbon Resources: The Puerto Vallarta Draft Treaty*, 31 Nat. Res. J. 134 (1991).

2. See R. Hahn, *The Internationalization of Environmental Regulation*, 30 Harv. Int'l L.J. 421 (1989); El-Baghdadi, *An Effort to Establish a Novel Organizational Structure for the Management of Resources on the Basis of Efficiency and Equity*, 54 Int'l R. of Admin. Sci. 585 (1988); P. Sands, *The Environment, Community and International Law*, 30 Harv. Int'l L.J. 393 (1989); J. Barnes, *The Growing International Dimension to Environmental Issues*, 13 Colum. J. Envtl L. 389 (1988).

1. Nature and the Environment:

- a. African Convention on the Conservation of Nature and Natural Resources (Sept. 15, 1968).
- b. OECD Guiding Principles on the Environment (May 26, 1972).
- c. Nordic Convention on the Protection of the Environment (Feb. 19, 1974).
- d. OECD Principles Concerning Transfrontier Pollution (Nov. 14, 1974).
- e. OECD Implementation of the Polluter-Pays Principle (Nov. 14, 1974).
- f. OECD Council Recommendation on Strengthening International Cooperation on Environmental Protection in Frontier Regions (Sept. 21, 1978).
- g. European Convention on Long Range Transboundary Air Pollution (Nov. 13, 1979).
- h. Benelux Convention for the Conservation of Nature and the Protection of the Landscape (June 8, 1982).
- i. OECD Council Decision and Recommendation on Transfrontier Movements of Hazardous Wastes (Feb. 1, 1984).
- j. Canada-Europe Declaration on Acid Rain (Mar. 21, 1984).
- k. Protocol to the Convention on Long Range Transboundary Air Pollution, on Financing the Monitoring and Evaluation of Air Pollutants in Europe (Sept. 28, 1984).
- l. Convention for the Protection of the Natural Resources and the Environment in the South Pacific (Nov. 24, 1984).
- m. OECD Council Decision and Recommendation on Exports of Hazardous Wastes from the OECD Area (June 5, 1986).
- n. Convention on the Regulation of Antarctic Mineral Resources Activities (June 2, 1988).

2. Flora and Fauna:

- a. Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Mar. 3, 1973).
- b. Agreement on the Conservation of Polar Bears (Nov. 15, 1973).
- c. Convention on the Conservation of European Wildlife and Natural Habitats (Sept. 19, 1979).
- d. Protocol Concerning Specially Protected Areas and Wildlife to the 1983 Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Jan. 18, 1990).

3. Water Resources:

a. Europe:

- 1) Convention Concerning Fishing in the Waters of the Danube (Jan. 29, 1958).
- 2) Agreement Concerning the Regulation of Lake Inari by Means of the Kaitakoski Hydro-Electric Power Station and Dam (Apr. 29, 1959).
- 3) Convention on the Protection of Lake Constance Against Pollution (Oct. 27, 1960).
- 4) Agreement Concerning the International Commission for the Protection of the Rhine Against Pollution (Apr. 29, 1963).
- 5) Agreement Regulating the Withdrawal of Water from Lake Constance (Apr. 30, 1966).
- 6) European Water Charter, Directive 10 of the Council of Europe (May 26, 1967).
- 7) Draft European Convention on the Protection of Fresh Water Against Pollution, Council of Europe (May 12, 1969).
- 8) ECE Recommendation 346 on River Basin Management, Council of Europe (1971).
- 9) ECE Recommendation 347 to the Governments of Southern European Countries Concerning Selected Water Problems, Committee on Water Problems, Council of Europe (1972).
- 10) Draft European Convention for the Protection of International Watercourses Against Pollution, Committee of Ministers, Council of Europe (1974).
- 11) Convention on the Protection of the Rhine Against Chemical Pollution (Dec. 3, 1976).
- 12) The Convention on the Protection of the Rhine Against Pollution by Chlorides (Dec. 3, 1976).
- 13) ECE Declaration of Policy on Prevention and Control of Water Pollution, Including Transboundary Pollution (1980).

b. InterAmerican:

- 1) Seventh InterAmerican Conference Declaration on Industrial and Agricultural Use of International Rivers (Dec. 24, 1933).
- 2) Draft Convention on the Industrial and Agricultural Use of International Rivers and Lakes, InterAmerican Juridical Committee, Organization of American States (Sept. 1, 1965).
- 3) Control and Economic Utilization of Hydrographic Basins and Streams in Latin America, InterAmerican Economic and Social Council, Organization of American States (1966).
- 4) Treaty of the River Plate Basin (Apr. 23, 1969).

- 5) InterAmerican Act on the Use of International Rivers (June 3, 1971).
 - 6) Treaty for Amazonian Cooperation (July 8, 1978).
- c. Asia and Africa:
- 1) Statute and Committee for Coordination of Investigations of the Lower Mekong River Basin (Oct. 31, 1957).
 - 2) Convention Concerning the General Administration of the Senegal River Basin (July 26, 1963).
 - 3) Act Regarding Navigation and Economic Cooperation Between the States of the Niger River (Oct. 26, 1963).
 - 4) Convention Concerning the Statute of the Senegal River (Feb. 7, 1964).
 - 5) Convention and Statute Regarding the Better Utilization of the Chad River Basin (May 22, 1964).

4. Marine Resources:

- a. General:
- 1) International Convention for the Regulation of Whaling (Dec. 2, 1946).
 - 2) Protocol to the International Convention for the Regulation of Whaling (Nov. 19, 1956).
- b. Atlantic Ocean:
- 1) International Convention for the Conservation of Atlantic Tunas (May 14, 1966).
- c. North Atlantic:
- 1) Convention on Conduct of Fishing Operations in the North Atlantic (June 1, 1967).
 - 2) Convention for the Protection of Salmon in the North Atlantic Ocean (Mar. 2, 1982).
- d. Northeast Atlantic:
- 1) Northeast Atlantic Fisheries Convention (Jan. 24, 1959).
 - 2) Convention of Future Multilateral Cooperation in the Northeast Atlantic Fisheries (Nov. 18, 1980).
- e. Baltic Sea:
- 1) Agreement Concerning Measures for the Protection of Deep-sea Prawns (Mar. 7, 1952).
 - 2) Agreement Concerning the Protection of the Salmon Population in the Baltic Sea (Dec. 20, 1962).
 - 3) Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts (Sept. 13, 1973).

- 4) Protocol to the Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and Belts (Nov. 11, 1982).
- f. Northwest Atlantic:
- 1) International Convention for the Northwest Atlantic Fisheries (Feb. 8, 1949).
 - 2) Protocol to the International Convention for the North West Atlantic Fisheries (July 15, 1963).
 - 3) Convention on Future Multilateral Cooperation in the North West Atlantic Fisheries (Oct. 24, 1978).
- g. Mediterranean Sea:
- 1) Agreement for the Establishment of a General Fisheries Council for the Mediterranean (May 22, 1963).
 - 2) Amendments to the Agreement for the Establishment of a General Fisheries Council for the Mediterranean (May 22, 1963).
- h. Eastern Europe:
- 1) Agreement Concerning Cooperation in Marine Fishing (July 28, 1962).
- i. Black Sea:
- 1) Convention Concerning Fishing in the Black Sea (July 7, 1959).
- j. Southeast Atlantic:
- 1) Convention on the Conservation of the Living Resources of the Southeast Atlantic (Oct. 23, 1969).
- k. North Pacific:
- 1) International Convention for the High Seas Fisheries of the North Pacific Ocean (May 9, 1952).
 - 2) Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and the Bering Sea (1953).
 - 3) Interim Convention on Conservation of North Pacific Fur Seals (Feb. 9, 1957).
 - 4) Amendments to the Annex to the International Convention for the High Seas Fisheries of the North Pacific Ocean (Nov. 17, 1962).
 - 5) Protocol Amending the International Convention for the High Seas Fisheries of the North Pacific Ocean (Apr. 25, 1978).
 - 6) Protocols Amending the Interim Convention on Conservation of North Pacific Fur Seals (Oct. 8, 1963; May 7, 1976; and Oct. 14, 1980).

l. Eastern Pacific:

- 1) Convention for the Establishment of an Inter-American Tropical Tuna Commission (May 31, 1949).
- 2) Joint Declaration on Fishery Problems in the South Pacific (Aug. 18, 1952).
- 3) Regulations Concerning Whaling in the Waters of the South Pacific (Aug. 18, 1952).
- 4) Agreement Relating to the Issue of Permits for the Exploitation of the Marine Resources of the South Pacific (Dec. 4, 1954).
- 5) Eastern Pacific Ocean Tuna Fishing Agreement (Mar. 15, 1983).
- 6) Regional Agreement on the Research and Management of Marine Turtles in the American Pacific (Dec. 3, 1986).
- 7) Convention Establishing the Latin American Tuna Organization (July 21, 1989).

m. Western South Pacific:

- 1) Treaty on Fisheries between the Governments of Certain Pacific Islands and the Government of the United States of America (Apr. 2, 1987).

n. Latin America:

- 1) Inter-American Conference Resolution IX on Conservation of Natural Resources (May 22, 1948).
- 2) Inter-American Conference Resolution LXXXVI on Conservation of Natural Resources: Continental Shelf and Marine Waters (Mar. 28, 1954).
- 3) Constitutive Convention of the Latin American Fisheries Development Organization (Oct. 29, 1982).

o. Indo-Pacific:

- 1) Agreement for the Establishment of the Indo Pacific Fisheries Council (Feb. 26, 1948).
- 2) Amendments to the Agreement for the Establishment of the Indo Pacific Fisheries Council (Jan. 20, 1961).

p. Southeast Asia:

- 1) Agreement Establishing the Southeast Asian Fisheries Development Centre (Dec. 28, 1967).
- 2) Protocol Amending the Agreement Establishing the Southeast Asian Fisheries Development Centre (Jan. 13, 1968).

q. Antarctica:

- 1) Convention for the Preservation of Antarctic Seals (Feb. 11, 1972).

- 2) Convention on the Conservation of Antarctic Marine Living Resources (May 20, 1980).

5. The Marine Environment:

- a. North Sea:
 - 1) Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil (June 9, 1969).
 - 2) Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (Sept. 13, 1983).
- b. Baltic Sea:
 - 1) Agreement Concerning Cooperation in Measures to Deal with Pollution of the Baltic Sea by Oil (Sept. 16, 1971).
 - 2) Convention on the Protection of the Marine Environment in the Baltic Sea Area (Mar. 22, 1974).
- c. Mediterranean Sea:
 - 1) Convention for the Protection of the Mediterranean Sea Against Pollution (Feb. 16, 1976).
 - 2) Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (Feb. 16, 1976).
 - 3) Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (Feb. 16, 1976).
 - 4) Agreement Concerning the Protection of the Waters of the Mediterranean (May 10, 1976).
 - 5) Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources (May 17, 1980).
 - 6) Protocol Concerning Mediterranean Specially Protected Areas (Apr. 3, 1982).
- d. Eastern South Atlantic:
 - 1) Convention for Cooperation in the Protection and Development in the Marine and Coastal Environment of the West and Central African Region (Mar. 23, 1981).
 - 2) Protocol Concerning Cooperation in Combating Pollution in Cases of Emergency (Mar. 23, 1981).
- e. Wider Caribbean:
 - 1) Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Mar. 24, 1983).
 - 2) Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean (Mar. 23, 1983).
 - 3) Protocol Concerning Specially Protected Areas and Wildlife

in the Wider Caribbean (Jan. 18, 1990).

f. Southeast Pacific:

- 1) Convention for the Protection of the Marine Environment and Coastal Area of the Southeast Pacific (Nov. 12, 1981).
- 2) Agreement on Regional Cooperation in Combating Pollution of the Southeast Pacific by Hydrocarbons or Other Harmful Substances in Cases of Emergency (Nov. 12, 1981).
- 3) Supplementary Protocol of the Agreement on Regional Cooperation in Combating Pollution of the Southeast Pacific by Hydrocarbons or Other Harmful Substances (July 22, 1983).
- 4) Contingency Plan of Cartagena for the Combating of Oil Pollution in the Southeast Pacific in Cases of Emergency (July 22, 1983).
- 5) Protocol for the Protection of the Southeast Pacific against Pollution from Land-based Sources (July 22, 1983).

g. Persian Gulf:

- 1) Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution (Apr. 24, 1978).
- 2) Protocol Concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (Apr. 24, 1978).

h. Red Sea and Gulf of Aden:

- 1) Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (Feb. 14, 1982).
- 2) Protocol Concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (Feb. 14, 1982).

B. Common Elements in Regional Cooperation

The usefulness of the lengthy list reproduced above is that it helps to identify the common ingredients which seem to have typically led to the establishment of a region or subregion of international cooperative management and conservation of natural resources, or for the protection of the environment.³ Mere geographical adjacency or proximity has not been enough, even if the States concerned are located in the same conti-

3. See A. Utton, *Environmental Policy and International Institutional Arrangements: A Proposal for Regional and Global Environmental Cooperation*, 11 Nat. Res. J. 513 (1971); Utton, *The Emerging Need to Focus on Transboundary Resources*, 1 Transboundary Res. Rep. 1 (1987); O. Young, *The Politics of International Regime Formation: Managing Natural Resources and the Environment*, 43 Int'l Org. 349 (1989); Young, *International Cooperation: Building Regimes for Natural Resources and the Environment* (1989); Timonina, *Legal Protection of Nature*, 66 Far E. Aff. 32 (1989); Graedel, *Regional and Global Impacts on the Biosphere*, 31 Env't 8 (1989); Kukushkin, *Planning the Rational Use of Natural Resources*, 17 Soc. Sci. 214 (1986); L. Bartoluzzi, *Regionalismo Transnacional y Ecosistema Mundial*, 166 Revista de Política Internacional 19 (1979); and Utton, *International Environmental Law and Consultative Mechanisms*, 12 Colo. Transnat'l L. 57 (1973).

nent or sub-continent. Perhaps not even the sharing of a common geographical feature, such as a coastline in the same sea or ocean, is sufficient to formalize regional cooperation. There are several things, though, which seem to be indispensable.

- a) The existence of transboundary resources, whether migratory or not.⁴
- b) The configuration of a more or less well-defined transboundary ecosystem.⁵
- c) The likelihood that activities in one jurisdiction, undertaken either by the territorial State or by third States acting within it, may affect the natural resources or the environment in other neighboring jurisdictions, or even in areas beyond the limits of national jurisdictions. Today, however, the recognition of long range transport of substances, either through water bodies or the atmosphere, seems to make it unnecessary for the "neighboring" element to be present in order to encourage international action and cooperation. The same would be the case for the transboundary movements, by whatever means of transport or communication, of hazardous wastes and substances.
- d) The need to undertake concerted and coordinated action among all of the States involved, to make sure that unilateral activities will be undertaken with due regard to the interests of others who may be affected by them.⁶
- e) The political willingness on the part of those States to cooperate among themselves, not out of generosity or of an acute environmental conscience, but as a result of a keen perception that it is the best way to protect the national interest.

It is therefore a combination of some or all of the above elements which may be regarded as common among States in making the determination that regional cooperation is warranted.

C. Probable Reasons for Lack of Regional Cooperation

Evident also from the list is the fact that many geographical regions or subregions in several parts of the world have so far produced

4. For a definition of "transboundary resources" see Szekely, *Transboundary Resources: A View from Mexico*, 26 Nat. Res. J. 669 (1986).

5. For a definition of "ecosystem" see P. Ehrlich and A. Holdren, *Ecoscience: Population, Resources, Environment* (1977). E. Teclaff and L. Teclaff, in *International Control of Cross-Media Pollution—An Ecosystem Approach*, 27 Nat. Res. J. 21 (1987), refer to a definition according to which an "ecosystem is connected to the surrounding biosphere by a system of inputs and outputs, which may be in the form of radiant energy, water, gases, chemicals, or organic materials, move through the ecosystem boundary by meteorological, geological, or biological processes."

6. See R. Bilder, *The Role of Unilateral State Action in Preventing International Environmental Injury*, 14 Vand. J. Transnat'l L. 51 (1981).

none or only rather modest schemes of multilateral cooperation. This may be the result of a variety of reasons.

- a) One of these could derive from political considerations, which would make such cooperation undesirable or not even viable. That would be the case, for instance, in the Middle East or in the southern cone of Africa. In contrast, however, is the drafting of Israel as party to the 1976 Convention for the Protection of the Mediterranean Sea against Pollution, in coexistence with several Arab coastal States.⁷
- b) Another reason could be a lack of sufficient environmental conscience among the neighboring States, or of understanding as to the practical need to undertake measures of cooperation in the face of actual or emerging threats to the natural resources or to the environment in the region. Notably, this would be the case of eastern Europe and some parts of the developing world.
- c) Finally, it could be that international cooperation through formal multilateral commitments may have been unnecessary due to the lack of transboundary resources in a given region or subregion, or to the lack of activities in one jurisdiction with potential for affecting the resources or environment in another. This, however, seems quite unlikely today. It is especially so in the field of atmospheric interferences which, due to their long range effects, an isolated or apparently localized interference may affect even distant corners of the world, provoking a chain reaction of far-reaching consequences.

II. THE THEORY AS APPLIED TO NORTH AMERICA

Conspicuously absent from the list is the North American continental States, that is, Mexico, the United States, and Canada.

A. North America *Strictu Sensu*

This specific geographical region, so conceived, obviously excludes other immediate territorial insular jurisdictions, such as Denmark (for Greenland), France (for its claimed St. Pierre and Miquelon islands adjacent to the eastern coast of Canada,⁸ and for Clipperton Island west of the Mexican coast, the United Kingdom (for Bermuda and Caicos Islands), the Bahamas, Cuba, the Dominican Republic, Haiti, and several

7. This constituted a major diplomatic achievement, as an integral part of the successful work of the Regional Seas Programme (now called the Oceans and Coastal Areas Programme Activity Center) of the United Nations Environment Programme. Bliss-Guest, *The Regional Seas Programme of UNEP*, 9 *Envtl Conservation* 43 (1982).

8. See T. McDorman, *The Canada-France Maritime Boundary Case: Drawing a Line around St. Pierre and Miquelon*, 84 *Am. J. Int'l L.* 104 (1984).

other Caribbean island States or European possessions, all of which are generally situated, like the three continental countries, approximately between parallels north 12 and north 88, and meridians west 170 and west 50, and which would otherwise constitute, from a strict geographic point of view, the North American region *latu sensu*.

The contiguous space occupied by those three neighboring continental States encompasses an enormous portion of the northern half of the western hemisphere, considering that such space embraces not only their continental and insular land territories (from which the Hawaiian islands are here also excluded for obvious geographic reasons), but also extends from the northern fringes of Alaska in the Arctic to the Rio Suchiate bordering with Central America.

Such contiguous North American space also includes the respective territorial seas (12 nautical miles) of Mexico, Canada, and the United States, their exclusive economic zones (188 additional nautical miles) and continental shelves in three of the world's oceans (the Arctic, the Pacific, and the Atlantic), and in ten major seas or semi-enclosed seas (the Bering, the Chukchi, the Beaufort, the Baffin Bay, the Labrador, the Hudson Bay, the Gulf of St. Lawrence, the Gulf of Mexico, the Caribbean off the Mexican coast, and the Gulf of California), as well as the air-space superjacent to all of the above up to 12 nautical miles offshore.

Canada's territory is the second largest in the world, the United States' the fourth, and Mexico's the fourteenth. Their areas of national marine jurisdiction are the second, fourth, and ninth largest, respectively, among all coastal States. The entire continental North American region includes an area of over 8,228,620 square miles of land territory, and 11, 508,475 square nautical miles of ocean space. All of territorial Europe could fit more than four times within that area, as well as almost one and a half times the territory of Africa, and practically the whole Asian land continent.

It appears rather surprising that the North American countries have not formally banded together to adequately care for their substantial corner of the earth, despite the impressive dimensions, constituting about a third of the world's map. It is even more surprising in view of the incredible biological diversity of the region and the great intensity of human activities which are undertaken within it.

B. North American International Environmental Activity

Given the leadership role the three countries have traditionally played in international affairs, they might have been expected to provide a model of regional cooperation for the rest of the international community. Instead, they have limited themselves to:

- a) playing a significant role in multilateral environmental negotiations of a global character; and

- b) investing their best efforts to consolidate mostly bilateral cooperation, in the field of natural resources and the environment, between Mexico and the United States on the one hand and, on the other, between the United States and Canada, but not trilaterally (except for the few humble instances which will be reviewed here later on).

It is fair to recognize, though, that some of those bilateral schemes have become significant models for other pairs of neighboring countries in other parts of the world.

The foregoing discussion would seem to justify the conclusion that it is high time for the three countries of North America to take the time and effort necessary to determine whether or not there is a need to consolidate and create, among themselves, a new region of international ecological cooperation.

III. NEEDED RESEARCH

For such a purpose, the study of two key concerns would seem to be in order:

- a) the intra-regional interests which would justify or even demand such cooperation; and
- b) the extra-regional or global impact of either securing or not securing such regional cooperation in North America.

A. Intra-regional Interests for Cooperation in North America

Regarding the intra-regional component, it is necessary to make inventories of:

- a) the transboundary resources identifiable in the region;
- b) the elements which indicate the existence of a more or less well-defined North American transboundary ecosystem;
- c) the activities undertaken in each of the three countries which may affect the natural resources or the environment in either one or both of the other two countries; and
- d) the areas where there seems to be a need for concerted or coordinated action among the three States, to ensure that unilateral activities will in the future be undertaken with due regard for the common interests of each and of the group.

In addition, an assessment must be made of the degree of political willingness in each country to undertake such an enterprise, to be bound by well-defined commitments of trilateral cooperation, and to implement the necessary measures to adequately manage, conserve, and protect the region's transboundary resources and environment.

B. Extra-Regional Impact

As for the extra-regional component, it is necessary to determine four issues.

- a) The natural resources in the region which could be considered as being of a transboundary character, that is, those located within the jurisdiction of the three countries, as well as extending to or from adjacent jurisdictions, and even areas beyond the limits of national jurisdictions. The transboundary resources inventory would involve the interests of extra-regional neighboring States, such as those listed above as belonging to the North American region *latu sensu*, plus the Soviet Union (as a result of the proximity of its coast just a few nautical miles west of Alaska),⁹ even western Europe (as demonstrated by the concerns which led to the adoption of the Canada-Europe Declaration on Acid Rain)¹⁰ and, finally, at the southern flank of the region, the Central American and Caribbean States, as well as the northern States of South America, which are part of the neighboring "Wider Caribbean", as defined in the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region.¹¹ The inventory would also involve the "international community" and "mankind" as a result of the adjacency of North American areas of national marine jurisdiction with the high seas, and with the seabed and ocean floor beyond the limits of national jurisdiction, that is, the international sea-bed area.
- b) The approximate outer fringes of what could be called the "wider" transboundary ecosystem, comprehending the region's national jurisdictions as well as the neighboring extra-regional jurisdictions adjacent to those fringes, and which would involve at least the same three States and areas beyond the limits of national jurisdictions; which were listed in the above paragraph for regional/extra-regional transboundary resources;¹²
- c) The activities which are undertaken from outside the region and which may interfere with or affect, directly or indirectly, natural resources or the environment within the region.

9. See C. Antinori, *The Bering Sea: A Maritime Delimitation Dispute between the United States and the Soviet Union*, 18 *Ocean Dev. & Int'l L.J.* 1 (1987).

10. 28 *I.L.M.* 698.

11. 22 *I.L.M.* 221. See also Frazer and Peterson, *Protecting Caribbean Waters: The Cartagena Convention*, 27 *Oceannus* 85 (1984); G. Bundschuh, *Transfrontier Pollution: Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region*, 14 *Ga. J. Int'l & Comp. L.* 210 (1984).

12. See D. Johnston, *New Uses of International Law in the North Pacific*, 43 *Wash. L. Rev.* 77 (1967).

- d) The areas which would require cooperation between the region's States and extra-regional parties.

C. Preliminary Work and Research Agenda

In order to determine whether the formalization of a region of ecological cooperation in North America is sufficiently warranted and required, the above list of still pending tasks must necessarily be undertaken. Such work constitutes the research agenda that must be contended with and an attempt will be made here to initiate such research, as well as to identify the areas which will require further detailed study. If the result of this initial endeavor and of the subsequent specific research proves, as expected, that there are more than enough elements which fully justify the formal establishment of a region of ecological cooperation in North America, the next step would be to draft a model trilateral conventional instrument which could then be negotiated by Mexico, Canada, and the United States.

IV. TOWARD AN INVENTORY OF TRANSBOUNDARY NATURAL RESOURCES AND OF TRANSBOUNDARY ENVIRONMENTAL ISSUES WITHIN THE NORTH AMERICAN REGION

Available information on the transboundary natural resources in the North American region and a concern for their better utilization and conservation have been enough to prompt some trilateral action, albeit mostly limited to flora and migratory fauna. However, there is sufficient information to indicate that the transboundary biological wealth of the region may be significantly greater than is currently documented. The understanding of transboundary environmental issues within North America, however, is still limited, despite the fact that these issues are closely linked to the utilization and conservation of natural resources.

A. North American Flora and Fauna

It is in the field of international regulation for the utilization and conservation of flora and fauna, that the three continental States of North America have established the most significant schemes of regional cooperation. This scheme is composed of conventional commitments, not only through their participation in some multilateral instruments with extra-regional States, but also through several trilateral agreements, and other important, albeit fragmented, bilateral instruments concluded between Mexico and the United States or between the United States and Canada. These bilateral agreements have in the past served as examples for initiating trilateral actions. However, the challenge of effectively protecting

North American wildlife and plant resources is much bigger than the action taken so far by the countries of the region.¹³

The world's coniferous forests, which are the source of most of the planet's industrial wood production, cover 1.1 billion hectares, or 27 percent of the world's total forest area, and some 83 percent of these forests are in North America and the Soviet Union.¹⁴ The total forested area in North America increased steadily in the early twentieth century, after centuries of decline. More recently, however, the total gain has dropped slightly.¹⁵ Data suggests that air pollution, including acid deposition, is severely hampering growth rates and survival of trees over vast areas.¹⁶ Global warming and ozone layer depletion are two other widespread atmospheric phenomenon certain to have perilous effects on flora resources and their distribution.

Damage to forests from acidic deposition occurs both above and below ground. Foliar damage and plant mortality are common symptoms of acidic deposition in certain high-elevation forests of Europe and North America, perhaps because clouds, mist, and fog are considerably more acidic than rain.¹⁷ According to the World Resources Institute, North America's higher elevation eastern coniferous forests have experienced a rapid and severe deterioration since 1983 or 1984.¹⁸ The most affected areas are in the Appalachian Mountains from Georgia to New England. Canada's forests are also threatened by acid deposition, heavy metals, and ozone. Of Canada's 161 million hectares of productive and accessible forests, 46 million hectares, or 28 percent of the total, receive wet acid sulfate depositions greater than 20 kilograms per hectare per year, the threshold at which sensitive lakes are known to become acidified.

Global climate change will certainly affect flora resources. There is wide agreement that significant warming will occur in high latitudes, but there is little agreement on the potential change in precipitation. In the highlands there are temperate forests of oak, pine, and fir. The total number of species of vascular plants native to Mexico is not known with certainty, but is probably around 25,000. The potentially most vulnerable ecosystems are probably the high elevation alpine grassland or "paramo". In northwestern Mexico, small populations of *Abies Concolor* would be vulnerable to extinction. A mean annual warming of only two degrees cel-

13. See VanHoogstraten, *The Effectiveness of International Law with Regard to Endangered Species*, 54/55/56 Y.B. A.A.A. Nat. Res. Int'l L. 157 (1986).

14. International Institute for Environment and Development and World Resources Institute, *World Resources 1987* 59 (1987).

15. *Id.* at 58.

16. *Id.* at 57. This matter will be analyzed in greater detail later.

17. See Sedjo, *Forests: A Tool to Moderate Global Warming?*, 31 *Env't* 14 (1989); *The Legal and Political Implications of the International Undertaking on Plant Genetic Resources*, 12 *Ecology L.Q.* 1053 (1985); A. Iskoyan, *Issues Related to Legal Protection of Wild Plants*, 5 *Pace Env'tl L. Rev.* 519 (1988).

18. *World Resources, World Resources 1987* (1987).

sus might also have significant effects on the extent of permanent ice on Mexico's higher peaks, notably the Citlaltepētli, the Popocatepetl and the Iztacihuatl.¹⁹

Not all regions or sub-regions will be negatively affected by global warming. It is no consolation, however, that receding forests and increases in precipitation as a result of climate change may benefit agriculture in some areas, for those benefits will be offset by harm done in other areas. For example, the growth of soybeans in Canada may increase 5 percent, but decrease 15 percent in the United States. Wheat crops may decrease 10 percent in the United States and increase 5 percent in Canada. No figures are available for Mexico, but its growing dependency on imports from the north will undoubtedly receive a strong impact from reductions of crops there.

The potential effects of climate change, acid rain, ozone layer depletion, and other environmental interferences on North American fauna, give no less reason for concern, especially in a region where devastation of natural resources has a long history. By the mid-twentieth century alone, the United States had killed about four-fifths of that nation's wildlife, cut over half its timber, and used up two-fifths of its iron ore.²⁰

What is at stake is the biodiversity of the region, that is, of the variety of living things within it. It is widely accepted that the biosphere comprises extremely complex and interrelated systems and that a change in even one element of a system creates impacts on other elements and could affect, to some degree, the entire planet. This interrelatedness is, therefore, a very important factor to be taken into account in the management of various ecosystems, including any regional ecosystem. The warming of the earth's climate would lead to changes in precipitation distribution, winds, ice cover, ocean currents, and other climate variables. It would also lead to a rise in sea level and greater extinction of species, both flora and fauna. Even catastrophic natural events could be altered, such as heat waves and floods. Uncontrolled deforestation would create rapid salinization of water reservoirs, reduction of water supply for human and agricultural activities, flooding, soil erosion, and loss of biological resources. In the case of trees, even a one degree celsius rise would replace boreal species, such as aspen and firs, with hardwoods. Global warming may alter migratory paths of fish due to the anticipated increase in water temperature because they rely on specific food at specific points in their journey, and they depend on a specific climate when they reach their destination. The greenhouse effect could leave the entire Arctic Ocean free of

19. See Menchaca and Byrne, *The Potential Impact of Greenhouse Warming on the Terrestrial Ecosystems of Mexico*, Centro de Ciencias de la Atmosfera, UNAM, Mexico.

20. See S. Lyster, *International Wildlife Law*, 80 Am. J. Int'l L. 1028 (1986); M. Bowman, *The Protection of Animals under International Law*, 4 Conn. J. Int'l L. 487 (1989); and A. Batchelor, *The Preservation of Wildlife Habitat in Ecosystems: Towards a New Direction under International Law to Prevent Species' Extinction*, 3 Fla. Int'l L.J. 307 (1988).

ice each summer within a century since, if the ice melts, the reflectivity of the area will be reduced and the water will absorb more heat. This has implications for marine mammals, most of whom are dependent in some way on the ice for survival. Ice melting will lead to higher seas, which will affect both marine life, such as coral, and terrestrial life as well, because it will inundate coastal areas. Currents will be altered, and it has been suggested that the Gulf Stream may "switch off", which would threaten the ability of Europe to keep warm in winter.²¹ The likely chain reaction from a relatively small increase in temperature could be devastating.

In the view of such an incredible array of present and future environmental interferences affecting the immense biodiversity in North America, the apparently impressive list of international actions already taken by the countries of the region will surely look quite humble.

1. Multilateral Cooperation

Of the eleven multilateral instruments currently in force dealing with flora and fauna, the three North American States together find themselves bound by only four of them, namely, the International Plant Protection Convention,²² the Convention on Wetlands of International Importance Especially as Waterfowl Habitat,²³ the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),²⁴ and the UNESCO Convention for the Protection of the World Cultural and Natural Heritage.²⁵ In 1991, Mexico finally responded to strong international pressure and joined Canada and the United States as signatories to the CITES Convention. This pressure was due to concern for the conservation of marine turtles in Mexican coasts and for tropical birds throughout Mexico. The Mexican Government had before that actively and positively participated in the CITES meetings as an observer.²⁶

There are seven multilateral conventions to which one or two North American States are party. Mexico and the United States are parties

21. United Nations Environment Programme, Biological Diversity, a Unifying Paper, prepared for the Resource Use and Management Subgroup of the Intergovernmental Panel on Climate Change Working Group III, Doc. IPCC/WG3/RUMS/Doc. 3, Sept. 25, 1989; and Abarbanel and Young, *General Circulation of the Ocean* (1986).

22. Dec. 6, 1951, 150 U.N.T.S. 67.

23. Feb. 2, 1971, 11 I.L.M. 963. See also A. Timoshenko, *Protection of Wetlands by International Law*, 5 *Pace Envtl L. Rev.* 563 (1988).

24. 993 U.N.T.S. 243. See also L. Kosloff and M. Trexler, *The Convention on International Trade in Endangered Species: Enforcement Theory and Practice in the United States*, 5 *Boston U. Int'l L.J.* 327 (1987).

25. Nov. 23, 1972, 27 U.S.T. 37.

26. See J. Heppes and E. McFadden, *The Convention on International Trade in Endangered Species of Wild Fauna and Flora: Improving the Prospects for Preserving our Biological Heritage*, 5 *Boston U. Int'l L.J.* 229 (1987); K. Fuller, G. Hemsley, and S. Fitzgerald, *Wildlife Trade Law Implementation in Developing Countries: The Experience in Latin America*, 5 *Boston U. Int'l L.J.* 289 (1987); and D. Favre, *Tension Points within the Language of the CITES Treaty*, 5 *Boston U. Int'l L.J.* 247 (1987).

to the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere.²⁷ Now that Canada has become a member of the Organization of American States (OAS), it will be in a better position to join this Inter-American instrument through accession. Canada and the United States are parties to the Agreement on the Conservation of Polar Bears.²⁸ Since Mexico is not a circumpolar State, as are the other parties to this instrument, and polar bears obviously do not transcend into Mexican territory, its participation is naturally not envisaged. The United States is a party to the International Convention for the Protection of New Varieties of Plants.²⁹ It is open for accession to Mexico and Canada. Canada and the United States are parties to the Convention Placing the International Popular Commission within the Framework of the Food and Agriculture Organization of the United Nations and both of its amendments.³⁰ They are also parties to the International Tropical Timber Agreement,³¹ to which Mexico could accede.

Mexico has signed the Protocol to the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region, Relating to Specially Protected Areas, Flora and Fauna.³² Although the United States participated in the drafting of this instrument, it has yet to become a signatory. The entry of Canada to the OAS may encourage it to accede to regional instruments such as this protocol.

Other instruments in this field to which the three North American States may accede in the future, are the Convention on the Conservation of Migratory Species of Wild Animals,³³ the International Convention for the Protection of Birds,³⁴ and even the Convention on the Conservation of European Wildlife and Natural Habitats.³⁵

2. Bilateral Cooperation

On the bilateral front, the spectrum of cooperation has been quite rich. The United States and Canada have concluded the Convention for the Protection of Migratory Birds,³⁶ the Arrangement Prohibiting the Importation of Raccoon Dogs,³⁷ the Agreement on the Conservation of the

27. Oct. 12, 1940, 161 U.N.T.S. 193.

28. Nov. 15, 1973, 27 U.S.T. 3918, T.I.A.S. No. 8409.

29. Dec. 2, 1961, amended Nov. 10, 1972 and Oct. 23, 1978, JO 13 avril 1983, p.1115.

30. Nov. 19, 1959, U.S.T. 2060, T.I.A.S. No. 6952, 410 U.N.T.S. 155; Oct. 30, 1967, 21 U.S.T. 2060, T.I.A.S. No. 6952, 634 U.N.T.S. 433; and Nov. 15, 1977, 29 U.S.T. 5579, T.I.A.S. No. 9130.

31. Nov. 18, 1983, UNCTAD, TD/Timber/11/Rev. 1, 23317 U.N.T.S. See also Anderson, *The Myth of Sustainable Logging: The Case for a Ban on Tropical Timber Imports*, 19 *Ecologist* 166 (1989).

32. Jan. 18, 1990.

33. June 23, 1979, J.O.C.E. L. 210, July 19, 1972, p. 11.

34. Oct. 18, 1950, 638 U.N.T.S. 186.

35. Sept. 19, 1979, J.O.C.E. L.38, Feb. 10, 1982, p.3.

36. Dec. 7, 1916, T.S. No. 628.

37. Through an exchange of letters on Sept. 1 and 4, 1981, 33 U.S.T. 3764.

Porcupine Caribou Herd,³⁸ the Convention on Great Lakes Fisheries,³⁹ and the Agreement Relating to the Establishment of the Roosevelt Campobello International Park.⁴⁰

Mexico and the United States started cooperating in this field when they signed the Convention for the Protection of Migratory Birds and Game Mammals,⁴¹ which they supplemented in 1972 with a further agreement.⁴² These two conventional instruments, constitute the seed of the now long-established tradition of bilateral cooperation for the protection of transboundary flora and fauna between Mexico and the United States.

In the past seven years, United States and Mexican officials have undertaken even greater cooperative efforts to protect and conserve their transboundary wildlife resources. December 5, 1984, marked the beginning of some new developments of great importance: in Clairmont, California, the two countries established the Mexico-United States Joint Committee for the Conservation of Wildlife,⁴³ a body composed of representatives from the Mexican Flora and Fauna division of the Secretariat of Urban Development and Ecology (SEDUE) and of the United States Department of the Interior's Fish and Wildlife Service. In its 1987 meeting in Albuquerque, New Mexico, the Joint Committee adopted two cooperative agreements.⁴⁴ The first addresses controlling traffic in wild species of flora and fauna; the other concerns research, studies, and scientific collection of territorial and aquatic species of wild flora and fauna. In 1988, the Joint Committee identified and classified four additional categories of cooperative projects in this field: protected areas, endangered species, migratory bird management, and administration and law enforcement. Finally, in November 1988, Mexico and the United States signed a Memorandum of Understanding on Cooperation in the Management and Protection of National Parks and other Protected Natural and Cultural Heritage Areas.⁴⁵

During the 54 years of Mexico-United States cooperation in this field, they have put into operation successful programs of bilateral action pertaining to a large number of species which migrate through their respective territories and jurisdictions. The intensity of the cooperation

38. July 17, 1987. See also Bankes, *A Migratory Caribou Convention between Canada and the United States*, 18 Can. Y.B. Int'l L. 285 (1980).

39. Sept. 10, 1954, 6 U.S.T. 2836, amended Apr. 5, 1966 and May 19, 1967, 18 U.S.T. 1402.

40. Jan. 22, 1964, 15 U.S.T. 1504.

41. Feb. 7, 1936, T.S. No. 912.

42. 23 U.S.T. 260.

43. Agreement Establishing the Joint Committee for the Conservation of Wildlife, Dec. 5, 1984, United States-Mexico.

44. Joint Committee for the Conservation of Wildlife Cooperative Agreement, 1987, United States-Mexico.

45. Nov. 30, 1988, United States-Mexico.

between Mexico and the United States is best illustrated by current programs, adopted in Mexico City during a special meeting of the Joint Committee in March 1988. Those programs involve commitments of cooperation on:

- a) the evaluation and recovery of threatened and endangered cactus in the Cuatro Ciénegas, Coahuila region;
- b) the evaluation of the population of the Pronghorn (berrendo) in El Pinacate, Sonora;
- c) the evaluation of the population of the White Tortoise (*Tortuga Blanca*) in the Selva Lacandona, Chiapas;
- d) the evaluation of the population of the Jaguar and of the Ocelot in the area of Calakmul, Campeche;
- e) the evaluation of the hunting harvest of migratory aquatic birds in Laguna de San José de Bavicora, Chihuahua, in el Pabellón, Sinaloa, in Laguna Madre, Tamaulipas, and in Laguna de Cuitzeo, Michoacán;
- f) the protection of the Sea Turtle in Rio Lagartos and Rio Celestun, in Yucatán;
- g) the protection of threatened fish in the Cenotes of Sian Ka'an, Quintana Roo;
- h) the reintroduction of Pronghorns in Mapimi, Durango;
- i) the study of the biology and feeding habits of the Wild Turkey in Michilia, Chihuahua;
- j) the survey of wetlands in Mexico and a research project on harvesting Black Brant (*Branta Negra*);
- k) the study of the White Wing Dove in Tamaulipas, including the protection of their habitats, the translocation of nests and the impacts of pesticides;
- l) the analysis of 27 natural areas in Mexico, especially wetlands, as refuges for migratory birds;
- m) the study of the ecology of the White Geese in Mexico;
- n) the evaluation of the hunting harvest of five species of migratory waterfowl;
- o) a study of the population distribution of Jaribu Stork in southeastern Mexico;
- p) a cooperative project on the marking of doves in the state of Arizona;
- q) the recovery of threatened and endangered cactus in Tamaulipas;
- r) a study project on the Mexican Wolf;
- s) a project on the Golden Eagle and methods of reintroducing birds of prey into the wild; and

- t) other projects on the White Tortoise, endangered amphibians, sea turtles, the prairie dog, the Aplomado Falcon, the Bald Eagle, and the Sonora Chub.

Finally, Mexico and Canada have just recently launched their bilateral cooperation for the protection of their migratory fauna, namely, the Monarch Butterfly (which migrates from the Great Lakes in Southern Canada to Michoacan, Mexico) as well as some aquatic migratory birds, such as Canadian geese and ducks which also travel to Mexico. This cooperation was formalized in March 1990 by the Agreement on Environmental Cooperation between the Government of the United Mexican States and the Government of Canada.⁴⁶ In Article II of the Agreement, the parties decided to cooperate in the "[p]rotection and conservation of ecosystems, particularly protected natural areas, the habitats, flora and fauna at risk, with emphasis on migratory species." On the basis of this provision, and in accordance with Article VI of the Agreement, a specific agreement, memorandum of understanding, or arrangement may soon be concluded, to deal with migratory birds, the Monarch Butterfly, and the Grey Whale, including studies regarding their areas of distribution (abundance, feeding habits, indices of reproduction and survival, and current and potential utilization), the establishment of an Information Network for Migratory Species, the analysis of the physical and cultural environment of the zones of distribution of such species, a characterization of their biological environment, an evaluation of the applicable national and international legislation and, finally, an assessment of the environmental impact of the stocks of migratory species on certain activities such as fishing, tourism, and forestry.

3. Trilateral Cooperation

Trilateral action has taken three important avenues. In November 1960, the first trilateral mechanism on any issue in the region was created. The North American Forestry Commission of the United Nations' Food and Agriculture Organization started operating as a channel of cooperation between Mexico, the United States, and Canada for the protection of forest resources.⁴⁷ Since then, the Commission has met every two years. Its existence may have had a positive effect in preventing further damage to the region's forest reserve, and will have a major role to play in averting further deterioration by future potential threats. In October 1987 the Commission started seriously tackling the problem of acid rain and long-range air pollution. It then approved, in one of its recommendations, the Working Plan of the Study Group on Atmospheric Pollution Deposits, and entrusted that group with studying and preparing a program of action on

46. Mar. 16, 1990.

47. FAO Resolution Establishing the North American Forestry Commission, Nov. 15, 1960.

climate change.⁴⁸ The Commission, through its recommendations, has also secured trilateral action to combat insects and plagues which affect forests, to organize forest fire fighting, to promote the development of forestry, to protect birds and plants associated with trees and forests, to combat desertification and manage arid lands, to take advantage of biotechnology and remote sensing for forest development, to prevent deforestation, and many other matters.⁴⁹

The second instance of trilateral cooperation took shape through the Agreement of the Countries of North America for the Protection of Plants, signed between Mexico, the United States, and Canada in October 1976,⁵⁰ and which led to the creation of the North American Plant Protection Organization.⁵¹ The Agreement provides for cooperation among the parties for the protection of the plants of the region from plagues and harmful weeds.⁵²

The third avenue of trilateral cooperation in the field of transboundary flora and fauna in North America materialized in March 1988, when Mexico, the United States, and Canada adopted a memorandum of understanding⁵³ among their respective wildlife services, through which they agreed to exchange information and to cooperate on wetlands and on migratory bird refuges, and to establish a tripartite committee to develop a strategy for the conservation of migratory birds and their habitats, through a coordinated management plan. The Committee held its first session in Mexico City in April 1990 to initiate implementation of the memorandum.

B. Water

1. Mexico-United States Water Boundaries and Cooperation

The political boundaries in North America are among the longest in the world. The land boundary between Mexico and the United States measures about 2,000 miles, of which nearly two-thirds is constituted by international rivers (1,238 of the Rio Grande, and 18 of the Colorado). Along this line there also are extremely important transboundary ground-

48. Recommendation of the 14th Session of the FAO North American Working Plan of the Study Group on Atmospheric Pollution Deposits, Oct. 1987.

49. See documents FAO-FO NAFC/87/REP and FAO-FO NAFC/90/4.

50. Agreement for the Protection of Plants, Oct. 12, 1976.

51. Agreement Establishing the North American Plant Protection Organization, Oct. 25, 1984.

52. The 1976 Agreement was followed by a supplementary cooperative agreement. Supplementary Cooperative Agreement to the Agreement Establishing the North American Plant Protection Organization, Oct. 17, 1989.

53. Memorandum of Understanding on Exchange of Information and Cooperation on Wetlands and Migratory Bird Refuges, and Establishing a Tripartite Committee to Develop a Strategy for the Conservation of Migratory Birds and Their Habitats, Mar. 16, 1988.

water deposits which will play a pivotal role in the development and even the survival of the border area.⁵⁴ The Mexico-United States maritime boundary, including their adjacent or overlapping territorial seas and exclusive economic zones, extends to 660 additional nautical miles (340 in the Pacific, as a result of the presence of off-shore islands on both sides, and 320 in two segments of the Gulf of Mexico, one of 200 continuing the land boundary from the mainland, and the other one of 120 as a result of overlapping limits in two spots of the central part of the Gulf, measured from Louisiana and Yucatan).

The Mexico-United States land boundary has been delimited and settled through the 1970 Treaty to Resolve Pending Boundary Differences and Maintain the Rio Grande and Colorado Rivers as the International Boundary between Mexico and the United States.⁵⁵ The maritime boundary, though delimited in November 1976 through an exchange of notes,⁵⁶ has not yet been definitely settled. A 1978 treaty concluded in order to formalize the 1976 notes has not yet been ratified by the United States Senate.⁵⁷

54. The transboundary aquifers include: the Hueco Bolson aquifer in the Juarez-El Paso region, extending to about 3,000 square miles, the La Mesilla Bolson between Chihuahua and New Mexico, measuring about 7,450 square miles, and the Mesa de San Luis aquifer in the Baja California/Sonora and California/Arizona region, with an area of approximately 3,000 square miles. See Utton, *International Groundwater Management: The Case of the U.S.-Mexican Frontier*, 57 Neb. L. Rev. 641 (1978); Utton and Rodgers, *The Ixtapa Draft Agreement Relating to the Use of Transboundary Groundwaters*, 25 Nat. Res. J. 713 (1985); Utton and Hayton, *Transboundary Groundwaters: The Bellagio Draft Treaty* (1990); Szekely, *Contexto Juridico Internacional en el que se Enmarcarian las Negociaciones Bilaterales sobre Uso y Conservacion de Mantos Acuiferos Subterranos Transfronterizos*, Primera Reunion de Analisis sobre Uso y Conservacion de las Aguas Subterranas Transfronterizas, Cuernavaca, enero de 1987; Canchola, *El Regimen Juridico de las Aguas Subterranas Transfronterizas: El Caso de Mexico y los Estados Unidos*, Tesis en la Facultad de Derecho, UNAM, Mexico (1990); Charberneau, *Groundwater Resources of the Texas Rio Grande Basin*, 22 Nat. Res. J. 957 (1982); J. Day, *International Aquifer Management: The Hueco Bolson on the Rio Grande River*, 18 Nat. Res. J. 453 (1978); K. DeCook and M. Bradley, *Ground Water Occurrence and Utilization in the Arizona-Sonora Border Region*, 18 Nat. Res. J. 29 (1978); J. Hernandez, *Interrelationship of Ground and Surface Water Quality in the El Paso-Juarez and Mesilla Valleys*, 18 Nat. Res. J. 1 (1978); and C. Rincon Valdes, *Aguas Subterranas en la Region de Cuidad Juarez-El Paso*, 22 Nat. Res. J. 847 (1982).

55. Treaty to Resolve Pending Boundary Differences and Maintain the Rio Grande and Colorado River as the International Boundary between Mexico and the United States, Nov. 23, 1970, United States-Mexico, 23 U.S.T. 371, T.I.A.S. No. 7313.

56. Agreement Concerning Certain Maritime Boundaries, Nov. 24, 1976, United States-Mexico, 29 U.S.T. 196, T.I.A.S. No. 8805.

57. Treaty on the Maritime Delimitation, May 4, 1978, S. Exec. Doc. No. F-H, 96th Cong., 1st Sess. 4-6. See Szekely, *A Commentary with the Mexican View on the Problem of Maritime Boundaries in United States-Mexican Relations*, 22 Nat. Res. J. 155 (1982); K. Schmitt, *The Problem of Maritime Boundaries in U.S.-Mexican Relations*, 22 Nat. Res. J. 139 (1982); Colson, *The Maritime Boundaries of the United States: Where Are We Now? in The Law of the Sea: What Lies Ahead?* 464 (1986); Feldman and Colson, *The Maritime Boundaries of the United States*, 75 Am. J. Int'l L. 729 (1981); and M. Nash, *U.S. Maritime Boundaries with Mexico, Cuba, and Venezuela*, 75 Am. J. Int'l L. 161 (1981).

The history of Mexico-United States water relations can be divided into two eras. In the first era, the traditional one, transboundary surface water resources, their use, conservation and, above all, their distribution, prevailed as the central component. The second one can be said to have been propelled by the Colorado River salinity controversy that affected the Mexicali Valley, and which opened the issue of groundwater deposits. The groundwater issue is still to be settled. Concurrently, the new era of water relations between Mexico and the United States will have to deal with the adoption of additional schemes of cooperation to cope with the potential effects of global climate change on the availability, distribution, and conservation of both surface and groundwater transboundary resources.

In 1889, the two countries created their first bilateral mechanism to deal with boundary water problems in the Convention to Avoid the Difficulties Occasioned by Reason of the Changes which Take Place in the Beds of the Rio Grande and Colorado River.⁵⁸ In 1906, they concluded the Convention Providing for the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes.⁵⁹ Finally, in November 1944, they signed the historic Treaty Relating to the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande,⁶⁰ greatly expanding the powers of the now century-old International Boundary and Water Commission (IBWC). At the end of this process, the Commission had apparently led the two neighbors to settle all major surface water allocation and distribution problems through the adoption of an incredible number of agreements.⁶¹

The marvel of the IBWC experience is that it has survived and grown through ten decades practically oblivious to the turmoil of political and other disputes which have plagued the relations of the two countries in other respects during that period. This indicates that the work of the IBWC has been handled independently of most political considerations and, rather, has been the result of a common political understanding and

58. 26 Stat. 1512, T.S. No. 232.

59. 34 Stat. 2593, T.S. No. 455.

60. 59 Stat. 1219, T.S. No. 994, 3 U.N.T.S. 313.

61. See Sepulveda, *Instituciones para la Solucion de Problemas de Aguas de Superficie entre Mexico y Estados Unidos*, 18 Nat. Res. J. 131 (1978); M. Jamail and S. Mumme, *The International Boundary and Water Commission as a Conflict Management Agency in the U.S.-Mexico Borderlands*, 19 Nat. Res. J. 45 (1982); Mumme, *Continuity and Change in U.S.-Mexico Land and Water Relations: The Politics of the IBWC*, Woodrow Wilson Center for International Scholars (1980); Mumme, *The Background and Significance of Minute 261 of the IBWC*, 11 Cal. W. Int'l J. 223 (1981); Mumme, *Regional Powers in National Diplomacy: The Case of the U.S. Section of the IBWC*, 14 Publius 115 (1984); Mumme, *Engineering Diplomacy: The Evolving Role of the International Boundary and Water Commission in U.S.-Mexico Management*, 1 J. Borderlands Studies 24 (1986); Mumme and Moore, *Agency Autonomy of U.S. Transboundary Resource Commissions*, 3 Transboundary Res. Rep. 3 (1989); Mumme and Moore, *Agency Autonomy in Transboundary Resources Management: The United States Section of the International Boundary and Water Commission, United States and Mexico*, 30 Nat. Res. J. 661 (1990); and A. Eldridge, *A Comprehensive Approach to U.S.-Mexico Border Area Water Management*, 4 Southwestern Rev. 89 (1985).

awareness of the need for an unbiased technical, economic, and even ecological approach to transboundary water problems for the mutual benefit of the two countries.⁶²

The method of work established by the Commission consists in the technical and legal analysis of its concerns by the specialists from both the Mexican and the United States sections. Their agreements are incorporated into minutes which are then submitted for approval to their respective governments in order to acquire full legal force. In the past there has been sufficient political will on the part of the two countries to approve the minutes of the Commission. This has resulted in major successes, such as exchange and integration of information regarding the hydrological and climatological behavior of watercourses, channeling and channel rectification works, construction of five major international dams, and the solution of sanitation problems related to the use of river waters.⁶³

The relatively peaceful transboundary relationship was seriously disrupted in the 1960s when the Colorado River water reaching Mexico was so saline that it severely damaged the soils in the Mexicali Valley—Mexico's most productive agricultural region. This controversy was eventually resolved by the adoption of Minute 242 of the IBWC in 1972,⁶⁴ signaling the beginning of the second era of United States-Mexico transboundary water relations. This experience eventually led to the initiation of Mexico-United States cooperation on broader transboundary environmental issues in the 1980s. The salinity controversy also yielded the first bilateral criteria for dealing with transboundary groundwater deposits. The latter will undoubtedly constitute the prevailing item on the water resource agenda between Mexico and the United States in the immediate future, especially due to the increasing demand for the resource in the border area, the lack of formally adopted rules on the use, conservation, and allocation of aquifers, and the emerging dispute over the lining of the All-American Canal in southern California.

62. See C. Ramirez, *La Comision Internacional de Liites y Aguas: Cien Anos de Relaciones Bilaterales, 1889-1989*, 26 *Politica Exterior* 13 (1990).

63. See Mumme, *The Politics of Water Apportionment and Pollution Problems in United States-Mexico Relations*, Overseas Development Council (1982); G. Rohlich, *Surface Water Quality in the Border between El Paso and the Gulf of Mexico*, 22 *Nat. Res. J.* 915 (1982); Mumme, *State Influence in Foreign Policy Making: Water Related Environmental Disputes along the United States-Mexico Border*, 38 *Western Political Q.* 620 (1985).

64. Minute 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River, Aug. 30, 1973, United States-Mexico, 24 U.S.T. 1971, T.I.A.S. No. 7708. See also Cabrera, *La Salinidad del Rio Colorado: Una Diferencia Internacional*, *Coleccion del Archivo Historico Diplomatico Mexicano*, Tercera Epoca, Serie Documental 13, Secretaria de Relaciones Exteriores (1975); H. Dregne, *Salinity Aspects of the Colorado River Agreement*, 15 *Nat. Res. J.* 43 (1975); D. Furnish and J. Ladman, *The Colorado River Salinity Agreement of 1973 and the Mexicali Valley*, 15 *Nat. Res. J.* 83 (1975); D. Gantz, *United States Approaches to Salinity Problems on the Colorado River*, 12 *Nat. Res. J.* 496 (1972); A. Kneese, *A Theoretical Analysis of Minute 242*, 15 *Nat. Res. J.* 135 (1975); and D. Mann, *Politics in the United States and the Salinity Problem of the Colorado River*, 15 *Nat. Res. J.* 113 (1975).

During the past few years there have emerged worrisome signs that the IBWC may no longer be as well equipped to deal with its current work, and perhaps even less with the tasks ahead. It appears that the excellence in technical expertise historically associated with the IBWC personnel and primarily responsible for its success is now dwindling. Much work will thus have to be carried out by the two countries to strengthen this bilateral mechanism and to make sure that it will remain effective in view of the great challenges of the future, particularly regional and global atmospheric interferences and the explosive regional population growth.⁶⁵

2. United States-Canada Water Boundaries and Cooperation

The United States and Canada share a 5,525 mile land border (3,987 in their southern border and 1,538 in Alaska), crossed by nearly 300 lakes, rivers, and streams, including the Great Lakes (except for Lake Michigan), the 800 mile St. Lawrence River, the 1,243 mile Columbia River, and the 1,979 mile Yukon River. From the Manitoba-Minnesota region to the Atlantic Ocean there is a 2,000 mile discontinuous water border. In many areas, several rivers or streams cross the boundary in both directions, making each of the two countries both upstream and downstream riparians in the same river basin. There are also significant subsurface water deposits along the border. The United States and Canada also share at least 8,000 additional nautical miles in their maritime boundaries separating their territorial seas and their exclusive economic zones, in both the Pacific and in the Atlantic, and in their southern border and in Alaska. The Treaty in Regard to the Boundary Between the United States and Canada⁶⁶ and the judgment of the International Court of Justice settling the delimitation of the maritime boundary in the Gulf of Maine Area⁶⁷ have led to the definitive determination of maritime boundaries between the two countries. As can be easily appreciated, the political boundaries of North

65. See Sepulveda and Utton, *The U.S.-Mexico Border Region: Anticipating Resource Needs and Issues to the Year 2000* (1984); and N. Armstrong, *Anticipating Transboundary Water Needs and Issues in the United States-Mexico Border Region*, 22 Nat. Res. J. 149 (1982).

66. Treaty in Regard to the Boundary between the United States and Canada, July 17, 1925, United States-Canada.

67. *Case Concerning Delimitation of the Maritime Boundary in the Gulf of Maine Area* (U.S. v. Can.) 1984 I.C.J. No. 67, reprinted in 23 I.L.M. 1197 (1984). See also S. Rhee, *Equitable Solutions to the Maritime Boundary Dispute between the United States and Canada in the Gulf of Maine*, 75 Am. J. Int'l L. 590 (1981); L. Clain, *Gulf of Maine: A Disappointing First in the Delimitation of a Single Maritime Boundary*, 25 Va. J. Int'l L. 561 (1985); Cohen, *The Regime of Boundary Waters: The Canadian-United States Experience*, Recueil des Cours 198 (1975); J. Cooper, *Delimitation of the Maritime Boundary in the Gulf of Maine Area*, 16 Ocean Dev. & Int'l L.J. 59 (1986); D. LeMarquand, *Preconditions to Cooperation in Canada-United States Boundary Waters*, 26 Nat. Res. J. 221 (1986); B. Sadler, *The Management of Canada-U.S. Waters: Retrospect and Prospect*, 26 Nat. Res. J. 359 (1986); and Cuyvers, *Maritime Boundaries: Canada v. United States*, 2 Marine Pol'y 6 (1979).

America are essentially water boundaries, probably with no comparable parallel elsewhere in the world.

The situation between Canada and the United States is substantially similar to that of Mexico and the United States over the same period of time. As a result of the 1909 Treaty Relating to the Boundary Waters and Questions Arising Along the Boundary between the United States and Canada,⁶⁸ they established the International Joint Commission,⁶⁹ which can be regarded as much of a model for the World as the IBWC, given its successes.

Some of those achievements are the conclusion of the Treaty Relating to Cooperative Development of the Water Resources of the Columbia River Basin,⁷⁰ the construction of the St. Lawrence Seaway through agreements signed in 1952,⁷¹ and in 1954,⁷² the regulation of the Great Lakes through the 1972 and 1978 Water Quality Agreements,⁷³ the

68. 36 Stat. 2448, T.S. No. 548.

69. See LeMarquand, *Canada-United States Relations: The 1909 Boundary Waters Treaty and the International Joint Commission*, 2 *Transboundary Res. Rep.* 4 (1988); L. Dworsky, *The Management of International Boundary Waters of Canada and the United States: A Comparative Study*, 15 *Nat. Res. J.* 223 (1975); Sewell and Utton, *Getting to Yes in United States-Canadian Water Disputes*, 16 *Nat. Res. J.* 20 (1976); LeMarquand, *Canada-United States Boundary Waters Management Philosophies*, 2 *Transboundary Res. Rep.* 7 (1988); Spencer and Nossal, *The International Joint Commission: Seventy Years On* (1981); LeMarquand, *The International Joint Commission: To Expand or Not Its Environmental Powers?* 4 *Transboundary Res. Rep.* 4 (1990).

70. Jan. 17, 1961, 15 U.S.T. 1555, T.I.A.S. No. 5638, 542 U.N.T.S. 244. See also Utton, *The Columbia River Treaty and Protocol*, 1 *Land & Water L. Rev.* 181 (1966); Lee, *The Columbia River Basin: Experimenting with Sustainability*, 31 *Env't* 6 (1989); Wandschneider, *Management of a United States-Canada Common Resource: The Columbia River*, 83 *Staff Paper*, Washington State University Dept. of Agricultural Economics (1983); and Swainson, *The Columbia River Treaty—Where Do We Go From Here?* 26 *Nat. Res. J.* 243 (1986).

71. June 30, 1952, 5 U.S.T. 1788, T.I.A.S. No. 3053, 234 U.N.T.S. 199.

72. Aug. 17, 1954, 5 U.S.T. 1784, T.I.A.S. No. 3053, 234 U.N.T.S. 210.

73. 23 U.S.T. 301, 24 U.S.T. 2268, T.I.A.S. No. 7312/7747; and 30 U.S.T. 1384, T.I.A.S. No. 9257. See also Dworsky, *The Great Lakes, 1955-1985*, 26 *Nat. Res. J.* 291 (1986); *An Overview of Canadian Law and Policy Governing Great Lakes Water Quality Management*, 18 *Case W. Res. J. Int'l L.* 109 (1986); P. MacAvoy, *The Great Lakes Charter: Toward a Basinwide Strategy for Managing the Great Lakes*, 18 *Case W. Res. J. Int'l L.* 49 (1986); Williams, *Public International Law and Water Quantity Management in a Common Drainage Basin: The Great Lakes*, 18 *Case W. Res. J. Int'l L.* 155 (1986); J. Wilder, *The Great Lakes as a Water Resource: Questions of Ownership and Control*, 59 *Ind. L. Rev.* 463 (1984); T. Vigod, *Global Environmental Problems: A Legal Perspective on Great Lakes Toxic Pollution, U.S.-Canadian Strategies for a Solution*, 12 *Syracuse J. Int'l L. & Comity* 315 (1985); W. Griffin, *A Prologue to Protecting Great Lakes Water Quantity*, 4 *Cooley L. Rev.* 275 (1987); Sax, *A Model State Water Act for Great Lakes Management: Explanation and Text*, 18 *Case W. Res. J. Int'l L.* 219 (1986); Regier and Grima, *The Nature of Great Lakes Ecosystems*, *Int'l Bus. L.* 261 (1984); M. Irwin, *Guarding the Great Lakes: A Call to Action*, 64 *Mich. Bus. J.* 39 (1985); D. Hoffman, *Who Owns the Great Lakes? Posturing for Control of an International Resource*, 16 *Case W. Res. J. Int'l L.* 71 (1984); J. Hill, *The Great Lakes Quasi-Compact: An Emerging Paradigm for Regional Governance of U.S. Water Resources*, *Detroit College of L. Rev.* 1 (1989); R. Sugarman, *Controlling Toxics on the Great Lakes: United States-Canadian Toxic Problems Control Program*, 12 *Syracuse J. Int'l L. & Comity* 299 (1985); L. Pittman, *Plugs to Pull: Proposals for Facing High Great Lakes Water Levels*, 8 *UCLA J. Envtl L. & Pol'y* 213 (1989); and A. Tarlock and S. Deutsch, *Symposium on Prevention of Groundwater Contamination in the Great Lakes Region*, 65 *Chicago-Kent L. Rev.* (1989).

regulation of the Skagit River and Ross Lake,⁷⁴ and the Seven Mile Reservoir on the Pend d'Oreille River,⁷⁵ and the use of the waters of the Niagara River.⁷⁶ The three North American countries can draw significantly from their respective bilateral experiences in dealing with the more traditional surface water distribution and management problems, to face other transboundary challenges of the future. In confronting these new challenges, the two pairs of neighbors may not be equally prepared. Mexico and the United States supposedly culminated their surface water agenda almost two decades ago, allowing them to embark in a new era of environmental cooperation, including the imminent negotiations on transboundary groundwater management. In contrast, the United States and Canada are only now completing 80 years of joint transboundary surface water projects and major issues are still pending. The two countries still have to take action on important surface water problems, such as the proposed large-scale water transfers from Canada to the United States, for which studies are being conducted for the Grand Canal Project, which would transfer the resource from James Bay to the Great Lakes.⁷⁷ Canada and the United States also seem to be late in launching a new stage of ecological cooperation, despite great concern on both sides of the border on such issues as acid precipitation, toxic discharges in the Great Lakes, and global climate change. The International Joint Commission (IJC) remains the only permanent bilateral mechanism operating in Canadian-United States natural resource or environmental relations, and a bit of intransigence may still be permeating the bilateral dialogue.⁷⁸

Although the problems and issues tackled by the three countries on their respective borders have been relatively limited to date, the three countries have learned a great deal about successful cooperation which

74. See J. Kim and M. Marts, *The Skagit-High Ross Dam Controversy: Negotiation and Settlement*, 26 Nat. Res. J. 261 (1986); and Gibson, *The Evolution of the High Ross Dam Settlement*, 2 Northwest Env't J. 1 (1985).

75. Apr. 2, 1984.

76. Treaty of Washington, Feb. 27, 1950, 1 U.S.T. 694, T.I.A.S. No. 2130, 132 U.N.T.S. 223.

77. See Sewell, *Inter-Basin Water Diversions: Canadian Experiences and Perspectives*, in *Large Scale Water Transfers: Emerging Environmental and Social Experiences* (Golubev and Biswas, eds.) 7 (1985); Quinn, *Will Free Trade Drink Canada Dry?* *International and Transboundary Water Resources Issues* 383 (1990); McMillan, *Canadian Water Exports: The Myth and the Facts*, Address to the Association of Conservation Authorities of Ontario, Aug. 25, 1988; Day, *Water Diversion and Export: Learning from Canadian Experience*, Report for Public Issues Series, Canadian Association of Geographers, Vancouver (1990); Rawson Academy of Aquatic Science, *Canadian Water Exports and Free Trade*, Occasional Paper No. 2 (1989); S. Harris, *Great Lakes Symposium: Diversion and Consumptive Use*, 18 Case W. Res. J. Int'l L. 11 (1986); L. Caldwell, *Garrison Diversion: Constraints on Conflict Resolution*, 24 Nat. Res. J. 839 (1984); I. Reinumagi, *Diverting Water from the Great Lakes: Pulling the Plug on Canada*, 20 Val. U.L. Rev. 299 (1986); and Sugarman, *Binding Ties, Tying Binds: International Options for Constraints on Great Lakes Diversions*, 18 Case W. Res. J. Int'l L. 239 (1986).

78. See LeMarquand, *Canada-United States Boundary Waters: Management Philosophies*, 2 *Transboundary Res. Rep.* 7 (1988); LeMarquand, *Preconditions to Cooperation in Canada-United States Boundary Waters*, 26 Nat. Res. J. 221 (1986); Carroll, *Water Resources Management as an Issue in Environmental Diplomacy*, 3 *Transboundary Res. Rep.* 4 (1989).

can be applied to the broader, more complex problems of the future. Not only can the pairs of countries learn from their own experience, but they can also benefit from the experiences on the other border.

C. The Atmosphere

Mere geographic adjacency or proximity, or the sharing of a common geographic feature, such as a coastline in the same sea or ocean, may not be enough to require or to justify the establishment of a formal region of international cooperation for the management and conservation of natural resources or for the protection of the environment. Those ingredients certainly have not been enough for the North American community of States, nor have the rich variety of their transboundary flora and fauna resources, the dimensions of their transboundary water reserves, or even the unique and impressive size of their combined region. At most, those elements have prompted only isolated trilateral action in limited instances.

The lack of trilateral environmental action in North America may be the result of many different considerations. Political considerations may have made cooperation undesirable or unviable. Insufficient environmental conscience or understanding of the practical need to undertake such action, despite the actual or emerging threats to the natural resources or to the environment, may have hindered action. Finally, cooperation through formal multilateral commitments may have been unnecessary due to a lack of transboundary resources or to minimal threats from localized unilateral activities. Far from an intentional negative policy of abstention, the fact that no formal region of ecological cooperation has yet been established in North America is due to a lack of sufficient consciousness and understanding of the urgent and easily identifiable practical needs to do so as soon as possible. The three countries must join together in order to face the concrete and real threats looming over the region, its natural resources, its environment, and even its populations. This is surely the perception that will result from entering the field of North American atmospheric issues.

1. Atmospheric Interferences

The elements which make it necessary, amply justify, and urgently require the formalization of a region of ecological cooperation in North America, and which will be analyzed within this section, are the following:

- 1) the atmosphere superjacent to North America, combined with
- 2) the existence of the great western North American Cordilleras, as an additional geographic feature common to the three countries of the region which has so far received little consideration by practically anyone in this context, and also combined with

- 3) the effects of atmospheric pollutants and the consequent climate change induced by the greenhouse phenomenon on the region's water resources (especially through the hydrologic cycle and mostly in the case of the Cordilleras), and on flora and fauna resources.

a) *The North American Atmosphere as a Long-range Carrier of Pollutants*

At least as significant as the various transboundary flora, fauna, and water resources in North America, is the superjacent atmosphere, which is itself a transboundary resource. Part of the many functions of the atmosphere, and of its intimate and reciprocal relationship with virtually all other elements of any ecosystem, is its ability to serve as a carrier of pollutants, including toxics.⁷⁹ Those pollutants originate primarily in anthropogenic sources and may be transported over great distances throughout the region by means of winds, clouds, rain, snow, and air currents.⁸⁰ These pollutants then either fall out or precipitate out, causing harm to the soil, flora, fauna, or water resources, polluting the air, contaminating the marine environment and its resources, or destroying the ozone layer,⁸¹ or they create a greenhouse effect which adversely affects the climate.⁸²

All of these atmospheric interferences occur in North America in a transboundary fashion.⁸³ The long-range transport of air pollutants does not only occur bilaterally, but from one end of the region to the other. The worst problem is perhaps acid deposition, especially between the United

79. See C. Flinterman, B. Kwiatkowska, and J. Lammers, *Transboundary Air Pollution: International Legal Aspects of the Co-operation of States*, 12 Air L. 112 (1987).

80. See Pallemmaerts, *International Legal Aspects of Long-Range Transboundary Air Pollution*, 1 Hague Y.B. Int'l L. 189 (1988); A. Tollan, *The Convention on Long-Range Transboundary Air Pollution*, 19 J. World Trade L. 615 (1985); A. Fraenkel, *The Convention on Long-Range Transboundary Air Pollution: Meeting the Challenge of International Cooperation*, 30 Harv. Int'l L.J. 447 (1989).

81. See Pollock Shea, *Protecting the Ozone Layer*, in *State of the World 1989* 77 (1989).

82. See J. Brunnee, *Acid Rain and Ozone Depletion: International Law and Regulation* (1988); C. Kiss, *Du Nouveau dans l'Air: Des Pluies Acides a la Couche d'Ozone*, 31 *Annuaire Francais de Droit International* 812 (1985); Ballantyne, *International Liability for Acid Rain*, 41 U. Toronto Fac. L. Rev. 63 (1983); N. Bankes, J. Saunders, *Acid Rain: Multilateral and Bilateral Approaches to Transboundary Pollution under International Law*, 33 U. New Brunswick L.J. 155 (1984). Aside from the nuclear arms race, global warming may well be the only other international issue menacing the survival of mankind as a whole. See V. Nanda, *Global Warming and International Environmental Law—A Preliminary Inquiry*, 30 Harv. Int'l L.J. 375 (1989); Keepin, *Greenhouse Warming: Comparative Analysis of Nuclear and Efficiency Abatement Strategies*, 16 *Energy Pol'y* 538 (1988); Brown, *The Greenhouse Effect: A Global Challenge*, 45 *World Today* 61 (1989); Wirth, *Climate Chaos*, 74 *Foreign Pol'y* 3 (1989); Crosson, *Greenhouse Warming and Climate Change: Why Should We Care?* 14 *Food Pol'y* 107 (1989); M.I. Budyko, *Global Climatic Catastrophes* (1988); C. Layton, *Conserving the Planet or Rushing to Disaster?* 20 *J. World Trade L.* 701 (1986); Stone, *Redistribution of Natural Resources: Hopes and Loopholes in the Definition of Aggression*, Am. J. Int'l L. 241 (1977).

83. For maps of streamlines and speeds of surface resultant winds in North America, see P. Lydolph, *The Climate of the Earth* (1985); J.G. Lockwood, *World Climatology: An Environmental Approach* (1974); Whittaker and Horn, *Geographical and Seasonal Distribution of North American Cyclogenesis: 1958–1977*, 109 *Monthly Weather Rev.* 2312 (1981); Garcia, *Mapa de Climas*, Atlas Nacional de Mexico (1989).

States and Canada. Pollutants, such as sulphur dioxide (from fossil fuel-burning plants) and nitrogen oxides (from motor vehicles), change chemically in the atmosphere and then fall to earth as acid rain, snow, fog, or particulate matter. Because of acidic deposition, some susceptible lakes in North America can no longer support aquatic life. Half of the 700,000 lakes in the six eastern provinces of Canada are extremely acid sensitive, as are many in the northern United States.⁸⁴

There is already important evidence as to other forms of long-range transboundary air pollution in North America and the dimensions of its effects, including global warming and ozone depletion.⁸⁵ Studies have been undertaken that show that the rise in sea level due to global temperature increase should be a matter of concrete concern for the region.⁸⁶ Illustrative of the ozone depletion sources in the North American region is the fact that 35 percent of all chlorofluorocarbons (CFCs) in the world are consumed in the United States and Canada, while only one percent is consumed in Mexico and an additional two percent in the rest of Latin America.⁸⁷ Concern is also growing on DDT entering the Great Lakes, and recent studies suggest that it is being transported through the atmosphere for thousands of kilometers from Mexico and Central America, where the pesticide is still in widespread use. Its long range transport

84. See Dudley, *Acid Rain and U.S.-Canadian Environmental Relations: Looking Beyond National Solutions to Transboundary Pollution*, 5 *Kansainoikeus Ius Gentium* 86 (1988); C. Garland, *Acid Rain Over the United States and Canada: The D.C. Circuit Court Fails to Provide Shelter Under Section 115*, 16 *Boston College Env'tl Aff. L. Rev.* 1 (1988); Green, *Acid Rain and U.S.-Canadian Relations*, 9 *Wash. Q.* 103 (1986); R. Steiner, *The North American Acid Rain Problem: Applying International Legal Principles Economically, Without Burdening Bilateral Relations*, 12 *Suffolk Transnat'l L.J.* 1 (1988); E. Moller, *The United States-Canadian Acid Rain Crisis: Proposal for an International Agreement*, 36 *UCLA L. Rev.* 1207 (1989); D. Johnston, P. Finkle, *Acid Precipitation in North America: The Case for Transboundary Cooperation*, 14 *Vand. J. Transnat'l L.* 787 (1981); *Acid Rain: A Common Problem, A Joint Solution*, 4 *J. Min. L. & Pol'y* (1988); Blackwell, *Acid Rain: Corrosive Problem in Canadian-American Relations*, 47 *Saskatchewan L. Rev.* 1 (1982); C. Erwin, *Resolving Transboundary Air Pollution Disputes in North America: The Case for a Quasi-Judicial Remedy*, 84 *Wis. Int'l L.J.* 203 (1984); C. de Saillan, *Acid Rain, Canada and the United States: Enforcing the International Pollution Provision of the Clean Air Act*, 1 *Boston U. Int'l L.J.* 151 (1982); S. Cagann, *Finding a Common Ground for Canada and the United States to Resolve Acid Rain Disputes*, 1988 *J. Dispute Resolution* 175 (1988); A. Lucas, *Acid Rain: The Canadian Position*, 32 *U. Kan. L. Rev.* 165 (1983); E. Knapp, *Our Neighbor's Keeper? The United States and Canada: Coping with Transboundary Air Pollution*, 9 *Fordham Int'l L.J.* 159 (1986); A. Scott, *The Canadian-American Problem of Acid Rain*, 26 *Nat. Res. J.* 337 (1986); L. Smartt, *Canada to Follow U.S. Lead in Air Cleanup*, 115 *Pub. Util. Fort.* 6 (1985).

85. For further information, see M. Adams and M. Steiner, *Energy and the North American Community: Canada, Mexico, and the U.S.*, 3 *Hastings Int'l & Comp. L. Rev.* 309 (1980); B. Bishop, *Impact of Energy Development on Colorado River Quality*, 18 *Nat. Res. J.* 649 (1978).

86. Intergovernmental Panel on Climate Change, *Changing Climate and the Coast*, IPCC Report from Miami Conference on Adaptive Responses to Sea Level Rise and Other Impacts of Global Climate Change, May 1990. See also Hekstra, *Global Warming and Rising Sea Levels: The Policy Implications*, 19 *Ecologist* 4 (1989); and Merino, *The Coastal Zone of Mexico*, 15 *Coastal Mgmt* 27 (1987).

87. See Technical Progress in Protecting the Ozone Layer: Refrigeration, Air Conditioning and Heat Pumps, Technical Options Report, UNEP (1989); and O. Nangle, *Stratospheric Ozone: United States Regulation of Chlorofluorocarbons*, 16 *Boston College Env'tl Aff. L. Rev.* 531 (1989).

is facilitated by the general circulation pattern, which brings moisture from the Gulf of Mexico into the United States, as well as by anticyclonic airflow sweeping across the eastern seaboard.⁸⁸ The range and severity of potential problems resulting from atmospheric pollution indicates the need for immediate and comprehensive trilateral, if not global, cooperation.

b) *The Great Western North American Cordilleras as a Common Geographical Feature*

The last, but certainly the greatest, system of mountains to form in North America, known as the Cordilleras, rose mainly in post-Jurassic times, less than 136 million years ago. The great North American Cordilleras constitute a belt that extends beyond 8,000 kilometers, reaching a breadth of 1,700 kilometers. They are positioned from north to south, in contrast with the Alpine and Himalayan systems in Europe and Asia, respectively, and run from the Aleutians, through British Columbia and the United States, south to Tehuantepec, Mexico.

The Cordilleras are divided essentially into three great belts:

- a) The eastern Cordilleras or Rocky Mountain system, along the inner edge of the continent, which starts with the Brooks Mountains in Alaska, divides the Yukon and the Mackenzie Rivers,⁸⁹ goes through the Missouri River and Yellowstone Park, then to Santa Fe southwards to El Paso, the Rio Grande depression, and Mexico;⁹⁰
- b) The central string of high intermontane plateaus, from Alaska to Mexico, which include the Columbia Basin, the Great Basin, and the Colorado Basin, and the western and eastern Sierras Madre, which rise in the Toluca plain and then in the Popocatepetl, the Iztacihuatl and the Citlaltepetl; and
- c) The western Cordilleras, on the continent's outer edge, divided into the Cascadian and the Coast Range systems, which emerge from the bottom of the sea to form the Aleutians, and rise in Mount McKinley, subsequently in the Rainier

88. See Eisenreich, *Toxic Fallout in the Great Lakes*, Issues in Science and Technology 71 (1987); Rapaport, *New DDT Inputs to North America: Atmospheric Deposition*, 14 *Chemosphere* 1167 (1985); Sierra Club, *Sweetwater, Bitter Rain: Toxic Air Pollution in the Great Lakes Basin*, a 1988 Update (1988); Brown, *Toxic Wind*, Discover 42 (1987); Miller, *When Air Poisons Water*, 30 *Northeast-Midwest Econ. Rev.* 12 (1989); Simonian, *Pesticide Use in Mexico: Decades of Abuse*, 18 *Ecologist* 82 (1988); F. Halter, *Regulating Information Exchange and International Trade in Pesticides and Other Toxic Substances to Meet the Needs of Developing Countries*, 12 *Colum. J. Envtl L.* 1 (1987); K. Golberg, *Efforts to Prevent Misuse of Pesticides Exported to Developing Countries: Progressing Beyond Regulation and Notification*, 12 *Ecology L.Q.* 1025 (1985); and A. MacIntire, *Why Pesticides Received Extensive Use in America: A Political Economy of Agricultural Pest Management to 1970*, 27 *Nat. Res. J.* 533 (1987).

89. See Sadler, ed., *International Arrangements for Water Management in the MacKenzie River Basin* (1983).

90. See C. Baker, *Geology Reconnaissance in the Eastern Cordillera of Mexico*, Special Paper 131, Geological Society of America (1967).

Peak and Whitney Peak in the Sierra Nevada, seem to disappear in Cabo San Lucas, but continue after 500 kilometers in Cabo Corrientes and, from there, through the Sierra Madre del Sur up to the Isthmus of Tehuantepec.

c) The North American Atmosphere, the Rockies Connection and the Hydrological Cycle

In the new era of North American water relations, the three countries will have to deal not only with traditional problems, such as distribution, or more current problems, such as surface water quality and groundwater depletion, but also with the potential consequences resulting from global warming induced by anthropogenic atmospheric interferences. One of the greatest anxieties provoked by the potential dimensions of global warming is its negative effects on water resources and the chain reaction that could be triggered by such effects.⁹¹ These effects would be in addition to those problems which mankind has traditionally experienced, and is now increasingly suffering, and which translate into growing pressure on limited water resources due to: (a) increased demand, spurred largely by population growth; (b) depletion of groundwater; (c) migration into arid areas; (d) periods of short-term and prolonged drought; (e) degraded water quality; (f) settlements in flood-prone areas; and (g) land uses that affect water supply, flooding, and water quality.

Global warming will itself add incredible complications, such as a change in spatial and temporal distribution of precipitation, soil moisture, and run-off, and the frequencies and magnitudes of droughts and floods. In turn, these factors could lead to changes in cropping patterns, the supply of and demand for water, and changes in natural ecosystems. If the world becomes warmer, there is general agreement that it will also receive more precipitation on a globally average basis. Some areas will get more, and others less, precipitation. Yet precipitation is only one factor determining water availability. Availability and run-off can be altered by several factors, including temperature, wind speed, humidity, the nature and extent of vegetation, and the amount and duration of accumulated snow-pack. Each of these factors would also change in the event of climate change. Lower wind speeds and changes in humidity would change the frequencies, magnitudes, and patterns of storms. Higher carbon dioxide concentrations will also likely increase temperature in arid areas.

Higher temperatures would result in greater evaporation and ear-

91. See Water Resources—Adaptive Responses to Climate Change, draft working paper prepared for the Resource Use and Management Subgroup of the Intergovernmental Panel on Climate Change (IPCC) Response Strategy Working Group (1989); Stakhiv and Lins, Impacts of Climate Change on U.S. Water Resources, with Reference to the Great Lakes Basin, paper presented at the IPCC Resource Uses and Management Strategies Workshop (1989); and Matter and Feddema, Hydrologic Consequences of Increases in Trace Gases and CO₂ in the Atmosphere, in J.G. Titus, ed., *Greenhouse Effect and Sea Level Rise: Challenge for this Generation* 251 (1984).

lier spring melting of permafrost and snowpack. The Technical Workshop on Developing Policies for Responding to Future Climate Change concluded that the global temperature rise the world will experience by the middle of the twenty-first century will be even higher at the poles.⁹² Permafrost is the term used to describe ground, soil, or rock that remains frozen throughout the year. Most permafrost is many thousands of years old and underlies between 20 percent to 25 percent of the land surface of the earth, mainly in the polar and circumpolar regions and in alpine areas at lower altitudes. About one-half of the Alaskan and Canadian land areas are underlain by permafrost. It is also found throughout the mountain ranges of North America. Permafrost, in the strictly thermal sense, is widespread beneath the seabed in the Arctic Ocean, and its presence also influences a number of environmental factors important to plants.

The often shallow active soil layer, which is the top layer of the ground, subject to an annual regime of freezing and thawing, is the biological reservoir for Arctic vegetation, providing water and nutrient needs, while the frozen ground below is relatively inert, and acts as a barrier to deep rooting. In fact, permafrost is a product of climate and, if the climate changes, so will permafrost. If some change causes the mean annual surface temperature to rise, the result would be a deeper active layer. If the progressive warming were great enough, then the permafrost could eventually disappear altogether.

Changes to permafrost will produce a set of second order effects, although apparently positive impacts are likely as well. Potential new territory will become available for use and settlement, but native Arctic species such as muskox, caribou, and lemmings might suffer, perhaps greatly, due to changes in climate and to their ecology. A northward shift of the forests would reduce tundra and barren land species, and changes in wetlands may affect nesting areas and migration routes for waterfowl and other birds. Permafrost melting will thus have a transboundary ecological impact, from north to south, throughout North America. So will early spring snowpack melting at the top of the high mountain ranges and Cordilleras of North America.⁹³ In this setting, the eastern Cordillera or Rocky Mountain system will have a central and fundamental role to play, as it

92. J. Kindt and T. Parriott, *Ice Covered Areas: The Competing Interests of Conservation and Resource Exploitation*, 21 San Diego L. Rev. 941 (1984).

93. See S. Manabe, statement before the U.S. Senate Committee on Energy and Natural Resources, Nov. 9, 1987; Boyd, *The Legal Status of the Arctic Sea Ice: A Comparative Study and a Proposal*, 22 Can. Y.B. Int'l L. 98 (1984); Young, *Arctic Environmental Cooperation*, 12 Current Research on Peace and Violence 105 (1989); K. Shusterich, *International Jurisdictional Issues in the Arctic Ocean*, 14 Ocean Dev. & Int'l L. 235 (1984); Utton, *The Arctic Waters Pollution Prevention Act and the Right of Self Protection*, 7 U. British Columbia L. Rev. 221 (1972); D. Vanderzwaag, J. Donihee, and M. Faegteborg, *Towards Regional Ocean Management in the Arctic: From Co-existence to Cooperation*, 37 U. New Brunswick L.J. 1 (1988); and Pharand, *The Legal Status of the Arctic Regions*, 163 Recueil des Cours 49 (1979).

creates the Continental Divide watershed, from which the drainage is easterly and westerly.

The Continental Divide begins at the point of crossing the United States-Mexican boundary, near longitude 108° 45" West, crosses New Mexico along the western edge of the Rio Grande drainage basin, entering Colorado near 106° 52" West. It continues on a very irregular route northerly across Colorado, along the western summits of the Rio Grande and of the Arkansas, the South Platte and the North Platte River basins, and across Rocky Mountain National Park, entering Wyoming near longitude 106° 52" West. From this point it proceeds in a northwesterly direction, forming the western rims of the North Platte, Big Horn, and Yellowstone River basins, crossing the southwestern portion of Yellowstone National Park. Thereafter it continues in a westerly and then a northerly direction, forming the common boundary of Idaho and Montana, to a point on that boundary near longitude 114° 00" West. Thence northeasterly and northwesterly through Montana and the Glacier National Park, entering Canada near longitude 114° 04" West.

It could be said that there is river water continuity through the Continental Divide, all the way from the Colorado River and the Rio Grande in Mexico to the Milk River in southern Canada. But the real or natural continuity is provided by the macro-basin created by the inputs of water provided by the Rocky Mountain system through the Continental Divide, itself fed by precipitation, snowpack, groundwater, and other sources. There is also artificial continuity, due to the Colorado-Big Thompson Project, in which a series of reservoirs capture part of the flow of the Colorado River and its tributaries on the western side of the Rockies and divert it to natural streams on the eastern slope. The first deliveries commenced in 1947.⁹⁴ It can be ventured to say that changes, natural or human-induced, in any part of the macro-basin may have effects in the entire North American region.

d) Effects of Climate Change, as an Atmospheric Interference, on Transboundary Waters in the Region⁹⁵

Some studies have already been undertaken on specific effects of global climate change. According to Revelle and Waggoner,⁹⁶ warmer air temperatures and a slight decrease in precipitation would probably severely reduce both the quantity and quality of water resources in the western United States. The impact would be severe on seven water

94. See C. Howe, *Project Benefits and Costs from National and Regional Viewpoints: Methodological Issues and Case Study of the Colorado-Big Thompson Project*, 26 Nat. Res. J. 77 (1986).

95. See Bandyopadhyay, *The Ecology of Drought and Water Scarcity*, 18 Ecologist 88 (1988).

96. Revelle and Waggoner, *Effects of a Carbon Dioxide-Induced Climate Change on Water Supplies in the Western United States*, in E. Abrahamson, ed., *The Challenge of Global Warming* 151 (1989).

regions, including the drainage basins of the Rio Grande, the Colorado River, the rivers draining into the Gulf of Mexico from the northern two-thirds of Texas, and the rivers of California.⁹⁷ Supplies would greatly diminish, from almost a 76 percent reduction in the Rio Grande region to nearly 40 percent in the Upper Colorado. These quite alarming forecasts derive from the 1979 Stockton and Boggess model, which is based on a 2 degree Celsius temperature increase and a 10 percent precipitation decrease.⁹⁸

The prediction of the Stockton and Boggess model has apparently received widespread credibility. Even the United States Environmental Protection Agency (EPA) quotes it in a study on the potential effects of climate change on the United States.⁹⁹ In that study, the EPA recognizes that climate change may exacerbate current water shortage and water quality problems in the West. Higher temperatures could cause earlier snowmelt and run-off, resulting in lower water availability in the summer. Some global climate change scenarios predict mid-summer drought and heat, less groundwater recharge, and less groundwater and surface water availability for irrigation in the middle latitudes of the country. Hydropower output would also decline as a result of lower river flow. Climate change may alter the seasonality and volume of snowmelt and precipitation, thereby increasing the risk of flooding, changing reservoir management practices, and affecting the output and reliability of hydroelectric power production and the availability of water for irrigation.

To complicate matters, in the Rio Grande, the Colorado, and the Great Plains basins, total consumption is already more than 40 percent of renewable supply. The Colorado River has huge reservoir storage capacity, but demand already exceeds supply in the lower half of the basin. Ordinarily, all of the Colorado River water is consumed before it reaches the Gulf of California in Mexico. The Colorado River Compact of 1922, the 1963 Supreme Court decision in *Arizona v. California*, the treaties with Mexico and other agreements, allocate Colorado River water to seven United States states and Mexico, but some studies show that the upper Colorado region (which currently uses only a portion of its allocated water) will use all of its allocation by the year 2000, further reducing water hitherto available to lower Colorado River states. Climate change will

97. Knox and Buddemeir, *Impacts of Climate Change on California Water Resources*, Lawrence Livermore Laboratory.

98. Stockton and Boggess, *Geohydrological Implications of Climate Change on Water Resource Development*, U.S. Army Coastal Engineering Research Center (1979). For other studies, see Dracup, *Impact on the Colorado River Basin and Southwest Water Supply*, in National Research Council, *Climate Change and Water Supply* 121 (1977); Kneese and Bonem, *Hypothetical Shocks to Water Allocation Institutions in the Colorado Basin*, in G. Weatherford and F.L. Brown, eds., *New Courses for the Colorado River: Major Issues for the Next Century* 87 (1986).

99. *The Potential Effects of Global Climate Change on the United States*, EPA Doc. 230-05-89-050, Dec. 1989.

only make matters worse than they are already projected to become if the climate were to remain stable.

Gleick has published perhaps the most complete analysis on the foreseeable consequences of climate change on transboundary water resources between Mexico and the United States.¹⁰⁰ The virtue of this study is that it puts on the table most of the considerations necessary to dealing with the issue, most of which seem to be quite plausible, although others are questionable.

1. Although less than a tenth of the average flow of the Columbia River and a thirtieth of the flow of the great Mississippi River, the Colorado is the principal river system in the southwestern United States and northwestern Mexico, moving through arid regions that are among the driest and hottest in the country.
2. Population growth and the rising demand for irrigation water in the region have led to the nearly total allocation of the waters of the Colorado, and in many years no flow reaches the Gulf of California at all.¹⁰¹
3. Still, the 1944 Treaty failed to resolve two important problems:
 - a) the quality of the water to be delivered to Mexico, and
 - b) the possibility of long-term reductions in water availability, which was addressed by Article 10 of the Treaty in only a limited way, by providing that in the event of an "extraordinary drought" or a "serious accident" to the irrigation system in the United States, the water allocated to Mexico is to be reduced in the same proportion as consumptive uses of water in the United States are reduced.¹⁰²
4. Because Mexico has consistently received all the water allocated to it by the Treaty, this ambiguity in Article 10 has yet to be resolved.
5. As a result of current growth in consumptive water demand, treaty allocations to Mexico could be threatened beginning as early as the mid-1990s.
6. Problems could arrive even sooner if the presently unquantified water rights of the Navajo Indians are resolved.
7. At the extreme, if a persistent ten-year drought as severe as the one already identified in the long-term records occurs, major disruptions of standard water-use practices and water deliver-

100. Gleick, *The Effects of Future Climate Changes on International Water Resources: The Colorado River, the United States, and Mexico*, 23 *Pol'y Sci.* 23 (1988).

101. See L. Blackwood and E. Carpenter, *The Potential for Population Growth in the United States Counties that Border Mexico: El Paso to San Diego*, 17 *Nat. Res. J.* 545 (1977); F. Alba, *Condiciones y Políticas Económicas en la Frontera Norte de México*, 17 *Nat. Res. J.* 573 (1977).

102. Neither "extraordinary drought" nor "serious accident" was defined in the treaty, and the written records offer little clarification.

- ies would result, and the full deliveries to Mexico would be regularly threatened.
8. The treaty was completed with the assumption that the average supply of water in the Colorado River basin would continue to be the same in the future, and thus that climate would remain stationary.
 9. Climatic changes will greatly complicate planning large-scale water transfers, for two reasons:
 - a) while long-term droughts tend to be localized, climatic changes caused by the greenhouse effect are likely to be widespread and persistent, which would produce shortages in neighboring regions that might otherwise have had surplus water to transfer, and
 - b) uncertainties about details of specific regions' climatic changes may take decades to resolve, which will increase the economic and political costs of large-scale transfers.
 10. Finally, waiting until serious pressures develop on the water resources of the Colorado River will only increase the difficulty of resolving the issue. Gleick makes an appeal for negotiations to begin as soon as possible, with the goal of adopting two new treaty components:
 - a) clear definitions of "extraordinary drought" and "climatic change," and how to identify the onset of such events, and
 - b) unambiguous allocations of the subsequent shortages.

Even before the potential consequences of climate change on water resources were first contemplated, Utton had warned that the "extraordinary drought" provision in Article 10 of the 1944 Treaty, was "the major remaining water quantity issue," and that the generality of the drought language could lead to substantial problems in times of water shortage. In support, he cites Sepulveda:

The Treaty of 1944 failed to specify whether the drought could occur in the total region served by a river system, or only in a portion of it, and also did not define the intensity nor the duration of the drought. Further, no precise measurement is provided. Such imprecisions give rise to many interesting hypothetical questions. For example, if severe drought conditions do indeed exist in the United States during one year, the reduction in consumption would not be immediately calculable, and until such calculations would be made, would Mexico not be entitled to receive her full allotment of water?

Although Utton concludes by offering a somewhat consoling precedent, that a similar drought provision "in the 1906 Treaty has been implemented in a manner acceptable to both governments," the possible

consequences of climate change on water availability makes the issue substantially larger and, thus, a source of much greater concern.¹⁰³

e) Questions to be Asked

It is proposed here that the questions that have to be asked are, among others:

- a) In whose favor would the ambiguity and vagueness of the "extraordinary drought" provision of Article 10 in the 1944 Treaty be resolved?
- b) Would it be more convenient to the interests of the United States or to the interests of Mexico to resolve the problems?
- c) Would the international rules for treaty interpretation¹⁰⁴ work better for one country than for the other?
- d) Would the long history of bilateral activities contain enough customary elements to satisfactorily solve an eventual dispute through the use of international customary law?
- e) Will the matter give new life to the Harmon doctrine of the United States?
- f) Will the work of the International Law Commission (ILC) on the Law of the Non-navigational Uses of International Watercourses be in place in time to provide applicable rules to adequately avoid conflict?¹⁰⁵
- g) How would an eventual dispute on this matter be aggravated by bilateral groundwater problems?
- h) Will it be necessary to negotiate an amendment to the 1944 Treaty?
- i) Which country would run the greatest risks in a treaty amendment negotiation?
- j) Finally, will the IBWC be adequately equipped to tackle such enormous new problems, as may already be envisaged for the immediate future?

Such is the magnitude of the transboundary water agenda that both Mexico and the United States will have to face. Bilateral work has to be started with absolutely no delay, as nature may be running ahead of

103. Utton, *An Assessment of the Management of U.S.-Mexican Water Resources: Anticipating the Year 2000*, in Sepulveda and Utton, eds., *The U.S.-Mexico Border Region: Anticipating Resource Needs and Issues to the Year 2000* 364 (1984).

104. Articles 31-33 of the Vienna Convention on the Law of Treaties, U.N.T.S. 1155.

105. It is of great importance to review the record of Mexico's participation in that work through the Sixth Committee of the United Nations General Assembly, where for several years already Mexico has been questioning the ILC, especially in regards to this item. At issue has been the inventory of applicable criteria for the distribution of transboundary river waters, which appears to take a step back from previous work in the field. See Szekely, *Transboundary Resources: A View from Mexico*, 26 Nat. Res. J. 669 (1986).

both awareness and political will to respond to the challenge. It may well be that a similar situation is going to defy the United States and Canada in the field of their transboundary water relations as a result of climatic change. Thus, it seems to be urgent and imperative that a comparable work agenda be drafted and negotiations commence as soon as possible.

2. Multilateral Cooperation

As a result of certain conceptions of practical and political expediency, the international community has adopted a rather fragmented approach to the negotiations, at the multilateral level, of legal instruments to cope with global atmospheric problems. Instead of fully recognizing the ecological unity of the atmosphere as a natural resource, the international community has dealt individually with the various anthropogenic sources of environmental interferences which affect the global atmosphere as a whole. Thus, multilateral activity has been devoted separately to the ozone layer, global climate change and, in a lesser and more indirect fashion, with acid rain. New efforts are being undertaken to protect biological diversity, especially forest resources from the effects of such atmospheric interferences.

This piecemeal approach prevailed over the voices which called for the adoption of an umbrella atmosphere convention. Such was the appeal made in a statement issued by the Meeting of Legal and Policy Experts on the Protection of the Atmosphere, this made several important contributions. First of all, this so-called Ottawa Statement defined the "atmosphere" as "the resource constituted by the global mass of air surrounding the earth," and as "all or part of the collection of gases which lie within the limits of the troposphere and stratosphere as defined by the WMO international standard atmosphere." Secondly, the Statement defined an "atmospheric interference" as "any change in the physical and chemical condition of the atmosphere resulting directly or indirectly from human activities and producing effects of such nature as to appreciably endanger human health, harm living resources, ecosystems and material property, impair amenities or interfere with other legitimate uses of the environment," and an "international atmospheric interference" as "any atmospheric interference of which not both the origin and effects are wholly located within the area under the national jurisdiction of one State." Finally, the Statement went as far as to declare that "Without prejudice to the sovereignty of States over the airspace superjacent to their territory as recognized by international law, . . . the atmosphere, as defined, constitutes a common resource of vital interest to Mankind."¹⁰⁶

106. Westing, *The Atmosphere as a Common Heritage of Humankind*, 2/3 *Peace and the Sciences* 78 (1989).

Within such a fragmented multilateral spectrum, the United States and Canada are parties to the European Convention on Long-range Transboundary Air Pollution,¹⁰⁷ which is not open to Mexico. Both Canada and the United States are parties to the Convention's 1984 Geneva Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe,¹⁰⁸ but only Canada is a party to the 1985 Helsinki Protocol on the Reduction of Sulphur Emissions or Their Transboundary Fluxes by at Least 30 Percent,¹⁰⁹ and also to the 1988 Sofia Protocol Concerning the Control of Emissions of Nitrogen Oxides of Their Transboundary Fluxes.¹¹⁰ Additionally, Canada joined Austria, Denmark, Finland, the Federal Republic of Germany, and the Netherlands, in the adoption of the Declaration on Acid Rain, by the Canada-Europe Ministerial Conference on Acid Rain.¹¹¹

Mexico, the United States, and Canada are parties to the 1984 Vienna Convention on the Protection of the Ozone Layer¹¹² as well as to its 1986 Montreal Protocol.¹¹³ Mexico was the first country to ratify the Montreal Protocol and has committed itself to reducing the use of controlled substances by 1993, in the case of chlorofluorocarbons, and by 1996 in the case of halons. Mexico's deadlines are 17 and 14 years ahead of the schedule set by the Protocol, which is significant since Mexico contributes one percent of the global production and consumption of ozone depleting substances. Both Mexico and Canada were quite active in the negotiations leading to the adoption of the Montreal Protocol amendments to address ozone depletion.¹¹⁴ Mexico's participation was instrumental in securing the establishment of a Multilateral Fund to finance the incremental costs to developing countries for reducing or banning the use of the substances that deplete the ozone layer; that is, chlorofluorocarbons (CFCs), halons, carbon tetrachloride, methylchloroform, and HCFCs. The latter was

107. Nov. 13, 1979, 18 I.L.M. 1442, T.I.A.S. No. 10541. See also Fraenkel, *The Convention on Long-Range Transboundary Air Pollution: Meeting the Challenge of International Cooperation*, 30 Harv. Int'l L.J. 447 (1989).

108. U.N.T.S. 25638.

109. 24 I.L.M. 484, Mar. 1985.

110. 27 I.L.M. 698, May 1988.

111. 23 I.L.M. 662, Mar. 21, 1984.

112. 26 I.L.M. 1529, 1987. See also Szell, *The Vienna Convention for the Protection of the Ozone Layer*, 36 Int'l Dig. of Health Legis. 839 (1985); Sand, *Protecting the Ozone Layer: The Vienna Convention Is Adopted*, 27 Env't 18 (1985); and Rummel-Bulska, *Recent Developments Relating to the Vienna Convention for the Protection of the Ozone Layer*, 54/56 Y.B. Academy Alumni Ass'n 115 (1986).

113. 26 I.L.M. 1541, Nov. 1987. See also Szell, *The Montreal Protocol on Substances that Deplete the Ozone Layer*, 39 Int'l Dig. of Health Legis. 278 (1988); Lammers, *Efforts to Develop a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer*, 1 Hague Y.B. Int'l L. 225 (1988); G. Lean, *Action on Ozone* (1989); C. Davidson, *The Montreal Protocol: The First Step Toward Protecting the Global Ozone Layer*, 20 N.Y.U. J. Int'l L. & Pol. 793 (1988).

114. UNEP/OZL.PRO.2/L.4, June 27-29, 1990.

accomplished despite lack of enthusiasm on the part of the United States, especially on the rules for the operation of the Fund. The same was the case for the provisions agreed to on the transfer of required technologies to the developing countries. Both achievements will have a significant effect on the ongoing United Nations negotiations for climate change.

While there is not a lot of concrete evidence on the extent or impacts of global warming, what is known has been sufficient to trigger an unprecedented amount of international consultations, mostly through the IPCC process. The alarming risks facing present and future generations are the result of human activities and may provoke disastrous consequences, not only to the atmosphere but to the planet as a whole. Since 1984, a lot of time, effort, and financial resources have been devoted internationally to taking precautionary measures to handle this formidable challenge. Significant progress has been made in international negotiations despite prevailing disagreement, ignorance, or lack of full comprehension, as to all of the causes and potential effects of the greenhouse phenomenon.

The three North American countries have been quite active and played leading roles in the IPCC global warming negotiations, albeit not necessarily in the same direction. Dismay has been the response of the international community, mostly by the Europeans and some developing countries, at the attitude adopted in the negotiations by the United States government. In contrast with an announced intention to be the "President of the Environment," George Bush and his administration have consistently opposed immediate adoption of concrete national and international actions to respond effectively to climate change sources and consequences. The United States has delayed any immediate action, calling instead for more research and information prior to undertaking any specific legal commitments.

Canada has played a more moderate role in the negotiations, but perhaps not sufficiently adequate given the potential consequences of global warming on its territory, natural resources, and environment. This may be the price that Canada has paid for attempting to play an intermediary role among the various competing interests.

Mexico, on the other hand, has become one of the most active and constructive developing countries in the IPCC process and is outstanding for its detailed proposals to dealing with the problem. It has championed the so-called "precautionary principle," the establishment of an international trust fund to cover the incremental costs to be incurred by developing countries in substituting environmentally friendly technologies that do not produce greenhouse gases for cheaper but more destructive technologies, and the transfer of such technologies on a preferential and non-commercial basis. Mexico's position may come from its increasing aware-

ness and concern regarding potential effects on the quality of its environment, on the protection of its natural resources, and on the health of its nationals. There also seems to be a growing understanding of the need to cope with the anthropogenic sources of greenhouse gases originating within its jurisdiction. At stake are more than 10,000 kilometers of shoreline, the resources of one of the largest exclusive economic zones, the fourth richest biological diversity, and the well-being of present and future generations. In addition, there may be serious threats to its water resources in the northern border region.

The positions taken by the three North American countries in the international conferences on global climate change and on global biodiversity may very well indicate the positions they will take in the face of any proposal for the formal establishment of a North American region of ecological cooperation.

3. Mexico-United States Cooperation

Bilaterally, the progress made between Mexico and the United States to cooperatively combat transboundary air pollution has advanced more quickly than between the United States and Canada, for whom the problem is of a much greater dimension.¹¹⁵

Once the 1983 La Paz Agreement¹¹⁶ came into force, the national coordinators appointed by the two parties established a Working Group of Technical Experts on Air Quality. Eventually, successful negotiations led to the adoption of two very important annexes to the agreement. Annex IV, containing the Agreement of Cooperation between Mexico and the United States Regarding the Transboundary Air Pollution Caused by Copper Smelters Along Their Common Border¹¹⁷ was signed after a very difficult but positive negotiation. As a result of this agreement, a grave problem of transboundary air pollution originating in the triangle of copper smelters formed by the Phelps Dodge (Arizona), Nacozari and Cananea (Sonora) plants was effectively dealt with.¹¹⁸ Annex V to the La Paz Agreement contains the agreement between Mexico and the United States on the international transport of urban air pollution. Air pollution in the Ciudad Juarez-El Paso region, as well as other border areas, had become a

115. See H. Applegate, *Transboundary Air Resources: Problems, Prospects and Recommendations for the Future*, 22 Nat. Res. J. 169 (1982).

116. Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Region, Aug. 14, 1983, United States-Mexico. The agreement came into force on Feb. 16, 1984.

117. 26 I.L.M. 33.

118. See White, *Section 119 of the Clean Air Act and Phelps Dodge: A Case Study of EPA Inaction*, 1 Transboundary Res. Rep. 1 (1987).

matter of great concern for communities in border cities.¹¹⁹ Annex V was negotiated specifically for the Ciudad Juarez-El Paso region, but it also allows for further transboundary cooperation between other twin cities in the border that may require it.¹²⁰

It is relevant to note here that on the same date of signing of Annex V the two countries signed another air pollution agreement to deal with the problem in Mexico City.¹²¹ The agreement does have regional and international significance given that it constitutes a device for cooperation on the environmental and public health consequences of air pollution. In addition, what has been learned recently about the long-range transport of air pollution and its potential impact on the global climate, this agreement certainly is of international importance.

4. Canada-United States Cooperation

The transboundary air pollution problem is far greater for the United States and Canada and has, in fact, become one of the most serious irritants in their relationship. Much of the tension stems from Canada's perception of the United States as unwilling to cooperate. Bilateral cooperation between the United States and Canada in this area has been modest at best. This is unfortunate not only because the problem is so important and immense, but also because the leading precedent for resolving transboundary air pollution problems involved these same two countries.¹²² The arbitration award of the Trail Smelter Case yielded the written precedent for Principle 21 of the 1972 Stockholm Declaration on the Human Environment, which declares that no State may use its territory in a way as to cause harm to the territory of another State.

Acid deposition is a serious, but unevenly distributed problem in the United States-Canada border region. The United States produces about one-half of all the acid deposition that falls in Canada, while only 10 to 15 percent of the deposition in the United States originates in Can-

119. See Applegate and C. Bath, *Air Pollution along the United States-Mexico Border with Emphasis on the El Paso-Ciudad Juarez-Las Cruces Air Shed*, 18 Nat. Res. J. 91 (1978); Bath, *U.S.-Mexico Experience in Managing Transboundary Air Resources: Problems, Prospects and Recommendations for the Future*, in *Transboundary Resources and Needs* 419; Bath and Rodriguez, *Comparative and Binational Air Pollution Policy: El Paso, Texas and Ciudad Juarez, Chihuahua*, 6 *The Borderlands J.* 171 (1983); Bath, *Alternative Cooperative Arrangements for Managing Transboundary Air Resources Along the Border*, 18 Nat. Res. J. 181 (1978); L. Barojas-Weber, *Impacto del Crecimiento en la Calidad del Aire en las Comunidades Fronterizas*, 18 Nat. Res. J. 101 (1978).

120. See Jauregui, *Local Winds and Air Pollution in the Tijuana/San Diego Air Basin*, Center for Atmospheric Studies (1981).

121. *Agreement on Cooperation for the Protection and Improvement of the Environment in the Metropolitan Area of Mexico City*, Oct. 3, 1989, United States-Mexico.

122. *Trail Smelter Case (U.S. v. Can.)* 3 R. Int'l Arb. Awards 1938 (1941). 33 Am. J. Int'l L. 182 (1939); 35 Am. J. Int'l L. 684 (1941). See also Szekely, *El Derecho Internacional del Medio Ambiente*, XXVII *Revista de la Facultad de Derecho de Mexico* (1976); and Read, *The Trail Smelter Dispute*, 1963, Can. Y.B. Int'l L. 213 (1963).

ada.¹²³ After several years of negotiations to persuade the United States to undertake joint cooperative measures to prevent and combat acid rain, Canada has only been able to obtain the Memorandum of Intent Concerning Transboundary Air Pollution.¹²⁴ The Memorandum defined "transboundary air pollution" as "the short and long range transport of air pollutants between" the two countries, "including the already serious problem of acid rain," and recognized it as "an important and urgent bilateral problem." Despite this explicit recognition, the Memorandum only announced the intention of the two countries to negotiate an eventual transboundary air pollution agreement. More than a decade later, such agreement finally materialized, but its effectiveness remains to be tested.¹²⁵

The United States-Canada Agreement on Arctic Cooperation¹²⁶ recognizes the particular interests and responsibilities of the two countries as neighboring States in the Arctic, as well as the fact that resource development must not adversely affect the unique environment of the region and the well-being of its inhabitants. This bilateral instrument may well need to be expanded to include Mexico, given the environmental connection between atmospheric interferences and permafrost.

5. Mexico-Canada Cooperation

The year 1990 marks the beginning of intense environmental cooperation between Mexico and Canada. At the Seventh Ministerial Committee Meeting held between the two countries, the environment ministers decided to strengthen the existing cooperation in relation to migratory species. They also decided to cooperate in the restoration of freshwater lakes, which, although they really had in mind a specific project for Canadian cooperation in the preservation of Lake Chapala in Mexico, could eventually apply to the growing concern for the long-range transport of DDT from Mexico to the Great Lakes, so that adequate and timely cooperation measures may be taken to prevent a bilateral environmental dispute.¹²⁷ More importantly, the ministers acknowledged, for the first time at the bilateral level, "the need for international cooperation to confront serious global problems such as ozone depletion and climatolog-

123. Smith, *The Politics of Acid Rain*, 2 Transboundary Res. Rep. 4 (1988).

124. Aug. 5, 1980, 32 U.S.T. 2521, T.I.A.S. No. 9856.

125. Mar. 13, 1991, 30 I.L.M. 676.

126. Jan. 11, 1988, C.T.S. 29. See also Besnault, *Souverainetes et Strategies dans l'Arctique*, 29 *Strategique* 80 (2986); Boczek, *The Arctic Ocean and the New Law of the Sea*, German Y.B. Int'l L. 154 (1986); Feder, *A Legal Regime for the Arctic*, 6 *Ecology L.Q.* 785 (1978); D. Bederman, *High Stakes in the Arctic: Jurisdiction and Compensation for Oil Pollution from Offshore Operations in the Beaufort Sea*, 4 *Alaska L. Rev.* 37 (1987); K. Lawson, *Delimiting Continental Shelf Boundaries in the Arctic: The United States-Canada Beaufort Sea Boundary*, 22 *Va. J. Int'l L.* 221 (1981); and Frederick, *La Delimitation du Plateau Continental entre le Canada et les Etats-Unis dans la Mer de Beaufort*, 18 *Can. Y.B. Int'l L.* 30 (1979).

127. See Tolba, *Caring for Lakes in a Developing World*, 3 *Int'l J. Water Res. Dev.* 3 (1987).

ical change."¹²⁸ Subsequently, negotiations were held that led to the signing of the Agreement on Environmental Cooperation between Mexico and Canada.¹²⁹ The two countries agreed to cooperate in "[a]tmospheric environment issues, including climate change and its impacts, acid rain, atmospheric ozone and air pollution, meteorology and climatology." This provision cannot be underestimated in its value, as it will lend itself to opening the way for cooperation on long-range transboundary atmospheric problems in North America.

D. International Environmental Cooperation

Aside from the practice of the countries of North America on transboundary resources, their broader international activity on the protection and preservation of the environment has been equally significant.

1. Multilateral Cooperation

Almost any observer of international environmental protection would agree that Mexico, the United States, and Canada have always been, individually and at times jointly, at the forefront of all multilateral cooperative endeavors in that direction, irrespective of the fora or the subject at hand. Their presence has been strongly felt, almost always identifying themselves as positive contributors, be it at the 1972 United Nations Conference on the Human Environment, or at the multitude of international meetings that ensued for almost two decades throughout the United Nations system, including those sponsored by the United Nations Environment Program (UNEP). The same seems to be the case in the preparatory work for the 1992 United Nations Conference on Environment and Development to be held in Brazil. In their respective international undertakings, the North American countries have championed what may be regarded as the central piece of the emerging international law of the environment, namely Principle 21 of the 1972 Stockholm Declaration, which provides that "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."¹³⁰

128. See Joint Communique of the Ministerial Committee Meeting, Jan. 23, 1990.

129. Mar. 16, 1990.

130. See Davidson and Kudej, *International Environmental Law: Selective Bibliography*, 20 N.Y.U. J. Int'l L. and Pol. 793 (1988); D. Magraw, *The International Law Commission's Study of International Liability for Nonprohibited Acts as it Relates to Developing States*, 61 Wash. L. Rev. 1041 (1986); and Raferty, *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States*, 83 Mich. L. Rev. 1035 (1983).

The voting record of Mexico, the United States, and Canada, on resolutions adopted by the United Nations General Assembly (UNGA) on environmental questions, is almost invariably and solidly positive.¹³¹ It is only perhaps in the field of atmospheric cooperation that the United States has been so reluctant to lead the international community, contrasting rather sharply with the positive participation of both Mexico and Canada.¹³²

2. Mexico-United States Environmental Cooperation

The 14th of August 1983 is an important date for Mexico-United States transboundary cooperation, as on that day the presidents of the two countries signed the La Paz Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Area, signaling the beginning of broader environmental cooperation in the region.¹³³ It could be said that the two countries, in concluding the ambitious agreement, capitalized on the success they had achieved in their transboundary surface water cooperation.¹³⁴ Mexico and the United States agreed to cooperate to prevent, reduce, and eliminate pollution sources in their respective territories which may affect the border area, defined as an area situated 100 kilometers at each side of both the land and the maritime boundaries

131. See the following United Nations General Assembly resolutions: Resolution 2849 (XXVI) on Development and Environment (1971), Resolution 2995 (XXVII) on Co-operation Among States on the Human Environment (1972), Resolution 2996 (XXVII) on International Responsibility of States in Regard to the Environment (1972), Resolution 2997 (XXVII) on Institutional and Financial Arrangements for International Environmental Cooperation (1972), Resolution 40/200 on International Cooperation on the Environment (1985), Resolution 42/184 on International Cooperation in the Field of the Environment (1987), Resolution 42/186 on Environmental Perspective to the Year 2000 and Beyond (1987), Resolution 43/196 on a United Nations Conference on Environment and Development (1988), Resolution 42/187 on the Report of the World Commission on Environment and Development (1987), Resolution 44/206 on Possible Adverse Effects of Sea Level Rise on Islands and Coastal Areas, Particularly Low Lying Coastal Areas (1989), Resolution 44/207 on the Protection of Global Climate for Present and Future Generations of Mankind (1989), Resolution 44/227 on the Implementation of UNGA Resolutions 42/186 and 42/187 on the Conference of Environment and Development (1989), and Resolutions 44/228 and 44/229 on International Cooperation in the Field of Environment and Development (1989). Also see the UNEP Governing Council Nairobi Declaration of 1982 reviewing ten year of international environmental cooperation since the Stockholm Conference and the UNEP Governing Council Resolution 13/18 on Environmental Law (1985).

132. See *The Struggle for the International Shared Environment: The United States Abdicates Its Leadership Role*, 77 Am. J. Int'l L. 418 (1983).

133. Aug. 14, 1983, United States-Mexico, T.I.A.S. No. 10827, 22 I.L.M. 1025 (1983).

134. See Szekely, *Innovative Solutions to North American Environmental Problems: The Mexico-United States Contribution*, Proceedings of the 18th Annual Conference of the Canadian Council on International Law (Oct. 1989); J. Nalven, *Transboundary Environmental Problem Solving: Social Process, Cultural Perception*, 26 Nat. Res. J. 793 (1986); Mumme, *La Paz Agreement: Progress and Problems in Managing the Border Environment*, 2 Transboundary Res. Rep. 1 (1988);

between the two countries. Given the dimensions of such boundaries, the area of application of the agreement comprises an impressive portion of territory and ocean space, larger than the territory of many countries of the world. The agreement provides for the ingenious conclusion of special or ad hoc arrangements, in the form of annexes, to deal with specific common environmental border problems. The agreement is applicable to all possible environmental issues.

The La Paz process has done honor to its name, notwithstanding the fact that it evolved during one of the least felicitous periods of Mexico-United States relations in recent years. By the early 1980s, the two countries were experiencing severe environmental problems in the border region. Dealing with each problem individually or on an ad-hoc basis was a difficult and ineffective solution. It is all too easy to get bogged down or entangled in the solution of just one problem and then lose the possibility of resolving others effectively. To address this problem, the two countries agreed on a general framework of environmental cooperation which would then serve as a vehicle to face the specific challenges. The strategy has proved to be correct so far.

While leaving water sanitation problems basically in the hands of the IBWC, the agreement created a new bilateral institutional mechanism to deal with environmental cooperation matters, namely, the designation of National Coordinators, whose principal functions are to coordinate and monitor the implementation of the agreement and its annexes, make recommendations to the parties and organize annual meetings. In Mexico, the national coordinator is the Secretaria de Desarrollo Urbano y Ecologia (SEDUE) and in the United States it is the Environmental Protection Agency (EPA).

The National Coordinators First Annual Meeting was held in March 1984, where they agreed to establish working groups on air, water, and soil quality. By the end of the 1980s, Mexico and the United States had agreed on five annexes creating concrete schemes for cooperation on:

- 1) the terrible water sanitation problem coming from the sewers

M. Sinclair, *The Environmental Protection Agreement between Mexico and the United States: A Response to the Pollution Problems of the Borderlands*, 19 Cornell Int'l L.J. 87 (1986); Hajost, *U.S.-Mexico Environmental Cooperation: Agreement between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area*, *Env'tl L.Q.* 1 (1984); Hoffman, *Agreement between the U.S. and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area*, 25 Harv. Int'l L.J. 239 (1984); S. Weston, *United States-Mexico: Coping with Environmental Problems at the Border*, 9 Loy. L.A. Int'l & Comp. L.J. 117 (1986); Ingram, *State Role in U.S.-Mexico Resource Issues*, 1 Transboundary Res. Rep. 4 (1987); Mumme, Nalven, *Regulation of Environmental Hazards in the Borderlands*, 2 Transboundary Res. Rep. 1 (1988).

- of Tijuana into San Diego and its adjoining bay,¹³⁵
- 2) the increasing discharge of dangerous substances into their border rivers,
 - 3) the increasing transboundary illegal movement of hazardous wastes and substances from the United States to Mexico,
 - 4) the alarming case of air pollution caused by a triangle of copper smelters in the border region, and
 - 5) the growing and worrisome case of urban air pollution in the Ciudad Juarez-El Paso region.

Annexes I to V of the La Paz Agreement constitute specific bilateral mechanisms to deal directly with each of these five problems in the border.¹³⁶ As a result, sanitation plants and facilities have been and are being built, and copper smelters are being closed down, frozen at their current capacity, or being forced to modify processing installations. Monitoring devices are now common at both sides of the border, more stringent environmental regulations have been adopted for the area by the two countries, and the exchange of data and training of personnel is now commonplace. There should be no doubt that new environmental challenges, especially the potential effects of global warming, will present the La Paz process with a large working agenda, and the national coordinators will be subject to increasing demands for effectiveness.

However, a closer and much more tangible issue has already made it necessary for the two countries to embark on a new exercise. This has resulted from public criticism of the negotiating process for a North American Free Trade Agreement (NAFTA). The passage and implementation of NAFTA may have extremely negative consequences for the preservation of the environment and the conservation of natural resources. Many opponents argue that the Mexican environment will be seriously threatened because United States investors will be attracted there to escape the application of strict and costly EPA regulations in the United States. It is beyond the scope of this work to embark on an analysis of that issue, but for the purpose at hand it is necessary to briefly describe one of

135. See Sanchez, *El Drenaje de Tijuana como Fuente de Conflicto entre Mexico y Estados Unidos*, El Colegio de la Frontera Norte (1988); Hendricks, Coastal Currents, in Coastal Water Research Project Annual Report (1977); Morales and Romero, *Evaluacion de la Contaminacion en Playas de Tijuana*, B.C. Reporte Preliminar, Ecologia y Frontera, Universidad Autonoma de Baja California (1986); Sanchez, *Las Relaciones Binacionales como un Marco Conceptual en el Analisis de los Problemas Ambientales Transfronterizos entre Mexico y Estados Unidos*, in Utton and Marroquin, eds., *Una Frontera dos Paises* (1988); Metzner, *Transboundary Sewage Problems: Tijuana/San Diego/New River/Imperial Valley*, 2 Transboundary Res. Rep. 5 (1988); and N. Glickman, *Keep Your Pollution to Yourself: Institutions for Regulating Transboundary Pollution and the United States-Mexico Approach*, 25 Va. J. Int'l L. 693 (1985).

136. Annexes I and II were signed on July 18, 1985; Annex III was signed on Nov. 12, 1986; Annex IV was signed Jan. 29, 1987; and Annex V was signed Oct. 3, 1989.

the official measures so far taken. While many of the responses have been restricted to the border area, those measures will also have an effect on the way environmental matters are handled internationally throughout North America.

On November 27, 1990, the presidents of Mexico and the United States agreed to direct their respective environmental authorities (SEDUE and EPA, respectively) to work together to develop a comprehensive border environmental plan to promote cooperative strategies. This agreement, "Integrated Environmental Plan for the Mexico-United States Border Area" was adopted in February 1992, and is to be reviewed and revised in 1994. The Integrated Plan negotiating experience may be a good example to follow in the United States-Canada border area or in any North American initiative for regional cooperation.

3. Mexico-Canada Environmental Cooperation

On March 16, 1990, the prime minister of Canada and the president of Mexico expanded the potential range of their environmental cooperation beyond that which their environment ministers had previously. In referring to the Agreement on Environmental Cooperation that the two countries signed on that date, the Mexican president recalled the efforts of his country to protect the ozone layer and to control the greenhouse effect, acknowledged the domestic challenge to clean the national atmosphere and forests, and called for cooperation with Canada in such common undertakings. In his turn, the Canadian prime minister made a statement of great significance for all of North America:

[f]or those of us who share a continent, the search for instruments designed to strengthen our competitiveness and enhance the prosperity of our peoples should be an ongoing commitment. The new umbrella agreement on the environment commits us both to work together on the environmental problems we share as partners in North America and as members of the global community. It will help us both make sustainable development a reality.

With that statement, Canada was affording full political confirmation to its acceptance of a proposal made by Mexico during the negotiations for the agreement, which committed the countries to cooperate in "[t]he identification and treatment of environmental issues which affect or may affect the region to which the Parties belong."

This provision may well be the first step toward the formalization of comprehensive North American trilateral ecological cooperation. Each

of the three countries have now concluded separate environmental agreements with their North American neighbors, though their trilateral agreements are still lacking.

4. United States-Canada Environmental Cooperation

The contrast between environmental cooperation on the United States-Mexico border and that on the United States-Canada border is even greater regarding general environmental cooperation. While the United States and Mexico have signed an umbrella or framework bilateral instrument to deal with common general environmental problems, Canada and the United States have not been able to do so aside from some rather limited instances, such as their agreement regarding the Establishment of Joint Pollution Contingency Plans for Spills of Oil and Other Noxious Substances,¹³⁷ their Memorandum of Understanding between the Department of the Environment of the Government of Canada and the Environmental Protection Agency of the United States Government, Concerning Research and Development Cooperation in Science and Technology for Pollution Measurement and Control,¹³⁸ their Memorandum of Understanding Regarding Accidental and Unauthorized Discharges of Pollutants Along the Inland Boundary,¹³⁹ and their Agreement Concerning the Transboundary Movement of Hazardous Wastes.¹⁴⁰ It is to be hoped that whenever Canada and the United States finally get around to negotiating their differences on acid rain, the way will be finally open to expanding their much needed environmental cooperation.

5. A Note on the Control of Transboundary Movements of Hazardous Wastes and Substances in the Region

Hazardous waste movement has received some bilateral attention by the three countries of North America. All three countries signed the Basil Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal; Mexico and the United States agreed on

137. June 19, 1974.

138. Oct. 17, 1985.

139. Oct. 17, 1985.

140. Oct. 28, 1986, Can. T.S. 1986, No. 39. See also C. Cooper, *The Management of International Environmental Disputes in the Context of Canada-United States Relations: A Survey and Evaluation of Techniques and Mechanisms*, 24 Can. Y.B. Int'l L. 247 (1986); J. Carroll and N. Mack, *On Living Together in North America: Canada, the United States, and International Environmental Relations*, 12 Denver J. Int'l L. & Pol'y 35 (1982-83); Carroll, *Environmental Diplomacy: An Examination and a Prospective of Canadian-U.S. Transboundary Relations* (1983); B. Partridge, *Canadian and U.S. Natural Resources Law: A Study in Contrasts*, 29 Rocky Mtn. Min. L. Inst. 1 (1983); King, *Transboundary Pollution: Canadian Jurisdiction*, 1 Can.-Am. L.J. 1 (1982); W. Sewell, *U.S.-Canada Transboundary Resource Issues*, 26 Nat. Res. J. 201 (1986).

Annex III to the 1983 La Paz Agreement, which addresses transboundary movements of hazardous wastes; and the United States and Canada concluded their Agreement Concerning the Transboundary Movement of Hazardous Waste. These and other regional agreements on spills and on the regime applicable to noxious substances should constitute an integral part of the inventory of environmental matters to be included in any agenda for regional cooperation in North America.¹⁴¹

E. Transboundary Resources of the Sea and the Marine Environment

It is beyond the scope of this work to undertake a detailed analysis of North American law of the sea practice, but the matter has been widely covered in the current literature.¹⁴² However, a comprehensive marine analysis is still necessary as a fundamental part of the regional agenda in order to form a North American region for ecological cooperation. It is hereby proposed that an inventory of issues of regional interest, pertaining to transboundary resources of the sea or to the marine environment in North America, would necessarily include six items.

First, the effects of the failure of the United States and Canada to accept the United Nations Convention on the Law of the Sea.¹⁴³ For the most part, the convention can be said to reflect current international customary law. The effects of formal acceptance would pertain mostly to the portion of the convention which has not attained that level of international acceptance which deals with the international regime applicable to the seabed, the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction. A study should be made of the possible conse-

141. See Applegate and Bath, *Hazardous and Toxic Substances in U.S.-Mexico Relations*, 57 *Tex. Bus. Rev.* 34 (1983); Cohen, *Exports of Hazardous Products from the United States: Analysis of Consumer Product Safety Commission Policy*, 19 *Geo. Wash. J. Int'l L. & Econ.* 123 (1985); A. Greenwood, *Restrictions on the Exportation of Hazardous Products to the Third World: Regulatory Imperialism or Ethical Responsibility?* 5 *B.C. Third World L.J.* (1985).

142. See Morgan, *Large Marine Ecosystems: An Emerging Concept of Regional Management*, 29 *Env't 4* (1987); Bandow, *The United States Versus the Law of the Sea*, 7 *J. Soc. Pol. & Econ. Stud.* 195 (1982); Hage, *Canada and the Law of the Sea*, 8 *Marine Pol'y* 2 (1984); Szekely, *Mexico y el Derecho Internacional del Mar* (1978); Szekely, *Latin America and the Development of the Law of the Sea* (1976); Nordquist and Choon, *North America, Asia Pacific, and the Development of the Law of the Sea* (1981).

143. *Draft Final Act of the Third United Nations Conference on the Law of the Sea*, Oct. 21, 1982, U.N. Doc. A/CONF.62/121 (1982), reprinted in 21 *I.L.M.* 1245 (1982). Mexico was the third State to ratify the Law of the Sea Convention, on Mar. 18, 1983. For more information, see D. Larson, *The Reagan Rejection of the U.N. Convention*, 14 *Ocean Dev. & Int'l L.* 337 (1985); J. Malone, *The United States and the Law of the Sea*, 24 *Va. J. Int'l L.* 785 (1984); Richardson, *The United States Posture Toward the Law of the Sea Convention: Awkward but not Irreparable*, 20 *San Diego L. Rev.* 505 (1983); and McDorman, *Will Canada Ratify the Law of the Sea Convention?* 25 *San Diego L. Rev.* 535 (1988).

quences of long-term nonparticipation in the convention by the United States and Canada, especially since some of the prime areas of the international seabed where resource exploitation, mostly polymetallic nodules, will in all probability occur first, are located in Exclusive Economic Zones (EEZ) of North America. Additionally, the effect of submarine mineral exploitation may have relevance to the marine environment of the region generally.

A second item to consider is another portion of the United Nations Convention on the Law of the Sea selectively rejected by the United States which pertains to highly migratory species. The United States and Mexico have conflicting views on the interpretation of Article 64 of the convention as applied to the tuna resources in the eastern Pacific Ocean which has already resulted in a prolonged dispute between the two countries.¹⁴⁴ Although the tuna migrate back and forth through the southern half of the eastern Pacific, extending into the EEZ of Mexico but not to the EEZ of the United States, the latter country has nonetheless questioned Mexico's rights of sovereignty over the resource. The three North American countries were once all members of the Inter-American Tropical Tuna Commission.¹⁴⁵ However, Mexico left the Commission in November 1978 after 14 years of membership because of the Commission's inability to adjust to the new rules of the international law of the sea. Canada, which had joined the Commission in 1968, also eventually left when it ceased its tuna fishing operations in the region.

A third issue to consider is that of marine mammals, which are one category of truly transboundary marine living resources, especially the grey whale which migrates from the Behring Sea to Baja California. Here again, the three North American countries have been parties to several international conventions, namely the 1931 Geneva Convention for the Regulation of Whaling,¹⁴⁶ the 1948 Washington Convention for the Regulation of Whaling with Schedule of Whaling Regulations,¹⁴⁷ and its 1956 Washington Protocol.¹⁴⁸ In 1982, Canada dropped out claiming that the International Whaling Commission would not take into account exclusive economic zones, a matter which was the case until recently. Since then, Canada has remained a rather passive observer at the Commission.

144. See Szekely, *Yellow Fin Tuna: A Transboundary Resource of the Eastern Pacific*, 29 Nat. Res. J. 1051 (1989); Hofman, *The Marine Mammal Protection Act: A First of its Kind Anywhere*, 32 Oceanus 21 (1989); W. Burke, *Highly Migratory Species in the New Law of the Sea*, 14 Ocean Dev. & Int'l L. 273 (1984); S. Wade, *A Proposal to Include Tunas in U.S. Fishery Jurisdiction*, 16 Ocean Dev. & Int'l L. 255 (1986); and Hilborn and Sibert, *Is International Management of Tuna Necessary?* 12 Marine Pol'y 31 (1988).

145. R.T.A.F. No. 55, 1975.

146. 49 Stat. 3079, T.S. 880, 155 L.N.T.S. 349.

147. 62 Stat. 1716, T.I.A.S. 1849, 161 U.N.T.S. 72.

148. 10 U.S.T. 952, T.I.A.S. 1849, 338 U.N.T.S. 366.

In contrast, Mexico has had a firm conservationist position on protecting from extinction whales which reach its marine jurisdiction, establishing important refuge areas around the Baja California Peninsula, particularly in Laguna Ojo de Liebre and in San Ignacio. North American aboriginal dependence on whale hunting is obviously a paramount regional issue in this matter.¹⁴⁹

A fourth item is another important marine fisheries controversy in North America and stems from the regime applicable to the fishing of cod immediately east of the Canadian EEZ and for which the North Atlantic Fisheries Organization (NAFO) was created in 1978 with the strong sponsorship of Canada.¹⁵⁰ Spain, as a member of NAFO, failed to get an increase in its annual fishing quota and so promoted the establishment of a joint enterprise with Mexico, a non-Member, to fish cod in the high seas adjacent to the Canadian EEZ. Obviously, Canada objected to such fishing activity, considering it detrimental to the fishery and even contrary to the NAFO conservation regime, and asserted that Mexico was participating in the fishery as a "flag of convenience." Mexico, in turn, alleged that its fleet is merely exercising freedom of fishing in the High Seas and that the NAFO conservation regime is not solidly based on the best available scientific evidence when establishing fishing quotas for members. Although Mexico has tried to cooperate by attending NAFO meetings as an observer and Canada invited it to join the organization, the matter is still to be resolved.

A fifth category of transboundary resources at issue in North America is the presence of underground and submarine hydrocarbon reserves, especially between Mexico and the United States.¹⁵¹ A regime to effectively manage those transboundary deposits will require preventive

149. See P. Birnie, *International Legal Issues in the Management and Protection of the Whale: A Review of Four Decades of Experience*, 29 Nat. Res. J. 903 (1989); Hall, *Whaling: The Slaughter Continues*, 18 *Ecologist* 207 (1988); S. Chopra, *Whales: Towards a Developing Right of Survival as Part of an Ecosystem*, 17 *Denver Int'l L. & Pol'y* 255 (1989); N. Doubleday, *Aboriginal Subsistence Whaling: The Right of Inuit to Hunt Whales and Implications for International Environmental Law*, 17 *Denver Int'l L. & Pol'y* 373 (1989); Birnie, *The Role of Developing Countries in Nudging the International Whaling Commission from Regulating Whaling to Encourage Nonconsumptive Uses of Whales*, 12 *Ecology L.Q.* 937 (1985); B. Adel, *Japan Whaling Association v. American Cetacean Society*, 6 *Wis. Int'l L.J.* 129 (1987); S. Geha, *International Regulation of Whaling: The United States' Compromise—Japan Whaling Association v. American Cetacean Society*, 27 *Nat. Res. J.* 931 (1987); *Environmental Law: Certification of Japanese Violations of International Whaling Agreements—Letter from U.S. Secretary of Commerce Verity to President Reagan*, 29 *Harv. Int'l L.J.* 541 (1988).

150. Oct. 24, 1978, J.O.C.E. No. L.347, p. 2 (Dec. 1980).

151. See Szekely, *Transboundary Oil and Gas: Selected Bibliography*, 26 *Nat. Res. J.* 833 (1986); Ballem, *International Pipelines: Canada-United States*, 18 *Can. Y.B. Int'l L.* 146 (1980); R. Shipman, *Energy on the U.S.-Mexico Border*, 26 *Nat. Res. J.* 711 (1986); Szekely, *A Commentary with the Mexican View on the Problem of Maritime Boundaries in United States-Mexican Relations*, 22 *Nat. Res. J.* 155 (1982); K. Schmitt, *The Problem of Maritime Boundaries in U.S. Mexican Relations*, 22 *Nat. Res. J.* 139 (1982).

diplomacy in order to avert a bilateral dispute.¹⁵²

Finally, there is a multitude of other marine issues in the region, such as various other bilateral fishery problems, fishing activities undertaken by extra-regional fleets, marine pollution issues, ocean thermal energy conversion, marine scientific research matters, the relationship with the Wider Caribbean region and the Pacific Basin as a whole, and the Arctic's needs for protection.

V. THE PROPOSAL

Having attempted a theoretical approach to the establishment of geographical regions for ecological cooperation, and also having sought to apply such approach to North America, a preliminary, albeit lengthy, inventory of transboundary resources and environmental issues pertaining to the region has been undertaken in this work. Special emphasis and attention was given to the schemes of multilateral, trilateral, and bilateral cooperation already in place in North America for flora, fauna, and water resources, for atmospheric interferences, for protecting and improving the environment, and for handling transboundary marine resources and preserving the marine environment. Above all, an effort has been made here to identify those areas which deserve and require further research and it is believed that all of the above should make a strong case for the proposal to formally establish a North American Region for Ecological Cooperation.

For that purpose, the research agenda outlined herein has to be dealt with as soon as possible from a multi-disciplinary standpoint. Not only specialists, but also the three governments of the region should be called to start working on it. They should also begin to devise the instruments and mechanisms necessary to deal with all natural resource and environmental issues pertaining to North America with the urgency required. That urgency seems to be quite pressing, especially when one considers the potential effects that global warming may have on the resources, especially water, of the region and on its environment.

An integral part of the research has to be the preparation of basic draft treaty material, perhaps in the shape of a model trilateral comprehensive instrument, that could be used by the North American countries when they muster the political will to initiate negotiations. Such a model would need to include not only the regional principles applying to transboundary natural resources and to environmental cooperation, including

152. See Szekely, *The International Law of Submarine Transboundary Hydrocarbon Resources: Legal Limits to Behavior and Experiences in the Gulf of Mexico*, 26 Nat. Res. J. 733 (1986); Utton, *On an Institutional Arrangement for Developing Gas and Oil in the Gulf of Mexico*, 26 Nat. Res. J. 717 (1986); and Pedrazzini and J. Teyssier, *Hydrocarbon Deposits of the Border Region between Mexico and the United States: A Preliminary Report*, 26 Nat. Res. J. 695 (1986).

corresponding reciprocal rights and obligations, but also the institutional mechanisms to make them effective.

**List of Current North American Legal Materials
on the Environment and on Natural Resources**

1. Convention to Avoid the Difficulties Occasioned by Reason of the Changes which Take Place in the Beds of the Rio Grande and Colorado River, Mar. 1, 1889, United States-Mexico.
2. Convention Providing for the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes, May 21, 1906, United States-Mexico.
3. Treaty between the United States and Great Britain Relating to Boundary Waters, Jan. 11, 1909, United States-Canada, 36 Stat. 2448, T.S. No. 548.
4. Convention for the Protection of Migratory Birds, Dec. 7, 1916, United States-Canada, T.S. 628.
5. Treaty in Regard to the Boundary Between the United States and Canada, July 17, 1925, United States-Canada.
6. Convention for the Protection of Migratory Birds and Game Mammals, Feb. 7, 1936, United States-Mexico, 50 Stat. 1311, T.S. No. 912, reprinted in 9 *Bevans* 1017 (1972).
7. Treaty Relating to the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Nov. 14, 1944, United States-Mexico.
8. St. Lawrence Seaway Agreement, June 30, 1952 and Aug. 17, 1954, United States-Canada, 5 United States T. 1784, T.I.A.S. No. 3053, supplemented by an Agreement Regarding the Establishment of Saint Lawrence River Joint Board of Engineers, Nov. 12, 1953, 5 United States T. 2638, T.I.A.S. No. 3116.
9. Convention on Great Lakes Fisheries, Sept. 10, 1954, United States-Canada, 6 United States T. 2836.
10. FAO Resolution Establishing the North American Forestry Commission, Nov. 15, 1960.
11. Treaty between the United States and Canada Relating to the Cooperative Development of Water Resources of the Columbia River Basin, Jan. 17, 1961, United States-Canada, 15 United States T. 1555, T.I.A.S. No. 5638.
12. Agreement Relating to the Establishment of the Roosevelt Campobello International Park, Jan. 22, 1964, United States-Canada, 15 United States T. 1504.

13. Convention on Great Lakes Fisheries, amendments of Apr. 5, 1966 and May 19, 1967, United States-Canada, 18 United States T. 1402.
14. Treaty to Resolve Pending Boundary Differences and Maintain the Rio Grande and Colorado Rivers as the International Boundary between Mexico and the United States, Nov. 23, 1970, United States-Mexico, 23 United States T. 371, T.I.A.S. No. 7313.
15. Protection of Migratory Birds and Game Mammals, Mar. 10, 1972, United States-Mexico, 23 United States T. 260, T.I.A.S. No. 7302.
16. Great Lakes Water Quality Agreement, Apr. 15, 1972, United States-Canada, 23 United States T. 301, T.I.A.S. No. 7512.
17. Minute 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River, Aug. 30, 1973, United States-Mexico, 24 United States T. 1971, T.I.A.S. No. 7708.
18. Agreement Relating to the Establishment of Joint Pollution Contingency Plans for Spills of Oil and Other Noxious Substances, June 19, 1974, United States-Canada.
19. Agreement for the Protection of Plants, Oct. 12, 1976, (United States-Mexico-Canada).
20. Agreement Concerning Certain Maritime Boundaries, Nov. 24, 1976, United States-Mexico, 29 United States T. 196, T.I.A.S. No. 8805.
21. Treaty on Maritime Delimitation, May 4, 1978, United States-Mexico.
22. Convention on the North Atlantic Fisheries Organization (NAFO), Oct. 24, 1978.
23. Great Lakes Water Quality Agreement, Nov. 22, 1978, Amended on Oct. 16, 1983 and Nov. 18, 1987, United States-Canada.
24. Memorandum of Intent Concerning Transboundary Air Pollution, Aug. 5, 1980, United States-Canada.
25. Arrangement Prohibiting the Importation of Raccoon Dogs, exchange of letters Sept. 1 & 4, 1981, United States-Canada.
26. Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Region, Aug. 14, 1983, United States-Mexico, T.I.A.S. No. 10827, reprinted in 22 I.L.M. 1025 (1983).
27. Treaty Relating to the Skagit River and Ross Lake, and the Seven Mile Reservoir on the Pend d'Oreille River, Apr. 2, 1984, United States-Canada.

28. Delimitation of the Maritime Boundary in the Gulf of Maine Area (Can. v. United States), 1984 I.C.J. Rep. 246 (Judgment of Oct. 12) reprinted in 23 I.L.M. 1197 (1984).
29. Agreement Establishing the North American Plant Protection Organization, Oct. 25, 1984 (United States-Mexico-Canada).
30. Agreement Establishing the Joint Committee for the Conservation of Wildlife, Dec. 5, 1984, United States-Mexico.
31. Memorandum of Understanding Concerning Research and Development Cooperation in Science and Technology for Pollution Measurement and Control, Oct. 17, 1985, United States-Canada.
32. Memorandum of Understanding Regarding Accidental and Unauthorized Discharges of Pollutants Along the Inland Boundary, Oct. 17, 1985, United States-Canada.
33. Agreement Concerning the Transboundary Movement of Hazardous Wastes, Oct. 28, 1986, United States-Canada.
34. United States-Canada Joint Committee for the Conservation of Wildlife Cooperative Agreement, 1987. United States-Mexico Joint Committee for the Conservation of Wildlife Cooperative Agreement, 1987.
35. Recommendation of the 14th Session of the FAO North American Forestry Commission for a Working Plan of the Study Group on Atmospheric Pollution Deposits, Oct. 1987.
36. Agreement on Arctic Cooperation, Jan. 11, 1988, United States-Canada.
37. Memorandum of Understanding on Exchange of Information and Cooperation on Wetlands and Migratory Birds Refuges, and Establishing a Tripartite Committee to Develop a Strategy for the Conservation of Migratory Birds and Their Habitats, Mar. 16, 1988 (United States-Mexico-Canada).
38. Memorandum of Understanding on Cooperation in the Management and Protection of National Parks and Other Protected Natural and Cultural Heritage, Nov. 30, 1988, United States-Mexico.
39. Agreement on Cooperation for the Protection and Improvement of the Environment in the Metropolitan Area of Mexico City, Oct. 3, 1989, United States-Mexico.
40. Supplementary Cooperative Agreement to the Agreement Establishing the North American Plant Protection Organization, Oct. 17, 1989 (United States-Mexico-Canada).
41. Agreement on the Conservation of the Porcupine Caribou Herd, July 17, 1987, United States-Canada.

42. Joint Communique of the Ministerial Committee Meeting, Jan. 23, 1990, Mexico-Canada.
43. Agreement on Environmental Cooperation, Mar. 16, 1990, Mexico-Canada.
44. Agreement on Air Quality, Mar. 13, 1991, United States-Canada.