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Nicholas A. Robinson, Introduction: Emerging International Environmental Law, 17 Stan. J. Int'l L. 229 (1981), <http://digitalcommons.pace.edu/lawfaculty/388/>.

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Introduction: Emerging International Environmental Law

NICHOLAS A. ROBINSON*

This Introduction notes the emerging mandate for international environmental law and the concurrent problems of implementation. It focuses on two particular applications of this new mandate: the United States-Panama Joint Environment Commission for the Panama Canal, and the suggested role of the United Nations Environment Programme in developing a system of global environmental hazard alerts.

This issue of the *Stanford Journal of International Law* could hardly be more timely. The international community is at the threshold of formulating new roles for international law in protecting the Earth's environment. Long recognized as a vehicle for ordering behavior among states and within societies, law is now perceived as ordering the relationships between human endeavors and the environment which sustains them.

Since the late 1960s, there has been an extraordinary expansion of laws for environmental protection on both the national¹ and international planes.² These laws mirror evolving social values; their very existence evidences a growing "reconciliation," as the eminent English scientist Lord Eric Ashby expresses it, "of man with the environment."³

Yet the initial framework of environmental law is necessarily limited. Data enabling scientists to understand many environmental problems is lacking. Even when problems are understood, perceptions vary as to what steps will solve them. These fundamental

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¹ See, e.g., J. NOBLE, J. BANTA & J. ROSENBERG, *GROPING THROUGH THE MAZE* (1977); R. ODELL, *ENVIRONMENTAL AWAKENING* (1980).

² See, e.g., the essays in the three volumes in print of the *Earth Law Journal* (1975-77); or those in the journal of the International Council of Environmental Law, *Environmental Policy and Law* (1975-81).

³ E. ASHBY, *RECONCILING MAN WITH THE ENVIRONMENT* 86 (1978).

problems are all the more acute at the transnational level where accepted legal norms have not fully evolved. In his Leon Sloss, Jr., Memorial Lectures at Stanford University in 1977, Lord Ashby carefully delineated these problems and the reconciliation of organized human development with the capacity of nature to sustain it. This reconciliation means the recognition that society must understand, nurture, and maintain functioning natural systems, not disregard or exploit them as if humankind were somehow independent of nature.⁴ This Introduction is an overview of the recent attempts within the international legal system to bring about that reconciliation.

I. INTERNATIONAL LAW'S NEW MANDATE: ENVIRONMENTAL PROTECTION

Every ideology recognizes stewardship of natural resources and the protection of natural systems as a basic obligation of government.⁵ The question is not so much whether the obligation exists, but what importance to assign to the duty and how to discharge it. Many states still treat environmental protection as a low priority, either because they lack the technical capacity to foresee the long term loss which adverse environmental activities bring—as in the expanding desertification of the Sahel—or because they value only the short term gains of industrial production—as in the pell-mell factory development which until recently characterized Brazil and the People's Republic of China.

Ideological differences, therefore, may be less difficult to overcome than the prevailing attitude among many leaders that environmental protection is not yet important. Most government officials never studied problems of biosphere protection in school; few have encountered environmental issues in their careers.

The community of nations, however, recognized the growing threat of pollution to life and productivity at the 1972 United Nations Conference on the Environment held in Stockholm, Sweden. The resulting U.N. Declaration on the Human Environment is a compendium of policies favoring sound environmental stewardship.⁶ Nonetheless, a gap remains between intellectual appreciation of the problem and creation of governmental programs to deal with it.

⁴ See generally E. ASHBY, *supra* note 3.

⁵ Compare National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4361 (1976) with KONSTITUSIA (Constitution) art. 42 (U.S.S.R.) ("Citizens of the U.S.S.R. have the right to health protection. The right is ensured . . . by measures to improve the environment.")

⁶ See Sohn, *The Stockholm Declaration on the Human Environment*, 14 HARV. INT'L L.J. 423 (1973).

Recently, however, two influential new authorities have reissued the call for national and international action to avert global environmental injury. The first is the 1980 report of the Independent Commission on International Development Issues, chaired by former West German Chancellor Willy Brandt, entitled *North-South: A Program for Survival*.⁷ The second is a three-volume monograph produced by the United States government for former President Jimmy Carter, entitled *The Global 2000 Report to the President*.⁸

Concluding the *North-South* study, former German Chancellor Brandt and seventeen other world leaders declared that all nations must cooperate more urgently in international management of the atmosphere and other global commons, and in the prevention of irreversible ecological damage.⁹

The Brandt Commission findings anticipated by just half a year the similar conclusions of the United States agencies¹⁰ working on the *Global 2000 Report*. This report projected the results of present trends in population, resources, and the environment if continued without change to the end of the century. While much more detailed than the *Brandt Commission Report*, its conclusions are comparable.

As the world's population increases by 55 percent over the next two decades, current trends point to substantial increases in air and water pollution, loss of forests and agricultural resources, reduction of soil productivity, extinction of many plant and animal species, and impairment of health conditions. In transmitting the report to President Carter, Gus Speth, Chairman of the President's Council on Environmental Quality, and Thomas Pickering, Assistant Secretary of State, observed that "the trends reflected in the *Global 2000* study suggest strongly a progressive degradation and impoverishment of

⁷ INDEPENDENT COMMISSION ON INTERNATIONAL DEVELOPMENT ISSUES, *NORTH-SOUTH: A PROGRAMME FOR SURVIVAL* (1980) [hereinafter cited as BRANDT COMMISSION REPORT].

⁸ COUNCIL ON ENVIRONMENTAL QUALITY & U.S. DEP'T OF STATE, *THE GLOBAL 2000 REPORT TO THE PRESIDENT: ENTERING THE TWENTY-FIRST CENTURY* (1980) [hereinafter cited as GLOBAL 2000 REPORT].

⁹ BRANDT COMMISSION REPORT, *supra* note 7, at 117 ("The strain on the global environment derives mainly from the growth of industrial economies, but also from that of the world's population. It threatens the survival and development opportunities of future generations. All nations have to cooperate more urgently in international management of the atmosphere and other global commons, and in the prevention of irreversible ecological damage.").

¹⁰ The agencies are: Department of Energy; National Science Foundation; Environmental Protection Agency; Department of Agriculture; Department of Interior; Department of Commerce; National Aeronautics and Space Administration; Department of State; Office of Science and Technology Policy in Executive Office of President; Federal Emergency Management Agency; Central Intelligence Agency; and President's Council on Environmental Quality.

the earth's natural resource base."¹¹ There are, moreover, many implications for national and international environmental law in the *Global 2000* study, which transcend the current policies or priorities within any single country.¹²

The *Global 2000 Report* also examined earlier studies of the global environment, reviewing the works of the Club of Rome¹³ and the model of Mihajlo Mesarovic and Edward Pestel.^{14,15} Although the works of these commentators differ in degree and emphasis, their conclusions are inescapable: Governments locally, nationally, and globally must develop effective new policies, programs, and laws to avert environmental degradation.

On January 14, 1981, representatives of the Council on Environmental Quality and the Department of State released a six-month study of recommendations for federal action to reverse the deleterious trends described in the *Global 2000 Report*.¹⁶ These recommendations, admittedly tentative,¹⁷ fell into three groups. First, since the *Global 2000 Report* documented the present inability of federal agencies to anticipate and evaluate global problems, the recommendations proposed a centralized authority to gather and assess information and foster development of an integrated U.S. strategy on resources, environment, and population. Second, remedial policies were sketched to cope with population growth, food production, renewable energy resources, tropical forests, maintenance of biological diversity, coastal and marine resource protection, water and air quality, and the problem of nuclear and other hazardous wastes. Finally, the study proposed institutional changes to assure that these policies could be implemented.¹⁸

Another recent consensus of scientific and managerial policies is embodied in the *World Conservation Strategy* of the International Union

¹¹ 1 GLOBAL 2000 REPORT, *supra* note 8, at iii.

¹² See generally 1 GLOBAL 2000 REPORT, *supra* note 8; 2 *id.* at 227-452.

¹³ D.L. MEADOWS, D.H. MEADOWS, E. ZAHN, P. MILLING, *THE LIMITS TO GROWTH* (1972).

¹⁴ M. MESAROVIC & E. PESTEL, *MANKIND AT THE TURNING POINT* (1974).

¹⁵ 2 GLOBAL 2000 REPORT, *supra* note 8, at 601-55. One early survey which is still useful is the anthology of reports compiled by the American Society of International Law. AMERICAN SOCIETY OF INTERNATIONAL LAW, *LAW, INSTITUTIONS & THE GLOBAL ENVIRONMENT* (1972). The more traditional legal and political approaches for transnational environmental protection have been ably synthesized by Jan Schneider. J. SCHNEIDER, *WORLD PUBLIC ORDER OF THE ENVIRONMENT: TOWARDS AN INTERNATIONAL ECOLOGICAL LAW AND ORGANIZATION* (1979).

¹⁶ COUNCIL ON ENVIRONMENTAL QUALITY & U.S. DEP'T OF STATE, *GLOBAL FUTURE: TIME TO ACT* (1981) [hereinafter cited as *GLOBAL FUTURE*].

¹⁷ *Id.* at xix.

¹⁸ *Id.* at xxv-liii.

for the Conservation of Nature and Natural Resources (IUCN).¹⁹ Still earlier, in 1975, several hundred scientists independently framed a range of proposals for protection of natural systems at the EARTHCARE conference.²⁰

There is no dearth, therefore, of informed policies awaiting adoption. What is lacking, as Jan Schneider points out, is the political will to embrace those reforms.²¹

II. INNOVATIONS IN PROTECTION OF THE INTERNATIONAL ENVIRONMENT

This essay introduces a volume which includes many illustrations of the role international law may play in assuring a stable world order capable of maintaining Earth's environmental quality.

The best hope for environmental preservation is embodied in the Barcelona Agreement, in which the coastal Mediterranean states agreed to cooperate in combatting a shared environmental problem — pollution of the Mediterranean Sea. Ms. Patricia Bliss-Guest's article on the Land-Based Sources Protocol to the Barcelona Convention describes the continuing cooperation of these states. The Agreement and Protocols address a specific environmental hazard. At the same time, they demonstrate the ability of regions with diverse national governments to agree on strategies to combat a shared problem in spite of political differences. The pattern established in the United Nations Environment Programme (UNEP) Mediterranean agreements may prove equally helpful in other regions facing comparable ecological dangers.

The focus of environmental concern and protection efforts has, for some time, rested with the industrialized nations of the West. The article by Messrs. H. Jeffrey Leonard and David Morell offers a new view. Developing nations will encounter similar ecological problems as a result of economic growth. Environmental degradation has already occurred in some developing nations that encourage production by multinational industries. Effective response to future environmental dangers will depend on the establishment of effective

¹⁹ INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE AND NATURAL RESOURCES, *WORLD CONSERVATION STRATEGY: LIVING RESOURCES CONSERVATION FOR SUSTAINABLE DEVELOPMENT* (1980). The IUCN is a unique international agency with state members, agency members (*e.g.*, the U.S. Forest Service), and nongovernmental members (*e.g.*, the Sierra Club and the All Russia Society for the Protection of Nature).

²⁰ *EARTHCARE: GLOBAL PROTECTION OF NATURAL AREAS* (E. Schofield ed. 1978). The book consists of papers written for the 14th Biennial Wilderness Conference (June 5-8, 1975).

²¹ J. SCHNEIDER, *supra* note 15, at 199.

political institutions with sufficient expertise to assess the extent and impact of pollution sources. Environmentalism can no longer be—if indeed it ever has been—the exclusive province of industrialized states.

Environmental problems are more easily handled if they are addressed at an early stage. In this regard, two articles in this issue of the *Journal* are particularly useful. The first, Dr. Edith Brown Weiss' examination of the implications of new developments in the technology of weather forecasting, points to the danger that a few nations, possessed of such knowledge, could exploit weather fluctuations for their own economic or political benefit. The critical link between weather patterns and resource use increases the importance of forecasting technology in a period of diminishing resources. Ms. Allene Zanger's note on the threat posed by increasing levels of carbon dioxide in the Earth's atmosphere describes another feature of global climate with severe environmental implications. Both articles present useful and reasonable strategies to address the described problems before a critical threat to the environment arises. The success of the recent Mediterranean negotiations, moreover, indicates that multilateral planning for environmental protection can succeed much in the manner that the authors propose.

In total, this issue of the *Stanford Journal of International Law* presents both a realistic and an optimistic view of international environmental law. Continued progress in protecting and restoring the international environment must result from cooperative efforts among nations. In the industrialized West, and in the developing world, we see that these efforts are underway.

III. ILLUSTRATIONS OF PROGRESSIVE REGIONAL AND GLOBAL DEVELOPMENTS

Beside the developments described in the articles that follow, there are two further noteworthy illustrations of global developments in environmental protection: (i) the Panama-United States initiative to create a Joint Environmental Commission to deal with threats to the Central and North American environment; and (ii) the authority of the Executive Director of UNEP to issue international alerts concerning threats to the global environment. While these innovative measures have remained dormant, they are examples of the new governmental roles needed at the regional and global levels. Only by developing these roles can the environmental protection mandate be realized.

A. *Bilateral Undertakings by Panama and the United States*

The Panama Canal Treaty illustrates how two non-contiguous nations can agree to collaborate to protect a shared environment. During the public debates on the Treaty in 1977, only a handful of persons were even aware of the environmental issues surrounding the Treaty.²² Yet, despite the public's lack of perception of the need to protect the Panama Canal watershed, the ultimate series of bilateral undertakings broke new international environmental protection ground.

The Panama Canal agreements established the first joint environmental commission the United States has entered into with another nation not contiguous to one of the fifty states.²³ How this came about, without even public demand or political machination by either government, is worth recounting in this introduction.

1. *History of the Treaty.*

The 1903 Panama Canal Treaty, by which the United States finished construction of the Canal, provided that the United States would control the area as "if it were the sovereign."²⁴ The United States entered into further agreements in 1936 and 1955 regarding control of the Canal Zone.²⁵ President Lyndon B. Johnson initiated negotiations for a new Panama Canal Treaty in 1964 following anti-United States riots in the Canal Zone. The riots reflected resentment against U.S. control of 550 square miles of key Panamanian soil.²⁶

²² These included: those responsible for maintaining the Canal's navigation capacity; Panama's natural resource management agency, RENARE; scientific institutes such as the Smithsonian Institution; environmental groups such as the Sierra Club and World Wildlife Fund; and the small cadre of diplomats from Panama and the United States assigned to work on environmental issues (such as the Office of International Environmental and Scientific Affairs in the U.S. State Department).

²³ The United States has joint commissions on border environmental issues with Canada, Water Boundary Treaty of 1909, United States-Canada, 36 Stat. 2448, T.S. No. 548; and with Mexico, Agreement on Salinity of the Colorado River, Aug. 30, 1973, United States-Mexico, 24 U.S.T. 1968, T.I.A.S. No. 7708. The United States is also part of a cooperative body which oversees the environmental agreement with the Soviet Union. Agreement of Cooperation in the Field of Environmental Protection, May 23, 1972, U.S.-U.S.S.R. 23 U.S.T. 845, T.I.A.S. No. 7345. However, this cooperative body has no authority for independent action.

²⁴ Isthmian Canal Convention, Nov. 18, 1903, United States-Panama, art. III, 33 Stat. 2234, T.S. No. 431.

²⁵ Treaty of Mutual Understanding and Cooperation, Jan. 25, 1955, United States-Panama, 6 U.S.T. 2273, T.I.A.S. No. 3297; Treaty of Friendship and Cooperation, Mar. 2, 1936, United States-Panama, 53 Stat. 1807, T.S. No. 945.

²⁶ Why a New Panama Canal Treaty?, Address by Sol M. Linowitz, in Denver, Colorado (Aug. 19, 1977), at 3 (print of speech available from Bureau of Public Affairs, Office of Media Services, Department of State).

Two treaties, plus a series of collateral agreements, comprise the ultimate package of the new Panama Canal arrangements: the Panama Canal Treaty and the Treaty Concerning the Permanent Neutrality and Operation of the Panama Canal.²⁷ The Panama Canal Treaty presents the largest number of environmental law issues.

2. *Environmental Components of the Treaty.*

The environmental components of the Treaty are substantial. For the first time an essentially non-environmental treaty created a Joint Commission on the Environment. The extension of bilateral environmental diplomacy into a primarily political and security context is a valuable precedent. It is a sound acknowledgement that sensitive environmental issues exist in Panama and that the unique history of U.S.-Panama relations provides cause for specially created channels for coping with those issues. Article VI of the Treaty provides the duties and structure for the Joint Commission. The enumerated duties of the Commission include mutual consultation on actions with potentially adverse environmental impact and the presentation of recommendations to avoid damage.²⁸

Although incorporation into the Treaty of duties to exchange information and consult on environmental protection issues is a major step forward, the absence of other basic environmental protection measures reflects a number of inadequacies in the Treaty. For example, the Treaty is silent on such important issues as the control of

²⁷ Panama Canal Treaty, Sept. 7, 1977, United States-Panama, __ U.S.T. __, T.I.A.S. No. __, reprinted in 16 INT'L LEGAL MATERIALS 1021 (1977) (includes Annex); Treaty Concerning the Permanent Neutrality and Operation of the Panama Canal, September 7, 1977, United States-Panama, __ U.S.T. __, T.I.A.S. No. __, reprinted in *id.* at 1040.

²⁸ Panama Canal Treaty, *supra* note 27, art. VI:

"1. The United States of America and the Republic of Panama commit themselves to implement this Treaty in a manner consistent with the protection of the natural environment of the Republic of Panama. To this end, they shall consult and cooperate with each other in all appropriate ways to ensure that they shall give due regard to the protection and conservation of the environment.

"2. A Joint Commission on the Environment shall be established with equal representation from the United States of America and the Republic of Panama, which shall periodically review the implementation of this Treaty and shall recommend as appropriate to the two Governments ways to avoid or, should this not be possible, to mitigate the adverse environmental impacts which might result from their respective actions pursuant to the Treaty.

"3. The United States of America and the Republic of Panama shall furnish the Joint Commission on the Environment complete information on any action taken in accordance with the Treaty which, in the judgment of both, might have a significant effect on the environment. Such information shall be made available to the Commission as far in advance of the contemplated action as possible to facilitate the study by the Commission of any potential environmental problems and to allow for consideration of the recommendation of the Commission before the contemplated action is carried out."

Aftosa (hoof and mouth disease).²⁹ Furthermore, the text itself raises a number of questions as to scope and construction.

First, the Joint Commission and bilateral national agreements focus on protecting the environment of Panama. Activities in Panama can, however, affect the environment of the United States, and other countries as well as the ecology of two oceans. Thus, it may be inferred that the necessary scope of protection is broader than just the Panamanian environment.

Second, a range of environmental matters are left open as to whether the United States or Panama will assume responsibility for them. These include, among others, prevention of the spillage of oil and other harmful substances,³⁰ the dredging of the Canal,³¹ and purification and supply of water.³²

Finally, present environmental problems will be affected by the transfer of authority. Problems within this category include exploitation of the tropical rain forest and regulation of water pollution from sources other than oil spills.

The Joint Commission, it is hoped, will be able to meet these problems as they arise. The Commission is not expressly limited to Canal issues; thus, theoretically, it should be able to deal with such diverse issues as the Darien Gap highway or exploitation of the tropical rain forest.

3. *Structure of the Joint Commission.*

On January 6, 1978, Acting Secretary of State Warren Christopher issued a Statement on the Panama Canal Treaties and Environmental Protection,³³ in which he noted the importance of the Panamanian environment³⁴ and the enthusiastic commitments of

²⁹ The barriers of the Canal waterway and of the tropical rain forests of the Darien Gap in Panama have prevented the northern expansion of *Aftosa*, "foot and mouth disease", in livestock. While this disease has been held in check in the United States, it is prevalent in South America. See *Sierra Club v. Coleman*, 421 F. Supp. 63, 65 (D.D.C. 1975) (environmental impact statement held insufficient in its consideration of the control of hoof and mouth disease). See generally Tarlock, *The Application of the National Environmental Policy Act of 1969 to the Darien Gap Highway Project*, 7 N.Y.U.J. INT'L L. & POL. 459 (1974).

³⁰ Annex to Panama Canal Treaty, *supra* note 27, para. 3(n).

³¹ *Id.* at para. 3(s).

³² *Id.* at para. 3(x).

³³ Statement on the Panama Canal Treaties and Environmental Problems (Jan. 12, 1978) (distributed with cover letters by William H. Mansfield III, Bureau of Oceans and International Environmental and Scientific Affairs, Office of Environmental Affairs, Department of State) (partially reprinted in *SIERRA CLUB BULLETIN*, April 1978, at 24-25) [hereinafter cited as Christopher text].

³⁴ *Id.* at para. 1.

both the United States³⁵ and Panama³⁶ toward making the Joint Commission on the Environment effective.

The most interesting portion of the statement is Christopher's view on how the Joint Commission will be structured.³⁷ But, it is likely that this structure will require new legislation to be fully implemented. The House of Representatives—which has not yet had as prominent a role to play with respect to the Treaties as it would like—will probably seize such opportunities to define U.S. procedures under the Treaty.

Whether the State Department proceeds to structure the Commission or Congress exercises authority to do so, there are three possible models for the Joint Commission. There is, first, the bilateral cooperation agreement format such as the environmental agreement between the United States and the Soviet Union.³⁸ This format entails an exchange of information and experts and occasional joint projects to study problems of mutual interest. The second is the pattern of the International Boundary and Water Commission,³⁹ which focuses on environmental issues of boundary water volume and quality for the Rio Grande and Colorado Rivers. The third model is the International Joint Commission between the United States and Canada (I.J.C.), with an open-ended agenda and a flexible, evolving

³⁵ *Id.* at para. 3 ("For the United States, this [commitment] will entail provision of relevant information about the Canal Zone and its resources, technical assistance, as well as resources needed to carry out effective programs of environmental protection. To that end, the U.S. Agency for International Development is developing a project, in cooperation with the Panamanian Government, to provide it with the capability to carry out sound land and water management and restoration programs.")

³⁶ *Id.* at para. 4 ("On the Panamanian side, our diplomatic mission in Panama has noted that the Panamanian Government is taking environmental concerns seriously and has attached a high priority to the problem of protecting the Canal watershed. As evidence of this, the mission reports that both the Panamanian Minister of Planning and the Vice Minister of Agriculture have recently pressed for early implementation of the AID Watershed Management Project.")

³⁷ *Id.* at para. 5 ("It is our intention that the Joint Environmental Commission shall have the staff and financial support it needs to be effective. We will propose that the American members of this Commission include leading science and environmental figures as well as others from the private and public sectors. In addition, reports on the state of the environment in the Canal Zone and the surrounding watershed will be assembled and indexed. Federal agencies with expertise relevant to Canal Zone issues will assist in developing information for the Joint Commission on matters which require priority attention. And, recognizing the importance of baseline data showing the current state of Canal Zone ecosystems, including air and water quality, marine life in the adjacent oceans, and flora and fauna, the U.S. will cooperate with the Panamanian Government in assembling that data expeditiously.")

³⁸ Agreement of Cooperation In the Field of Environmental Protection, *supra* note 23.

³⁹ International Boundary and Water Commission Act, 22 U.S.C. §§ 277-277f (1976 & Supp. 1980).

authority for coordinated work on environmental protection issues.⁴⁰

The last two commissions were designed before environmental concerns became prominent. Both have taken on environmental issues and procedures in recent years.⁴¹ They have powers to gather information (including subpoena powers), to exchange information, to maintain field offices, to place matters on the common agenda, and to require their examination. Experts, on staff or secured "on loan" from other agencies, assist these commissions and expert advisory committees to undertake oversight and follow-up responsibilities. As a result, the referral of a specific matter to the U.S.-Canadian Joint Commission has proven significant in prompting amelioration of environmental problems. The U.S.-Canadian Joint Commission also has regulatory power to license "uses, diversions, or obstructions" affecting the flow or bend of boundary waters.⁴²

Regardless of the model chosen, the Commission also must establish procedures detailing how its obligations will be undertaken. The Panama Canal Treaty directs the U.S.-Panama Joint Commission to oversee protection of the environment through the fulfillment of a series of mandatory duties. It requires that the Commission "shall" review treaty implementation and "shall recommend" ways to avoid or mitigate environmental harm. It also provides that both parties "shall" furnish complete information on actions, but only when *both* agree that the actions may have a significant effect on the environment.⁴³ The *veto* potential of this provision must be circumscribed by mutually agreed upon standards. The test created by the National Environmental Policy Act (NEPA), which defines an action's "significance",⁴⁴ could be grafted onto this clause; in fact, since NEPA inspired this Treaty language, such an interpretation is entirely appropriate.

Other procedures must also be explored. For instance, within Panama the Commission should develop ways to refer environmental matters to local health and conservation officers. Provisions should be designed for training in and programs for collection of base-line

⁴⁰ Water Boundary Treaty of 1909, *supra* note 23; Exec. Order No. 9972, 13 Fed. Reg. 3573 (1948) (under the International Organizations Immunities Act, 22 U.S.C. § 288 (1945)).

⁴¹ Note, *The International Joint Commission (United States-Canada) and the International Boundary and Water Commission (United States-Mexico): Potential for Environmental Control Along the Boundaries*, 6 N.Y.U.J. INT'L. L. & POL. 499, 501, 503 (1973) [hereinafter cited as *International Joint Commission*].

⁴² Water Boundary Treaty of 1909, *supra* note 23, art. III.

⁴³ Panama Canal Treaty, *supra* note 27, art. VI.

⁴⁴ National Environmental Policy Act of 1969, § 102(2)(c), 42 U.S.C. § 4332(2)(c) (1976).

data and other information on an outgoing basis. Procedures should be created to enable the citizens of other countries, or scientific and environmental groups, to bring matters to the Commission's attention.

Most important in this regard will be the relationship of the Joint Environment Commission to the Panama Canal Commission. If environmental protection is to be taken seriously, this relationship must be defined at the outset with clarity. Congress has had more experience in framing such a relationship than has the State Department, although the State Department could also seek guidance from the Council on Environmental Quality, the Department of the Interior, and the Environmental Protection Agency.

Finally, priorities for the Commission's initial environmental agenda should be announced. The Joint Commission should begin operations with several clear and immediate charges, such as a joint program to contain *Aflosa* south of the Darien peninsula before Colombia extends the Pan American highway into Panama,⁴⁵ and forestry management to avoid soil erosion and protect flora and fauna, especially endangered species.

Setting aside the Joint Commission's preparation of its operating procedures and its substantive agenda, ratification of the Panama Canal Treaty has brought already to environmental law the undertaking of two non-neighboring states to act in concert to protect the regional environment. This model could be replicated in other regions. NEPA and the Canadian and Mexican Boundary Commissions are the best guides available in this process. Beyond protection of the Central American environment, the innovations may serve as a model for other nations. As a major project, the Canal may have been unique in its creation, but, in hindsight, it is actually a precursor of like projects around the world.

4. *Slow Treaty Implementation.*

Sound treaty language never ensures a treaty's success; the true test is implementation. While assessment now may be premature, clearly the realization of the Treaty's early potential has been slow.

The U.S. members of the Joint Commission were recently appointed and an initial set of meetings took place.⁴⁶ But even with

⁴⁵ *Colombians Are Closing Gap in Pan American Highway*, N.Y. Times, Nov. 12, 1980, at 2, col. 3.

⁴⁶ See *Hearings on Panama Canal Treaty Before the Panama Canal Subcommittee of the House Merchant Marine and Fisheries Comm.*, 96th Cong., 2d Sess. (1979-80) (statement of Deputy Ass't Sec'y of State for Environment, Health, and Natural Resources William A. Hayne).

members appointed and a small staff in place, most basic issues of implementation remain to be addressed. These include the vital issues of securing access to information necessary for the Commission to function and of consultation procedures with other nations.

Yet while the Commission founders in a morass of bureaucratic detail, two forces are working to degrade the Panamanian environment. The first is deforestation of the Canal Zone through slash-and-burn farming techniques which threaten the watershed which supplies the Canal.⁴⁷ The second environmental hazard, which affects not only Panama but all of Central and North America, is the breakdown of the epidemiological barriers of the Canal Zone. With the shrinking of the tropical forests, there is greater danger of the spread of yellow fever, malaria, *aflosa*, and other diseases northward. If these diseases are not contained in Panama, they can even spread throughout the world via the passage of ships through the Canal.⁴⁸

Since Panamanian government agencies lack the staff and the funding to match the needs for forest watershed management and sanitation in the Canal Zone, considerable reliance on existing U.S. services will be necessary.⁴⁹ The Commission must also take an active role in monitoring these problems and making recommendations. It can do this by broadly interpreting its mandate to "periodically review the implementation of the treaties" and to "recommend as appropriate to the two governments" ways to avoid or mitigate adverse environmental impacts.⁵⁰ In addition to this right to recommend, the Commission enjoys the right to receive "complete

⁴⁷ Farmers have cleared forest from about half of the watershed, and operation of the Canal is threatened by destabilization of water flows and by desedimentation of the lake and its reservoirs. 2 GLOBAL 2000 REPORT, *supra* note 8, at 165-69, 550-54, 613 (1977). Loss of forest will also deny scientists a wide range of flora and fauna for study.

Slash-and-burn practices are fast encroaching upon the Canal; as much as 80 percent of the Gatun Lake watershed and 40 percent of the Madden Lake watershed have been deforested since 1952. Letter from Scientific Committee Chairman of the Panama Audubon Society to U.S. Dep't of State (Sept. 26, 1977), *reprinted in* U.S. DEPT OF STATE, FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE NEW PANAMA CANAL TREATIES P-29 (1977) [hereinafter cited as FEIS].

⁴⁸ The health personnel of the Canal Zone constitute what the Gorgas Memorial Institute of Tropical and Preventative Medicine terms "an epidemiological early disease warning system," alerting states from Venezuela and Colombia to Mexico and the United States of dangers of spreading diseases. Yellow fever, Venezuelan equine encephalitis, vesicular stomatitis of cattle, malaria, leishmaniasis, and even hybrid "killer bees" are a few of the possible diseases and pests which could migrate through the region if adequate preventative measures are not taken. *Id.*

⁴⁹ The U.S. Agency for International Development (AID) approved a \$10 million loan in 1978 for a watershed management project, which would develop the Panamanian agencies' capacity to manage and protect the forests of the region. *Id.* at 40. No comparable measures have been taken in the area of health and sanitation. *Id.* at 42.

⁵⁰ Panama Canal Treaty, *supra* note 27, art. VI, para. 2.

information on any action taken in accordance with this treaty" when both nations judge that such action may have "significant effect on the environment."⁵¹

The Commission faces additional organizational problems if it accepts this pervasive role. First, a system of consultation among neighboring states must be set up. This system of consultation could be accomplished by a concerted act of the Joint Commission, the United States, and Panama. The U.S.-Canadian I.J.C. or the U.S.-Mexican International Boundary and Water Commission, discussed *supra*, could serve as useful models.⁵²

Second, the Commission needs an adequate professional support staff to monitor, study, and receive information on Canal problems. The Commission working alone cannot effectively achieve its goals, as former Acting Secretary of State Christopher pointed out in his policy statement of 1978.⁵³ An earlier environmental impact statement recognized this need, and observed that the "detailed responsibilities, staffing and operating procedures of the Commission will have to be worked out within the U.S. government and with the Panamanians"⁵⁴

Beyond this preliminary structure the Commission confronts the practical problem of organizing its work. Two items of utmost importance for the Commission's agenda have been discussed above. Beyond these, the Treaty provides the Commission the opportunity to address: (1) recommendations for Panama as it develops its next five-year Development Plan; (2) the preservation of rare and endangered species in the tropical forests the Canal Zone; (3) the environmental consequences of the proposed "sea-level" canal, and (4) expansion of the laws of Panama to encompass environmental issues beyond the Canal.⁵⁵

If the Joint Commission on the Environment functions professionally and efficiently, it will gain the confidence of those throughout the region who depend on the Panamanian environment. New functions may then be added, as happened with the Canadian and Mexican Commissions. A system for peaceful settlement of environmental disputes should be considered. Panama and the U.S. antici-

⁵¹ *Id.* at art. VI, para. 3.

⁵² Note, *International Joint Commission*, *supra* note 41, at 500, 518.

⁵³ Statement of Acting Secretary of State Warren Christopher, *reprinted in* Robinson, *An Environmentalist Looks at the Panama Canal Treaties*, SIERRA CLUB BULL., April 1978, at 24 (pledging that the Commission will have the staff and financial support it needs to be effective).

⁵⁴ FEIS, *supra* note 47, at 18.

⁵⁵ Panama Canal Treaty, *supra* note 27, art. XII, para. 1.

pate the need for the new mechanisms between themselves in the text of the Treaty.⁵⁶ Since Canal-related actions can easily affect the environment of neighboring states, a broader dispute settlement system would be a prudent addition.

The undertaking by the United States and Panama to implement the Treaty in a manner consistent with the protection of the environment contributes importantly to international law. It reflects the duty framed in Principle 22 of the United Nations Stockholm Declaration on the Human Environment that all nations shall cooperate to assure environmental protection.⁵⁷ It also goes far toward implementing Principle 21 of the Declaration that each nation must prevent actions within its jurisdiction or control from causing environmental harm to areas outside its control.⁵⁸

In terms of U.S. law, the Joint Environment Commission is a concrete response by the State Department to its NEPA obligation that it cooperate for environmental protection in the international context.⁵⁹ Thus, creation of the Joint Environment Commission responds to both international and national law environmental protection mandates. If there is a flaw in the conception of the Joint Commission, it is not in its creation or structure; rather it is in the lack of attention given it by both countries. Direct Congressional responsibility could remedy this situation. An environmental catastrophe arising from deforestation or disease would focus worldwide attention on the Commission's implementation problems, but this would bring change only at the cost of major environmental damage, expensive remedial measures, and breaches of international obligations. We can hope that the U.S. and Panamanian governments will not wait for such a catastrophe to commence proper support for their Commission.

The administration of President Ronald Reagan has indicated a businesslike approach toward the Panama Canal Treaty. While commitments will be honored, the priorities probably will not include an expansive reading of the environmental protection roles possible for the Joint Environment Commission. One environmental issue, a sea-level canal, has been rendered less likely to emerge, because a 78-mile oil pipeline is being planned for construction between Charco Azul Bay on the Pacific and Chiriqui Grande on the

⁵⁶ *Id.* at art. XIV.

⁵⁷ For text with annotations, see Sohn, *supra* note 6.

⁵⁸ *Id.* at 485.

⁵⁹ 42 U.S.C. § 4332(2)(F) (1976).

Atlantic.⁶⁰ The pipeline will be used for shipment of oil from tankers bearing Alaskan oil, thereby obviating the need to enlarge the Panama Canal to accommodate supertankers. Because the Republic of Panama is reported to be contracting directly with U.S. and international corporate entities, it seems unlikely that the environmental protection role of the Joint Environment Commission will be involved. Nonetheless, if needed, the mechanism of the Commission is available.

IV. UNEP'S ROLE IN WARNING OF MAJOR INTERNATIONAL HAZARDS

Just as the Panama-U.S. Joint Commission facilitates transnational cooperation to cope with regional environmental problems, the U.N. Environment Programme has the potential to focus transnational cooperation on shared global problems. Under the Stockholm Declaration, each nation is responsible for ensuring that activities within its jurisdiction or control do not cause damage to the environment of areas beyond the limits of its national jurisdiction.⁶¹ There is, however, no internationally accepted method of implementing this principle. The result is that states take actions largely without regard for their environmental impact on other nations or on the shared commons such as the oceans or atmosphere.

Existing political structures have authority to call for international action to cope with global hazards. As with the implementation of the Panama-U.S. Commission, the question is how to build the means to take this action.

There are several issues which must be addressed in fashioning an institution for transnational action. This essay is necessarily preliminary regarding both regional and global measures for environmental protection; these issues require further study and refinement. Nonetheless, just as there is a role for Joint Commissions on the environment, there should be a comparable role for a global authority such as UNEP. This can be most clearly illustrated in the case of major international "hazard alerts."

A. *"Major International Hazards"*

At the outset, a working definition is needed for "major international hazard." To be "major", the environmental injury should be

⁶⁰ Pace, *Panama Oil Pipeline Job Is Assigned—Idaho Contractor Wins The Order*, N.Y. Times, Mar. 19, 1981, at D5, col. 1.

⁶¹ See notes 57-58 and accompanying text *supra*.

substantial, affecting the life-support system immediately or in the foreseeable future. This impact may be (i) global, such as threatened ozone depletion or climate modification; (ii) regional, having a more limited geographic effect, such as transnational acid rain or pollution of an international river; or (iii) species or resource specific, such as extinction of an endangered species or depletion of an essential local resource.

This essay notes the third category in passing only. Endangered species are protected by the Endangered Species Convention.⁶² Although the species may be found solely within one state's boundaries, the international community has imposed a high standard of care on such a state in recognition of the common interest in the resource.

As for resource specific hazards other than those in the endangered category, no mechanisms exist for protection of resources located wholly within one state. A careless or wasteful state could destroy its resources and consign its future generations to poverty. While such conduct might offend the environmental sensibilities of other states, at present this dimension of state conduct is not subject to international constraints unless the activity bears an impact upon other nations or a commons area. For such dangers, transnational cooperation such as that of the Barcelona Agreement or Panama Canal Treaty is required.

The most numerous major international hazards are regional. Cloud seeding to abate hail or defuse a hurricane by one state may deprive another state of rain needed for irrigation. High stacks to dissipate air pollution in one state may cause acid rains in another. Discharges of industrial wastes into one state's river water may contaminate waters downstream in another country. Siting of a nuclear facility on a bay shared by two states may inflict thermal discharges and risks of a nuclear accident on the neighbor. Similar examples abound. Since each instance is fact-specific, each probably requires a specially tailored strategy to cope with the hazard. But some accepted mechanism or procedure for instituting protection measures is required.

A Regional Case Study—Nigerian oil development. Consider the unregulated off-shore oil development along the Nigerian coast. As a developing country, Nigeria is eager to exploit its oil resources, but does not enforce pollution controls. The result is oil pollution in the nearby Bight of Benin and the coastlines of neighboring states.

⁶² Convention on International Trade in Endangered Species of Wild Fauna and Flora, March 3, 1973, — U.N.T.S. —, reprinted in 12 INT'L LEGAL MATERIALS 1085 (1973) [hereinafter cited as Endangered Species Convention].

Three responses are possible to such a regional pollution hazard. First, the stringent anti-pollution safeguards employed off the California and North Sea coasts could be required in Nigeria. This requires either that the Nigerian government have the expertise and power to implement such procedures, or that aggrieved parties have access to reliable information when they seek injunctive relief in court.⁶³ This approach also assumes that the Nigerian courts and government will value the quality of the environment over rapid oil production.

A second response focuses on the companies producing the oil. These multinational enterprises derive their expertise and capital from North America and Europe. If the states which incorporate, audit, and otherwise regulate such companies also insist upon their environmental responsibility abroad, then the securities laws, the monitoring of export permits, and other regulatory controls should be structured to promote, if not require, a high standard of care.⁶⁴

A third response looks to multilateral measures. A "Barcelona Convention"-type mechanism might be developed among the several coastal states.⁶⁵ This regional agreement would provide for concerted efforts to identify the pollution hazards, agree on their abatement, and assist in the implementation and monitoring of remedial measures.

Of these alternatives, only the third is apt to produce a satisfactory response. As long as Nigeria is producing and exporting oil, it has no economic interest in curbing production to protect the regional environment. The states within the Nigerian Federation where the enterprises extracting oil are located are not likely to assert independent local authority. If the oil company is incorporated abroad, the state of incorporation is not likely to regulate either activity abroad or the activity of a foreign subsidiary which fails to use the most stringent oil pollution safeguards.

A Global Case Study. Many regional environmental problems have no impact on a larger scale. For instance, the eutrophication and

⁶³ When fishermen and villagers sued Shell-BP Development Company in Nigerian courts over the loss of fresh water resulting from coastal oil development, no one presented evidence on possible safeguards against oil pollution, short of terminating oil development, that might be ordered under the equity powers of the court. See Nwogugu, *Law and Environment in the Nigerian Oil Industry*, 1 EARTH L.J. 91, 98-100 (1975).

⁶⁴ See Robinson, *Environmental Laws and Conventions: Toward Societal Compacts With Nature*, in EARTHCARE, *supra* note 20, at 513, 529-31 (1978).

⁶⁵ Convention for the Protection of the Mediterranean Sea Against Pollution, Feb. 16, 1976, __ U.N.T.S. __, reprinted in 15 INT'L LEGAL MATERIALS 290 (1976) [hereinafter cited as Barcelona Convention].

other environmental problems in Lake Kariba in Africa can be handled as regional issues alone.⁶⁶ But where accumulated local acts have a gradual global impact, the hazard becomes one of global concern.

Specific projects within one country can also have global consequences. Thus, a salt-water sea-level canal in Panama mixing the Pacific and Atlantic Oceans might alter these commons and adversely affect the ecosystems of the Caribbean.⁶⁷

Finally, there are global hazards which patterns of trade or technology force upon many individual countries. The combined effect and the recurring and pervasive nature of such hazards render them suitable for international treatment.

The endangerment of the earth's ozone layer provides an example. The impact of fluorocarbons on the ozone layer was suggested in 1974 by two American scientists.⁶⁸ Public attention focused on aerosol sprays as a source of fluorocarbons, although other sources existed as well.

Authority for the regulation of fluorocarbon emissions, like most pollutants, rests at the municipal, or domestic, level. Demand for action on aerosol sprays surmounted the facts, and the sprays were banned in the United States. The fact that no single and central forum existed for international deliberations on the ozone threat has resulted in a pattern of inconsistent national legislation. While the United States banned fluorocarbon aerosols, many European nations did not. Such bans, therefore, while costly, may be ineffective.

To avert such problems, an international agency is needed to identify global hazards, propose reasoned responses, and develop the consensus in favor of a given course of action. This would result in new international environmental law.

B. *Elements of an Institutional Role for Coping with Global and Regional Hazards*

There are at least four principal functions which an institution must perform in order to cope with such international environmental hazards.

⁶⁶ See M. FARVAR & J. MILTON, *THE CARELESS TECHNOLOGY* 206-35 (1972). This work also contains other case studies of primarily local concerns.

⁶⁷ A feasibility study of a sea-level canal is provided for in the Panama Canal Treaty, along with measures to promote environmental protection. Panama Canal Treaty, *supra* note 27, arts. VI, XII.

⁶⁸ Rowland & Molina, *Chlorofluoromethanes in the Environment*, *REVS. GEOPHYSICS & SPACE PHYSICS*, Feb. 1975, at 1, 13.

1. The institution must have scientific competence, using the existing scientific community rather than duplicating its efforts. It is important that scientists control data collection and define as fully as possible the nature of international environmental hazards.

The goal here is an independent and valid scientific inquiry into hazards and related situations. An international body could choose the topics for which it would fund data collection and research; it should also be ready to fund investigations which scientific unions identify.

2. The institution must have some means to gauge the risk which the data reveal. This is a difficult task, and several tools may be appropriate depending on the nature of the hazard.

The findings of the scientific community must be ranked on the institution's agenda. Risk cannot be weighed unless the social, environmental, economic, and other externalities are given values and entered into the equation. An interdisciplinary panel of experts could perform this task; to maximize its objectivity the panel would examine all identifiable social and economic concerns related to a hazard, then classify it as major or insignificant.

3. The institution must have means to respond to the hazard proportionate to its risk.

Many tools are available in dealing with a hazard, such as inviting consultations, initiating treaty conferences, and calling for mediation. The Barcelona Agreement contains many useful examples of such institutional measures: Beyond "general undertakings" to avert pollution, its protocols also specify the mechanics of environmental protection, such as emergency measures to deal with oil spills and other disasters, and harmonization of domestic laws to abate land-based pollution.⁶⁹

One important tool could be issuance of an environmental "alert" for especially serious hazards. Communication of a problem, in forms appropriate to the circumstances, can be a critical first step in resolving the problem. Such communications, however, may fall on unresponsive ears; these alerts, therefore, should be viewed as only a part of a broader plan.

Such alerts may be likened to the environmental impact state-

⁶⁹ Barcelona Convention, *supra* note 65, art. 8; Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency, Feb. 16, 1976, — U.N.T.S. —, reprinted in 15 INT'L LEGAL MATERIALS 306.

ments now required by several nations.⁷⁰ The scientists defining the problem and the interdisciplinary experts estimating its impact and costs would prepare the best possible statement on the hazard and its environmental and other consequences. Having openly been confronted with the risk, the responsible party could examine the evaluations and either act, modify its actions, or decline to act.

Where the responsible party is not likely to act voluntarily, some incentive is needed. The international institution should consider how to create that incentive as a part of its planning function.

4. Finally, the institution must have oversight, monitoring, auditing, and follow-up capabilities.

Such activity identifies and permits adjustments in remedial programs, as well as promoting implementation of, and compliance with, such programs.

C. *Legal Authority for Developing Institutions to Cope with Major International Hazards*

Even a survey of global and regional environmental hazards as cursory as the foregoing demonstrates that no one institution or legal mechanism is likely to suit every situation. A variety of institutions with different competences is probably needed to accommodate both environmental and political realities.

1. *UNEP as an International Coordinating Authority.*

Some international authority competent to perform a coordinating and overview function should exist to identify hazards and to involve states or relevant regional and international organizations in fashioning means to control the hazards. It is logical that the United Nations Environment Programme perform such a role. It has facilitated the cooperation of states in fashioning solutions to environmental problems, such as the Barcelona Agreement for combatting pollution of the Mediterranean Sea, discussed *supra*.⁷¹

Although strictly speaking UNEP is not mandated to develop international environmental law, its Governing Council acknowledges that "it can facilitate this development by initiating appropriate consultations between experts"; UNEP has convened legal experts to dis-

⁷⁰ The model for such laws has been the National Environmental Policy Act, 42 U.S.C. §§ 4321-4361 (1976). Some 25 states within the United States have enacted comparable laws, as have several Australian states, France, and a few other countries; similar proposals are under consideration elsewhere. See, e.g., Yamamura, *Procedural Aspects of Environmental Impact Analysis in Japan: A Proposal of Legal Policy*, 2 EARTH L.J. 255 (1976).

⁷¹ Barcelona Convention, *supra* note 65.

cuss the legal principles appropriate for governing resources shared by more than one state and similar issues.⁷² In fact, because UNEP is not a law-making body, its scientific and technical roles have an integrity and legitimacy uncompromised by the different attributes of a policy-making or political body. Although early concern of states like Brazil and Argentina that UNEP might intrude in domestic affairs has greatly dissipated, some otherwise sympathetic observers have expressed skepticism that UNEP can work as effectively as necessary with countries and international agencies to fashion new institutions for environmental protection.⁷³

In view of UNEP's consulting and coordinating roles, it seems both appropriate and desirable that UNEP should establish some program to identify international environmental hazards, to issue warnings about them, and to provide a forum for and facilitation of consultations.

2. *Tools for Instituting Environmental Protection Mechanisms.*

At this point, it may be useful to sketch some of the tools available to UNEP for fashioning institutions and systems to cope with environmental hazards. These can be municipal, bilateral, regional, or multilateral.

For instance, the World Health Organization (WHO) has authority to adopt conventions to cope with pollution;⁷⁴ more vigorous use of the WHO's constitutional mechanism to cope with air pollution is possible. The International Labour Organization has comparable capacity,⁷⁵ as have several other specialized agencies. UNEP could encourage these multilateral agencies to develop programs more effective in averting major international environmental hazards.

Similarly, UNEP could fashion proposals using the existing institutional means under the United Nations Charter for peaceful resolution of international disputes, such as investigation and fact

⁷² Report of Governing Council of United Nations Environment Programme (UNEP), 2 U.N. Environment Programme 174, U.N. Doc. UNEP/GG/26 (1974).

⁷³ The early Argentine and Brazilian views are set forth succinctly in Bacon, *The Role of the United Nations Environment Programme (UNEP) in the Development of International Environmental Law*, 12 CAN. Y.B. INT'L L. 255, 256-260 (1974).

⁷⁴ Constitution of the World Health Organization, opened for signature July 22, 1946, arts. 19 & 21, 62 Stat. 2679, T.I.A.S. No. 1808, 14 U.N.T.S. 185; Shubber, *The Role of WHO in Environmental Pollution Control*, 2 EARTH L.J. 363, 369-70 (1976).

⁷⁵ See Bolin, *The International Labour Office and the Working Environment*, 2 EARTH L.J. 7 (1976).

finding, proposals for regional agencies or arrangements,⁷⁶ and referral to the General Assembly or Security Council.⁷⁷ Multilateral aid programs could also be of assistance. Since many pollution abatement programs are costly and require expertise not always available, UNEP could cooperate with aid agencies to identify ways to use financial and technical assistance to promote pollution control.

Where a new activity having transnational impact is proposed by one state, UNEP could promote the organization of joint ventures or multilateral agreements among the interested states in order to institutionalize the activity and thus control its adverse transnational environmental effects. Such a mechanism could anticipate and abate any hazards from a new project.

Either technical and financial aid or new institutional relationships could be used to accommodate the varying perspectives of risk or hazard which different countries have toward the same activity. New procedures are needed to bring all affected states into a working relationship to avert the environmental problems which large scale activities could produce.

Panama's new bilateral Joint Environment Commission with the United States is a first step toward such a new institution.⁷⁸ As discussed above, the Commission has the potential to implement protective measures for Panama's environment as the United States withdraws from the Canal Zone. However, the Joint Commission is defective at present because it does not involve the neighboring states which also could be affected by a range of activity in Panama far less massive than a sea-level canal.

The Endangered Species Convention illustrates an alternative institutional framework.⁷⁹ By international agreement, the participating states designate a Management Authority and a Scientific Authority to implement the treaty. A Secretariat is designated to oversee the operation of the treaty. Export and import permits are required by domestic law, and reporting and documentation are required; biannual conferences and dispute settlement articles are pro-

⁷⁶ U.N. CHARTER arts. 33, 52(2)-(3) (dealing with resort to regional agencies and local disputes respectively).

⁷⁷ See S. BAILEY, *PEACEFUL SETTLEMENTS OF DISPUTES: IDEAS AND PROPOSALS FOR RESEARCH* 17-18 (rev. ed. 1971) (UNITAR study).

⁷⁸ The Commission is created in Article VI of the Canal Treaty, *supra* note 28. Compare the U.S.-Panama Environment Commission with the U.S.-Canadian International Joint Commission, as an on-going means for control of transfrontier environmental problems. A description of the U.S.-Canadian commission appears in Note, *International Joint Commission*, *supra* note 41.

⁷⁹ Endangered Species Convention, *supra* note 62.

vided. Such a pattern coordinates municipal authorities, as does the Barcelona Agreement.

Any new institutional arrangement would offer a better opportunity for avoiding major environmental hazards than would resort to traditional adjudications. Arbitration is probably useful only in contexts where cause and effect from one state to another can be demonstrated clearly. Resort to the International Court of Justice seems unlikely unless the two states both accept the Court's jurisdiction. The failure of France to accede to adjudication of the claims of Australia and New Zealand concerning radioactive pollution from French nuclear weapons testing in the South Pacific illustrates how the political context may eliminate the possibility of a judicial determination.⁸⁰

An international forum is also not likely to be used to adjudicate environmental rights and liabilities because the scientific nature of these problems is too little understood. Especially in the case of a major hazard, there is no evidence which can prove causation; rather, only general trends can be identified. Caution is needed in assigning liability. New institutional mechanisms can be tailored to explore such trends better than can adjudications.

This is not to say that a new environmental institution could not create a new adjudicatory mechanism. States with a shared resource might institute a common permit system for the use of the resource, and then agree to allow appeals to an international tribunal to assure uniformity in the administration of the permit system among the several jurisdictions. This system of environmental tribunals has been initiated within some states in the U.S.⁸¹ and certainly could be repeated among nations.

3. *Resolution in the Absence of An International Regime.*

Without an international institution or forum through which to resolve disputes about environmental hazards, the resolution of such disputes falls either to general state practice or to municipal administrative and judicial mechanisms.

State practice. State practice will probably amount to a *laissez-faire* attitude in which environmental issues are disregarded until the political costs of doing so become too high. By that time, the number

⁸⁰ Judgment in Nuclear Test Cases, *Australia v. France*, [1974] I.C.J. 253; *New Zealand v. France*, [1974] I.C.J. 457.

⁸¹ See, e.g., Freshwater Wetlands Appeals Board Act, N.Y. ENVIR. CONSERV. LAW §§ 24-1101 to 24-1105 (McKinney Supp. 1980). On the international plane, see essays by Jessup, [1971] PROC. AM. SOC'Y INT'L L. 261; Lachs, [1974] PROC. AM. SOC'Y INT'L L. 328.

of available alternatives to avert environmental injury may have shrunk or been foreclosed while the costs of remedying the harm probably will have escalated. Most global and regional major environmental hazards currently rest in this posture. While there have been occasional catastrophes within countries, such as the toxic fume pollution which devastated Seveso, Italy, or the killer smog which hit London,⁸² fortuitously no transnational environmental hazards have caused major injury.

Municipal Action. Most activity aimed at resolving international environmental hazards to date has occurred at the municipal level. The availability of private remedies for transfrontier pollution and other environmental injury has been extensively studied.⁸³ While litigation has not been frequent, there are enough reported cases to encourage both scholarly examination and intergovernmental cooperation. In the latter category are the recommendations on transfrontier pollution and, more recently, on a regime of equal right of access and non-discrimination in relation to transfrontier pollution, adopted by the Council of the Organization for Economic Cooperation and Development (OECD).⁸⁴

While an extended discussion of private remedies is beyond the scope of this introductory essay, several points relevant to major environmental hazards may be made. In this connection, two aspects of municipal law should be considered: procedural law and substantive law.

There are major differences in both of these aspects of law from country to country. Consider a comparison of the U.S. and Canada. If a nuclear power plant in the state of Washington were to suffer an accident in which the reactor vessel was breached and radioactive contamination reached British Columbia, Canadians could sue for damages in the U.S. courts. They would face the limit of liability imposed by the American Price-Anderson Act, the validity of which the U.S. Supreme Court recently upheld.⁸⁵ Thus, their procedural

⁸² For a discussion of the Seveso tragedy, see 10 ENV'TL SCI. & TECH. 1193 (1976). London suffered 3,500-4,000 smog-related deaths in four days in 1952. See WHO, HEALTH HAZARDS OF THE HUMAN ENVIRONMENT 24-25 (1972).

⁸³ See, e.g., McCaffrey, *Private Remedies for Transfrontier Pollution Injuries* in ENVIRONMENTAL LAW: INTERNATIONAL AND COMPARATIVE ASPECTS (J. Nowak ed. 1976).

⁸⁴ OECD, *Recommendation of the Council on Equal Right of Access in Relation to Transfrontier Pollution*, in LEGAL ASPECTS OF TRANSFRONTIER POLLUTION 19 (1977); *Recommendation of the Council for the Implementation of a Regime of Equal Right of Access and Non-Discrimination in Relation to Transfrontier Pollution*, *id.* at 29.

⁸⁵ 42 U.S.C. § 2210(e) (1976); *Duke Power Co. v. Carolina Environmental Study Group*, 438 U.S. 59 (1978).

right exists but their recovery is circumscribed by substantive law. Moreover, if the Canadian plaintiffs tried to sue officials of the Nuclear Regulatory Commission for failing to assure safety measures, they would find that the Federal Torts Act does not apply to claims arising in a foreign country.⁸⁶

If the facts were reversed, U.S. plaintiffs procedurally might not even get far enough in the Canadian court to lose on substantive grounds. Canadian courts follow a rule honored in most Commonwealth countries that courts may not hear an action for damages involving trespass to a foreign land.⁸⁷

Once the private party was properly before a municipal court, the rule usually applied in civil law and common law jurisdictions is that the law of the place of the wrong governs liability and other substantive law matters.⁸⁸ The ability to bring suit also depends on establishing the court's jurisdiction over the offending party. The injured party in one state may have to enter into a potentially hostile forum in another state if the offending party is only to be found there.

In matters of securing protective action before the occurrence of injury, similar problems exist. To enjoin hazardous activity by one state, it is necessary to sue in its courts since a foreign state's orders to halt an on-going activity would not be enforceable except where the laws of the offending state permit it.

Some countries have begun to eliminate this sort of patchwork quilt of inconsistent laws. The Nordic Environmental Convention gives all citizens of each country party to the treaty an equal right to invoke judicial or administrative measures to secure environmental relief.⁸⁹

Finally, lacking a way to protect legitimate private interests, private persons may seek state action. Canada's Arctic Waters Pollution Prevention Act, adopted in 1970, changed patterns of international law by establishing a pollution zone to protect its arctic ecosystems.⁹⁰ This avenue may be useful for coastal states, but has limited utility for shared resources or transfrontier pollution.

The OECD's proposals for equal rights of access and nondiscrimi-

⁸⁶ Federal Tort Claims Act, § 421(k), 28 U.S.C. § 2680(k) (1976).

⁸⁷ *British South Africa Co. v. Companhia de Mocambique*, [1893] A.C. 602.

⁸⁸ For a discussion of this principle, known as *lex loci delicti commissi*, see 2 E. RABEL, *THE CONFLICT OF LAWS* 235 (2d ed. Drobnig 1960).

⁸⁹ Nordic Environmental Convention, Feb. 19, 1974, — U.N.T.S. —, reprinted in 4 *INTERNATIONAL ENVIRONMENTAL LAW: MULTILATERAL TREATIES* 974 (W. Burhenne ed. 1974) (Fund for Environmental Studies (FUST) Project No. 51).

⁹⁰ Arctic Waters Pollution Prevention Act, CAN. REV. STAT. c. 2, (1st Supp. 1970).

nation are similar initiatives to assure availability of municipal forums for relief, but the OECD recommendations are not binding. They contain principles for state conduct regarding transfrontier pollution and also advance principles for the legal protection of persons from transfrontier pollution.⁹¹ The OECD proposals are intended to ensure that relief for pollution from outside a jurisdiction is as effective as for pollution wholly within the jurisdiction. Procedurally, an injured party is to be given full access to all municipal mechanisms available to abate pollution, regardless of where the party comes from. This OECD proposal has been criticized as benefiting the polluter too much. As Ernst Willheim puts it:

From the perspective of his foreign victim the scenario is somewhat different [than that of the defendant polluter where the suit is brought under the OECD proposal]. The ordinary victim of transfrontier pollution damage is likely to be shocked and dismayed when his legal advisers inform him that to recover compensation he must litigate in a foreign state. . . . The availability of 'equal right of access' will be but small consolation when he is faced with the daunting prospect of litigation in a place that is geographically remote, probably conducted in a foreign language, according to foreign procedures, and almost certainly according to a foreign legal system.⁹²

The involuntary victim of foreign pollution might be comfortable suing in the foreign court if the jurisdictions are similar, as among the Nordic states, but otherwise Willheim's criticisms illustrate the shortcomings of equal access to the municipal forum.

4. *Impediments to UNEP's Role*

Several possible municipal legal consequences may flow from a decision by a competent international authority to identify a major environmental hazard. While these may present obstacles to such a system, alone they probably are not of sufficient moment to prevent creation of an international "alert" mechanism or the development of other institutions.

Municipal law reactions to environmental hazards, such as the threat posed by fluorocarbons to the ozone layer or the manufacture of DDT for export, reveal that individual governments respond ambivalently. This ambivalence is caused not only by the lack of scien-

⁹¹ See generally OECD, PROBLEMS IN TRANSFRONTIER POLLUTION (1974).

⁹² Willheim, Private Remedies for Transfrontier Environmental Damage: A Critique of OECD's Doctrine of Equal Right of Access (manuscript submitted to the *Earth Law Journal*).

tific consensus on the problem, but also by political constraints on a government's choice of acceptable risks. The implicit understanding is that each country must make its own assessment of risk for its citizens.

In environmental protection, such inconclusive government conduct results in ineffective safeguards. Different states, and different agencies within the states, perceive risks differently. What is lacking at the municipal level is a mechanism for resolving the question of acceptable risk on a transnational scale. For example, before the Barcelona Agreement, each coastal Mediterranean state perceived the pollution of the sea as a modest risk; only when UNEP provided a means to view the problem as a common one was the risk perceived in its true proportions. The problem here is one of externalities, and municipal law, with its focus on the individual state, cannot provide protection for a global environment.

If an international authority were to issue an alert on discovery of a suspected carcinogen, such as identification of a transnational contaminant in a shared drinking water supply, the scientific data to prove the cancer-agent correlation would probably be incomplete. Most likely those whose interests are tied to the production or use of the cancer-causing agent would contest the alert. Meanwhile, those exposed to the carcinogen may divide over whether or not they wish to assume the risk. Even if one state responds to an alert, vested interests may evade any sanctions by seeking refuge in other states that view the risk as less extreme. Thus, those manufacturing or trading in a new suspected carcinogen might respond to an international alert by simply relocating to a state not regulating the substance.

Equally troublesome are the consequences of promoting an alternative to the banned substance, which itself is discovered also to be dangerous. The use of phosphates in detergents has been banned in several jurisdictions of the United States because of the pollution of lakes and supplies of fresh water. Initially it was thought that sodium nitrilotriacetate (NTA) was an effective, yet safe substitute for phosphates in detergents. Once it was determined that NTA might cause cancer, those jurisdictions which had approved NTA found that they had to revamp their rules again.⁹³ Had persons relied upon official government assurances that NTA was safe, used NTA detergent and then contracted cancer, a damage action might lie against the government, where it has consented to being sued, as has the

⁹³ E. ASHBY, *supra* note 3, at 37.

United States through the Federal Tort Claims Act.⁹⁴

Should UNEP or any other international organization become involved in an environmental protection situation comparable to these examples, it would probably encounter the same sort of problems. If an alert is issued to an international hazard and the steps to abate it necessarily impair the financial interests of private companies, they are likely to seek ways to protect themselves. It is conceivable that they may ask their home government to make a claim against UNEP or another state if they believe UNEP has acted in violation of some aspect of international law. The usual route for private claims against states or multilateral agencies is for a state to make the claim for damages or reparations on behalf of its nationals. The same claim could, of course, be made by a state on its own behalf.

Short of a formal claim following a UNEP alert which injures a state's citizens, injured parties might follow two courses. They could seek action by a member state of UNEP's Governing Council to curtail or modify UNEP's action or, ultimately, a state could refuse to fund the action or could deny UNEP access to its territory and assistance.

Alternatively, an injured private party might pursue litigation in municipal courts for damages. Injured persons could not succeed in maintaining a suit against UNEP itself. International organizations, including those with competence in an environmental protection field, are immune from the jurisdiction of member states so long as they are within the exercise of their assigned functions.⁹⁵ Thus, the employees and other agents of a body like UNEP are immune from suit when they work on a UNEP project to identify and resolve an international environmental hazard; they might also be immune from subpoena as witnesses concerning their official conduct.⁹⁶

It is, of course, always possible that an affected party could start a suit against UNEP simply for the political exposure and publicity it would generate, even though it probably would be dismissed for lack of jurisdiction. It is also possible, and perhaps more likely, that an injured private party could sue any organization, consultant, firm or

⁹⁴ Federal Tort Claims Act of 1946, ch. 753, tit. IV, 60 Stat. 842 (current version codified at 28 U.S.C. §§ 1291, 1346(b)-(c), 1402(b), 1504, 2110, 2401(b), 2402, 2411(b), 2412, 2671-2680).

⁹⁵ *See, e.g.*, International Organizations Immunities Act, 22 U.S.C. § 288 (1976); Convention on the Privileges and Immunities of the United Nations, Feb. 13, 1946, 1 U.N.T.S. 15.

⁹⁶ *See, e.g.*, International Organizations Immunities Act, 22 U.S.C. § 288 (1976); *see also* County of Westchester v. Ranollo, 187 Misc. 777, 67 N.Y.S.2d 31 (New Rochelle City Ct. 1946).

other person who performs services for UNEP. Such potential defendants may not be entitled to rely on UNEP's immunity. Just the expense of litigating the immunity issue, for instance, in a U.S. District Court, could cost the defendant from \$15,000 to \$25,000, and more if discovery is allowed.

One further political consequence may assume juridical trappings. An international agency might express a concern about a potential major international hazard and certain states could misconstrue the agency's purpose or beliefs. If, for instance, Panama seriously wanted a larger canal and sought to use a nuclear device in its construction, both possibilities provided for in the new U.S.-Panama Treaties on the Canal,⁹⁷ Nicaragua might propose that such a new canal would be better located in its jurisdiction, but in any event might be opposed to both a new Panama Canal and nuclear construction methods. Any intervention by an international environmental body to oppose either a sea-level canal or use of nuclear devices, could become allied *de facto* with a position contrary to Panama's wishes. Panama might suspect that Nicaragua had pressed its case unfairly; local tensions could be exacerbated.

V. CONCLUSION

This introductory survey of the developments in international environmental law discussed in this issue of the *Journal* includes a wide range of topics. Many more have not even been mentioned, such as procedures and safeguards for genetic manipulation or limits on environmental warfare. Collateral problems also require scrutiny. The General Agreement on Tariffs and Trade, for instance, permits non-tariff trade barriers where necessary to protect public health; unless this exception is examined, international trade could become increasingly circumscribed by environmental limitations adopted by one or more states.

Ultimately, environmental catastrophes such as the toxic cloud that devastated Seveso, Italy, the photochemical smog poisoning the air in Los Angeles, California, or the Minamata poisoning of Japanese citizens and fish, may become the pattern of the future. Some deterioration is likely as the world population increases by 2,300,000,000 over the next two decades. The cumulative effect of many small environmental hazards and abuses will soar as the population grows. Population growth itself may become the most troublesome "major environmental hazard".

⁹⁷ Panama Canal Treaty, *supra* note 27, art. XII.

The *Global 2000 Report* confirmed the cumulative hazard from isolated environmental problems in evaluating climatic change as follows:⁹⁸

Furthermore, scientists now know that several human activities have reached a scale that, over periods of several to many decades, has the potential to alter the world's climate significantly. These anthropogenic influences on global climate affect the ozone layer as well as potential land use changes, aerosol and particulate generation, and heat releases.

The import of anthropogenic influences on climate lies not in any imminent threat of massive climatic change, but rather in the inadequacy of present knowledge, and the inability of institutions to make society respond effectively if evidence of serious consequences develops.

A rigorous program to develop the specific new framework to assure regional or global environmental protection against major hazards is needed. UNEP has demonstrated a willingness and ability to do this in limited fields. UNEP's Governing Board should study how to broaden UNEP's initiatives and create new institutions for environmental protection. There are at least two aspects to a UNEP role in fashioning institutional responses to cope with global environmental hazards. One concerns the constraints under which UNEP works: UNEP is only a decade old and is still assembling the scientific, technical, and legal resources and support staff it needs to work effectively. It must, therefore, limit the number of issues to which it gives priority and concentrate its resources to maximum effect. Another aspect is that UNEP's Governing Council is not structured to create international legal standards or procedures, as are certain other specialized agencies such as WHO or ILO. Because existing institutional competence for international law-making rests in different agencies, UNEP should seek to advance specific international law reforms through the agencies best suited to each problem. UNEP should act as a broker in the creation of new mechanisms, such as the Barcelona Agreement or Panama-U.S. Joint Environment Commission.

While UNEP may provide the guiding and coordinating force to alert nations to environmental hazards, each individual state must provide the mechanism for coping with the problem. At this level, the Panama-U.S. Joint Commission and its predecessors provide a model for incorporating environmental concerns into states' foreign policies through bilateral treaties. Other mechanisms are con-

⁹⁸ 2 GLOBAL 2000 REPORT, *supra* note 8, at 269.

ceivable, each arising from the particular relationships two or more states may have built among themselves over the years.

The most significant tool which could be promoted at the municipal level is the environmental impact assessment.⁹⁹ The legal requirements that a person must study all the possible environmental consequences before acting alert him to the often unanticipated adverse impacts of his action while there is still time for corrections. Such reports can be an effective tool of foreign policy and organization.¹⁰⁰ Also useful would be a set of uniform environmental laws, which could be adopted separately in each state, establishing a common pattern of state practice and regulation.

The *Brandt Commission Report*¹⁰¹ and *The Global 2000 Report*¹⁰² both document why the international law developments set forth in this symposium are critical. Each of the articles that follow sets forth recent innovations in international environmental law. Such innovations are apt to multiply as environmental problems become better understood. By collecting these articles at this time, the editors of the *Stanford Journal of International Law* provide both a scholarly and a valuable public service.

⁹⁹ National Environmental Policy Act, § 102(2)(C), 42 U.S.C. § 4332(2)(C) (1976).

¹⁰⁰ See S. REP. NO. 990, 95th Cong., 1st Sess. (1975) (proposing U.S. sponsorship of an international environmental assessment treaty, including draft text proposed by Sen. Claiborne Pell (R.I.)).

¹⁰¹ BRANDT COMMISSION REPORT, *supra* note 7.

¹⁰² GLOBAL 2000 REPORT, *supra* note 8.