

1990

The Role of the United Nations Environment Programme (UNEP) in the Development of International Environmental Law

Carol Annette Petsonk

Follow this and additional works at: <http://digitalcommons.wcl.american.edu/auilr>



Part of the [International Law Commons](#)

Recommended Citation

Petsonk, Carol Annette. "The Role of the United Nations Environment Programme (UNEP) in the Development of International Environmental Law." *American University International Law Review* 5, no. 2 (1990): 351-391.

This Article is brought to you for free and open access by the Washington College of Law Journals & Law Reviews at Digital Commons @ American University Washington College of Law. It has been accepted for inclusion in *American University International Law Review* by an authorized administrator of Digital Commons @ American University Washington College of Law. For more information, please contact fbrown@wcl.american.edu.

RECENT DEVELOPMENTS IN INTERNATIONAL ORGANIZATIONS

THE ROLE OF THE UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) IN THE DEVELOPMENT OF INTERNATIONAL ENVIRONMENTAL LAW

Carol Annette Petsonk*

INTRODUCTION

A marked change in the language of debate on international and national security has taken place in the past decade. In the international arena, the importance of economic as well as military stability is now recognized. In the last three years, environmental concerns have emerged as a major theme.¹

The ideal of competitiveness still dominates discussion in the military and economic spheres. But competition is not the optimal paradigm for environmental negotiations. While military competition can lead to a stable result (e.g., balance of terror) and economic competition remains the grail of trade negotiations, environmental stability requires

* J.D., Harvard Law School. Ms. Petsonk served as Associate Programme Officer in the Environmental Law Unit of the United Nations Environment Programme from 1987-89. The views expressed here are those of the author in her personal capacity.

1. See Mathews, *Redefining Security*, 68 FOREIGN AFF. 2, 162-77 (1989) (suggesting the broadening of the definition of national security to encompass resource, environmental, and demographic issues); see also Martz, *The Green Summit*, NEWSWEEK, July 24, 1989, 12, 12 (noting that “[f]or the first time the environment stood at stage center in the world economy” during the 1989 summit of the seven industrial powers); Beardsley, *Greening the Summit: The Environment Arrives on the International Political Agenda*, SCI. AM., Sept. 1989, at 17 (reporting that the Group of Seven during their July 1989 meeting identified the need to safeguard the environment as one of the three main challenges facing the international community).

cooperation.

International legal instruments, including binding conventions, protocols, and nonbinding guidelines, constitute increasingly important mechanisms for achieving bilateral and multilateral cooperation in the field of the environment.² Because there is no global entity with power to enforce such instruments, their effectiveness depends on voluntary compliance.

One factor favoring compliance is the current resurgence in environmental awareness at both national and international levels. The interplay between environmental and economic considerations also affects compliance. Short-term economic imperatives may undermine compliance, resulting in long-term environmental damage. Environmental protection measures may inadvertently foster black markets³ or operate as unfair trade barriers,⁴ further hampering compliance. Observed changes in environmental quality can provide a yardstick for measuring the effectiveness of international environmental instruments.⁵

Since its inception in 1972, the United Nations Environment Programme (UNEP) has played a significant role in the development of international environmental law. It has negotiated and obtained adoption of nearly thirty binding multilateral instruments,⁶ including the

2. See *International Legal Instruments in the Field of the Environment*, Decision 15/31 of the Governing Council of the United Nations Environment Programme (May 25, 1989) [hereinafter UNEP GC Decision 15/31], reprinted in *United Nations Environment Programme: Report of the Governing Council on the work of its fifteenth session*, 44 U.N. GAOR Supp. (No. 25) Annex I at 158, U.N. Doc. A/44/25 (1989) [hereinafter *UNEP GC Fifteenth Session Report*]. Nineteen multilateral legal instruments entered into force between May 1986 and June 1989. UNEP GC Decision 15/31, *supra*, para. 1(a). Ten multilateral legal instruments were adopted between May 1987 and November 1988. *Id.*; see also *Progress in the Control of Transboundary Movements of Hazardous Wastes*, Decision 15/33 of the Governing Council of the United Nations Environment Programme (May 25, 1989) [hereinafter UNEP GC Decision 15/33], reprinted in *UNEP GC Fifteenth Session Report, supra*, at 160 (taking note of the adoption of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal).

3. See *Trail of Shame: Behind the Ivory Trade*, ASIaweek, Aug. 5, 1988, at 18, 39 (noting that a total ban on ivory trade could force the business underground, thereby providing no possibility for monitoring).

4. Cf. General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 Stat. vol. 5, A60, T.I.A.S. No. 1700, 55 U.N.T.S. 194, 262 (original text), 4 *General Agreement on Tariffs and Trade, Basic Instruments and Selected Documents* 37 (1969) (current text, as amended) [hereinafter GATT].

5. Cf. Commoner, *A Reporter at Large: The Environment*, NEW YORKER, June 15, 1987 (analyzing the efficacy of a decade of environmental legislation in the United States as measured by changes in concentrations of particular environmental pollutants).

6. See *supra* note 2 and accompanying text (discussing multilateral instruments pertaining to the environment); *infra* notes 7, 31, 32, & 39-47 and accompanying text (addressing specific conventions and protocols).

landmark 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol),⁷ as well as ten sets of nonbinding environmental law guidelines and principles. UNEP serves as secretariat to a number of environmental conventions, offers technical assistance to developing countries in the formulation of environmental legislation, and publishes a set of reference texts for international environmental law scholars and practitioners.

Part I of this article describes in greater detail UNEP's activities in the field of international environmental law. Part II examines the evolution of UNEP's approach to this field and the effectiveness of its approach in promoting protection of the ozone layer, environmentally sound management of hazardous wastes, and exchange of information on chemicals in international trade. This evaluation reveals that UNEP has negotiated a large number of agreements with scientific, legal, and political acumen. It argues that UNEP's approach could be more effective, however, if it systematically included economic incentives⁸ and ef-

7. Montreal Protocol on Substances that Deplete the Ozone Layer, *adopted and opened for signature* Sept. 16, 1987, (entered into force Jan. 1, 1989), *reprinted in UNITED NATIONS ENVIRONMENT PROGRAMME, MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER: FINAL ACT (1987)*, and in 26 I.L.M. 1541 (1987) [hereinafter Montreal Protocol]. The Montreal Protocol is a protocol to the Vienna Convention for the Protection of the Ozone Layer, *adopted and opened for signature* Mar. 22, 1985 (entered into force Sept. 22, 1988), *reprinted in UNITED NATIONS ENVIRONMENT PROGRAMME, VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER: FINAL ACT (1985)*, and in 26 I.L.M. 1516 (1987) [hereinafter Vienna Convention] (reprinting text of Convention only); see *Register of International Treaties and Other Agreements in the Field of the Environment*, U.N. Doc. UNEP/GC.15/Inf.2, at 221 (May 1989) (available from UNEP) [hereinafter *Register of Treaties*] (summarizing the Montreal Protocol and Vienna Convention and providing signatory and ratification data).

8. The author uses the term "economic incentives" to mean legal mechanisms which seek to channel economically motivated behavior in market-based or centrally administered systems into environmentally sound activity. Such mechanisms might include entitlements, taxes, marketable permits, bargaining structures, competitive markets for environmentally friendly products and the like. F. ANDERSON, ET AL., ENVIRONMENTAL IMPROVEMENT THROUGH ECONOMIC INCENTIVES (1977); Stewart, *Controlling Environmental Risks Through Economic Incentives*, 13 COLUM. J. ENVTL. L. 153 (1988).

Some in the environmental community might protest that such incentives amount to licensing pollution. No assertion is made here that market mechanisms without more can or should control environmental considerations; rather, it is because markets often favor economic degradation that their pressures need to be channeled toward environmentally sound ends. A. BLINDER, *HARD HEADS, SOFT HEARTS: TOUGH-MINDED ECONOMICS FOR A JUST SOCIETY* 136-59 (1987). Others would argue that market-based controls are fundamentally undemocratic. See, e.g., J. DRYZEK, *RATIONAL ECOLOGY: ENVIRONMENT AND POLITICAL ECONOMY* (1989) (arguing against such controls and in favor of mediated solutions). Economic incentives, if carefully designed, can in fact increase the transparency of control structures and enhance public participation in environmental preservation. Ackerman & Stewart, *Reforming Environmental Law: The*

ficacy monitoring mechanisms in the legal instruments it develops. Part III comments briefly on the need for UNEP to take particular account of economic considerations as it develops future conventions on preservation of biological diversity and global climate change. In the area of climate, Part III introduces the idea of an international emissions credit bank as one possible mechanism for providing economic incentives and for monitoring the efficacy of control measures.

I. UNEP'S ACTIVITIES IN THE DEVELOPMENT OF INTERNATIONAL ENVIRONMENTAL LAW

A. HISTORY

The United Nations General Assembly (UNGA) established UNEP in December 1972⁹ following the United Nations Conference on the Human Environment (Stockholm Conference).¹⁰ The purpose of the new organization was to "promote international co-operation in the field of the environment and to recommend, as appropriate, policies to this end, [and] to provide general policy guidance for the direction and coordination of environmental programmes within the United Nations system."¹¹ The UNGA established the UNEP secretariat "to serve as a focal point for environmental action and co-ordination within the United Nations system."¹² UNEP serves as the central catalyzing and coordinating body in the field of the environment within the UN system.¹³ UNEP has a mandate to pay special attention to the situation of

Democratic Case for Market Incentives, 13 COLUM. J. ENVTL. L. 171 (1988).

9. See *Institutional and Financial Arrangements for International Environmental Co-operation*, G.A. Res. 2997, 27 U.N. GAOR Supp. (No. 30) at 43, U.N. Doc. No. A/8730 (1972) [hereinafter G.A. Res. 2997] (calling for the implementation of measures to safeguard and promote environmental quality).

10. *Stockholm Declaration on the Human Environment*, reprinted in *Report of the United Nations Conference on the Human Environment*, U.N. Doc. A/CONF.48/14 and Corr. 1 (1972), U.N. Sales No. E.73 II.A.14 and corr. [hereinafter *Stockholm Declaration*], reprinted in 11 I.L.M. 1416 (1972), and in UNITED NATIONS ENVIRONMENT PROGRAMME, STOCKHOLM DECLARATION, ENVIRONMENTAL LAW GUIDELINES AND PRINCIPLES NO. 1 (1972) [hereinafter *UNEP GUIDELINES SERIES*]; *United Nations Conference on the Human Environment*, G.A. Res. 2994, 27 U.N. GAOR Supp. (No. 30) at 42, U.N. Doc. A/8730 (1972); *Cooperation Between States in the Area of the Environment*, G.A. Res. 299J, 27 U.N. GAOR Supp. (No. 30) at 42, U.N. Doc. A/8730 (1972); *International Responsibility of States in Regard to the Environment*, G.A. Res. 2996, 27 U.N. GAOR Supp. (No. 30) at 42, U.N. Doc. A/8730 (1972).

11. G.A. Res. 2997, *supra* note 9, at pt. I, para. 2(a)-(b).

12. *Id.* pt. II, para. 1.

13. *Strengthening the Role and Effectiveness of the United Nations Environment Programme*, Decision 15/1 of the Governing Council of UNEP (May 25, 1989) [hereinafter *UNEP GC Decision 15/1*], reprinted in *UNEP GC Fifteenth Session Report*, *supra* note 2, at 101, pt. I, para. 1.

developing countries.¹⁴ In accordance with its charter, the UNEP secretariat remains relatively small in comparison to other UN bodies.¹⁵

B. STRUCTURE

The Governing Council (GC) of UNEP is composed of 58 states, which need not be members of the UN. The GC meets biennially at UNEP headquarters in Nairobi, Kenya to deliberate policy matters, issue decisions, and set UNEP's agenda, including its environmental law program.¹⁶ In most of its activities, UNEP plays a primarily coordinative role; however, in the area of environmental law, UNEP is authorized to undertake direct implementation.¹⁷

14. G.A. Res. 2997, *supra* note 9, pt. I, para. 2(f).

15. See *id.* pt. II, para. 1 (forming a small secretariat to serve as a focal point to ensure effective management); EXECUTIVE DIRECTOR OF THE UNITED NATIONS ENVIRONMENT PROGRAMME, ANNUAL REPORT OF THE EXECUTIVE DIRECTOR OF THE UNITED NATIONS ENVIRONMENT PROGRAMME 149-57 (1987) (stating that UNEP's secretariat employs nearly two hundred professionals at headquarters in Nairobi, Kenya, and at sixteen duty stations around the world).

16. G.A. Res. 2997, *supra* note 9, part I, para. 1; *Rules of Procedure of the Governing Council of the United Nations Environment Programme*, Rule 1 at 6, U.N. Doc. UNEP/GC/3/Rev.3 (Jan. 9, 1988) [hereinafter *Governing Council Rules*].

17. See G.A. Res. 2997, *supra* note 9, pt. I, para. 2(a) (stating the UNGA's delegation of authority to UNEP "to promote international co-operation in the field of the environment"); *id.* pt. II, para. 2(e), (j) (entrusting the Executive Director to provide, at the request of all parties concerned, advisory services promoting international cooperation and to perform such other functions as the Governing Council may entrust to him).

In delegating to UNEP the authority to promote international environmental cooperation, the UNGA arguably drew on its own authority to encourage the progressive development of international law and promote solutions of international economic, health and related problems. U.N. CHARTER arts. 13(1)(a), 55(b). Thus, the UNEP Governing Council received authority to encourage the progressive development of international environmental law and to promote solutions of international environmental problems. *Id.* The GC draws on this authority when it requests the Executive Director to develop conventions and guidelines. See, e.g., *Montevideo Programme for the Development and Periodic Review of Environmental Law*, U.N. Doc. UNEP/GC.10/5/add.2, Annex, reprinted in UNITED NATIONS ENVIRONMENT PROGRAMME, ENVIRONMENTAL LAW UNIT, MONTEVIDEO PROGRAMME (1982) (available from UNEP) [hereinafter *MONTEVIDEO PROGRAMME*] (recommending an environmental law agenda for UNEP); *Programme for the Development and Periodic Review of Environmental Law*, Decision 10/21 of the Governing Council of UNEP (May 31, 1982) [hereinafter *UNEP GC Decision 10/21*], reprinted in *United Nations Environment Programme: Report of the Governing Council (Session of a special character and tenth session)*, 37 U.N. GAOR Supp. (No. 25) Annex I at 108, U.N. Doc. A/37/25 (1982) [hereinafter *UNEP GC Tenth Session Report*] (adopting the Montevideo Programme). See generally UNITED NATIONS ENVIRONMENT PROGRAMME, ENVIRONMENTAL LAW UNIT, ENVIRONMENTAL LAW IN THE UNITED NATIONS ENVIRONMENT PROGRAMME 3 (1985) (available from UNEP) [hereinafter *ENVIRONMENTAL LAW IN UNEP*] (discussing UNEP's involvement with regional seas plans, international agreements, international guidelines, and principles and standards).

Two different program units share environmental law responsibilities in UNEP. The Oceans and Coastal Areas Programme Activity Center (OCAPAC) is responsible for the regional seas conventions.¹⁸ UNEP's Environmental Law Unit handles all of UNEP's other activities in the field of environmental law.¹⁹ For most UNEP convention and guideline negotiations, the Law Unit (or OCAPAC) prepares draft documentation. UNEP then convenes an *ad hoc* working group of legal and technical experts to review and revise the draft.²⁰ When a working group has reached consensus on nonbinding guidelines, UNEP refers the guidelines to the Governing Council for consideration and possible adoption. If the subject matter is a binding legal instrument, UNEP convenes a diplomatic conference to consider and hopefully adopt and sign the instrument.

C. ENVIRONMENTAL LAW PROGRAM

Recently, in accordance with the various decisions of the Governing Council, UNEP's environmental law program has concentrated on a broad range of global environmental problems. UNEP drafted, negotiated, and obtained adoption and entry into force of the Vienna Convention for the Protection of the Ozone Layer (Vienna Convention)²¹ and the Montreal Protocol.²² UNEP presently serves as the secretariat for these agreements.²³

Building on the Vienna Convention and the Montreal Protocol, UNEP is preparing a framework convention on global climate change.²⁴ UNEP is undertaking this project in cooperation with other

18. See *infra* note 76 and accompanying text (noting Governing Council decision establishing OCAPAC's agenda for developing regional seas conventions); *infra* notes 39-46 (listing regional seas agreements). Twenty-three of more than thirty environmental agreements governing major marine regions were adopted under UNEP auspices. P. SAND, MARINE ENVIRONMENT LAW IN THE UNITED NATIONS ENVIRONMENT PROGRAMME ix (1988).

19. See generally MONTEVIDEO PROGRAMME, *supra* note 17.

20. Working groups usually adopt the Governing Council Rules *mutatis mutandis*. *Supra* note 16. Thus, all states are eligible to participate in the working groups, inter-governmental and UN organizations may participate in a nonvoting capacity, and non-governmental organizations (NGOs) may participate as observers. *Id.*

21. See Vienna Convention, *supra* note 7.

22. See Montreal Protocol, *supra* note 7.

23. Report of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer, First Meeting, U.N. Doc. UNEP/OzL.Conv.1/5, at 11 (Apr. 28, 1989) [hereinafter *Vienna Report*].

24. See *Global Climate Change*, Decision 15/36 of the Governing Council of UNEP (May 25, 1989), reprinted in *UNEP GC Fifteenth Session Report*, *supra* note 2, at 164 [hereinafter *UNEP GC Decision 15/36*] (requesting the Executive Director of UNEP to begin preparations for negotiations on a framework convention on climate).

UN bodies, in particular, the World Meteorological Organization (WMO).²⁵ UNEP previously worked with WMO in developing the *Provisions for Co-operation Between States in Weather Modification*.²⁶

UNEP drafted, negotiated, and obtained adoption of the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal²⁷ and is currently working to obtain its entry into force.²⁸ UNEP prepared a report for the UNGA on illegal traffic in toxic and dangerous products and wastes.²⁹ UNEP also developed a nonbinding global regime under which exporting countries are to obtain the informed consent of importing countries prior to shipment of any banned or severely restricted chemical or pesticide.³⁰

UNEP serves as the secretariat to two of the principal binding legal instruments on wildlife protection: the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)³¹ and the Convention on Conservation of Migratory Species (CMS).³² The 1982 World Charter for Nature was developed partly under UNEP

25. *Id.* para. 9.

26. *Provisions for Co-operation Between States in Weather Modification*, Decision 8/7(A) of the Governing Council of UNEP (Apr. 29, 1980) [hereinafter *Provisions on Weather Modification*], reprinted in *United Nations Environment Programme: Report of the Governing Council on the Work of its eighth session*, 35 U.N. GAOR Supp. (No. 25) Annex I at 117, U.N. Doc. A/35/25 (1980) [hereinafter *UNEP GC Eighth Session Report*]; and in WEATHER MODIFICATION, UNEP GUIDELINES SERIES NO. 3, *supra* note 10, at 1.

27. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, adopted and opened for signature Mar. 22, 1989, reprinted in UNITED NATIONS ENVIRONMENT PROGRAMME, BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL: FINAL ACT [hereinafter Basel Convention], and in 28 I.L.M. 649 (1989) (providing the text of Basel the Convention).

28. UNEP GC Decision 15/33, *supra* note 2, at para. 1.

29. *Report of the Secretary-General on Illegal Traffic in Toxic and Dangerous Products and Wastes*, U.N. Doc. A/44/362 and Corr. 1 (1989). See *Traffic in and disposal, control, and transboundary movements of toxic and dangerous products and wastes*, G.A. Res. 226, 44 U.N. GAOR Supp. (No. 49) at 294, U.N. Doc. A/44/49 (1989).

30. *Amended London Guidelines for the Exchange of Information on Chemicals in International Trade*, U.N. Doc. UNEP/GC.15/9/Add.2/Supp. 3 (1989) (available from UNEP) [hereinafter *Amended London Guidelines*]; see *Environmentally safe management of chemicals, in particular those that are banned and severely restricted, in international Trade*, Decision 15/30 of the Governing Council of UNEP (May 25, 1989) [hereinafter UNEP GC Decision 15/30], reprinted in *UNEP GC Fifteenth Session Report*, *supra* note 2, at 156 (adopting the *Amended London Guidelines*).

31. Convention on International Trade in Endangered Species of Wild Fauna and Flora (Mar. 3, 1973) art. 12, para. 2 (entered into force July 1, 1975), 27 U.S.T. 1087, T.I.A.S. No. 8249, reprinted in 12 I.L.M. 1085 (1973) [hereinafter CITES].

32. Convention on the Conservation of Migratory Species of Wild Animals, June 23, 1979, art. 9, para. 2 (entered into force Nov. 1, 1983) [hereinafter CMS], reprinted in 19 I.L.M. 15 (1980).

auspices.³³ UNEP is currently developing an umbrella convention to address economic and other dimensions lacking in existing international legal regimes for preservation of biological diversity.³⁴

UNEP has developed nonbinding guidelines on the use of shared natural resources³⁵ and on environmental impact assessment (EIA).³⁶ In the latter field, senior advisers to the Executive Director have noted the desirability of a global framework convention on EIA, concentrating on transboundary effects.³⁷ The UNEP Governing Council is seeking the views of governments on the need for further development in the EIA field.³⁸

UNEP has drafted, negotiated, and obtained or is in the process of obtaining adoption of conventions and protocols protecting the Mediterranean Sea,³⁹ the Persian Gulf,⁴⁰ the regional seas of the West and

33. See *World Charter for Nature*, G.A. Res. 7, 37 U.N. GAOR 8.11, U.N. Doc. A/RES/37/7 (1982), reprinted in *WORLD CHARTER FOR NATURE*, UNEP GUIDELINE SERIES NO. 5, *supra* note 10, at 3.

34. *Preparation of an International Legal Instrument on the Biological Diversity of the Planet*, Decision 15/34 of the Governing Council of UNEP (May 25, 1989) [hereinafter *UNEP GC Decision 15/34*], reprinted in *UNEP GC Fifteenth Session Report*, *supra* note 2, at 161.

35. *Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States* in *Report of the Fifth Session of the Intergovernmental Working Group of Experts on Natural Resources Shared by Two or More States*, U.N. Doc. UNEP/GC.6/17 (1978), reprinted in 17 I.L.M. 1091 (1978), and in *SHARED NATURAL RESOURCES*, UNEP GUIDELINE SERIES NO. 2, *supra* note 10 [hereinafter *Principles on Shared Natural Resources*]; see *Cooperation in the field of the environment concerning natural resources shared by two or more States*, decision 6/14 of the Governing Council of UNEP (May 19, 1978) (approving the principles), reprinted in *United Nations Environment Programme: Report of the Governing Council on the Work of its sixth session*, 33 U.N. GAOR Supp. (No. 25) Annex I at 154, U.N. Doc. A/33/25 (1978) [hereinafter *UNEP GC Sixth Session Report*]; and see G.A. Res. 186, 34 U.N. GAOR Supp. (No. 46) at 128, U.N. Doc. A/34/46 (1980) (requesting all states to use the principles as guidelines in the formulation of bilateral and multilateral conventions on shared resources).

36. *Goals and Principles of Environmental Impact Assessment*, U.N. Doc. UNEP/GC.14/17, Annex III (June 1987), reprinted in *ENVIRONMENTAL IMPACT ASSESSMENT*, UNEP GUIDELINE SERIES NO. 9, *supra* note 10; see *Environmental Impact Assessment*, Decision 14/25 of the Governing Council of UNEP (June 17, 1987) (adopting the goals and principles), reprinted in *United Nations Environment Programme: Report of the Governing Council on the work of its fourteenth session*, 42 U.N. GAOR Supp. (No. 25) Annex I at 77, U.N. Doc. A/42/25 (1987) [hereinafter *UNEP GC Fourteenth Session Report*].

37. UNITED NATIONS ENVIRONMENT PROGRAMME, SENIOR ADVISERS TO THE EXECUTIVE DIRECTOR (Mar. 1988) (unpublished report available from UNEP).

38. *Environment Impact Assessment*, Decision 15/41 of the Governing Council of UNEP (May 25, 1989), reprinted in *UNEP GC Fifteenth Session Report*, *supra* note 2, at 171, para. 3.

39. Convention for the Protection of the Mediterranean Sea Against Pollution, done at Barcelona, Feb. 16, 1976 (entered into force Feb. 12, 1978), reprinted in 15 I.L.M. 290 (1976) [hereinafter *Barcelona Convention*]; Protocol for the Prevention of

Central African region,⁴¹ the Southeast Pacific,⁴² the Red Sea and Gulf of Aden,⁴³ the Caribbean Sea,⁴⁴ the regional seas of East Africa,⁴⁵ the

Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft, *done at Barcelona*, Feb. 16, 1976 (entered into force Feb. 12, 1978), *reprinted in* 15 I.L.M. 300 (1976); Protocol Concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency, *done at Barcelona*, Feb. 16, 1976 (entered into force Feb. 12, 1978), *reprinted in* 15 I.L.M. 306 (1976); Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources, *done at Athens*, May 17, 1980 (entered into force June 17, 1983), *reprinted in* 19 I.L.M. 869 (1980); Protocol Concerning Mediterranean Specially Protected Areas, *done at Geneva*, Apr. 3, 1982 (entered into force Mar. 23, 1986), *reprinted in* P. SAND, *supra* note 18, at 37. *See generally* S. KUWABARA, THE LEGAL REGIME OF THE PROTECTION OF THE MEDITERRANEAN AGAINST POLLUTION FROM LAND-BASED SOURCES (Dublin 1984) (discussing various agreements relating to the Mediterranean); P. SAND, *supra* note 18, at 1 (providing texts); *Register of Treaties*, *supra* note 7, at 136 (providing signatory and ratification data).

UNEP prepared, and the Barcelona Convention Contracting Parties have considered, a draft Protocol concerning the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Sea-Bed and Its Sub-Soil.

40. Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution, *done at Kuwait*, Apr. 23, 1978 (entered into force June 30, 1979), U.N., Reg. No. A - 17898, *reprinted in* 17 I.L.M. 511 (1978); Protocol Concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency, *done at Kuwait*, Apr. 24, 1978 (entered into force July 1, 1979), *reprinted in* 17 I.L.M. 526 (1978). *See generally* P. SAND, *supra* note 18, at 45 (providing texts).

41. Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region, *done at Abidjan*, Mar. 23, 1981 (entered into force Aug. 5, 1984), *reprinted in* 20 I.L.M. 746 (1981); Protocol Concerning Co-operation in Combating Pollution in Cases of Emergency, *done at Abidjan*, Mar. 23, 1981 (entered into force Aug. 5, 1984), *reprinted in* 20 I.L.M. 756 (1981).

42. Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific, *done at Lima*, Nov. 12, 1981 (entered into force May 19, 1986), *reprinted in* UNITED NATIONS ENVIRONMENT PROGRAMME, CONVENTION FOR THE PROTECTION OF THE MARINE AND COASTAL AREA OF THE SOUTH-EAST PACIFIC AND PROTOCOLS (1988) (available from UNEP) [hereinafter SOUTH-EAST PACIFIC CONVENTION]; Agreement on Regional Co-operation in Combating Pollution of the South-East Pacific by Oil and Other Harmful Substances in Cases of Emergency, *done at Lima*, Nov. 12, 1981 (entered into force July 14, 1986), *reprinted in* SOUTH-EAST PACIFIC CONVENTION, *supra*; Supplementary Protocol to the Agreement on Regional Co-operation in Combating Pollution of the South-East Pacific by Oil and Other Harmful Substances in Cases of Emergency, *done at Quito*, July 22, 1983 (entered into force May 20, 1987), *reprinted in* SOUTH-EAST PACIFIC CONVENTION, *supra*; Protocol for the Protection of the South-East Pacific Against Pollution from Land-Based Sources, *done at Quito*, July 23, 1983 (entered into force Sept. 23, 1986), *reprinted in* SOUTH-EAST PACIFIC CONVENTION, *supra*. *See Generally* P. SAND, *supra* note 18, at 84 (providing texts).

43. Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment, *done at Jiddah*, Feb. 14, 1982 (entered into force Aug. 20, 1985), *reprinted in* UNITED NATIONS ENVIRONMENT PROGRAMME, REGIONAL CONVENTION FOR THE CONSERVATION OF THE RED SEA AND GULF OF ADEN ENVIRONMENT (1982) [hereinafter RED SEA CONVENTION] (available from UNEP); Protocol Concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in

South Pacific,⁴⁶ and the Zambezi River Basin.⁴⁷ Conventions to protect the South Asian and East Asian regional seas are in the drafting stage.⁴⁸ UNEP has also developed nonbinding guidelines for the prevention of marine pollution from land-based sources⁴⁹ and from offshore mining and drilling.⁵⁰

Cases of Emergency, *done at Jiddah*, Feb. 14, 1982 (entered into force Aug. 20 1985), *reprinted in RED SEA CONVENTION, supra. See generally P. SAND, supra note 18, at 114* (providing texts).

44. Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region *done at Cartagena*, Mar. 24, 1983 (entered into force Oct. 11, 1986), *reprinted in 22 I.L.M. 227* (1983); Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region, *done at Cartagena*, Mar. 24, 1983 (entered into force Oct. 11, 1986), *reprinted in 22 I.L.M. 240* (1983).

45. Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, *done at Nairobi*, June 21, 1985 (not yet in force), *reprinted in UNITED NATIONS ENVIRONMENT PROGRAMME, CONVENTION FOR THE PROTECTION, MANAGEMENT AND DEVELOPMENT OF THE MARINE AND COASTAL ENVIRONMENT OF THE EASTERN AFRICAN REGION* (1985) [hereinafter EAST AFRICAN REGION CONVENTION] (available from UNEP); Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region, *done at Nairobi*, June 21, 1985 (not yet in force), *reprinted in EAST AFRICAN REGION CONVENTION, supra*; Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region, *done at Nairobi*, June 21, 1985 (not yet in force), *reprinted in EAST AFRICAN REGION CONVENTION supra*.

46. Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, *done at Noumea*, Nov. 24, 1986 (not yet in force), *reprinted in 26 I.L.M. 38* (1987); Protocol for the Prevention of Pollution of the South Pacific Region by Dumping, *done at Noumea*, Nov. 25, 1986 (not yet in force), *reprinted in 26 I.L.M. 65* (1987); Protocol Concerning Co-operation in Combating Pollution Emergencies in the South Pacific Region, *done at Noumea*, Nov. 25, 1986 (not yet in force), *reprinted in 26 I.L.M. 59* (1987).

47. Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System, *done at Harare*, May 28, 1987 (entered into force May 28, 1987), *reprinted in 27 I.L.M. 1112* (1988).

48. Personal communication with C. DiLeva, UNEP Environmental Law Unit (July 1989).

49. *Montreal Guidelines for the Protection of the Marine Environment Against Pollution from Land-Based Sources*, *reprinted in Final Report of the Ad Hoc Working Group of Experts on the Protection of the Marine Environment Against Pollution from Land-Based Sources*, U.N. Doc. UNEP/WG.120/3 (1985), *also reprinted in MARINE POLLUTION FROM LAND-BASED SOURCES, UNEP GUIDELINES SERIES NO. 7, supra note 10, at 1. See Environmental Law: Protection of the marine environment against pollution from land-based sources*, Decision 13/18 (II) of the Governing Council of UNEP (May 24, 1985) (encouraging states to take the guidelines into account), *reprinted in United Nations Environment Programme: Report of the Governing Council on the work of its thirteenth session*, 40 U.N. GAOR Supp. (No. 25) Annex I at 53, U.N. Doc. A/40/25 (1985) [hereinafter *UNEP GC Thirteenth Session Report*].

50. *Conclusions of the Study of Legal Aspects Concerning the Environment Related to Offshore Mining and Drilling Within the Limits of National Jurisdiction*, *reprinted in Programme Performance Report* (1 Jan.-Apr. 1981), U.N. Doc. UNEP/GC.9/5/Add. 5, Annex III (1981); *and in OFFSHORE MINING AND DRILLING, UNEP GUIDELINES SERIES NO. 4, supra note 10* [hereinafter *Legal Aspects of Offshore Mining and Drilling*]. The conclusions were developed in accordance with the *Recommen-*

UNEP has conducted research to determine priority activities in the area of pollution damages liability⁵¹ and is developing a draft liability and compensation protocol to the Basel Convention.⁵² UNEP considered developing conventions on information exchange and assistance in the event of serious industrial accidents. For the time being, however, the GC has decided to proceed by establishing a technical program and an information exchange network.⁵³

In accordance with UNEP's mandate of giving special consideration to the situation of developing countries,⁵⁴ UNEP endeavors, within financial and staff limitations, to provide legal assistance to such countries on request.⁵⁵ UNEP publishes a number of useful reference works in the field of international environmental law.⁵⁶ In addition, UNEP is currently developing compendia of environmental legislation in Eastern European countries⁵⁷ and in Latin American countries.⁵⁸ *UNEP's*

dations of the Working Group of Governmental and Other Experts to Examine Specific Aspects of Liability for Pollution and Other Environmental Damage and Compensation for Such Damage, U.N. Doc. UNEP/WG.54/4 (1977) [hereinafter *Recommendations on Liability*]; see *Programme Matters: Environmental Law*, Decision 10/14 (VI) of the Governing Council of UNEP (May 31, 1982), reprinted in *UNEP GC Tenth Session Report*, *supra* note 17, at 101 (endorsing the conclusions); G.A. Res. 217, 37 U.N. GAOR Supp. (No. 51) at 145, 146, para. 6(b), U.N. Doc. A/37/51 (1983) (recommending that governments should consider the conclusions when formulating national legislation or negotiating international agreements).

51. *Recommendations on Liability*, *supra* note 50; see *Environmental Law*, Decision 66(IV) of the Governing Council of UNEP (Apr. 13, 1976) [hereinafter UNEP GC Decision 66(IV)] (requesting the Executive Director to convene the working group on liability), reprinted in *United Nations Environment Programme: Report of the Governing Council on the work of its fourth session*, 31 U.N. GAOR Supp. (No. 25) Annex I at 127, U.N. Doc. A/31/25 (1976) [hereinafter *UNEP GC Fourth Session Report*].

52. See Resolution 3 of the Final Act of the Conference of Plenipotentiaries on the Global Convention on the Control of Transboundary Movements of Hazardous Wastes [hereinafter Basel Conference Final Act], reprinted in *BASEL CONVENTION*, *supra* note 27, at 8 (calling on the Executive Director of UNEP to establish a working group to develop elements of a draft protocol on liability and compensation).

53. See *Industrial Accidents*, Decision 15/39 of the Governing Council of UNEP (May 25, 1989), reprinted in *UNEP GC Fifteenth Session Report*, *supra* note 2, at 170.

54. See *supra* note 14 and accompanying text.

55. See ENVIRONMENTAL LAW IN UNEP, *supra* note 17, at 11 (discussing assistance provided).

56. See, e.g., UNITED NATIONS PROGRAMME, SELECTED MULTILATERAL TREATIES IN THE FIELD OF THE ENVIRONMENT (A. Kiss ed. 1982) (providing summaries, ratification status, and full texts of treaties); *Register of Treaties*, *supra* note 7 (providing summary information and ratification status); UNITED NATIONS ENVIRONMENT PROGRAMME, DIRECTORY OF PRINCIPAL GOVERNMENTAL BODIES DEALING WITH THE ENVIRONMENT (Nairobi, 1989) (providing mailing, telephone, telex and telefax addresses for national environment ministries).

57. See Kolbasov, *Study of the Development of Environmental Law in the Socialist Countries of Eastern Europe*, U.N. Doc. UNEP/IG.28, U.N. Doc. No. 8 (1981).

*Newsletter for Parliamentarians*⁵⁹ highlights recent developments in international environmental law. The *UNEP Manual on Environmental Legislation*⁶⁰ and the UNEP publication, *New Directions in Environmental Legislation and Administration in Developing Countries*,⁶¹ provide helpful guidance for legislative development.

II. UNEP'S APPROACH TO THE DEVELOPMENT OF INTERNATIONAL ENVIRONMENTAL LAW

A. HISTORICAL APPROACH

For the first decade of UNEP's existence, its development of environmental law proceeded haphazardly, with little overall direction from the Governing Council. The Stockholm Declaration had announced only one principle that explicitly sought to spur development of international law—Principle 22 on liability and compensation.⁶² This difficult subject was one of the first UNEP sought to tackle.⁶³

During this period the Governing Council set UNEP's law agenda tree by tree, with little attention to the growing forest of international environmental law. UNEP established secretariats for CITES⁶⁴ and CMS;⁶⁵ completed work on guidelines in the rather disparate areas of shared natural resources,⁶⁶ off-shore mining and drilling,⁶⁷ and weather modification;⁶⁸ commenced work on issues relating to international trade in toxic chemicals,⁶⁹ and negotiated and obtained adoption of the

UNEP is undertaking its current work in cooperation with the Council of Mutual Economic Assistance (CMEA) and the International Union for the Conservation of Nature and Natural Resources (IUCN).

58. Research being undertaken by UNEP's Regional Office for Latin America and the Caribbean.

59. The publication is published ten times per year, in cooperation with the International Parliamentary Union (IPU) and IUCN (available from UNEP).

60. J. MAYDA, *MANUAL ON ENVIRONMENTAL LEGISLATION* (1979) (available from UNEP) (providing guidance on preparing environmental legislation).

61. UNITED NATIONS ENVIRONMENT PROGRAMME, *NEW DIRECTIONS IN ENVIRONMENTAL LEGISLATION AND ADMINISTRATION IN DEVELOPING COUNTRIES*, UNEP Doc. No. 87-2054, mo/2521e (Nairobi, 1989) (available from UNEP).

62. Stockholm Declaration, *supra* note 10, Principle 22.

63. See UNEP GC Decision 66(IV), *supra* note 51 (regarding the convening of a working group on liability); see also *Legal Aspects of Off-Shore Mining and Drilling*, *supra* note 50, at pt. H (discussing liability).

64. CITES, *supra* note 31.

65. CMS, *supra* note 32.

66. *Principles on Shared Natural Resources*, *supra* note 35.

67. *Legal Aspects of Off-Shore Mining and Drilling*, *supra* note 50.

68. *Provisions on Weather Modification*, *supra* note 26.

69. See *Human and environmental health*, Decision 85(V) of the Governing Council of UNEP (May 25, 1977) [hereinafter UNEP GC Decision 85(V)] (requesting the Executive Director of UNEP to assist developing countries in strengthening their capa-

1976 Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention).⁷⁰

The Barcelona Convention provided UNEP with a significant and successful model for the further development of international environmental law.⁷¹ In 1975, UNEP invited representatives of the Mediterranean Sea coastal governments to Barcelona to negotiate and adopt the nonbinding Mediterranean Plan of Action.⁷² The Action Plan provided the scientific and political basis for the negotiations leading to the adoption of the Barcelona Convention the following year.

The Convention is a framework instrument that creates a general obligation "to take all appropriate measures . . . to prevent, abate, and combat pollution of the Mediterranean Sea area and to protect and enhance the marine environment in that area."⁷³ It lists sources of pollution which require control, but leaves to protocols the elaboration of specific control measures. To date, the parties have adopted protocols concerning dumping, oil spills and other emergencies, pollution from land-based sources, and specially protected areas.⁷⁴

The Barcelona process is noteworthy in a number of ways. First, it brought together states with widely disparate interests, some of whom had recently been at war with each other, to adopt an agreement which has withstood subsequent hostilities. Second, it created a framework which required states to take on specific environmentally protective obligations, but allowed them flexibility in choosing which obligations to undertake.⁷⁵ Third, it established a procedure which UNEP success-

bilities for evaluating chemicals, and urging governments to ensure that domestically prohibited chemicals are not exported without the importing country's knowledge and consent), *reprinted in United Nations Environment Programme: Report of the Governing Council on the work of its fifth session*, 32 U.N. GAOR Supp. (No. 25) Annex I at 116, U.N. Doc. A/32/25 (1977) [hereinafter *UNEP GC Fifth Session Report*].

70. See *supra* note 39 and accompanying text (discussing adoption of the Barcelona Convention).

71. See P. SAND, *supra* note 18, at ix (stating that most of UNEP's 23 marine environmental agreements followed the Barcelona Model).

72. See UNITED NATIONS ENVIRONMENT PROGRAMME, MEDITERRANEAN PLAN OF ACTION, ADOPTED BY THE INTERGOVERNMENTAL MEETING ON THE PROTECTION OF THE MEDITERRANEAN (Barcelona, Jan. 28-Feb. 4, 1975) (available from UNEP); see also Barcelona Convention, *supra* note 39, arts. 3-4.

73. Barcelona Convention, *supra* note 39, art. 3.

74. See *supra* note 39 (listing protocols). UNEP has prepared drafts of a fifth protocol, on pollution from exploration of the continental shelf and seabed. *Id.* Still outstanding are the issues of liability and compensation. See Barcelona Convention, *supra* note 39, art. 12 (stating that contracting parties agree to "cooperate as soon as possible in the formulation and adoption of appropriate procedures for the determination of liability and compensation for damages resulting from the pollution of the marine environment").

75. See *id.* art. 23, para. 1 (providing that no state may become a contracting party

fully adapted in developing an extensive body of conventions to protect regional seas.⁷⁶ Finally, it demonstrated the success of a two-step approach, using a nonbinding instrument as the prelude to a binding legal agreement.

UNEP's environmental law activities outside the regional seas program proceeded without specific guidance for several more years. Not until 1982 did the UNEP Governing Council adopt the Montevideo Programme for the Development and Periodic Review of Environmental Law (Montevideo Programme).⁷⁷ The Governing Council laid the foundation for the Montevideo Programme in 1978, when it requested the Executive Director of UNEP to convene a group of experts to recommend a coherent plan.⁷⁸ Accordingly, the Senior Government Officials Expert in Environmental Law undertook to establish "a framework, methods and programme, including global, regional, and national efforts, for the development and periodic review of environmental law."⁷⁹

The Senior Governmental Officials sought to ensure that UNEP would undertake direct implementation in the area of environmental law.⁸⁰ The program they recommended called for development of "guidelines, principles or agreements" in three subject areas: prevention of marine pollution from land-based sources; protection of the stratospheric ozone layer; and transport, handling and disposal of toxic and dangerous wastes.⁸¹ The officials identified eight other areas for action, namely: environmental emergencies, coastal zone management, soil conservation, transboundary air pollution, international trade in potentially harmful chemicals, protection of rivers and other inland waters against pollution, legal and administrative mechanisms for the pre-

to the Convention without also becoming a party to at least one of its protocols).

76. See *The Environment Programme*, U.N. Doc. UNEP/GC.6/7, para. 397 (proposing strategies and objectives for future conventions on the Barcelona plan); see also *UNEP GC Sixth Session Report*, *supra* note 35, at 61, para. 252 (endorsing the proposals); UNEP GC Decision 6/2 (May 24, 1978), *reprinted in id.* at 120 (approving the proposals).

77. See MONTEVIDEO PROGRAMME, *supra* note 17, at 1-2 (establishing priorities for the development of international environmental law).

78. See *Environmental Law*, Decision 8/15 of the Governing Council of UNEP (Apr. 29, 1980) (requesting the Executive Director to convene the group), *reprinted in UNEP GC Eighth Session Report*, *supra* note 26, at 128. See also G.A. Res. 74, 35 U.N. GAOR Supp. (No. 48) at 134, U.N. Doc. A/35/48 (1981) (welcoming the GC's decision to convene the group).

79. MONTEVIDEO PROGRAMME, *supra* note 17, at 1.

80. See Montevideo Programme, *supra* note 17, at I.4.a. (requesting the GC "to ensure . . . [t]hat the programme for the development and periodic review of environmental law is action-oriented").

81. *Id.* at I.2.a, II.A.1.

vention and redress of pollution damage, and environmental impact assessment.⁸² The Montevideo Programme set forth objectives and strategies for each of these areas and also called upon UNEP "to promote the general development of environmental law."⁸³ Armed with these directives, UNEP set off to make major strides in the development of international environmental law.

UNEP's first notable success in implementing the Montevideo Programme was the Vienna Convention for the Protection of the Ozone Layer.⁸⁴ The Vienna Convention became UNEP's model for subsequent negotiations in other fields. The Vienna process sharpened UNEP's ability to build political, scientific and legal support for its law activities. The Convention itself led to a protocol that provided economic incentives for compliance and standards and methods for reassessment and readjustment.⁸⁵ The Vienna model, however, has thus far not led UNEP to incorporate economic considerations and assessment mechanisms into its environmental law activities on a regular basis.⁸⁶

B. A PROPOSED MODEL OF UNEP'S APPROACH TO THE DEVELOPMENT OF INTERNATIONAL ENVIRONMENTAL LAW

In the course of implementing the 1982 Montevideo Programme, UNEP has refined its approach to tackling environmental law issues. The organization usually begins by seeking scientific consensus on a particular environmental problem. Then UNEP develops a strategy for controlling the activities which give rise to the problem, and consolidates political support for its control measures.

To develop a scientific position, UNEP's Executive Director, Dr. Mostafa K. Tolba, who is a scientist, initiates in-house consultations and solicits diverse viewpoints within and without the UN system.⁸⁷ In

82. *Id.* at I.2.b.

83. *Id.* at I.2.c.

84. Vienna Convention, *supra* note 7.

85. *See infra* notes 117-25 and accompanying text (discussing compliance incentives and reassessment provisions).

86. *See infra* notes 176-80 & 217-31 and accompanying text (discussing UNEP's use of economic incentives).

87. *See, e.g., Conclusions and Recommendations of the Working Group on Guidelines for the Control of Toxic and Other Hazardous Chemical Waste, Garmisch-Partenkirchen* (Mar. 17-20, 1981), reprinted in WORLD HEALTH ORGANIZATION, REGIONAL PUBLICATIONS EUROPEAN SERIES NO. 14, MANAGEMENT OF HAZARDOUS WASTES: POLICY GUIDELINES AND CODE OF PRACTICE 92-96 (M.J. Suess & J.W. Huismans eds. 1983) [hereinafter WASTE POLICY GUIDELINES]. This work formed the foundation for the 1985 Cairo guidelines for hazardous waste. *Cairo Guidelines and Principles for the Environmentally Sound Management and Disposal of Hazardous Wastes*, U.N. Doc. UNEP/WG.122/3 Annex I (Dec. 1985), reprinted in ENVIRON-

so doing, UNEP begins to identify constituencies whom it will need to involve when consolidating its political support.

As it develops a core scientific position, UNEP also begins formulating its legal strategy. It convenes legal-technical working groups to consider issues papers and drafts of legal documents which the Law Unit prepares. Once its core legal and technical positions have coalesced, UNEP begins consolidating its political support. It identifies key constituencies such as developing countries, newly industrialized countries, industry associations, and environmental nongovernmental organizations (NGOs). UNEP solicits their views through formal meetings and informal consultations. The UNEP Secretariat participates actively in these sessions,⁸⁸ particularly through its Executive Director, a brilliant negotiator with great dedication, drive, and political acumen.

Working on the Barcelona model,⁸⁹ UNEP usually begins with the development of nonbinding guidelines or principles.⁹⁰ When these have been adopted, the GC may seek a binding legal agreement; however, it does not do so in all cases.⁹¹

The control measures UNEP selects consist primarily of targets for reducing pollutant emissions (e.g., of chlorofluorocarbons (CFCs)), and notice and consent controls on trade (e.g., in waste, chemicals, or endangered species). The effectiveness of control measures, however, often depends on precisely that which is lacking at the international level: an effective enforcement entity. Moreover, economic incentives which might boost compliance are not regular components of UNEP's approach. UNEP does not usually evaluate *ex ante* the economic impli-

MENTALLY SOUND MANAGEMENT OF HAZARDOUS WASTES, UNEP GUIDELINES SERIES No. 8, *supra* note 10 [hereinafter *Cairo Guidelines*]; see *Environmentally Sound Management of Hazardous Wastes*, decision 14/30 of the Governing Council of UNEP (June 17, 1987) [hereinafter *UNEP GC Decision 14/30*] (adopting the Cairo Guidelines), reprinted in *UNEP GC Fourteenth Session Report*, *supra* note 36, at 83. The Cairo Guidelines in turn formed the basis for the Basel Convention, *supra* note 27.

88. Working with science staff from five different UNEP technical units, from September 1988 to May 1989 the Law Unit staffed twenty-three negotiating sessions, including four diplomatic conferences at the ministerial level, changing venues fourteen different times. The Law Unit organizes the meetings and coordinates correspondence, translation, documentation, interpretation, security, credentials, press, budgets, travel, and financial support to defray expenses for participants from developing countries. This heavy administrative workload restricts the time, critical in environmental law practice, for Law Unit consultation with colleagues in the technical units.

89. See *supra* notes 71-76 and accompanying text (discussing the Barcelona approach).

90. See *supra* notes 30, 35, 36, 49, & 50 and accompanying text (identifying examples of nonbinding instruments developed by UNEP). But see *infra* notes 98-106 and accompanying text (noting direct development of the ozone layer convention).

91. See, e.g., *supra* notes 36-38 and accompanying text (noting that although the GC has adopted EIA guidelines, it has not moved toward developing a convention).

cations of the legal regimes it proposes. It also does not usually consider how to build into those regimes mechanisms for assessing their efficacy.

The notable exception, as discussed below, is in the field of ozone layer protection, where UNEP's approach has yielded economically sensible and measurable controls. In the area of hazardous wastes, by contrast, the absence of an economic perspective may undermine UNEP's Basel Convention, while lack of formal measurement parameters may complicate evaluation of the Convention's effectiveness if and when it enters into force.

UNEP has recently begun to give more consideration to economic aspects of legal regimes.⁹² As discussed below, such input will be critical to the success of UNEP's future legal efforts, particularly in the areas of chemicals trade, preservation of biological diversity, and global climate change.

C. CASE STUDIES

1. *Protection of the Ozone Layer*

a. *History*

UNEP's most significant environmental law successes have been the Vienna Convention⁹³ and Montreal Protocol.⁹⁴ In 1974, scientists Sherwood Rowland and Mario Molina of the University of California discovered that certain CFCs, commonly used in airconditioning, aerosols, foam insulation and cleaning solvents, could rise to the stratosphere.⁹⁵ There the chemicals, in reactions catalyzed by sunlight, caused a rapid breakdown of the stratospheric ozone (O_3) into molecular oxygen (O_2).⁹⁶ This was a finding of health and environmental significance. The fragile stratospheric ozone layer absorbs highly damaging ultraviolet radiation from the sun, and thus makes life on earth possible.⁹⁷

Reacting to this information, in the late 1970s several countries, including the United States, banned CFC aerosols. Global CFC con-

92. See, e.g., UNEP GC Decision 15/34, *supra* note 34 (directing UNEP to consider the economic dimension in its development of an umbrella convention on preservation of biological diversity); Vienna Convention, *supra* note 7, Annex II (directing parties to exchange technical, socio-economic, and business information).

93. Vienna Convention, *supra* note 7.

94. Montreal Protocol, *supra* note 7.

95. See Begley, *A Gaping Hole in the Sky*, NEWSWEEK, July 11, 1988, at 21 (citing the work of Rowland and Molina).

96. *Id.*

97. *Id.*

sumption continued to climb, however, as the chemicals were put to other uses. In 1980 the Governing Council directed UNEP to undertake measures to protect the ozone layer from modifications due to human activities,⁹⁸ and in 1981 the GC called for a convention.⁹⁹

The Montevideo Programme gave high priority to the development of a convention on ozone layer protection.¹⁰⁰ Building on its Barcelona Convention model,¹⁰¹ UNEP sought to obtain simultaneous adoption of a framework convention and a protocol controlling CFCs. There was no scientific consensus, however, on the extent of CFC-catalyzed ozone layer depletion. Several CFC-producing countries, most notably Japan,¹⁰² questioned the need for a CFC protocol. By 1985 UNEP had achieved consensus on only the framework convention.¹⁰³

Almost immediately after the convention was adopted, UNEP resumed intensive negotiations on the protocol. British reports of a hole in the ozone layer over Antarctica spurred the momentum.¹⁰⁴ Scientific evidence also began to implicate substances other than CFCs. In mid-1987 the Governing Council recommended that the protocol negotiations consider the full range of ozone-depleting substances.¹⁰⁵ Barely three months later, a UNEP-convened diplomatic conference adopted the Montreal Protocol.¹⁰⁶

98. Decision 8/7(B) of the Governing Council of UNEP (Apr. 29, 1980), reprinted in *UNEP GC Eighth Session Report*, *supra* note 26, at 118.

99. Decision 9/13(B) of the Governing Council of UNEP (May 26, 1981), reprinted in *United Nations Environment Programme: Report of the Governing Council on the work of its ninth session*, 36 U.N. GAOR Supp. (No. 25) at 118, U.N. Doc. A/36/25 (1981) [hereinafter *UNEP GC Ninth Session Report*].

100. See MONTEVIDEO PROGRAMME, *supra* note 17, at II.A.1.b. (directing UNEP to develop a convention to limit, reduce, and prevent activities that may have adverse effects on stratospheric ozone).

101. See Barcelona Convention, *supra* note 39 (adopting convention and protocols together).

102. See Declaration of Japan made at the time of the adoption of the Final Act of the Conference of the Plenipotentiaries on the Protection of the Ozone Layer, submitted March 22, 1985, reprinted in *Vienna Convention*, *supra* note 7, at 35 (contending that each country should decide how to control CFC emissions).

103. Vienna Convention, *supra* note 7. To date, 43 countries and the European Community (EC) have ratified the Vienna Convention. *Vienna Report*, *supra* note 23, at 1.

104. See Begley, *supra* note 95, at 21-22 (reporting on the discovery of a hole in the ozone layer over Antarctica).

105. Decision 14/28 of the Governing Council of UNEP (June 17, 1987), reprinted in *UNEP GC Fourteenth Session Report*, *supra* note 36, at 81.

106. See Montreal Protocol, *supra* note 7; see generally Doolittle, *Underestimating Ozone Depletion: The Meandering Road to the Montreal Protocol and Beyond*, 16 *ECOLOGY L.Q.* 407 (1989) (providing historical discussion and critique of the Montreal Protocol). Forty-one countries have ratified the protocol. UNITED NATIONS ENVIRONMENT PROGRAMME, MONTREAL PROGRAMME ON SUBSTANCES THAT DEplete THE OZONE LAYER: ECONOMIC PANEL REPORT 9 (July 1989) [hereinafter *ECONOMIC*

b. *Legal Strategy*

UNEP's strategy in ozone layer protection was to go for a convention directly without getting bogged down in soft law preliminaries.¹⁰⁷ This strategy was aided by the emergence, over the six years of negotiations, of a set of governmental negotiators—scientists and legal/political experts from developing and developed countries—who understood the importance of the issue and were committed to reaching consensus.

UNEP took care to involve not only environmental NGOs, but also industry groups. UNEP recognized that without industry support, CFC production controls would be meaningless. Fortunately for UNEP's efforts, CFC production is concentrated among relatively few countries and companies.¹⁰⁸ The major producers and some of the major consumers are large, publicly held firms and are thus increasingly sensitive to public pressure of the environmental kind.¹⁰⁹

The constituency that presented the greatest challenge to UNEP's drive for consensus was comprised of Asian and Pacific countries. Many of these had recently joined the ranks of CFC-producing countries and were seeking greater shares of the global market. Japan, a recalcitrant in the Vienna Convention days,¹¹⁰ finally joined the Protocol. Thailand and Singapore recently became parties, while India and the Republic of Korea have yet to ratify the agreement.¹¹¹

c. *Results*

Potentially, the Vienna Convention and Montreal Protocol constitute a highly effective regime for reducing—and possibly, in the future,

PANEL REPORT].

107. See *supra* notes 99-100 and accompanying text.

108. See ECONOMIC PANEL REPORT, *supra* note 106, at 130 (listing ten European and American companies which, together with Australian companies, represent "a large portion" of world CFC production).

109. See Begley, *supra* note 95, at 23 (noting that du Pont plans to phase out CFC production by 2000); see also ECONOMIC PANEL REPORT, *supra* note 105, at 120 (noting that eight major producers have announced policies to phase out CFC production as soon as safe alternatives become available, while du Pont has made the further commitment not to sell Halon 1301 for discharge testing after 1998); *id.* at 122 (noting that American Foodservice and Packaging Institute and three environmental public interest organizations have negotiated voluntary programs to phase out CFC-11 and CFC-12 from food packaging materials).

110. *Supra* note 102 and accompanying text.

111. See *Report of the First Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, U.N. Doc. UNEP/OzL.Pro.1/5 at 2, para. 4 (May 6, 1989) [hereinafter *Montreal Report*] (listing the 31 countries party to the Montreal Protocol); cf. ECONOMIC PANEL REPORT, *supra* note 106, at 9 (noting that outside of North America and Europe, few countries have ratified the Montreal Protocol).

eliminating—emissions of ozone layer-depleting chemicals. Unlike most other environmental agreements, the Montreal Protocol also contains economic incentives to encourage participation and compliance. It further provides for assessment of its efficacy and for readjustment.

The Vienna Convention is the central international mechanism for harmonizing national and international policies and strategies on ozone layer research.¹¹² The Montreal Protocol is the central international control instrument. It freezes CFC consumption as of January 1, 1990;¹¹³ requires 50% reductions in CFC production and consumption by mid-1998;¹¹⁴ and mandates a 1992 freeze on the consumption of halons.¹¹⁵ The parties have agreed to establish a working group to develop recommendations concerning the determination and consequences of noncompliance.¹¹⁶

The Montreal Protocol uses three kinds of provisions as economic incentives to encourage participation in and compliance with the Protocol's control regime: (1) entry into force requirements, (2) controls on trade with nonparties, and (3) research and technology transfer benefits. While the Protocol could have used other types of economic incentives,¹¹⁷ each of these kinds of provisions aims to make continued production of ozone-destroying CFCs less profitable, while boosting the market for safer substitutes.

Article 16 of the Montreal Protocol provides that eleven countries representing two-thirds of global consumption of controlled substances must ratify the Protocol before it may enter into force.¹¹⁸ Thus, the Protocol creates a cartel of consumers who control the consumption market, and who have agreed to reduce their consumption. Since most of the major consuming countries are also major producers, the consumption cartel also operates as a production cartel which has effec-

112. *Vienna Report*, *supra* note 23, at 9.

113. Montreal Protocol, *supra* note 7, art. 2. Consumption is defined as production plus imports minus exports. *Id.* art 1, para. 6. The controlled substances are listed in an annex. *Id.* Annex A.

114. *Id.* art. 2.

115. *Id.* Halons are chemically related to CFCs and are used principally in fire-fighting. ECONOMIC PANEL REPORT, *supra* note 106, at 19.

116. *Montreal Report*, *supra* note 111, at 14-15.

117. *Cf.* NORDISK MINISTERRAD, ECONOMIC INSTRUMENTS FOR REDUCING CFC EMISSIONS (Copenhagen, 1988) (available from the Nordic Council of Ministers, Store Strandstraede 18, 1255 Copenhagen, Denmark) (describing various types of economic incentives); *see also* ECONOMIC PANEL REPORT, *supra* note 106, at 74 (discussing fee schemes).

118. *See* Montreal Protocol, *supra* note 7, art. 16 (specifying requirements for entry into force). The current parties to the Protocol together account for about 80% of global consumption. ECONOMIC PANEL REPORT, *supra* note 106, at 9.

tively agreed to scale back production.¹¹⁹ Furthermore, as a result of the consumption cutback, this production cartel will face a shrinking market, with correspondingly lower prices and profits, discouraging continued production.

Article 4 of the Montreal Protocol gradually prohibits trade in controlled substances with nonparties.¹²⁰ Consequently, nonparty producing states will also face declining demand, with similar effects on prices, profits and production.

As a further result of Article 4's ban on trade with nonparties, nonparty consuming states will face a diminishing legal supply of controlled substances. This could give rise to black markets, were it not for the fact that the Vienna Convention specifically encourages research on the development of substitutes.¹²¹ The Montreal Protocol's consumption controls should accelerate these processes.¹²² Nonparty consumer states should therefore find increased availability of safe substitutes, which they can obtain legally from states party to the Protocol. The prices for these substitutes should become competitive as producers in party states shift to producing substitutes instead of producing controlled substances.

The Protocol promotes technology transfer to parties who are developing countries, thereby offering economic incentives for developing countries to join and comply.¹²³ The benefits of technology transfer should improve the ability of newly industrialized producing countries to penetrate the growing substitutes market. In addition, countries that are located in tropical climates, where demand for coolants is presuma-

119. See *supra* note 113 (noting that the Protocol defines consumption as production plus imports minus exports).

120. See Montreal Protocol, *supra* note 7, art. 4 (stating that within one year each party shall ban the import of controlled substances from any state not party to the Protocol). Currently, nonparties account for 20% of global consumption, mainly in newly industrialized and other developing countries. ECONOMIC PANEL REPORT, *supra* note 106, at 9. Concentration in the production industry should help prevent nonparties from starting up new production of controlled substances. *Id.* at 130 (noting that various countries and corporations representing a large portion of world CFC production have agreed not to sell or license CFC or halon manufacturing technology to nonparties).

121. Vienna Convention, *supra* note 7, art. 3, para. 1(f).

122. See ECONOMIC PANEL REPORT, *supra* note 106, at 122 (noting that phase-out policies create solid markets as customers seek new products and services that reduce and eliminate CFC and halon use); *id.* at 125-28 (stating that producer and consumer associations are cooperating in development of alternatives).

123. See Montreal Protocol, *supra* note 7, arts. 8, 10 (discussing technical assistance to developing countries); see also *id.* art. 5 (requiring parties to cooperate in promoting research, development, and information exchange). Developing countries are further given a "break" on implementing control measures, to allow additional time for technology transfers to take place. *Id.* art. 5.

bly high, should be interested in developing local production of substitutes in order to reduce dependence on expensive imports. The rewards of obtaining technology to develop local production, coupled with the difficulties of obtaining products from other nonparties, should encourage developing countries to join the protocol.

The Montreal Protocol specifically provides for readjustment of its controls.¹²⁴ The parties can undertake such readjustment on the basis of new information about the state of the ozone layer. In light of the preliminary reports of scientific, technical, economic, and environmental assessment panels convened under the Protocol, UNEP has already recommended that the parties amend the Protocol to phase out all protocol-controlled CFCs by 2005.¹²⁵

The parties to the Protocol could also re-evaluate the control measures based on the degree of compliance achieved. Compliance could be measured in terms of reductions in CFC emissions over time, compared against 1986 consumption.¹²⁶ In the short term, the relatively concentrated nature of the CFC industry, its susceptibility to the current climate of pro-environment political pressures, and the sense of personal commitment that many negotiators developed over the past ten years, increase the likelihood that compliance will continue with measurable results. Over time, however, if the Montreal Protocol increases competition in the substitutes industry, production may shift to smaller companies¹²⁷ less susceptible to these compliance pressures. Hopefully, the Protocol's economic incentives, as well as increased global awareness of the ozone layer problem, will continue to foster compliance with these much-needed control measures.

124. *Id.* art. 2, para. 9; *see id.* art. 6 (requiring panels to be convened on a regular basis to review scientific, environmental, technical, and economic information).

125. *See Note by the Executive Director of UNEP to the Open-Ended Working Group of the Parties to the Montreal Protocol to Integrate the Four Reports of the Assessment Panels into One Synthesis Report and to Make Recommendations on Amendments to the Montreal Protocol*, U.N. Doc. UNEP/Oz.Pro.Asmt/1/2, at 7 (July 17, 1989) (noting that a phase down of protocol-controlled CFC's by 95-98% by 2000 and complete phaseout by 2005 appears technically feasible); Helsinki Declaration on the Protection of the Ozone Layer, *reprinted in Montreal Report*, *supra* note 111, app. 1, and in 28 I.L.M. 1335 (1989) (declaring countries' intent to phase out production and consumption of CFCs and other currently known and potential ozone-depleting substances).

126. *See* Montreal Protocol, *supra* note 7, art. 2, paras. 1-6 (establishing 1986 as the base year for calculating consumption levels); *cf.* Commoner, *supra* note 5 (measuring efficacy of environmental controls in terms of emissions of controlled substances).

127. *See* Begley, *supra* note 95, at 23 (noting a small biotechnology company's development of a solvent to replace CFCs used to clean electronics equipment).

2. Environmentally Sound Management of Hazardous Wastes

a. History

The only global instrument controlling the transfrontier, nonoceanic dumping of hazardous wastes is the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention).¹²⁸ The Convention was adopted in 1989, but the UNEP's Governing Council had identified the control of hazardous wastes as a concern almost ten years earlier,¹²⁹ and had convened a working group to develop technical guidelines on hazardous waste management.¹³⁰

The 1982 Montevideo Programme directed UNEP to develop legal guidelines on hazardous waste management.¹³¹ Accordingly, UNEP convened a working group of legal and technical experts which negotiated the 1985 Cairo Guidelines and Principles for the Environmentally Sound Management and Disposal of Hazardous Wastes.¹³²

When the Cairo Guidelines came before the UNEP Governing Council in 1987, events¹³³ had focused the Council's attention on the narrow but high-profile question of international waste traffic. The Governing Council adopted the Cairo Guidelines and requested the UNEP Executive Director to convene a working group to prepare a global convention on control of transboundary movements of hazardous waste by early 1989.¹³⁴

Negotiations commenced almost immediately. While some of the delegates had participated in prior waste negotiations and were famil-

128. BASEL CONVENTION, *supra* note 27. At least two global conventions govern the disposal of hazardous waste at sea. See International Convention for the Prevention of Pollution from Ships, 1973, I.M.C.O. Doc. MP/CONF/WP.21/Add. 4 (1973), reprinted in 12 I.L.M. 1319 (1973), as modified by Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973, opened for signature June 1, 1978 (entered into force Oct. 2, 1983), I.M.C.O. Doc. TSPP/CONF/11 (1978), reprinted in 17 I.L.M. 546 (1978) (regulating the discharge of oil, noxious liquids and garbage from ships); International Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, done at London, Dec. 29, 1972, 26 U.S.T. 2403, T.I.A.S. No. 8165, 1046 U.N.T.S. 120 (entered into force Aug. 30, 1975) (controlling ocean dumping of wastes other than those incidental to the normal operation of ships).

129. Decision 8/8 of the Governing Council of UNEP (Apr. 29, 1980), reprinted in *UNEP GC Eighth Session Report*, *supra* note 26, at 119.

130. *Id.*; see *supra* note 87 (noting the WASTE POLICY GUIDELINES).

131. MONTEVIDEO PROGRAMME, *supra* note 17, at 4.

132. *Cairo Guidelines*, *supra* note 87.

133. See, e.g., Langone, *Waste: A Stinking Mess*, TIME, Jan. 2, 1989, at 44 (noting the voyage of the waste-carrying freighter *Pelicano*, which set sail in 1986 and wandered for more than two years in search of a dumpsite).

134. UNEP GC Decision 14/30, *supra* note 87.

iar with the issues, new players with new views and priorities soon began streaming in. They included previously uninvolved countries, international organizations, environmental groups, and trade associations for the manufacturing, inspection, transport, treatment and recycling industries. After eighteen months of nearly continuous negotiations, a diplomatic conference adopted the Basel Convention on March 2, 1989.¹³⁵

b. Legal Strategy

UNEP's approach to developing the Basel convention was of necessity more ramified than its ozone strategy. It has been said¹³⁶ that legal problems come in two types: artichokes and pretzels. To solve an artichoke problem, pluck out a few leaves, and the heart of the problem appears. Pretzel problems, however, twist and curl, leading from one issue to the next. If protection of the ozone layer was an artichoke problem, with controls on CFC consumption being the heart, hazardous waste was a pretzel by comparison. A swarm of legal, technical, and political issues, all to be dealt with in the abbreviated timetable which the GC had set for adopting the convention, increased the pressure on UNEP.

The 1981 technical guidelines¹³⁷ and 1985 Cairo Guidelines¹³⁸ provided UNEP with scientific and legal bases for its waste convention negotiating strategy. After the first few meetings, however, it became apparent that the major stumbling blocks would be political and economic.

The principal disputes were as follows. First, some countries and environmental groups called for a complete ban on all international waste shipments.¹³⁹ Arguably, a ban would force waste reduction at the source.¹⁴⁰ Other countries and organizations stated that the convention

135. BASEL CONVENTION, *supra* note 27. Thirty-five countries and the EC have signed the convention; of those, thirty-four signed immediately upon adoption. Greenhouse, *UN Conference Supports Curbs on Exporting of Hazardous Waste*, N.Y. Times, Mar. 23, 1989, at 1.

136. Lecture by Professor Lance Liebman, Harvard Law School, Dec. 1981.

137. WASTE POLICY GUIDELINES, *supra* note 87.

138. *Cairo Guidelines*, *supra* note 87.

139. See, e.g., *Report of the Second Session of the Ad Hoc Working Group of Legal and Technical Experts with a Mandate to Prepare a Global Convention on the Control of Transboundary Movements of Hazardous Wastes*, U.N. Doc. UNEP/WG.186/3, at 5, para. 3 (June 20, 1988) [hereinafter *Caracas Report*] (noting the statement of a Jamaican expert urging prohibition of waste shipments); *id.* at 9, para. 35 (noting that Greenpeace International supported a world-wide ban on all exports of hazardous waste); cf. Langone, *supra* note 133, at 47 (urging a global ban).

140. Cf. *Cairo Guidelines*, *supra* note 87 (stating that the first priority in hazard-

should not annul existing and pending bilateral and multilateral agreements on waste transport, recycling, and disposal.¹⁴¹ They pointed out that existing legal agreements governing intra-European and North American waste trade actually sanctioned most international hazardous waste shipments.¹⁴² Because much of this traffic has economic significance,¹⁴³ many countries opposed a flat ban.

Even if a ban on waste exports were rejected in favor of an international permit system, the problem of traffic in violation of that system remained. Fearing they would bear the brunt of such dumping,¹⁴⁴ developing countries, especially African nations, pressed the question of illegal traffic.¹⁴⁵ Arguing that a convention which did not deal with dis-

ous waste management is to reduce waste generation at the source).

141. See, e.g., *Report of the Fourth Session of the Ad Hoc Working Group of Legal and Technical Experts with a Mandate to Prepare a Global Convention on the Control of Transboundary Movements of Hazardous Wastes*, U.N. Doc. UNEP/WG.190/4, at 9-10, para. 47 (Feb. 13, 1989) [hereinafter *Luxembourg Report*] (noting the work of the Economic Commission for Europe (ECE) on a draft convention for civil liability for damage caused during carriage of dangerous goods); *id.* (noting the work of the International Maritime Organization (IMO) Legal Committee on a convention on liability and compensation with respect to carriage of hazardous substances at sea); see *id.* (noting the work of the U.N. Commission on International Trade Law (UNCITRAL) on a draft convention on transport terminal operator liability).

142. See, e.g., *Luxembourg Report*, *supra* note 141, at 5, para. 17 (noting the existence of an EEC directive on transboundary waste disposal in the European Community). Eighty percent of the 2.5 million metric tons of toxic waste exported from Europe each year is shipped to other Western European countries, with 15% shipped to Eastern Europe, and only 5% to developing countries. Greenhouse, *supra* note 135, at B11. Cf. 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, *done at La Paz, Baja California* (Aug. 14, 1983), T.I.A.S. No. 10827, *reprinted in* 22 I.L.M. 1025 (1983), Annex III: Agreement of Cooperation Between the United States of America and the United Mexican States Regarding the Transboundary Shipments of Hazardous Wastes and Hazardous Substances, *done at Washington, D.C.*, Nov. 12, 1986 (entered into force Jan. 29, 1987), *reprinted in* 26 I.L.M. 15 (1987) (providing for hazardous waste imports only with consent of the importing country).

143. For example, some Western European countries import wastes as raw materials for metals recovery. Cf. Declaration of Senegal, Côte d'Ivoire, Belgium et al. made at the time of the adoption of the Basel Conference Final Act, submitted Mar. 22, 1989, *reprinted in*, BASEL CONVENTION, *supra* note 27, at 24-25 (stating that "Belgium considers that this declaration [by which signatories, *inter alia*, "confirm their strong intention to dispose of wastes in the country of origin"] does not preclude the import into its territory of wastes defined as primary/secondary raw materials").

144. See Langone, *supra* note 133, at 47 (quoting a Nigerian diplomat that "[i]nternational dumping is the equivalent of declaring war on people of a country").

145. See *Caracas Report*, *supra* note 139, at 8-9, para. 34(e) (noting the concern of the Group of 77 on the need to prevent clandestine and illegal transboundary movements of hazardous wastes); *Resolution on Dumping of Nuclear and Industrial Wastes in Africa*, Council of Ministers of the Organization of African Unity (OAU), CM/Res. 1153 (XLVIII) (May 1988), *reprinted in* 28 I.L.M. 567 (1989) (declaring that the dumping of industrial wastes in Africa is a crime against Africa and the African peo-

posal would be environmentally insufficient, developing countries urged that exporting states be held responsible not only for transboundary movement, but also for disposal in cases of illegal traffic.¹⁴⁶ These countries sought state of export liability even where illegal traffic had occurred because of an importer or disposer's fraudulent activity.¹⁴⁷ This was, in effect, a warning that at least some importing states viewed importer corruption as beyond state control.

Developed countries opposed the disposal obligation, as it implicated doctrines of state responsibility.¹⁴⁸ The developed countries were especially reluctant to undertake such obligations given developing countries' stated position on corruption.¹⁴⁹ Moreover, rumors were circulating that some African governments had been quietly negotiating lucrative waste import deals.¹⁵⁰

A few developed countries arguably stood to benefit if exporting states were held responsible for disposal. In that situation, exporting states might require their exporters to obtain preshipment and/or pre-disposal verification of shipment contents, to reduce the likelihood of illegal substitution of more toxic waste.¹⁵¹ This could mean a windfall for preshipment inspection firms, most of whom are located in developed, Western European countries.¹⁵²

Perhaps the most politically charged issue was the conflict over the

ple, and requesting the OAU Secretary-General to raise the matter in the U.N. General Assembly).

146. See *Caracas Report*, *supra* note 139, at 9, para. 34(c) (noting Group of 77's position that transboundary movement must engage the responsibility of the state of export); Declaration of Ghana made at the time of the adoption of the Basel Conference Final Act, submitted Mar. 22, 1989, *reprinted in* BASEL CONVENTION, *supra* note 27, at 18 [hereinafter Declaration of Ghana] (declaring that the responsibility for disposal in cases of illegal traffic should lie with the state of export, or the exporter or generator).

147. See Declaration of Ghana, *supra* note 146, at 18 (declaring that the state of export or the exporter or generator should be held responsible for illegal traffic resulting from the conduct of the importer or disposer).

148. Cf. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES §§ 207, 711 (1987) (explaining the United States foreign relations law perspective on state responsibility).

149. See *supra* note 147 and accompanying text (discussing the Declaration of Ghana).

150. See, e.g., Greenhouse, *supra* note 135, at 1 (reporting on "[s]candals involving unscrupulous European waste-disposal companies that have bribed African officials to gain permission to dump waste at unsafe sites").

151. See *Caracas Report*, *supra* note 139, at 31 (proposing that a list of preshipment inspection firms be annexed to the convention). Such firms would be retained at the exporter's expense. *Id.*

152. See, e.g., 3 WARD'S BUSINESS DIRECTORY A-341, B-171, & C-156, (1985) (providing business data on one of the largest preshipment inspection firms, *Société Générale de Surveillance* of Switzerland).

right, championed by Portugal and many developing countries,¹⁵³ of a transit country to control hazardous waste traffic in its territorial sea and exclusive economic zone.¹⁵⁴ The United States, Japan, and others¹⁵⁵ argued that this right should not impede the navigational rights of ships.¹⁵⁶ This was a dispute of long standing and one which is likely to recur in future environmental negotiations.¹⁵⁷

To engineer consensus on these tangled issues in the short time frame which the GC had set, UNEP exhorted each of the disparate interest groups to raise its concerns and consolidate its position as soon as possible. The Executive Director held numerous formal and informal consultations with representatives from each constituency and pro-pounded myriad notes to the working group identifying issues and proposing solutions.¹⁵⁸ The constant influx of new participants, however, complicated this process.¹⁵⁹ Each shaky consensus seemed to fall apart at the next meeting.

153. See, e.g., Declaration of Portugal, *reprinted in* BASEL CONVENTION, *supra* note 27, at 31; Declaration of Colombia, *id.* at 26; Declaration of Mexico, *id.* at 30; Declaration of Uruguay, *id.* at 32; Declaration of Venezuela, *id.* at 34; *Caracas Report*, *supra* note 139, at 8-9 (documenting statements of experts from the Group of 77 advocating greater transit state control over shipments of hazardous waste).

154. See *United Nations Convention on the Law of the Sea, opened for signature* Dec. 10, 1982 (not yet in force), U.N. Doc. A/CONF.62/122 (1982), *reprinted in* 21 I.L.M. 1261 (1982) [hereinafter UNCLOS], arts. 2, 3, & 21-25 (defining rights of coastal states over territorial sea); *id.* arts. 55-58 & 73 (defining rights of coastal states over the 200-mile exclusive economic zone (EEZ)).

155. See, e.g., Declaration of Japan made at the time of the adoption of the Basel Conference Final Act, submitted Mar. 22, 1989, *reprinted in* Basel Convention, *supra* note 27, at 19; Declaration of the German Democratic Republic, *id.* at 35.

156. See UNCLOS, *supra* note 154, arts. 17-19 (defining right of innocent passage in territorial sea); *id.* arts. 58 & 87 (defining navigational rights in EEZ).

157. The conflict underscores the need to develop new conceptual frameworks for reconciling the competing concerns of political, economic, and environmental security. Cf. Mathews, *supra* note 1, at 162 (proposing an expansion of the definition of national security).

158. See, e.g., *Note by the Executive Director to the Second Session of the Ad Hoc Working Group of Legal and Technical Experts with the Mandate to Prepare a Global Convention on the Control of the Transboundary Movements of Hazardous Waste*, U.N. Doc. UNEP/WG.186/2 (June 1988) (addressing the issue of defining hazardous waste and the limited capability of developing countries to assess the hazardous nature of wastes); *Note by the Executive Director on Some Points of the Hazardous Wastes Convention Which Were not Resolved at the Fourth Session of the Ad Hoc Working Group*, U.N. Doc. UNEP/WG.191/2 (Feb. 10, 1989).

159. At each session new participants from governments, industry, and NGOs sought to open up previously agreed provisions and to make new proposals. Delegates who had participated at previous meetings were displeased at seeing their hard-won gains dismantled, while new participants felt frustrated, as if the old guard were trying to exclude them from the process.

c. Results

The Basel Convention, as finally adopted, covers not only hazardous wastes, but also municipal wastes, including ash from municipal incinerators.¹⁶⁰ It regulates not only transboundary movement, but also disposal.¹⁶¹

The Convention establishes a waste export notice and consent system to control transboundary traffic. An exporting state shall not permit a waste export to occur until it has notified the importing state, received written confirmation of the importing state's consent, and received the importing state's confirmation of the existence of a contract specifying environmentally sound management of the waste.¹⁶² Transit countries which are parties to the Convention shall be notified of proposed shipments.¹⁶³ In exercise of its sovereign rights over the area under its national jurisdiction, a transit state may control passage of ships carrying waste, as long as its actions do not affect the exercise of navigational rights under international law, and vice versa.¹⁶⁴

Parties shall not allow waste exports to countries which have legislation prohibiting imports, or where there is reason to believe waste will not be managed in an environmentally sound manner according to criteria to be decided at some future date.¹⁶⁵ Waste trade with nonparties

160. Compare UNEP GC Decision 14/30, *supra* note 87 (calling for a convention on control of transboundary movements of hazardous wastes) with the BASEL CONVENTION, *supra* note 27, arts. 1, 2, 4 & 9 and Annex II (covering not only hazardous, but also municipal wastes).

161. See BASEL CONVENTION, *supra* note 27, art. 1, paras. 2 & 4 (defining management as including "disposal"); *id.* art. 4, para. 2(b) (obligating parties to ensure the availability of adequate and environmentally sound disposal facilities).

162. BASEL CONVENTION, *supra* note 27, art. 6, annexes I-III; see also, Hackett, *An Assessment of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*, 5 AM. U.J. INT'L L. & POL'Y 291 (1990) (providing a detailed discussion of the Basel Convention).

163. BASEL CONVENTION, *supra* note 27, art. 4, para. 2e.

164. *Id.* art. 4, para. 12. The Convention states:

Nothing in this Convention shall affect in any way the sovereignty of States over their territorial sea established in accordance with international law, and the sovereign rights and the jurisdiction which States have in their exclusive economic zones and their continental shelves in accordance with international law, and the exercise by ships and aircraft of all States of navigational rights and freedoms as provided for in international law and as reflected in relevant international instruments.

Id.

The Basel Conference also adopted a resolution calling UNEP and the International Maritime Organization (IMO) to review the situation regarding transport of wastes by sea and recommend "any additional measures needed . . . to assist coastal States, flag States, and port States in fulfilling their responsibilities with respect to the protection of the marine environment." *Id.* resolution 7, at 13.

165. *Id.* art. 4, para. 2e.

is prohibited,¹⁶⁶ as are exports to Antarctica.¹⁶⁷ Shipments may occur under other bilateral, multilateral, or regional agreements, provided that those agreements stipulate provisions no less environmentally sound than the Basel Convention.¹⁶⁸

The Convention provides an extensive set of definitions of illegal traffic, including transboundary movement of wastes with consent obtained "through falsification, misrepresentation or fraud."¹⁶⁹ The exporting state must take the waste back if the illegal traffic results from the exporter's or generator's conduct.¹⁷⁰ If the illegal traffic results from conduct of the importer or disposer, the importing state shall ensure environmentally sound disposal.¹⁷¹ If responsibility cannot be assigned, the parties shall co-operate to ensure environmentally sound disposal.¹⁷² Any party which believes another party is in breach of the Convention may inform the secretariat,¹⁷³ which shall circulate to the parties concerned any information it has regarding illegal traffic.¹⁷⁴ UNEP presently serves as the interim secretariat.¹⁷⁵

UNEP surmounted many political obstacles in obtaining adoption of the Basel Convention. The convention, however, lacks economic incentives to encourage compliance, spur waste reduction, or combat the rumored corruption on both sides of north-south trade. In considering what economic incentives UNEP could have included in the Basel Convention, it is useful to compare the economic underpinnings of the Montreal Protocol.¹⁷⁶

First, the Montreal Protocol controls consumption of a valuable good (CFCs). Wastes, by contrast, often have negative value; that is why generators pay to get rid of them. Absent civil or criminal liability schemes, generators and others have an economic incentive to 'lose' wastes during transport in order to avoid disposal costs. It is this incentive to lose wastes that makes the waste trade particularly susceptible to corruption.

Second, UNEP was able to create a producer 'cartel' under the Montreal Protocol in part because CFC production is concentrated

166. *Id.* para. 5.

167. *Id.* para. 6.

168. *Id.* art. 11.

169. *Id.* art. 9, para. 1(c).

170. *Id.* para. 2.

171. *Id.* para. 3.

172. *Id.* para. 4.

173. *Id.* art. 19.

174. *Id.* art. 16, para. 1(h).

175. *Id.* para. 2.

176. *See supra* notes 107-27 and accompanying text (discussing the Montreal Protocol).

among a few large companies. Hazardous and municipal waste generators, by contrast, are vastly more numerous and diverse, ranging from households to multinational corporations. It would therefore be much more difficult to create a waste generator cartel.

Third, CFCs comprise a small class of molecules. Wastes, on the other hand, are highly heterogeneous.¹⁷⁷ They are therefore more difficult to characterize and keep track of in commerce, increasing the likelihood that they will be 'lost.' A cumbersome permit system like the Basel Convention's, with no economic incentives for compliance, may exacerbate the 'waste loss' problem.

Each of these aspects of waste economics, however, can be turned into a compliance incentive. Waste usually has negative value, but environmentally sound disposal sites are scarce and, thus, have positive value. Waste generators may be numerous, but relatively few countries import wastes, and these states could form an importers' cartel. The cartel could 'sell' a single valuable item—the right to import waste.

One alternative, then, for an international waste trade control system would be to establish a world market in tradable waste import rights. The amount of rights distributed on the world market would be fixed. An international entity (e.g., UNEP) could establish the initial amount of rights, calculated as a percentage of global waste exports in a designated base year.¹⁷⁸ The unit value of rights could be expressed in terms of a weighted measurement that takes account of waste volume, weight, and toxicity.¹⁷⁹

UNEP would distribute shares of the rights among prospective importing countries. Exporting countries would then have to purchase from the importing countries the right to import a given shipment of waste.¹⁸⁰ The world price of import rights would rise because world demand for waste disposal sites would be increasing while the supply of disposal rights under the system remained constant. Importing countries could use the proceeds from their sales of import rights to improve waste management domestically or for other purposes. Provisions to

177. Compare Montreal Protocol, *supra* note 7, Annex A (listing chemical formulae of eight controlled substances) with BASEL CONVENTION, *supra* note 27, Annexes I, II & III (listing 47 categories and 14 characteristics of wastes).

178. The rights would be created for waste having negative value in international trade. Where the waste has positive value, e.g., for recycling and metals recovery, market forces obviate the need for additional tradeable rights.

179. Such a system would require development of uniform measurement standards, a difficult but not impossible task, and one which could lead to better understanding of the scope of the global waste problem.

180. The net effect would be to monetize disposal sites in importing countries, presently an undervalued resource.

stimulate research and transfer of technology could also be included to enhance improvement of importing countries' technical capacities. Countries having prohibited imports could sell their rights to countries wishing to increase their share of the import market.

To spur source reduction, the parties could agree to reduce the pool of available disposal rights over a period of years. As the supply of disposal rights diminished, their value on the world market would increase, further favoring source reduction. Black marketeering would be discouraged, because the legal market for import rights would command the highest prices.

Such provisions could provide more economic incentive for compliance than those adopted at Basel. Additionally, such an approach could increase the measurability and transparency of the waste transport controls. The political climate of the Basel negotiations, however, made it difficult to propose a market-oriented approach. Thus, the Convention, bare of economic incentives, contains little to foster compliance or eliminate corruption in the waste trade.

3. *International Trade in Chemicals*

a. *History*

In May 1989, the UNEP Governing Council adopted the Amended London Guidelines for the Exchange of Information on Chemicals in International Trade.¹⁸¹ Under the guidelines, a country of export should not allow shipment of any dangerous chemical, i.e., one which is banned or severely restricted under any participating country's national legislation, without the importing country's prior informed consent (PIC).¹⁸² The Governing Council began looking at the problem of trade in dangerous chemicals in 1977, when it urged governments to ensure that chemicals unacceptable for domestic use were not exported without the knowledge and consent of the importing country.¹⁸³ The GC did not identify the subject as one for legal development, however, until 1982, when the Montevideo Programme recommended that UNEP develop guidelines¹⁸⁴ as a first step toward a global convention.¹⁸⁵

By 1985, a working group of legal and technical experts had developed the Provisional Notification Scheme for Banned and Severely Re-

181. *Supra* note 30 and accompanying text (discussing the Amended London Guidelines).

182. *Id.*

183. *See* UNEP GC Decision 85(V), *supra* note 69.

184. MONTEVIDEO PROGRAMME, *supra* note 17, at 6.

185. *Id.*

stricted Chemicals.¹⁸⁶ Under this scheme, each participating country was to designate a national authority to receive notifications of control actions, i.e., actions exporting countries take to ban or severely restrict chemicals domestically.¹⁸⁷ The national authority also was to receive notifications of export of such chemicals.¹⁸⁸

The scheme did not, however, require the exporting country to provide export notifications *before* an export occurred.¹⁸⁹ Furthermore, export notification would only occur for a given chemical if the exporting country had banned or severely restricted it. Exporting countries which had never regulated a chemical because they had no domestic demand for it and exporting countries with lax domestic regulation escaped the notification provisions.

In 1985 the Governing Council voted to reconstitute the working group and develop the provisional scheme into guidelines.¹⁹⁰ Some exporting countries, pressured by their chemical industries, refused to allow PIC in the resulting London Guidelines for the Exchange of Information on Chemicals in International Trade.¹⁹¹ Developing countries and NGOs, however, continued to press the issue. In 1987, the Governing Council directed that the London Guidelines be amended to incorporate PIC "and other modalities which could usefully supplement the Guidelines."¹⁹² Twelve years of opposition to PIC ended in 1989, when chemical exporting countries finally agreed to include PIC in the

186. *The Provisional Notification Scheme for Banned and Severely Restricted Chemicals*, U.N. Doc. UNEP/WG.112/5 (1985), reprinted in BANNED AND SEVERELY RESTRICTED CHEMICALS, UNEP GUIDELINES SERIES NO. 6, *supra* note 10.

187. *Id.* paras. 3 & 5.

188. *Id.* paras. 4 & 5.

189. *Id.* para. 6(b). The scheme stated:

[P]rovision of information regarding exports should take place at the time of the first export following the control action, and should recur in the case of any significant development of new information or condition surrounding the control action. It is the intention that, in so far as possible, *the information should be provided prior to export, but it is recognized that this may not always be possible, and that the procedures of the country of export should not be such as to delay or control the export.*

Id. (emphasis added)

190. UNEP GC Decision 13/18, *supra* note 49, at pt. III(B).

191. *London Guidelines for the Exchange of Information Chemicals International Trade*, U.N. Doc. UNEP/GC.14/17, Annex IV, reprinted in EXCHANGE OF INFORMATION ON CHEMICALS IN INTERNATIONAL TRADE, UNEP GUIDELINES SERIES NO. 10, *supra* note 10; see Decision 14/27 of the Governing Council of UNEP (June 17, 1987) [hereinafter UNEP GC Decision 14/27] (adopting the Guidelines), reprinted in *UNEP GC Fourteenth Session Report*, *supra* note 36, at 79. The anti-PIC group did not include the Netherlands, which had enacted a national PIC scheme for its chemical exports.

192. See UNEP GC Decision 14/27, *supra* note 191, at operative para. 3(a) (calling on UNEP to amend the guidelines to incorporate PIC).

Amended London Guidelines for Exchange of Information on Chemicals in International Trade.¹⁹³

b. Legal strategy

Early on in the development of the Provisional Notification Scheme,¹⁹⁴ UNEP identified the major interest groups and the technical, legal, and political issues surrounding chemicals trade. Developing countries, with NGO support, pressed for PIC as a means of preventing exporting countries from dumping unsafe and unwanted chemicals on markets ill equipped to handle them.¹⁹⁵ Exporting countries, with industry support, opposed PIC on the ground that obtaining consent prior to every shipment would generate too much paperwork. These states argued that the best way for countries to control unwanted imports was to develop national registration schemes.¹⁹⁶ Exporting countries and industry also took the position that PIC would run afoul of GATT. Technical experts expressed concern about how PIC would deal with different formulations of a given pesticide, some of which might be banned, while others were not.¹⁹⁷

UNEP took the position that PIC could be particularly useful for countries that had not yet developed national regulatory schemes.¹⁹⁸ PIC would not generate much paperwork if it simply asked each country to announce its position on importation of listed chemicals, instead of requiring the country to make a new PIC decision for each proposed shipment of chemicals.¹⁹⁹ Furthermore, PIC should not depend on the

193. *Amended London Guidelines, supra* note 30.

194. *See supra* notes 183-86 and accompanying text (discussing the development of the Provisional Notification Scheme).

195. *Cf. Amended London Guidelines, supra* note 30, at intro., para. 8 (stating that the goal of Guidelines is to help developing countries avoid serious and costly health and environmental mistakes due to ignorance of chemical risks).

196. *Cf. id.* para. 5 (stating that the Guidelines should assist states in developing national legislation).

197. *Cf. id.*, Annex II, para. 2 (calling for the establishment of an expert group to review the problems of acutely hazardous pesticide formulations). The situation is complex, because formulation of a particular pesticide may take place in a country of export, import, or elsewhere, while a large number of different formulations may be used. Additionally, the exporting country may ban or severely restrict some formulations while others are not restricted, and those that are not restricted may nevertheless pose a hazard under the local conditions of the country of import.

198. *Report of the Second Session of the Ad Hoc Working Group of Experts on Prior Informed Consent and Other Modalities to Supplement the London Guidelines for the Exchange of Information on Chemicals in International Trade*, U.N. Doc. UNEP/PIC.WG.2/4 at 2, para. 6 (New York, Feb. 16, 1989).

199. *Id.* at 2, para. 7 (advocating notification-linked rather than shipment-linked decision making).

vagary of whether the sending country had banned or severely restricted the chemical at home. Instead, a PIC system should take account of all countries' chemicals legislation.²⁰⁰ GATT posed no real problem, because Article XX(b) allows trade controls for health and environmental purposes as long as the controls are not applied in a discriminatory manner.²⁰¹

c. Results

The Amended London Guidelines for the Exchange of Information on Chemicals in International Trade phase in PIC gradually.²⁰² UNEP is to develop an alert list of chemicals that ten or more countries have banned or severely restricted for health or environmental reasons, as defined in the guidelines. UNEP is to circulate this list, together with technical guidance documents,²⁰³ to participating governments for their review and decision on importation of the listed chemicals.²⁰⁴

Countries should register their PIC decisions with UNEP. UNEP, in turn, will make the decisions available to all countries. As a next step, UNEP will review chemicals that five to nine countries have banned, and add to the alert list those chemicals which meet the guidelines definitions.²⁰⁵ An expert group will consider the problem of listing acutely hazardous pesticide formulations.²⁰⁶

It is the function of the designated national authority in each exporting country to ensure, within its authority, that exports do not occur contrary to the PIC decisions of importing countries.²⁰⁷ If an importing country fails to indicate its PIC decision on a particular chemical, the *status quo* with respect to importation of that chemical shall

200. *See id.* (supporting eventual introduction of PIC for each chemical when any country had banned or severely restricted it).

201. GATT, *supra* note 4, art. XX(b).

202. *Amended London Guidelines*, *supra* note 30, pt. I, paras. 1(g), 1(h) & 5; pt. II, para. 7; and pt. II, paras. 12.a.iv, 12.b.vii. & 12.c.iii.

203. *Id.*, Annex III. The guidance documents should include the reasons for the ban or severe restriction of the chemical, the chemical's environmental fate, recommended controls, and available alternatives, including integrated pest management and nonchemical alternatives. *Id.* The guidelines also call for provision of technical assistance and training to countries with less developed chemical regulatory programmes. *Id.* pt. III, para. 15.

204. *Id.* Annex II, para. 1.

205. *Id.* Countries taking additional control actions to ban or severely restrict chemicals should notify UNEP, which will disseminate the information to all participating countries. *Id.* Annex II, para. 1. This will permit participating countries to register their PIC decisions on those chemicals. *Id.*

206. *Id.* paras. 2, 3, & 4.

207. *Id.* pt. II, para. 12.c.iv.

continue.²⁰⁸

The Amended London Guidelines remain a "soft law" solution to the problem of trade in dangerous chemicals. Should the GC decide to proceed with a convention in this field,²⁰⁹ UNEP will have an opportunity to add compliance incentives and efficacy monitoring mechanisms to the PIC regime.

Only one country in the world, the United States, has a long established chemical export notification scheme. The United States experience indicates the need for additional incentives to boost compliance. Under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA),²¹⁰ the United States Environmental Protection Agency (EPA) must notify foreign governments when United States pesticide registrations are cancelled.²¹¹ Foreign buyers of unregistered pesticides must sign statements indicating that they understand that the products they are buying are not registered for use in the United States.²¹² Additionally, United States sellers must maintain records of the foreign buyer statements and provide copies of the statements to the EPA.²¹³

A recent General Accounting Office (GAO) investigation, however, found that EPA received copies of foreign buyer statements for only one quarter of United States unregistered pesticides sold overseas.²¹⁴ United States pesticide exports constitute one quarter of the world pes-

208. *Id.* para. 7.3.d (defining "status quo").

209. See UNEP GC Decision 15/30, *supra* note 30, at 70 (noting that the Governing Council has deferred the question of development of a chemicals convention until its sixteenth session).

210. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), 7 U.S.C. §§ 136a-y (1988). The Netherlands enacted a voluntary PIC scheme in 1986 and compliance experience to date has been positive. *Report of the Ad Hoc Working Group of Experts on Prior Informed Consent and Other Modalities to Supplement the London Guidelines for the Exchange of Information on Chemicals in International Trade* (Dakar, Sept. 19-23, 1988), U.N. Doc. UNEP/WG.188/5, para. 20 (Oct. 10, 1988); *Points for Consideration by the Ad Hoc Working Group of Experts on Prior Informed Consent and Other Modalities to Supplement the London Guidelines for the Exchange of Information on Chemicals in International Trade*, U.N. Doc. UNEP/WG.181/2, para. 6 (May 25, 1988).

211. FIFRA, 7 U.S.C. § 136o(b) (1988).

212. *Id.* § 136o(a)(2); 40 C.F.R. § 169.2(h)(3) (1988).

213. *Id.* (h)(1), (3)(i); EPA Policy Statement, 45 Fed. Reg. 50, 274 (1980); See Pesticide Export Policy Review and Labeling Requirements for Pesticides, Devices, and Pesticide Active Ingredients Intended for Export; Proposed Policy Statements, 55 Fed. Reg. 4956 (1990) (proposing to revise EPA's pesticide export policies, including, *inter alia*, revisions to bring U.S. activities into conformity with UNEP's PIC procedures).

214. General Accounting Office, Pesticides: Export of Unregistered Pesticides Is Not Adequately Monitored by EPA, GAO, RCED-89-128 (Apr. 1989). The report notes that pesticides in developing countries cause roughly one million human poisonings annually and pose a significant threat to wildlife. *Id.* See generally *EPA Found Lax on Poison Reports*, DEFENDERS, July/Aug. 1989, at 5 (reporting on GAO investigation of compliance monitoring under FIFRA).

ticide market.²¹⁵ Of the United States pesticides exported, one quarter are not registered for domestic sale.²¹⁶ The United States scheme thus appears to be driving trade in unregistered pesticides underground.

PIC might be more effective if it used economic incentives to channel trade away from unsafe chemicals. For example, in addition to providing an alert list of dangerous chemicals, PIC could utilize a 'clean list' of environmentally benign substitutes. Participating governments could nominate for inclusion on the clean list those products, methodologies, integrated pest management and intercropping techniques which they have found to be environmentally sound alternatives to alert list chemicals. Such an approach could stimulate competition to produce environmentally sound products and enhance transfer of information and technology. In addition, changes in market share of clean list and alert list products could, over time, provide a crude measure of the effectiveness of the PIC procedures.²¹⁷

III. UNEP'S PROSPECTS FOR FUTURE DEVELOPMENT OF INTERNATIONAL ENVIRONMENTAL CONVENTIONS: BIODIVERSITY AND GLOBAL CLIMATE CHANGE

The UNEP Governing Council has recently called for development of new international legal instruments on preservation of biological diversity²¹⁸ and global climate change.²¹⁹ In the field of biodiversity, the failure of existing legal instruments to take account of economic considerations led the Governing Council to direct UNEP to consider "the economic dimension, including, *inter alia*, the question of adequate machinery for financial transfers from those who benefit from the exploitation of biological diversity . . . to the owners and managers of biological resources."²²⁰ In the field of global climate change, the per-

215. *Id.*

216. *Id.* at 6. On occasion the EPA also fails to notify foreign governments that a United States manufacturer has voluntarily withdrawn a pesticide registration. *Id.*

217. A clean list could build on the work underway in many European countries to develop a competitive market in environmental friendly products. For example, CFC-free spray cans produced by some European companies bear a blue label with the words, *sans gaz considéré nuisible pour l'ozone*. Work on developing competitive markets in environmentally friendly products in the United States has only recently begun. See Rothenberg, *Advertising: New Agency Devoted to the Environment*, N.Y. Times, Feb. 22, 1990, at D22 (noting the establishment of what may be the first U.S. advertising agency for environmentally sensitive products and services, and reporting that the Wal-Mart retail chain has begun tagging products it believes to be environmentally harmless).

218. UNEP GC Decision 15/34, *supra* note 34.

219. UNEP GC Decision 15/36, *supra* note 24.

220. UNEP GC Decision 15/34, *supra* note 34, para. 4.

vasive nature of the control measures under consideration virtually mandates attention to economic implications.

The two principal existing conventions on biodiversity, the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora²²¹ and the 1979 Convention on Conservation of Migratory Species of Wild Animals,²²² establish permit systems in an effort to control trade in endangered species. Neither contains any economic incentives to foster compliance.

Under CITES, a state of export may issue an export permit for a specimen of a protected species only if the state's authorities are satisfied that the export will not be detrimental to the survival of that species, and if the authorities are satisfied that the specimen was not obtained in contravention of the laws of the exporting state.²²³ For the more seriously endangered species, an import certificate is also required.²²⁴

A large number of states participate in CITES,²²⁵ but membership is not broad enough to provide effective protection for many species. Because the convention fails to prohibit trade with nonparties,²²⁶ it inadvertently creates legal entrepôts of uncontrolled trafficking in endangered species. Unscrupulous ivory dealers, for example, ship poached elephant tusks to carving factories in nonparty states. The dealers can then legally re-export the carved material to countries that are CITES members but only prohibit import of raw, not worked, ivory. Traffic in poached ivory has decimated elephant herds, CITES notwithstanding.²²⁷

CMS follows the CITES model. Where CITES requires trade permits, CMS prohibits (with certain exceptions) the taking of the most endangered migratory species, and encourages habitat improvement and co-operative agreements to protect all listed species.²²⁸ Like

221. CITES, *supra* note 31.

222. CMS, *supra* note 32.

223. CITES, *supra* note 31, arts. 2-6 (specifying procedures governing issuance of export permits).

224. *Id.* arts. 3 & 4 (specifying that import permits are to be issued only if authorities in the state of imports have advised that the import would not serve purposes detrimental to the survival of the species).

225. See *Register of Treaties*, *supra* note 7, at 117-19 (stating that ninety-six states and the European Community participate in the CITES regime).

226. CITES, *supra* note 31, art. 10.

227. See *Trail of Shame*, *supra* note 3, at 35 & 38-39 (describing how CITES has often been circumvented). The recent (October 1989) listing of the elephant as a most endangered species under CITES, together with recently announced bans on ivory import by a number of countries, may ameliorate the situation.

228. CMS, *supra* note 32, arts. 3-5. CMS has a current membership of 27 states and the European Community. *Register of Treaties*, *supra* note 7, at 167-68.

CITES, however, CMS offers no economic incentives to encourage people who live in the vicinity of sensitive habitats to protect endangered species.

A number of national and international agencies and organizations have already done considerable work on developing mechanisms that preserve biodiversity while at the same time provide increased economic and social benefits to people who live in the vicinity of the biodiversity reserves.²²⁹ UNEP should build upon such work in developing its global convention on biodiversity and should include incentives to combat corruption that threatens species' survival.

In the area of global climate change, UNEP is working with WMO and other agencies to develop sound scientific targets and strategies for consideration in the context of a framework convention.²³⁰ The GC did not direct UNEP to develop control protocols for particular greenhouse gases.²³¹ In a sense, however, one such instrument already exists. Insofar as CFCs and halons not only deplete the ozone layer, but also contribute to the greenhouse effect,²³² the Montreal Protocol²³³ functions as a climate protection measure.

For other greenhouse and trace gases,²³⁴ consensus on control measures will be harder to obtain. CFC emissions arise from a narrow range of specialized products like aerosols, air conditioners, foam pack-

229. See, e.g., W. REID, *BANKROLLING SUCCESSSES: A PORTFOLIO OF SUSTAINABLE DEVELOPMENT PROJECTS* (Environmental Policy Institute and National Wildlife Federation 1988) (reviewing projects utilizing such tools).

230. See *supra* notes 24-25 and accompanying text (examining UNEP cooperation with the WMO).

231. See UNEP GC Decision 15/36, *supra* note 24.

232. See *Vienna Report*, *supra* note 23, at 1, para. 2 (noting that scientific research has confirmed the link between ozone depletion, climate change, and global warming); *Montreal Report*, *supra* note 111, at 6-7, para. 19 (noting statement of Dr. Robert Watson, Chief Scientist in the U.S. delegation, that CFCs and halons are greenhouse gases with high greenhouse warming potentials); see also N. ROSENBERG, *CLIMATE CHANGE: A PRIMER* 14 (Resources for the Future, Washington, D.C., 1984) (noting that CFC-catalyzed reduction of stratospheric ozone results in increased ultraviolet irradiation and consequent warming of the Earth's surface). The parties to the Vienna Convention and the Montreal Protocol agreed at their first meeting to undertake further work within the framework of the two instruments to ascertain the greenhouse gas potentials of the substances controlled under the protocol. *Vienna Report*, *supra* note 23, at 9; *Montreal Report*, *supra* note 111.

233. Montreal Protocol, *supra* note 7.

234. See N. ROSENBERG, *supra* note 232, at 14 (discussing greenhouse and trace gases). These include carbon dioxide, methane, nitrous oxides, tropospheric ozone, and carbon monoxide. *Id.*; JAMIESON, *MANAGING THE FUTURE: PUBLIC POLICY, SCIENTIFIC UNCERTAINTY, AND GLOBAL WARMING* 4 (1988) (Working paper available at Center for Values and Social Policy, Department of Philosophy, University of Colorado at Boulder) (listing greenhouse gases); see also Newell, Reichle, & Seiler, *Carbon Monoxide and the Burning Earth*, *Sci. Am.*, Oct. 1989, at 58-64 (discussing the role of carbon monoxide).

aging, and solvents for cleaning computer circuits. The other greenhouse gases, by contrast, come from activities which constitute the very fabric of daily life the world over.

Humans drive cars, burn fields and fossil fuels, clear forests, graze cattle, and grow rice. These are the kinds of quotidian activities that are probably contributing to the current buildup of greenhouse gases.²³⁵ They cannot be controlled by simple mandate, particularly an internationally unenforceable one. Efforts to control global climate change will need to incorporate economic incentives if they are to have any hope of success.

If and when climate changes occur, some nations will likely emerge as economic "winners" and others as economic "losers."²³⁶ Control efforts should therefore consider how the economic behavior of prospective winners and losers may change over time.²³⁷ The controls should build in flexibility to account for changing economic circumstances. Uncertainty about the nature, mechanisms, timing, and regional effects of global climate change heightens the need for flexible incentive systems and for efficacy monitoring mechanisms, so that controls can be readily adjusted in light of new scientific information.²³⁸

Marketable greenhouse gas emission rights and credits, traded through an international emissions credit bank, could provide a flexible and monitorable global system of economic incentives for controlling a range of greenhouse gas-generating activities.²³⁹ A central body could create the initial amount of rights, distribute a base amount to all countries, and deposit the remainder in the emissions credit bank. The amount of rights created, distributed and deposited would be calculated on the basis of best available scientific information, taking into account the needs of developing countries, in particular those (e.g. island states) that global climate changes are likely seriously and adversely to affect.

Public and private sector entities wishing to obtain additional emis-

235. See N. ROSENBERG, *supra* note 232, at 10; Newell, *supra* note 234, at 63-64 (discussing activities that contribute to greenhouse gases).

236. JAMIESON, *supra* note 234, at 13, citing Glantz, *Politics and the Air Around Us: International Policy Action on, Atmospheric Pollution by Trace Gases (CO₂/Trace Gases-Induced Global Warming)*, in SOCIETAL RESPONSES TO REGIONAL CLIMATE CHANGE: FORECASTING BY ANALOGY (1988).

237. See JAMIESON, *supra* note 234, at 14 (distinguishing between policy responses to a warmer world and policy responses to the possibility of transition to a warmer world).

238. See *id.* at 9, 14-15 (noting the scientific uncertainty of climate changes and effects).

239. See A. BLINDER, *supra* note 8, at 157-58 (noting that marketable pollution permits can provide greater flexibility and better performance monitoring than other pollution control instruments).

sions rights for polluting activities would have to purchase the rights from the bank, thus providing the bank with an initial source of capital. The bank could use this capital to finance loans to entities wishing to undertake pollution control and other off-setting activities such as re-forestation programs. Completion of such activities would entitle the entities to receive tradeable emission credits.

The central body responsible for creating the rights could establish initial prices for the rights. The bank could serve as the clearinghouse for the emissions trading market created. The central body could meet regularly to review the effectiveness of the system in light of new scientific information and world market activity.

Local branches of the bank could serve two key functions. First, they could encourage the kind of grass-roots participation that will be critical to the success of efforts to control greenhouse gas-generating activities. Second, they could, through the medium of electronic fund transfers, enable a truly international control effort to function efficiently and effectively.

Suppose, for example, that a village in a developing country seeks to introduce fuel-saving cookstoves. The village could borrow money from the local branch of the emissions credit bank to purchase the cookstoves. If the cookstove program is successful, the village would earn emissions credits. The villagers could then sell these credits on the world market, asking the bank to broker the transaction. If, for example, a power company in another country is seeking additional emissions rights to build a new plant, it could apply to its local branch of the emissions credit bank to buy the village's emissions credits. The bank could use the proceeds of the sale to pay off the villagers' cookstove loan, with any remaining profits going directly to the village. Such a proposal is admittedly ambitious. The challenge posed by global climate change, however, may demand ambitious solutions.

CONCLUSION

Since its inception, the United Nations Environment Programme has contributed greatly to the development of international environmental law. Its approach has been first to formulate scientific positions, then develop legal strategies, and in the process carefully build political support. An important component of this approach has been UNEP's negotiation of 'soft law' guidelines or principles as a prelude to the development of binding international law.

Historically, UNEP has negotiated legal instruments which seek to place direct controls on environmentally harmful activities. In the ab-

sence of any global entity capable of enforcing such controls, however, UNEP has begun to consider how to build into its agreements economic incentives that favor environmental compliance. UNEP has also begun to develop mechanisms for evaluating the effectiveness of environmental control regimes. UNEP's landmark 1987 Montreal Protocol on Substances that Deplete the Ozone Layer took an important first step in this direction. The 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, however, retreated to a strategy of direct controls. As UNEP's Governing Council has recently called for conventions on preservation of biological diversity and global climate change, and the Council will soon consider whether to proceed with a convention on international trade in dangerous chemicals, UNEP has the opportunity to include economic incentives and monitoring mechanisms in its further development of international environmental law.