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The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment

*James Cameron**
*Juli Abouchar***

In the Bergen process, there has been an important debate on the principle of precaution. I will add my strong support to those who say that we cannot delay action until all scientific facts are on our tables. We already know enough to start to act—and to act more forcefully. We know the time it takes from decision through implementation to practical effects. We know that it costs more to repair environmental damage than to prevent it. If we err in our decisions affecting the future of our children and our planet, let us err on the side of caution.

Gro Harlem Brundtland
Leader of the Opposition, Norway¹

We have sufficient scientific evidence to state that action is required. And where uncertainty still exists we must give the environment the benefit of the doubt.

Prime Minister Jan P. Syse
Leader, Conservative Party, Norway²

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¹ Keynote Speech, Opening Session, Conference on "Action for a Common Future," in Bergen, Norway (May 8, 1990).

² Opening Address, Opening Session, Conference on "Action for a Common Future," in Bergen, Norway (May 8, 1990).

INTRODUCTION

Briefly stated, the precautionary principle ensures that a substance or activity posing a threat to the environment is prevented from adversely affecting the environment, even if there is no conclusive scientific proof linking that particular substance or activity to environmental damage. The precautionary principle is a *guiding* principle. Its purpose is to encourage—perhaps even oblige—decisionmakers to consider the likely harmful effects of their activities on the environment before they pursue those activities.

Definitions vary widely, from the general notion that it is desirable to prevent pollution, to the requirement that polluters establish by some appropriate burden of proof that their activities are not releasing potentially eco-reactive substances into the environment and thereby causing damage. Proponents of the precautionary principle, as a new and progressive policy instrument, strive for a reversal of, or at the very least, a shift away from the current position whereby polluters can continue to discharge a wide variety of substances into the biosphere.³ For too long, humankind has acted in the short-term interests of progress and profit rather than the long-term health and welfare of the planet. This leads to the now familiar situation in which human society discovers that it has already caused extensive and perhaps irreversible damage to the environment and finds tremendous difficulty in coping with the consequences.

The precautionary principle focuses on the philosophical and spiritual relationship between humankind and the environment which sustains our physical existence. It marks a re-evaluation of the development path chosen by many societies since the great period of industrialization that began in England in the late eighteenth century. Pursued as a means to economic growth, industrial development has severely degraded the environment. Many of our environmental problems are so grave that within a generation, some ecosystems may no longer sustain future generations of species—including human beings, in some extreme cir-

³ Current environmental policies are largely typified by an assimilation approach. Johnston & MacGarvin, *Assimilating Lessons from the Past*, in GREENPEACE PAPER 28 at 2, 14 (1990) [hereinafter GREENPEACE PAPER 28]. Underlying this approach is the assumption that the environment can assimilate a certain amount of pollution without detrimental changes in the quality of ecosystems. Scientists, however, are now discovering that the complexity of ecosystems makes it impossible to predict exactly what effects a pollutant may have in regions geographically removed and in habitats seemingly unlinked.

cumstances such as drought, famine, and inundation. At the very least, such losses of species will impoverish the human experience which has been enriched by the immense diversity of the natural world.

When evaluating our responsibility in regard to the precautionary principle, we must recognize that human pollution of the environment is inevitable. The density of our numbers ensures that what may be droppings for an elephant is sewage sludge for an industrial society. Furthermore, we are able to justify a degree of industrial development and economic growth on many grounds in furtherance of the welfare and happiness of our society of human beings.

The task of lawmakers at the international, regional, national, and local levels is to enable economic progress and yet still protect and nurture a richly diverse and viable environment. The appeal of the precautionary principle is that it forces a debate about the types and quantities of human-induced harm to the environment that are acceptable. The legal process attached to the application of the principle institutionalizes caution: when there is sufficient evidence that an activity is likely to cause unacceptable harm to the environment, the precautionary principle requires that responsible public and private powerholders prevent or terminate the activity.

The international negotiations surrounding the climate change issue have brought the precautionary principle to the forefront of international legal discourse. Debate on this urgent global problem has focused on the development of effective policy in the face of scientific uncertainty as to the existence and scope of the problem,⁴ the extent of the danger which humankind can expect, and the capability of human response. Proponents of the precautionary principle argue that while scientific uncertainty is

⁴ A report of the Intergovernmental Panel on Climate Change (IPCC) states with certainty that concentrations of certain gases—that is, CO₂, NO₂, and CFCs—have increased, as a result of human activity, so as to transform the natural life-sustaining greenhouse effect into an accelerated warming of the planet. IPCC, WORKING GROUP I, POLICYMAKERS SUMMARY OF THE SCIENTIFIC ASSESSMENT OF CLIMATE CHANGE 5–12 (1990) [hereinafter IPCC REPORT] (the IPCC was created by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) to report on the phenomenon of climate change). Some are prepared to argue that even if this is accepted fact, it may not be classified as a problem. Wilfred Beckerman, Fellow of Balliol College, has been quoted as saying “nothing could be more absurd than the notion the human race is some tender, delicate species, that can survive only in a temperate band of three degrees. Many areas of the world would actually gain from global warming.” Independent, Oct. 27, 1990, at 14, col. 1.

inevitable, scientists and policymakers agree that evidence is sufficient to justify immediate action.⁵

Backed by political will, the precautionary principle is now emerging as a principle of law. Increased global consciousness of the political importance of protecting the environment has given rise to a developing consensus in favor of the principle. The opening speeches by the Norwegian Prime Minister and the leader of that country's opposition at the conference, Action for a Common Future (Bergen Conference),⁶ are but one example of this developing consensus.

This Article surveys the development of the precautionary principle as an emerging principle of law. Part I reviews the numerous references to the precautionary principle in international legal materials, tracing its interpretation and incorporation through national legislation and international declarations. Part II then analogizes to rules of space sovereignty and the formulation of instant custom and argues that the precautionary principle is emerging as a customary norm of international law. Part III presents a model legislative and administrative framework for incorporation and operation of the principle. This Article concludes that if present trends continue, the precautionary principle could be incorporated into international, regional, and national legislation and used as a comprehensive guide for environmental protection policy.

I. REFERENCES TO THE PRECAUTIONARY PRINCIPLE IN INTERNATIONAL LEGAL MATERIALS

A. *Examples of State Practice*

The 1987 Second International Conference on the Protection of the North Sea (Second North Sea Conference)⁷ introduced the

⁵ See generally, IPCC REPORT, *supra* note 4. See also *Scientists Urging Gas Emission Cuts*, N.Y. Times, Nov. 5, 1990, at A5, col. 1; GREENPEACE PAPER 28, *supra* note 3, at 14.

⁶ Conference on "Action for a Common Future," Bergen, Norway, May 8-16, 1990 [hereinafter Bergen Conference]. The Bergen Conference was organized by the Government of Norway in cooperation with the United Nations Economic Commission for Europe (ECE) as part of the follow-up to the report of the World Commission on Environment and Development, and as part of the preparations for the 1992 United Nations Conference on Environment and Development. *Bergen Conference, Bergen Ministerial Declaration on Sustainable Development in the ECE Region*, at ¶ 1 (May 16, 1990) [hereinafter *Bergen Declaration*]. Environment ministers and officials from thirty-four ECE countries attended the Bergen Conference.

⁷ Second International Conference on the Protection of the North Sea, London, Eng-

precautionary principle at the international ministerial level.⁸ The Second North Sea Conference Ministerial Declaration (London Declaration) explicitly referred to the principle three times:

. . . [I]n order to protect the North Sea from possibly damaging effects of the most dangerous substances, a *precautionary approach* is necessary which may require action to control inputs of such substances even before a causal link has been established by absolutely clear scientific evidence;

. . . [B]y combining . . . approaches based on emission standards and environmental quality objectives, a more *precautionary approach* to dangerous substances will be established;

[The parties] [t]herefore agree to . . . accept the principle of safeguarding the marine ecosystem of the North Sea by reducing polluting emissions of substances that are persistent, toxic and liable to bioaccumulate at source by the use of the best available technology and other appropriate measures. This applies especially when there is reason to assume that certain damage or harmful effects on the living resources of the sea are likely to be caused by such substances, *even where there is no scientific evidence to prove a causal link between emissions and effects* ("the principle of precautionary action").⁹

The London Declaration was a clear statement of the intent of the signatories to accept the precautionary principle as a guiding principle in the policy of environmental protection. Since the London Declaration, this principle has been interpreted and incorporated into the national legislation of the signatory states and into further international declarations.¹⁰

land, Nov. 24–25, 1987 [hereinafter Second North Sea Conference]. Ministers representing Belgium, Denmark, France, the Federal Republic of Germany (FRG), the Netherlands, Norway, Sweden, the United Kingdom (U.K.), and the European Economic Community (EEC) attended the conference. *Second International Conference on the Protection of the North Sea, Ministerial Declaration*, at 1 (London, Nov. 1987) [hereinafter *London Declaration*].

⁸ In fact, the precautionary principle had been developing prior to the Second North Sea Conference. Reports of the Great Lakes Science Advisory Board note that as early as 1984, scientists had begun to realize the limits of their database on the toxicological effects of chemicals being used in industry. See GREENPEACE PAPER 28, *supra* note 3, at 14. The scientists were of the opinion that such chemicals should be phased out of production unless an absence of harm could be shown.

⁹ *London Declaration*, *supra* note 7, at arts. VII, XV(ii), XVI(1) (emphasis added).

¹⁰ Participants in the Second North Sea Conference set a goal of achieving a "substantial reduction" in the total quantity of persistent, toxic, and bioaccumulative substances reaching the North Sea. *London Declaration*, *supra* note 7, at art. 2. In practice, however, these

1. Federal Republic of Germany

The Federal Republic of Germany has officially adopted the precautionary principle, but closer scrutiny reveals that the German Government has failed to implement it in practice. The German version of the London Declaration translates, "measures to reduce pollutants in the North Sea are necessary before definite scientific proof of a causal relationship has been furnished."¹¹ The practice and operative philosophy of the German Government, however, fall short of that advanced in the London Declaration.

In practice, the environmental philosophy of the German Government marries precaution to economic considerations in a principle known as the cooperation principle: a precautionary policy balanced against economic considerations.¹² The cooperation principle results in approaches to environmental challenges that are in fact less than precautionary. For example, the German Government has relied on end-of-pipe emission standards and has failed to implement the 50 percent reduction target for emissions as set out in the London Declaration.¹³

Aside from implementation of the London Declaration, the precautionary principle is contained in a number of laws that make use of the concept of *Vorsorgeprinzip*, which literally translates to "precautionary principle."¹⁴ According to the *Vorsorgeprinzip*, environmental protection policy should be preventative instead of reactive, employing avoidance and reduction of emissions technology at their source.¹⁵ The essence of the *Vorsorge*-

states have pursued strategies such as 50 percent reduction targets. While 50 percent reduction targets are preferable to an absence of emission standards, such an approach is still based on the assimilative capacity of the receiving environment rather than a true precautionary approach.

¹¹ Hanisch, *The Implementation of the Resolutions of the International North Sea Conferences in 1984 and 1987 at Bremen and London in the Federal Republic of Germany: Final Report, Part 2*, in THIRD NORTH SEA CONFERENCE: GREENPEACE PAPER 16 at 8 (1990) [hereinafter GREENPEACE PAPER 16].

¹² M. Klopfer, *UMWELTRECHT* 91-94 (1989); B. Bender & R. Sparwasser, *UMWELTRECHT* 8, ¶ 26 (1988).

¹³ GREENPEACE PAPER 16, *supra* note 11, at 40-41.

¹⁴ M. Klopfer, *supra* note 12, at 74-83. Examples include the Bundesimmissionschutzgesetz (Federal Emission Control Act), art. 5, § 1, no. 2; Atomgesetz (Nuclear Energy Act), art. 7, § 2, no. 3; and the Gesetz über die Umweltverträglichkeitsprüfung (Environmental Impact Assessment Act).

¹⁵ *Id.* at 74-75. The *Vorsorgeprinzip*, therefore, complies with the European Economic Community (EEC) mandate that EEC member states take preventative action to protect the environment. See Single European Act, Feb. 17, 1986, art. 130(r), O.J. L169/1 (1987) [hereinafter SEA].

prinzip is that "environmental dangers [harm to the environment] and damages *shall* be avoided as far as is possible."¹⁶ The use of "shall" instead of the more exigent "must" may explain why end-of-pipe technology is still practiced despite an avowed precautionary policy.

The German concept of *Vorsorgeprinzip* also includes the idea of *Gefahrenvorsorge*, or "precaution from danger."¹⁷ *Gefahrenvorsorge* offers greater environmental protection than the classical "prevention of damage." Traditionally prevention meant stopping activities which recognizably would cause damage.¹⁸ With *Gefahrenvorsorge*, action begins below the threshold level of danger and can be taken with respect to mere risks of danger. The purpose is to bring under environmental control those dangers that are distant spatially or temporally, possible dangers that have not been scientifically proven, and burdens on the environment that are not dangerous in themselves but are dangerous when combined with other pollutants.¹⁹

2. France

The French version of the London Declaration is not as clear. The original English declaration states that a precautionary approach is necessary "in order to protect the North Sea from possibly damaging effects of the most dangerous substances"²⁰ The French translation, however, states, "*pour protéger la Mer du Nord des effets des substances les plus dangereuse susceptibles d'être préjudiciables*"²¹ The phrase "*susceptible d'être préjudiciable*" roughly translates to "susceptible of causing harm." The French use of the word "susceptible" suggests that the French Government requires more certainty of proof regarding environmentally damaging effects.

The French Government evidently accepts the precautionary principle from a philosophical perspective, but nevertheless believes it impractical to ignore scientific opinions on the matter.²²

¹⁶ Kloepper, *supra* note 12, at 74 (emphasis added).

¹⁷ *Id.* at 75–79.

¹⁸ *Id.* at 75–76.

¹⁹ *Id.* at 77–79.

²⁰ *London Declaration*, *supra* note 7, at art. VII.

²¹ McGarvin, *Belgian Environmental Policy: National and International Perspectives—An Overview*, in *THIRD NORTH SEA CONFERENCE: GREENPEACE PAPER 11* at 23 (1990) [hereinafter *GREENPEACE PAPER 11*].

²² Lizop, *Third Conference on the North Sea: French Report*, in *THIRD NORTH SEA CONFERENCE: GREENPEACE PAPER 15* at 1 (1990); MacGarvin, *Implementation of the Second North Sea*

Given such a policy, it follows that the French translation was intended to require a higher level of scientific proof than envisioned in the original London Declaration. This distinction becomes less important as the scientific community increasingly accepts the legitimacy of a precautionary approach. French national policy may yet adopt a more precautionary approach as the French Government recognizes that international scientific and philosophical opinion are approaching agreement on the precautionary principle.

3. Belgium

Although the precautionary principle was adopted in the Belgian version of the London Declaration, the crucial word "possibly" was left out of the translation. While the original text referred to "possibly damaging effects," the Belgian translation merely refers to "damaging effects" and entirely avoids the word "possibly."²³ The result is a much less environmentally sound policy and hardly in the spirit of precaution. In this Belgian version, opponents of an activity must prove that its effects are damaging. In practice, when there is uncertainty as to whether a substance could cause damage, that substance would be allowed into the ecosystem. It is precisely this uncertainty that the precautionary principle in the London Declaration was designed to address.

4. The United Kingdom

The United Kingdom (U.K.) took a significant stance at the Bergen Conference in debate on the precautionary principle. At Bergen, British representatives were firmly in favor of including the principle in the Ministerial Declaration.²⁴ Endorsement of the London Declaration and the public support offered by the U.K. at the Second World Climate Conference²⁵ are important as po-

Conference: An Overview in THIRD NORTH SEA CONFERENCE: GREENPEACE PAPER 32 at 3 (1990) [hereinafter GREENPEACE PAPER 32].

²³ GREENPEACE PAPER 11, *supra* note 21, at 24; GREENPEACE PAPER 32, *supra* note 22, at 3.

²⁴ *Focus Report*, GLOBAL ENVTL. CHANGE REP., May 25, 1990, at 2.

²⁵ See Second World Climate Conference, Geneva, Switzerland, Oct. 29–Nov. 7, 1990. At the conference, former Prime Minister Margaret Thatcher asserted that a strong case already exists for taking immediate action: "The need for more research should not be an excuse for much needed action now." *Conference on Climate Singles Out U.S. as Waster of Energy*, N.Y. Times, Nov. 7, 1990, at A14, col. 3.

litical statements, and signal increasing British acceptance of the precautionary principle at the level of international negotiations.

In terms of domestic law, the British Government has acknowledged the existence of the precautionary principle but actually applies a "preventive principle."²⁶ Briefly stated, the aim of the preventive principle is to prevent damage to the environment once the damage is known or proved. Instead of adopting a precautionary approach, the British Government has adopted emission standards for only the most dangerous substances. The cornerstone of the British approach is a "Red List" of these substances.²⁷ The Red List, however, is missing two substances with levels of toxicity higher than most of the listed substances: carbon tetrachloride and chloroform.²⁸ The lack of controls on these substances and the conceptual basis of the Red List itself are entirely inconsistent with a precautionary approach.

5. Sweden, the Netherlands, Denmark and Norway

While Sweden, the Netherlands, Denmark, and Norway have strongly embraced the policy of a precautionary approach, they have not, for the most part, incorporated this principle into legislation. In Sweden, for example, cabinet ministers publicly call for a precautionary approach on matters relating to the environment.²⁹ The Government stresses that all sectors in Swedish society are responsible for ensuring that their activities comply with sound management of the environment and natural resources.³⁰ Nonetheless, the policy has yet to be incorporated into a legal framework.³¹ Similarly in Denmark and the Netherlands, the

²⁶ Address by A. Campbell, Central Unit on the Environment, Department of the Environment, U.K., Symposium on Application and Enforcement of Environmental Law, King's College, London (May 30, 1990).

²⁷ Churchill & Gibson, *The Implementation of the North Sea Declarations by the United Kingdom: An Assessment*, in THIRD NORTH SEA CONFERENCE: GREENPEACE PAPER 17 at 40 (1990). The Red List contains 23 substances, including mercury, cadmium, and DDT. *Id.* at 46.

²⁸ *Id.* at 44.

²⁹ Hågerhäll, *The Implementation by Sweden of the North Sea Declarations*, in THIRD NORTH SEA CONFERENCE: GREENPEACE PAPER 14 at 1 (1990) [hereinafter GREENPEACE PAPER 14].

³⁰ *Id.* Section 5 of Sweden's Environment Protection Act states that those who perform or intend to perform polluting activities must take protective action, tolerate restrictions on their activities, and observe other reasonable precautionary measures to prevent nuisances. GREENPEACE PAPER 32, *supra* note 22, at 3.

³¹ GREENPEACE PAPER 32, *supra* note 22, at 3; GREENPEACE PAPER 14, *supra* note 29, at 1.

precautionary principle has been adopted as policy, but is not specifically mentioned in legislation.³²

Both the Norwegian Prime Minister, Jan Syse, and the leader of the opposition party, Gro Harlem Brundtland, have expressed enthusiastic support for the precautionary principle. As the Prime Minister noted at the ministerial session of the Bergen Conference:

Lack of final scientific proof must not be taken as an excuse for postponing political decisions. Of course, I do not consider the sifting of evidence is a waste of time and resources. Our complex environment does not call for simplistic answers. But it is—and will remain—the view of my Government that the precautionary principle is of fundamental importance.³³

6. Canada

Certainly in international discourse, Canada defends the precautionary principle. Canada publicly supported inclusion of the precautionary principle in the Ministerial Declaration during debate at the Bergen Conference.³⁴ A recent Canadian Supreme Court decision, *R v. Crown Zellerbach Canada Ltd., AG Quebec, AG BC*,³⁵ has interesting repercussions for the precautionary principle and may count as national application of the principle. This case and the Canadian Ocean Dumping Control Act³⁶ indicate that at least with respect to marine dumping, Canadian environmental policy follows a precautionary approach.

³² GREENPEACE PAPER 32, *supra* note 22, at 3. For example, the precautionary principle is not included in the Dutch National Plan for the Environment. This trend led one commentator to conclude that "the Dutch government in practice does not attach much weight to the precautionary principle." The principle may be implicit, however, in Dutch laws such as the Surface Waters Pollution Law. *Id.*; Gerritzen-Rode, *The Implementation of the North Sea Declarations in the Netherlands*, in GREENPEACE INTERNATIONAL NORTH SEA RESEARCH REPORT 18 § 5.1–5.2 (1990).

³³ Address by Jan P. Syse, Ministerial Session, Bergen Conference, *supra* note 6 (May 14, 1990).

³⁴ *Focus Report*, *supra* note 24, at 2.

³⁵ 49 D.L.R.4th 161 (1988).

³⁶ Ocean Dumping Control Act, VI R.S.C. ch. O-2 (1985). The federal Ocean Dumping Control Act was enacted in fulfillment of Canada's obligations under the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters, Dec. 29, 1972, 26 U.S.T. 2403, T.I.A.S. No. 8165, 1046 U.N.T.S. 120. The Act creates a blanket prohibition against the dumping of any substance in the ocean, or in the internal marine waters of Canada.

In *Crown Zellerbach*, the respondent, a logging operator fined for dumping waste in marine waters considered internal to British Columbia, unsuccessfully challenged the Act as overbroad and beyond the federal government's constitutional power.³⁷ The federal government argued that dumping of any substance in provincial marine waters would have a direct effect on ocean pollution and was therefore a matter of national concern.³⁸ As such, it could be regulated best at the federal level.

Although it did not employ the word "precaution," the government's argument stressed similar language and ideas. The Canadian Government took a precautionary approach to both the territory and substances the Act controls. The Act is precautionary in the substances controlled because it provides penalties for the dumping of "any substance." There is no requirement that the substance be proven harmful to the environment.

An example of a precautionary approach in Canadian provincial environmental legislation can be found in the Ontario Water Resources Act,³⁹ in which merely the *threat* of damage—rather than *proof* of damage—as a result of a discharge into water is required for a conviction. Persons or municipalities can be convicted under the Act for discharging

any material of any kind into or in any well, lake, river, pond, spring, stream, reservoir or other water or watercourse or on any shore or bank thereof or into or in any place that may impair the quality of the water of any well, lake, river, pond, spring, stream, reservoir or other water or watercourse⁴⁰

The operative words "may impair" indicate a precautionary approach.

7. The United States

As demonstrated by its strong opposition to the precautionary principle at the Bergen Conference⁴¹ and again at the Second World Climate Conference,⁴² the United States has resisted em-

³⁷ *Crown Zellerbach*, 49 D.L.R.4th at 173.

³⁸ *Id.* at 174.

³⁹ Ontario Water Resources Act, ONT. REV. STAT. ch. 361 [1980].

⁴⁰ *Id.* at § 16(1).

⁴¹ *Focus Report*, *supra* note 24, at 2. See also *infra* note 73.

⁴² Second World Climate Conference, *supra* note 25. Ministers from more than 100 countries participated in the conference and debates on strategies to respond to global climate change. N.Y. Times, Nov. 11, 1990, at A5, col. 1. The overwhelming majority of

bracing the principle. Instead, U.S. policy toward climate change—and perhaps other environmental problems involving inherent uncertainty—is characterized by what has come to be known as the “no regrets” policy. According to Secretary of State James Baker, the “no regrets” policy means that the United States is “prepared to take actions that are fully justified in their own right [that is, make economic sense] and which have the added advantage of coping with greenhouse gases. They’re precisely the policies we will never have cause to regret.”⁴³

B. *Developments in EEC Law*

The Treaty of Rome, the constituent instrument of the EEC, now provides for preventative action by the Community for the purpose of environmental protection. Article 130r, introduced by the Single European Act (SEA), requires that actions by the Community relating to the environment be based on the principle that preventative action should be taken, that environmental damage should be rectified at source, and that polluters should pay for environmental damage.⁴⁴ In discussions with the Commission, it is apparent that the Commission understands “preventative action” as being different from “precautionary action.”⁴⁵ This is because precautionary action, properly understood, involves some shift in the burden of proof, towards those who would pollute, of demonstrating that pollution is not serious or likely to cause irreversible harm. “Preventative” is a shade less radical.

1. The Proposed Directive on Civil Liability for Damage Caused by Waste

Arguably, the proposed directive on civil liability for damage caused by waste⁴⁶ is likely to encourage precautionary measures in industry once adopted into law. The proposed directive pro-

countries were united in calling for immediate action. The United States, however, was strongly opposed to committing itself to cutbacks.

⁴³ Address by Secretary of State James Baker, National Governors Association, in Washington, D.C. (Feb. 26, 1990).

⁴⁴ SEA, *supra* note 15, at art. 130r(2).

⁴⁵ Conversation with Ludwig Krämer, Directorate General XI, in Brussels (Oct. 2, 1990).

⁴⁶ Proposal for a Council Directive on civil liability for damage caused by waste, COM (89) 282 final, O.J. C251/3 (1989) [hereinafter Proposed Waste Liability Directive].

vides for strict liability:⁴⁷ "The producer of waste shall be liable under civil law for the damage and injury to the environment caused by the waste, irrespective of fault on his part."⁴⁸ The mere fact that waste producers can be strictly liable for damage to the environment will encourage them to act cautiously when emitting waste. Indeed, any strict liability regime in environmental matters would fulfill the requirements of the precautionary principle, if conceived of as a guiding general principle.

2. Genetically Modified Organisms

In March 1990, the Council of the European Communities (Council) approved two directives on Genetically Modified Organisms (GMOs) designed to protect the environment and human beings against risks inherent in the use and dissemination of GMOs.⁴⁹ GMOs are variously used for pesticides, herbicides, deterioration of chemicals, and petroleum recovery, and pose substantial risks to the environment in their dissemination. To prevent any dangerous release of micro-organisms and to limit the damage caused by possible accidents, the Council approved a directive on the contained use of GMOs, which requires an environmental risk assessment prior to any use, and requires that competent authorities be kept informed.⁵⁰

⁴⁷ The Opinion of the Economic and Social Committee, however, asks that the proposed directive be revised and based, in approach, on the principles of preventative action, polluter pays, and rectification at source, as found in articles 130r and 130s of the SEA. Council Opinion 90/C 112/08, O.J. C112/23 (May 5, 1990).

⁴⁸ Proposed Waste Liability Directive, *supra* note 46, at art. 3. Article 2(1)(a) defines "producer" as "any natural or legal person whose occupational activities produce waste" and/or anyone who carries out operations "resulting in a change in nature and composition of this waste, until the moment when the damage or injury to the environment is caused." Article 2(2) extends this to include the concept of a deemed producer, which is a person who imports waste into the Community, or a person who has "actual control" of the waste at the time of the incident giving rise to damage or injury, or a person responsible for the installation where the waste was lawfully transferred. Liability cannot be limited by agreement and is joint and several. *Id.* at arts. 5, 8. Injury to the environment is defined as "a significant and persistent interference in the environment caused by a modification of the physical, chemical or biological conditions of water, soil and/or air . . ." *Id.* at art. 2(1)(d).

⁴⁹ Directive 90/219, Council Directive of 23 April 1990 on the contained use of genetically modified micro-organisms, O.J. L117/1 (1990) [hereinafter Directive 90/219]; Directive 90/220, Council Directive of 23 April 1990 on the deliberate release into the environment of genetically modified organisms, O.J. L117/15 (1990) [hereinafter Directive 90/220].

⁵⁰ Directive 90/219 at arts. 7-12.

Similarly, the Council's directive on the deliberate release of GMOs into the environment requires notification and express authorization for the dissemination of GMOs by industry and research centers on a case by case basis in order to better manage the particular risks associated with each deliberate release of GMOs into the environment.⁵¹ The directive emphasizes that all reasonable precautions in the dissemination of GMOs should be taken to prevent injury to individuals or the environment.⁵²

C. *International Declarations*

The precautionary principle has been adopted explicitly by the United Nations Environment Program (UNEP) Governing Council, accepted implicitly or explicitly by four international declarations on the dumping of waste at sea, reaffirmed by the North Sea Conference, and referred to in the preamble of the Montreal Protocol. Most significantly, the precautionary principle is emerging at the ministerial level as a principle upon which to base policies such as sustainable development. As is argued hereafter, incorporation of the principle into the Bergen Conference Ministerial Declaration indicates its emergence as customary international law.

1. UNEP Governing Council

The Fifteenth Session of the UNEP Governing Council recommended a precautionary approach to marine pollution including the dumping of waste at sea:

Recognizing that waiting for scientific proof regarding the impact of pollutants discharged into the marine environment may result in irreversible damage to the marine environment and in human suffering, . . . [the Governing Council] recommends that all the governments adopt the "principle of precautionary action" as the basis of their policy with regard to prevention and elimination of marine pollution⁵³

⁵¹ Directive 90/220 at arts. 1–12.

⁵² *Id.* Competent authorities in the member states are responsible for monitoring national compliance with the Directive. *Id.* at art. 11.

⁵³ *UNEP Governing Council Decision 15/27, Precautionary Approach to Marine Pollution, Including Waste-Dumping at Sea, reprinted in GREENPEACE PAPER 28, supra* note 3, at 23 [Annex 1].

2. Marine Dumping Conventions

The Paris Commission, established by the Convention for the Prevention of Marine Pollution from Land-Based Sources,⁵⁴ addressed the precautionary principle in its recommendation, On the Principle of Precautionary Action.⁵⁵ This recommendation incorporates the principle directly. The contracting parties

accept the principle of safeguarding the marine ecosystem of the Paris Convention area by reducing at source polluting emissions of substances that are persistent, toxic and liable to bioaccumulate by the use of best available technology and other appropriate measures. This applies especially when there is reason to assume that certain damage or harmful effects on the living resources of the sea are likely to be caused by such substances, even when there is no scientific evidence to prove a causal link between the emissions and effects ("the principle of precautionary action")⁵⁶

Similarly, in their October 1989 meeting, the contracting parties to the Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention)⁵⁷ agreed "to fully adopt the principle of precautionary approach regarding the prevention and elimination of contamination in the Mediterranean Sea area" ⁵⁸

The Oslo Commission (OSCOM), established by the Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft,⁵⁹ has implicitly adopted the precautionary principle. In a recent decision on the reduction and cessation of dumping industrial wastes at sea, the Commission decided that no dumping should occur "except for inert materials of natural origin" which would "cause no harm to the marine environment, [provided that] there be no practical alternatives on land."⁶⁰

⁵⁴ Feb. 21, 1974, 13 I.L.M. 352 (1974).

⁵⁵ *Paris Commission Recommendation 89/1, On the Principle of Precautionary Action* (June 22, 1989), reprinted in GREENPEACE PAPER 28, *supra* note 3, at 23-24.

⁵⁶ *Id.* at 24.

⁵⁷ Feb. 16, 1976, 15 I.L.M. 290 (1976). The Barcelona Convention is a regional agreement for the prevention of dumping in the Mediterranean Sea.

⁵⁸ *Sixth Meeting of the Contracting Parties to the Convention for the Protection of the Mediterranean Sea Against Pollution, Recommendations Approved by the Contracting Parties* (Oct. 1989), reprinted in GREENPEACE PAPER 28, *supra* note 3, at 25.

⁵⁹ Feb. 15, 1972, 11 I.L.M. 262 (1972).

⁶⁰ *OSCOM Decision 89/1, Reduction and Cessation of Dumping Industrial Wastes at Sea* (June 14, 1989), reprinted in GREENPEACE PAPER 28, *supra* note 3, at 24.

The final report of the Nordic Council's International Conference on the Pollution of the Seas⁶¹ underscores the need for substantial reduction of the pollution of the Northern Seas. The signatories took into account

the need for an effective precautionary approach, with that important principle intended to safeguard the marine ecosystem by, amongst other things, eliminating and preventing pollution emissions where there is reason to believe that damage or harmful effects are likely to be caused, even where there is inadequate or inconclusive scientific evidence to prove a causal link between emissions and effects.

This statement provides a clear articulation of the precautionary principle. The participants in the Nordic Council have committed themselves to implementation of the precautionary recommendations in the document—namely, a 50 percent reduction in emissions of toxic and bioaccumulating substances.

3. The Third North Sea Conference

The Third International Conference on the Protection of the North Sea (Third North Sea Conference) was held at The Hague in March, 1990.⁶² In the preamble of the Final Declaration of the Third North Sea Conference (Third Declaration),⁶³ the participants adopted the precautionary principle as a basis for their future work: "[The participants] will continue to apply the precautionary principle, that is to take action to avoid potentially damaging impacts of substances that are persistent, toxic and liable to bioaccumulate even where there is no scientific evidence to prove a causal link between emissions and effects."

Although the Third Declaration accepts the precautionary principle, it limits its application to those substances which are

⁶¹ *Nordic Council, International Conference on Pollution of the Seas, Final Document* (Oct. 1989), reprinted in GREENPEACE PAPER 28, *supra* note 3, at 27 [Annex 2]. Delegates from Belgium, Canada, Czechoslovakia, Denmark, the Federal Republic of Germany, Finland, the German Democratic Republic, Iceland, Ireland, the Netherlands, Norway, Poland, Sweden, Switzerland, the U.S.S.R., the U.K., the Faeroe Islands, Greenland, and Aland Island endorsed the Final Document.

⁶² Third International Conference on the Protection of the North Sea, The Hague, Mar. 7–8, 1990 (Third North Sea Conference). The original eight participants in the Second North Sea Conference were joined by Switzerland in reassessing the goals and time frames set out in the London Declaration.

⁶³ *Final Declaration of the Third International Conference on the Protection of the North Sea 4* (1990) [hereinafter *Third Declaration*].

persistent, toxic, and liable to bioaccumulate.⁶⁴ This limit appears to be a regression from the London Declaration. The Third Declaration, however, defines hazardous substances as “[groups of] substances that are persistent, toxic and liable to bioaccumulate.”⁶⁵ If the Third Declaration intends to be comprehensive and to cover any potentially hazardous substance, then that declaration is not a significant departure from the precautionary approach embraced in the London Declaration.⁶⁶

The Third Declaration includes a second endorsement of the precautionary principle. The signatories agreed “[to apply] the precautionary principle to coordinate initiatives to reduce nutrient inputs”⁶⁷ The signatories also reaffirmed and strengthened the London Declaration by agreeing to pursue their goals to reduce inputs of hazardous substances and nutrients, goals set previously in the London Declaration.⁶⁸

4. The Montreal Protocol

The Vienna Convention for the Protection of the Ozone Layer (Vienna Convention),⁶⁹ signed before conclusive evidence of the hole in the ozone layer was established, is in itself precautionary. The preamble of the Montreal Protocol to the Vienna Convention⁷⁰ endorses a precautionary approach: “[The parties are] determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it”⁷¹ In practice, however, the Montreal Protocol does not advance the precautionary principle. Although it prescribes controls for production and consumption of CFCs, the protocol fails to regulate all stages of the ozone-depleting substance’s life cycle—that is, production, emission, transportation, distribution, disposal, and destruction. In effect, the Mon-

⁶⁴ GREENPEACE PAPER 32, *supra* note 22, at 3–4. See also *Third Declaration*, *supra* note 63, at 5.

⁶⁵ *Third Declaration*, *supra* note 63, at 5 n.3.

⁶⁶ See *London Declaration*, *supra* note 7, at art. XVI.

⁶⁷ *Third Declaration*, *supra* note 63, at 7.

⁶⁸ *Id.* at 5, 10.

⁶⁹ Vienna Convention for the Protection of the Ozone Layer, May 2, 1985, 26 I.L.M. 1529 (1985).

⁷⁰ Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 26 I.L.M. 1550 (1987) [hereinafter *Montreal Protocol*].

⁷¹ Montreal Protocol, *supra* note 70, at 1551.

treational Protocol merely controls but does not eliminate or prevent the dangerous emissions of CFCs into the ecosystem.

5. The Bergen Conference

The Bergen Ministerial Declaration (Bergen Declaration) makes an important connection between the precautionary principle and sustainable development:

In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent, and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.⁷²

The importance of this ministerial level declaration should not be underestimated. The thirty-four ECE signatories to the Bergen Declaration now agree that the precautionary principle exists.⁷³ Although the principle still lacks a consistent definition, the signatories are already using the precautionary principle to guide policy. By linking the principle to development proposals, the signatories have given substance to the occasionally vague policy of sustainable development.⁷⁴ In applying a precautionary approach to development decisions, the burden of proof shifts to the proponent of development to show that an emission or construction will not seriously damage the environment. In cases where the environment is threatened, a lack of scientific evidence as to the probability of damage cannot be used as an argument to continue the damaging activity.

⁷² *Bergen Declaration*, *supra* note 6, at art. 7.

⁷³ In fact, the Bergen Declaration was a hard-won consensus, with debate starting before the conference had even begun. Prior to the conference, the United States had notified fifteen countries that it could not agree upon language in the proposed Declaration. A U.S. communique indicated that the United States "does not believe—as apparently some do—that we can lightly accept the . . . language in the expectation that it will be forgotten with the passage of time." *Focus Report*, *supra* note 24, at 2. Nevertheless, the precautionary principle did survive to the Final Declaration. No doubt this compromise was encouraged by the knowledge that the signatories could define the principle as they wish.

⁷⁴ *Bergen Declaration*, *supra* note 6, at arts. 13–15.

II. THE PRECAUTIONARY PRINCIPLE AS CUSTOMARY INTERNATIONAL LAW

Article 38 of the Statute of the International Court of Justice (ICJ) introduces and defines "international custom" as "evidence of a general practice accepted as law." Customary norms of international law arise when a practice among nations is extensive and virtually uniform, and is accompanied by a conviction that its actions are obligatory under international law.⁷⁵ Customary law by nature is dynamic: it evolves slowly or rapidly, becomes inducted and eventually, perhaps, codified. In new areas of law, state practice as evidence of *opinio juris* can quickly establish customary law. In such cases, customary law may develop instantaneously because of the lack of pre-existing customary law to be displaced, and the necessity to preserve a sense of order in the uncharted face of progress.⁷⁶

A. *An Example of Instant Custom: Space Sovereignty*

The rules governing space sovereignty, born of necessity in the face of a new global challenge, are considered prime examples of the formation of instant custom. The advent of space customary international law was the result of activities—and the uniformity of expectations that developed—during and following the International Geophysical Year (IGY), a period in which scientists predicted unusual sunspot activity and eclipses.⁷⁷ This unprecedented opportunity for extended scientific investigation prompted a coordination of efforts on the part of the global

⁷⁵ North Sea Continental Shelf Cases (W. Ger. v. Neth.; W. Ger. v. Den.), 1969 I.C.J. 3, 43–44.

⁷⁶ Cheng, *United Nations Resolutions on Outer Space: Instant International Customary Law*, 5 INDIAN J. INT'L L. 23 (1965). Instant custom arises because international law is a horizontal legal system in which states are both the lawmakers and the subjects of the legal system. In such a system, there are no centralized legislative and judicial authorities creating and interpreting narrow rules. The system is voluntarily entered and law is voluntarily assumed by states, rather than imposed from above. *Opinio juris generalis* arises instantly when a sufficient number of states believe they are bound by a law. Cheng, *Custom: The Future of General State Practice in a Divided World*, in JOHNSTON & MACDONALD, *THE STRUCTURE AND PROCESS OF INTERNATIONAL LAW* 513 (1983). See also Kunz, *The Nature of Customary International Law*, 47 AMERICAN J. INT'L L. 662, 666 (1953); Tunkin, *Remarks on the Juridical Nature of Customary Norms of International Law*, 49 CALIF. L. REV. 419 (1961) (length of time of state practice is not determinative of whether a rule exists).

⁷⁷ C. CHRISTOL, *THE INTERNATIONAL LAW OF OUTER SPACE* 134 (1962). The International Geophysical Year consisted of the period July 1, 1957 through Dec. 31, 1958.

community. Despite the prevailing climate of acute political acrimony between the two major space exploration states, the IGY saw a tremendous collaborative effort among scientists from sixty-six states in the launching of satellites.

Although there were only two major space exploration states, other interested states gave approval to the emerging customary law of mutual tolerance of non-aggressive and beneficial use of outer space. The rule that national sovereignty over air space does not extend into outer space is now customary international law, developed in large part from the thousands of documents and agreements produced during the IGY.⁷⁸

B. *Evidence of the Precautionary Principle Emerging as a Rule of Customary International Law*

Parallels can be drawn between the emergence of rules on space sovereignty and the present status of the precautionary principle. Nation states again face an urgent challenge, external to nations and to the international state system, yet affecting all and caused in some measure by all. Again, nongovernmental organizations have focused attention on the issues. As before, it is critical that action be taken immediately. There can be no doubt that the central reason cited for inaction in the face of this environmental challenge is uncertainty. Such uncertainty, however, only concerns the extent of the damage, not uncertainty as to whether human activities are causing serious damage, such as climate change. In the case of space sovereignty, the mutual recognition of some sixty-six states resulted in the acceptance of a customary rule. In another case, the twelve-mile territorial sea rule was recognized as customary international law when accepted by 102 nations.⁷⁹ In these instances, the development of customary international law was indicated by numbers. Certainly, endorsement of the principle by thirty-four nations at Bergen is an indication

⁷⁸ Although it is difficult to determine when the rule was accepted as custom, it appears to have been truly instantaneous. See C. CHRISTOL, *supra* note 77, at 134, citing Haley, *Recent Developments in Space Law and Metalaw—Work of International Groups*, 24 HARV. L. REC. 3 [Special Supp.] (Feb. 7, 1957); Haley, *Law and the Age of Space*, 5 ST. LOUIS UNIV. L.J. 1, 8 (1958).

⁷⁹ United Nations Convention on the Law of the Sea, U.N. Doc. A/CONF. 62/122 (1982), 21 I.L.M. 1261 (1982).

that the precautionary principle is emerging as a principle of customary international law.⁸⁰

III. DEFINITION AND STRUCTURE

A. *A Proposed Definition*

An ideal definition for the precautionary principle might combine two statements taken from the Bergen Declaration, which have survived to the draft Ministerial Declaration for the Second World Climate Conference.⁸¹ The language of the Bergen Declaration—and virtually identical language in the draft Ministerial Declaration—commits the signatories to “anticipate, prevent and attack the causes of environmental degradation,” and the parties have pledged that “where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.”⁸² A definition, therefore, must include the following key elements.

1. The Evidentiary Threshold

In this definition, threshold terms could include “threats of serious or irreversible damage.” Words or phrases such as “harm”

⁸⁰ Further evidence of emerging customary international law is found in the final declaration of the Second World Climate Conference, *supra* note 25. While the term “precautionary principle” did not appear in the final declaration, the language and meaning of the precautionary principle were retained from the Bergen Declaration. *Second World Climate Conference, Draft Ministerial Declaration*, at Preamble, art. 7 (Nov. 5, 1990) [hereinafter *Draft Declaration*]; *Bergen Declaration*, *supra* note 6, at art. 7. The language of the Draft Ministerial Declaration is quite similar to that of the Bergen Declaration, with the exception that the Draft Declaration now refers to “precautionary measures” rather than the “precautionary principle.” Although an earlier draft had referred to the “precautionary principle,” the term was changed under pressure of negotiations to arrive at a consensus. At the insistence of a coalition led by the United States, the U.S.S.R., and large oil producers such as Venezuela and Saudi Arabia, the term was replaced with “precautionary measures.” *Draft Declaration*, *supra*, at Preamble, art. 7; *N.Y. Times*, Nov. 5, 1990, at A5, col. 1. Many states, including a coalition led by those most threatened by the potentially disastrous effects of climate change, the small island states, entered formal reservations, which contain precautionary language stronger than that of the original draft.

Further evidence that the precautionary principle is emerging as a principle of customary international law is also found in the increasing references to the principle in ministerial declarations and regional, national, and local legislation. See *supra* notes 7–74 and accompanying text for examples of such emerging state practice.

⁸¹ See *Draft Ministerial Declaration*, *supra* note 80.

⁸² *Bergen Declaration*, *supra* note 6, at art. 7.

or "injury to the environment" could be used to weaken or strengthen the language of a legal document. The test of the precautionary principle in practice will be in its interpretation. In this respect we are comfortable not only in making the word "serious" a threshold but in the variety of interpretations which will attach to its use as a threshold. We must invest some trust in the possibility that the change of consciousness we have experienced in our scientific, philosophical, and political understanding of environmental problems will extend to the interpretative consciousness of lawyers and decisionmakers when they approach the meaning and effect of these threshold words.

2. The Burden of Proof

In this definition, the burden rests on the "proto-polluter"—which, in the case of an international declaration made by states, would be a polluting state acting on behalf of all those legal persons within its jurisdiction—to prove that an activity will not cause environmental degradation. This standard of proof is akin to the balance of probabilities in English civil law.

3. The Positive Obligation

This amounts to a duty to educate and inform decisionmakers at all levels in order that they may make every effort to terminate the causes of environmental degradation. It entails a duty of states to establish principles and procedures to ensure that activities within their jurisdiction and control have overcome the burden of establishing that they do not cause serious or irreversible harm to the environment. The duty is owed to international society as a whole and not simply to other states.⁸³

4. A Policy for Action in the Face of Uncertainty

This amounts to a liability for omissions. A failure to act, on grounds of scientific uncertainty, to prevent environmental deg-

⁸³ For example, the Declaration of The Hague, March 11, 1989, asserts "the duty of the community of nations vis-à-vis present and future generations to do all that can be done to preserve the quality of the atmosphere." *Hague Declaration on the Environment*, 28 I.L.M. 1308 (1989). The Declaration, which concerns the deterioration of the ozone layer, was produced by twenty-four countries at a two-day conference initiated by France, the Netherlands, and Norway.

radation would constitute a breach of international law under this definition.

B. *A Proposed Legislative and Administrative Framework*

The debate at Bergen focused on a precise definition of the precautionary principle. Although it is important for the global community to come to agreement upon a definition, it is more important to act now upon the principle. Action can take place in the absence of a common definition, although not as effectively in the absence of a supporting legislative and administrative framework.⁸⁴ Practical effect of the precautionary principle will depend as much upon procedure as the language of any definition.

If the precautionary principle is to be an effective legal instrument for protecting the environment, it must be conceived of as general in character but capable of devolving to the particular. Foremost, this necessitates an overarching principle of international law—a kind of constitutional principle for international society. That principle should inform the law of regional groupings of states such as the European Community. Similarly, national laws should provide general principles to inform subordinate and substantive legislation. Subordinate legislation in turn would create a regulatory regime within which decisions applying the precautionary principle could be routinely made.

The appropriateness of regulatory models involving the precautionary principle will vary among legal systems but nonetheless should be attached to the overarching international legal principle. Attachment may arise merely through awareness of the precautionary principle, or could arise through the principle of direct effect.⁸⁵ In EEC law, the principle of direct effect means that a citizen in a member state can invoke certain provisions of the Treaty of Rome as conferring direct rights upon which they may rely in proceedings in their national courts, even against

⁸⁴ In the Mediterranean, for example, a single definition does not exist for pollution: acceptable levels of pollution vary from country to country. Nonetheless, the countries bordering the sea have cooperated, through the Barcelona Convention and its associated regime, in a largely successful regional plan to clean up and protect the Mediterranean from further degradation. *See generally*, P. HAAS, *SAVING THE MEDITERRANEAN: THE POLITICS OF INTERNATIONAL ENVIRONMENTAL COOPERATION* (1990).

⁸⁵ *See* L. COLLINS, *EUROPEAN COMMUNITY LAW IN THE UNITED KINGDOM* 34–52 (1984).

their government or some other agency of government or body charged with carrying out a statutory duty.⁸⁶

Additionally, the European Court has extended the concept of direct effect to cover certain agreements between the Community and third party states. In *Hauptzollamt Mainz v. CA Kupferberg & CIE KG*,⁸⁷ the court reasoned that responsibility for such an agreement lies with the Community, not the member states.⁸⁸ The effect of an agreement should not be allowed to vary between member states; the agreement requires compliance by all member states. Thus in *Kupferberg*, the provisions in the agreement were sufficiently unconditional and precise and were capable of conferring individual rights which national courts must protect.

The development of EEC environmental law is a case study in how international environmental law can devolve through regional law to national law. The Community's action programmes on environmental protection originate with the 1972 Stockholm Declaration.⁸⁹ By degree, the Community has acquired greater and greater powers to regulate matters affecting the environment, culminating in the Single European Act in 1987, where for the first time Community environmental policy was placed on a treaty footing.⁹⁰ The Community has operated at the international level in signing international conventions and declarations on the environment, including those which make reference to the precautionary principle, and has concerned itself with the implementation of Community law in member state law and more recently in the enforcement of Community law against those member states that have failed to implement Community law.

It is in this way that the precautionary principle could be distributed throughout a far-reaching network of legal systems, though originating in and attached to an overarching principle of international law. A prospective framework could resemble the following:

⁸⁶ See, e.g., Case 152/84, *Marshall v. Southampton and South-West Hampshire Area Health Authority*, [1986] E.C.R. 723, 1 C.M.L.R. 688; Case 222/84, *Johnson v. Chief Constable of the Royal Ulster Constabulary*, [1986] E.C.R. 1651, 3 C.M.L.R. 240; Case C/188/89, *Foster v. British Gas*, [1990] E.C.R. —, 2 C.M.L.R. 833.

⁸⁷ Case 104/81, [1982] E.C.R. 3641.

⁸⁸ *Id.* at 3662; L. COLLINS, *supra* note 85, at 51.

⁸⁹ *Stockholm Declaration on the Human Environment*, in *Report of the United Nations Conference on the Human Environment*, U.N. Doc. A/CONF. 48/14 (1972), 11 I.L.M. 1416 (1972). Representatives from 113 states attended the Conference in Stockholm, Sweden, adopting the Declaration and an Action Plan for environmental action at the international level.

⁹⁰ SEA, *supra* note 15, at arts. 130r, 130s, 130t.

Constitutional Principle

* * *

Framework Law

* * *

Substantive Laws [Preamble and Text] on:
 Planning—Energy—Waste—Air—Water—Flora and Fauna

* * *

Administrative System [Quasi-judicial and/or Inquisitorial]
 Congressional Hearings—Public Inquiries
 Environmental Impact Assessment

* * *

Legal System

Judicial Review—Citizen Suits—Public Authority Action

Regulatory Regimes

Strict and Unlimited Liability—Parallel Civil and State
 Liability Regimes—Joint and Several Liability—Financial
 and Fiscal Incentives for Clean Production and Other

Precautionary Actions

* * *

Precautionary Remedies

Injunctions—Declarations of Law—Mandamus

* * *

Monitoring and Enforcement Agencies
 Linked National, Regional, and International Agencies
 Expert Secretariat

* * *

Access to Information on the Environment

* * *

Corporate/Industrial Environmental Policy
 Safety Plans—Operating Procedures—Management Manuals
 Corporate Ethic

This structure could be employed in the international, regional, and domestic contexts. In the language of the ICJ, the precautionary principle as a constitutional principle could come to be understood as a general principle of law. The framework for the law would be an instrument equivalent to a United Nations General Assembly resolution such as the 1970 Declaration on Principles of International Law.⁹¹ The substantive law would be derived from treaties and custom in each subject area. Administrative structures could exist within the institutional structure of a convention, for example, the Convention on International Trade in Endangered Species of Wild Fauna and Flora

⁹¹ See 1970 Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among States, G.A. Res. 2625, 25 U.N. GAOR Supp. (No. 28) at 121, U.N. Doc. A/8028 (1970).

(CITES)⁹² or the International Convention for the Regulation of Whaling with Schedule of Whaling Regulations,⁹³ or specialized United Nations agencies, such as the Human Rights Commission or the Economic and Social Committee, that commission reports and assess them in committee, and prepare and supervise voting on resolutions. These processes, administrative and judicial, must be open to nongovernmental and independent expert participation: the procedure of the international legal system can and should be made more accessible.

Present trends indicate an internationalization of environmental quality control mechanisms. For example, while monitoring and inspection agencies are already a feature of member state legal systems,⁹⁴ the EEC has now created an environmental agency⁹⁵ responsible for gathering information, which ultimately may acquire enforcement powers.⁹⁶ Arguments have been made for the creation of similar international agencies to monitor compliance with treaties such as the Montreal Protocol.⁹⁷ Finally, the opportunity exists to create an international environmental im-

⁹² Mar. 3, 1973, 27 U.S.T. 1087, T.I.A.S. No. 8249, 993 U.N.T.S. 243.

⁹³ Dec. 2, 1946, G2. Stat. 1716, T.I.A.S. No. 1849, 161 U.N.T.S. 72.

⁹⁴ E.g., Her Majesty's Inspectorate of Pollution (HMIP).

⁹⁵ Regulation 1210/90, Council Regulation of May 1990 on the establishment of the European Environment Agency and the European environment information and observation network, O.J. L120/1 (1990) [hereinafter Regulation 1210/90]. Article 1(2) sets out the purposes of the Agency. To achieve the aims of environmental protection and improvement laid down by the SEA and by successive action programmes on the environment, the objective of the Agency is to provide the Community and the member states with:

objective, reliable and comparable information at the European level enabling them to take the requisite measures to protect the environment, to assess the results of such measures and to ensure that the public is properly informed about the state of the environment

⁹⁶ Presently, the Agency has no enforcement powers. See Regulation 1210/90, *supra* note 95. The European Parliament made no secret of the fact that it wishes the Agency to have enforcement powers. Perhaps a compromise position would be to increase the enforcement powers of the Commission and establish very clear lines of communications between the Agency and the Commission. The Agency could thereby gather evidence for Commission actions against those member states in breach of their obligations. Furthermore, the Agency is going to be subject to the proposed directive on freedom of access to information on the environment, which will allow the public to gather information as evidence for the purposes of judicial review and other legal proceedings. See Proposal for a Council Directive on the freedom of access to information on the environment COM (90) 91 final, O.J. C102/6 (1990).

⁹⁷ The ministers at the Second Meeting of the Parties to the Montreal Protocol in London agreed that a Secretariat would be established in Montreal. *Report of the Second Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, U.N. Doc. UNEP/OzL.Pro.2/3 (1990).

pact assessment and monitoring body to oversee operations of multinational and transnational corporations. Many models now exist for environmental impact assessment (EIA) regimes.⁹⁸ The EEC EIA is one example of a regime that covers transborder effects.⁹⁹

CONCLUSION

The past two years have seen a change in discourse on approaches to environmental protection policy. The former "solution to pollution is dilution" or the assimilation approach is being reconsidered. Precautionary strategies such as clean production, cradle to grave care of hazardous substances, environmental impact assessments, and best available technology are the new buzzwords of the environmental protection field. With respect to global warming, both scientists and legislators agree that some precautionary measures can and should be taken, at the very least because they are intrinsically beneficial to the global environment. On the international plane, nations have accepted the precautionary principle as a basis for ocean dumping and sustainable development policies, an indication that the precautionary principle is emerging as customary international law.

Planning, industrial emissions, conservation of natural resources, and disposal of hazardous substances are areas which would benefit from a more precautionary approach. If present trends continue, the precautionary principle could become *the* fundamental principle of environmental protection policy and law at the international, regional, and local levels.

⁹⁸ The decision of the UNEP Governing Council on Environmental Impact Assessment (EIA) provides an excellent definition in its preamble:

EIA means an examination, analysis and assessment of planned activities with a view to ensuring environmentally sound and sustainable development. EIA goals and principles . . . are necessarily general in nature and may be further refined when fulfilling EIA tasks at the national, regional and international levels.

UNEP Governing Council Dec. 14/25, Goals and Principles of Environmental Impact Assessment, U.N. Doc. UNEP/GC.14/17 (1987).

⁹⁹ See Directive 85/337, Council Directive of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, O.J. L175/40 (1985).