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The Precautionary Principle: Development of an International Standard

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STUDENT NOTE

THE PRECAUTIONARY PRINCIPLE: DEVELOPMENT OF AN INTERNATIONAL STANDARD

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INTRODUCTION

This Note characterizes and evaluates the current status of the precautionary principle in international law and suggests how it could be more effectively incorporated into bodies of law such as trade law. Much of the literature focuses on whether the principle is a legal rule. This Note shows that precaution need not necessarily fit into the traditional categories of international legal sources[1] but may derive its legal force from being interpreted as a standard. While the theme—and thesis—of this Note will strike some as provocative, it will appear as an understatement to others, thereby reflecting the ongoing controversy about the role and status of the precautionary principle in international law.

Having its origin with the rise of environmentalism in Germany in the 1970s,[2] the precautionary principle was exported to the United States in the 1980s before it became an element of the European Community's environmental policy in the 1990s.[3] At the same time, the principle was incorporated into numerous international conventions and declarations, not limited to environmental law.[4] Despite this thirty year history, defining the precautionary principle remains problematic (as will be further discussed), with the Rio Declaration providing the most commonly stated definition: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. *Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*"[5] As this definition indicates, although significant scientific advances have been made, science is, as yet, incapa-

1. As described in the STATUTE OF THE INTERNATIONAL COURT OF JUSTICE art. 38(1) [hereinafter ICJ STATUTE].

2. François Ewald finds the philosophical origin of the principle in HANS JONAS, THE IMPERATIVE OF RESPONSIBILITY (1984), which became a landmark of contemporary ecological awareness. The thesis is that men now have the capacity to produce effects on the environment that cannot be anticipated with certainty. Having no master other than himself, mankind therefore has the responsibility to manage this infinite capacity. According to Ewald, there is a need to assign responsibility today for potential damages in a distant future. Precaution introduces a shift from a logic of compensation (for an actual or a past damage) to a decisionmaking framework that would avoid the occurrence of irreversible damages. François Ewald, *The Return of the Crafty Genius: An Outline of a Philosophy of Precaution*, 6 CONN. INS. L.J. 47, 70–77 (1999).

3. TREATY OF AMSTERDAM AMENDING THE TREATY ON EUROPEAN UNION, THE TREATIES ESTABLISHING THE EUROPEAN COMMUNITIES AND CERTAIN RELATED ACTS, Oct. 2, 1997, art. 174, O.J. (C 340) 1 (1997) [hereinafter E.C. TREATY] (formerly article 130 R in the Treaty on European Union).

4. *See* Gregory D. Fullem, Note, *The Precautionary Principle: Environmental Protection in the Face of Scientific Uncertainty*, 31 WILLAMETTE L. REV. 495 (1995) (providing a more extensive historical background).

5. Rio Declaration on Environment and Development, Principle 15, June 13, 1992, 31 I.L.M. 874, 879 [hereinafter Rio Declaration] (emphasis added).

ble of addressing ever-growing global threats to human health and the environment. The precautionary principle is intended to take into account these limits of science in addressing grave or irreversible risks. More importantly, however, it addresses the temptation for decision makers to rely on scientific expertise in order to avoid taking responsibility for their policies, requiring experts to recognize the imperfection of their science and placing the burden on policymakers to decide what level of risk is acceptable.

The precautionary principle applies when (1) a situation (use of a substance, or behavior, for example) exists, (2) which may threaten the environment or human health in a grave or irreversible way, and (3) there is a serious risk that the threat will materialize. Implicit in this setting is the scientific uncertainty about the nature and extent of the threat, or uncertainty as to the realization of the risk into a major harm. The issue is to determine the legal implications of the principle. What level of risk should trigger the implementation of the principle? Which costs should be offset, as against the environmental damage? Is the principle a procedural obligation, or does it carry an obligation to attain a certain result in terms of environmental protection? At first sight, it seems that no two formulations of the principle have the same perspective. Notwithstanding these various trends, the most recent jurisprudence indicates a move toward the recognition of the principle as a procedural standard. This will be examined further in Part II.

Science can be thought of as relatively uniform, whereas the political legitimacy of a certain risk level is contingent upon the societal context.[6]

6. Sheila Jasanoff has carried out comparative studies of risk management in Europe and the United States, as well as in certain international organizations such as the International Agency for Research on Cancer (I.A.R.C.). She identifies three categories of states in relation to identification processes of carcinogenic substances. SHEILA JASANOFF, RISK MANAGEMENT AND POLITICAL CULTURE 80 (1986). A first group, including Germany and the I.A.R.C., delegates most of the decisionmaking to experts, even in the case of scientific uncertainty. The scientists are called upon to propose solutions that the political leaders endorse, relying on the expertise available. A second group, including Canada and the United Kingdom, has a more cooperative approach, where the state administration and the experts determine the classification of potentially harmful products. The uncertainties are usually left out of the public debate. The United States is an example of the third model, where political decisionmakers make the ultimate call in the face of scientific uncertainties, after consulting with the administrative agencies. The public debate has a more important role, and tends to focus more on the scientific questions at stake, sometimes making it more difficult to take a quick action. In a subsequent article, Jasanoff focuses on technological risk. She stresses the American approach as open, public, confrontational, and costly, as opposed to a more secret, consensual, and cost-conscious European attitude. The United States favors a quantitative analysis of risk and seeks a "no need for action" risk level, whereas the Europeans prefer qualitative evaluations of the risks and of the harmfulness of a substance. Jasanoff notes that these diverging perspectives on political decisionmaking and risk management do not necessarily translate into different policies in the end, but the processes are fundamentally dissimilar. Sheila Jasanoff, *American Exceptionalism and the Political Acknowledgement of Risk*, 119 DAEDALUS 61, 63–78 (1990).

Science can estimate a risk level within a certain range of error but cannot tell us what level of risk is socially acceptable. The danger is to invoke the precautionary principle as a ready-made justification when scientific evidence is not conclusive, and decision makers want to make a decision without carefully weighing the interests at stake. The opponents of the precautionary principle often warn about the pitfalls of the principle, such as the chilling effect it might have on the development of new—and therefore possibly risky—technology, or the abusive use of the principle by States wanting to block imports from other States. These dangers are real and call for a close delineation of the principle.

Traditional divisions of public international law sources are custom and treaties. More recently, soft law emerged as a *sui generis* phenomenon, not carrying binding obligations, but providing an indicator of the law-in-making that has a stronger value than mere political declarations or diplomatic negotiations. This Note examines the precautionary principle simply as a *standard*; yet another nontraditional category of international law. Joel Trachtman characterizes a standard as the means to establish "general guidance to both the person governed and the person charged with applying the law, but does not, in advance, specify in precise detail the conduct required or proscribed."[7] Standards are used extensively in the domestic law of the United States (references to the "reasonable person" in contracts law is an example) and the growing diversity of norms and actors in the international era may well call for the use of such standards. It is in this sense that the term "standard" will be used here.

Part I of this Note examines the different formulations of the precautionary principle and its relation with other norms of environmental law, showing how the principle can be viewed as a standard of international law. Part II focuses on the doctrinal debate about the legal value of the principle. The different schools of thought suggest three trends: some deny any legal value to the principle, others view it as an established principle of customary law, while an intermediate position considers it as a legal norm despite its equivocal definition. Part III analyzes how the principle has been applied by such international jurisdictions and organizations as the European Community and the World Trade Organization. The role of the precautionary principle in international courts and other regulatory instances may serve as a test to ascertain its legal significance.

7. Joel P. Trachtman, *The Domain of WTO Dispute Resolution*, 40 HARV. INT'L L.J. 333, 334 (1999).

I. THE PRECAUTIONARY PRINCIPLE IN INTERNATIONAL TEXTS

This Part investigates the numerous formulations of the precautionary principle. It shows that the principle is called upon in relation to many environmental issues, ranging from general environmental protection to fisheries, genetically modified organisms (GMOs), and hazardous waste. In other words, the principle is invoked with respect to human-generated activities as well as the preservation of natural resources. Another recurrent element is that the precautionary principle rarely stands alone, but rather it is articulated with other norms or processes. It is precisely this conglomerate of regulatory elements that makes the precautionary principle an international standard. Section I.A analyzes the different formulations of the principle and Section I.B studies the incorporation of other norms into the principle.

A. *A Formulation Yet Unsettled*

Regulations on common environmental goods such as living and mineral natural resources, the atmosphere, and water often refer to the precautionary principle. The early manifestations of the principle date back to the early 1980s and found a new expression in the 1990s with the enactment of domestic legislation seeking to protect the environment, which relied on the precautionary principle.

The 1982 World Charter for Nature, a United Nations resolution proposing a general agenda for environmental protection, stated that "activities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that expected benefits outweigh potential damages to nature, and where potential adverse effects are not fully understood, the activities shall not proceed."[8] This formulation contains typical precautionary elements. First, the provision seeks to reverse the burden of proof as to the deleterious effects of the activity: it is up to its proponent to prove that the activity is harmless. Second, it bans any potentially harmful activity if scientific uncertainty is such that it does not allow for a complete impact assessment *ex ante*.

Unfortunately, the World Charter for Nature provision is not workable as such. It fails to specify what is included in the evaluation of the activity and of its impact on the environment and does not establish the level of scientific uncertainty that should trigger precautionary measures. The first part of the provision (activities authorized if their benefits outweigh the potential damages) provides no indication of the acceptable

8. G.A. Res. 37/7, U.N. GAOR, 37th Sess., Supp. No. 51, at 21, U.N. Doc. A/37/L.4 and Add. 1 (1982) [hereinafter World Charter for Nature].

level of risk. In such a situation, intergenerational interests could be adversely affected if the tradeoff between benefits and potential damages is calculated in the short or medium term. The promoter of an activity will typically plan for a relatively quick return on investment and will not be inclined to balance these short-term profits against interests of future generations in a sound environment.[9]

The Rio Declaration has already been mentioned as the most often cited formulation of the precautionary principle. It is more specific than the World Charter for Nature provision since it links the implementation of the principle to the risk of a "grave or irreversible damage to the environment." This baseline for intervention has rapidly become a landmark of the precautionary principle.[10] The Declaration further defines precautionary measures[11] as prevention in the face of scientific uncertainty. However, the content and extent of the actions to be taken remain obscure; at best, it can be thought that the promotion and implementation of the measures are within the sole competency of the Member States. This may prove inadequate in the case of global threats to the environment such as global warming or transboundary pollution. In any case, the Declaration is soft law, thus not imposing any binding obligation upon the signatory States.

The Convention on International Trade in Endangered Species (CITES)[12] and the Biodiversity Convention[13] call for an implementation

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9. *Id.*

10. The Association of South East Asian Nations Agreement on the Conservation of Nature and Natural Resources already provides that members should prevent changes to local ecosystems that would not be reversible within a reasonable period of time. Agreement on the Conservation of Nature and Natural Resources art. 4(1)(d), Association of South East Asian Nations (ASEAN)(July 9, 1985), *at* http://www.aseansec.org/menu.asp?action=5&content=2 (last visited Mar. 12, 2002).

11. A wide terminology is used in reference to the precautionary principle. A nonexhaustive list would include precautionary "approach," "methodology," "action," "measures," and "principle." The intense debate on the precautionary "principle" and the various meanings that underlie the term is certainly one explanation for this multiple wording of the concept. The term "precautionary approach" can be understood as a response to another environmental law concept: the preventive approach. The latter represents the traditional view of environmental protection, as opposed to the emerging precautionary approach. The legal core of such an "approach" is weak; the idea is rather to set a general orientation in order to guide further action. The precautionary approach is more of a conceptual framework than a legal instrument. In contrast, the "principle" carries stronger legal implications. The choice of the word "measure" in the Declaration reflects the rejection by the negotiators of the European proposal to endorse a more fleshed out "principle." Rio Declaration, *supra* note 5.

12. Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087, 12 I.L.M. 1085 [hereinafter CITES Convention].

13. Convention on Biological Diversity, June 5, 1992, pmbl., S. TREATY DOC. No. 103–20 (1993), 31 I.L.M. 818 (stating in its preamble that "where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such threat").

of the precautionary principle in a way similar to the Rio Declaration. The 1994 Conference of Member States of the CITES set out a twofold mechanism to protect species at risk: first, in a clear deference to the precautionary principle, species that may be at risk but where scientific uncertainty remains, qualify for a classification in Annex I and II; second, uncertainty may not be invoked to justify failure to take protective measures.

Climate change is one of the paramount examples of the development of the precautionary principle. The debate as to global warming rages among the scientific community, giving no firm ground for policymakers. Yet the most agreed-upon element is that we do not know how to reverse, or even to stop the process. Since the Vienna Convention on the Protection of the Ozone Layer in 1985,[14] states have called for a precautionary principle approach when regulating greenhouse gases[15] or specific substances such as CFCs. The Agenda 21, in Chapter 35.3 adds to the now traditional elements of grave or irreversible damage and scientific uncertainty a novel provision: measures taken under the precautionary approach should be "actions which are justified in their own right."[16] This interesting distinction means that the measures should have a technical or scientific base, and not be solely a political decision.

Protection of the marine environment is the oldest theme for precaution.[17] In 1969, the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties required that action be taken when the coasts are endangered, considering, *inter alia*, "the extent and probability of imminent damage if those measures are not taken."[18]

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14. Vienna Convention on the Protection of the Ozone Layer, Mar. 22, 1985, pmbl., T.I.A.S. No. 11,097, at 2, 1513 U.N.T.S. (volume not yet printed).

15. Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 1522 U.N.T.S. 3 (amended June 29, 1990)(specifying that Member States should take precautionary measures to control emissions of substances degrading the ozone layer). The Convention on Climate reiterates the provisions of the Ministerial Declaration of the Second Climate Change Conference (November 7, 1990), section 7: "where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent such environmental degradation." Framework Convention on Climate Change, May 9, 1992, art. 3.3, 1771 U.N.T.S. 107. Section 8 of the Ministerial Declaration of the Second Climate Change Conference stresses the issue of small insular states, whose existence is threatened by a possible elevation of the sea level. Ministerial Declaration of the Second World Climate Conference, *reproduced in* G.A. Res. 45/696, U.N. GAOR, 45th Sess., Agenda Item 81, at 18, U.N. Doc. A/45/696/Add.1 (1990).

16. Agenda 21: Programme of Action for Sustainable Development, United Nations Conference on Environment and Development (UNCED), ch. 35.3, U.N. Doc. A/Conf.151/PC/100/Add.1, U.N. Sales No. E.93.I.11 (June 14, 1992).

17. Philippe Sands, *The 'Greening' of International Law: Emerging Principles and Rules*, 1 IND. J. GLOBAL LEGAL STUD. 293, 298 (1994).

18. International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, Nov. 29, 1969, art. V (3) (a), 26 U.S.T. 765, 970 U.N.T.S. 211, 212.

This is somewhat different from later formulations of the precautionary principle, such as that is included in the Ministerial Declaration for the Protection of the North Sea.[19] Under article XVI (1) "The Principle of Precautionary Action," the members are committed to protect the North Sea ecosystem by reducing marine pollution even if no scientific evidence establishes a causal link between the emissions and the adverse effects on the marine environment. Adhesion to the precautionary principle was reinforced during the Third Conference in 1990. Similarly, the OSPAR Convention,[20] the Baltic Sea Convention,[21] and the Convention on the Transboundary Effects of Accidental Industrial Pollution[22] mention the principle.

The regulation of international fisheries is the area where the precautionary principle currently finds its most complete application. The issue is raised by the discovery of new fisheries, as the quantity of newly found stocks and their rate of reproduction cannot be ascertained immediately. Yet, if these stocks are fished too extensively before the sustainable level of exploitation is determined, the stocks are at risk of being permanently decimated. In a precautionary setting, the stocks are either not fished at all until the necessary parameters are established, or exploited at a rate low enough to ensure the preservation of the stock. Once the stocks have been scientifically evaluated, safe quotas can be established that will guarantee the viability of the resource. The Montego Bay Convention[23] implicitly introduced the notion of precaution, and the application agreement of the Straddling Fish Convention explicitly endorses the precautionary approach.[24] Here, the principle is incorporated in a binding agreement and the International Tribunal on the Law of the Sea (ITLOS) has given it legal value in a recent case involving Australia, New Zealand, and Japan.[25]

International agreements on the disposal of hazardous waste offer mixed evidence on the recognition of the precautionary principle. The

19. Second Conference on the Protection of the North Sea: Ministerial Declaration Calling for Reduction of Pollution, Nov. 25, 1987, 27 I.L.M. 835, 840 [hereinafter North Sea Conference].

20. Convention for the Protection of the Marine Environment of the North-East Atlantic, Sept. 22, 1992, art. 2.2 (a), 32 I.L.M. 1069 [hereinafter OSPAR Convention]. This convention reverses the burden of proof for immersion of radioactive waste.

21. Council Decision 94/157/EC of 9 April 1992, Helsinki Convention for the Protection of the Marine Environment in the Baltic Sea Area, art. 3.2, 1994 O.J. (L 73) 20.

22. Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Mar. 17, 1992, art. 2.5 (a), Doc. ENVWA/R. 53 and Add. 1, 31 I.L.M. 1312.

23. U.N. Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 3.

24. U.N. Conference on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, Aug. 4, 1995, art. 6, 34 I.L.M. 1542.

25. *See infra* Part III.

Basle Convention on Hazardous Waste[26] does not mention the principle and has never been interpreted to endorse it, even implicitly. By contrast, the Bamako Convention[27] poses the principle both as a general obligation and as a specific framework for certain provisions. Article 4(3)(f) invites members to take precautionary measures without waiting for scientific qualification of the risk for human health and the environment and lists a number of actions that would be incompatible with a precautionary framework. Examples of incompatibility include the dumping of toxic waste in the sea or in rivers. This provision, like the ones on marine pollution, represents a fundamental shift from the traditional policies based on the absorption capacity of specific ecosystems.

Finally, with the recent Cartagena Protocol,[28] GMOs have triggered the latest debate on the application of the precautionary principle.[29] Although the Cartagena Protocol endorses the principle in multiple provisions, it still fails to ascertain the full meaning and the implications of the principle. The struggle surrounding precaution is manifest in the way it is incorporated into the agreement. [30]

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26. Council Decision 93/98 of 22 March 1983, Basle Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1993 O.J. (L 39) 3.

27. Bamako Convention on the Ban of the Imports Into Africa and the Control of Transboundary Movement and Management of Hazardous Waste Within Africa, Jan. 29, 1991, 31 I.L.M. 163.

28. Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Jan. 29, 2000, 39 I.L.M. 1027 [hereinafter Cartagena Protocol].

29. Kim Brooks, *History, Change and Policy: Factors Leading to the Current Opposition to Food Biotechnology*, 5 GEO. PUB. POL'Y REV. 153, 153–54 (2000). The author stresses the diverging trends of United States and European GMOs regulations. In 1992, the FDA declined to differentiate GMOs from traditional crops, therefore sending the message that engineered food presents no specificity in terms of environment and health impact. By fall 1999, pressure groups obtained a moratorium on the growth of modified crops in Europe. This measure severely hampered the United States shipments of corn and soybeans, since the latter contained both engineered and traditional crops, without distinction. Consumer concern over GMOs then spread to Australia, Japan, Brazil, and ultimately back to the United States, where FDA regulations are now questioned. This struggle is well reflected by the debate surrounding the Cartagena Protocol.

30. *See* Molly Saigo, *Agricultural Biotechnology and the Negotiation of the Biosafety Protocol*, 12 GEO. INT'L ENVTL. L. REV. 779, 811 (2000) (discussing the negotiation of the Cartagena Protocol). The United States is not a member of the Cartagena Protocol and it expressed opposition to the main provisions of the agreement during the negotiation, but then-Secretary of State Madeleine Albright declared an intention to abide by Protocol terms. The Miami Group (including Argentina, Australia, the United States, supported by the massive presence of biotech industries, Canada, Chile, and Paraguay) advocated a narrow Protocol and regulations limited to products that were scientifically demonstrated to have a potential adverse effect on biodiversity. At the other end of the spectrum, the "Like Minded Countries" (China, most members of the G77, and most of the European Communities) pushed for a strong Protocol including the precautionary principle and a liability and compensation mechanism for damages caused by GMOs. The Compromise Group (Switzerland, Japan, Korea, and Norway) lobbied for a middle ground.

According to the Protocol, states can prohibit the importation of genetically engineered foods on the basis of precaution. The Cartagena Protocol creates strict procedures to regulate GMOs in international trade, thus giving a content and framework for the principle. The preamble refers to Principle 15 of the Rio Declaration and articles 10.6 and 11.8 reiterate the principle[31]. In fact, it is article 15 on risk assessment, that indicates the real role of the principle in the Protocol. Article 15 implements a framework where it is up to the export candidate to provide information on the products, and if required, to proceed to the risk evaluation. In other words, the burden of proof as to the safety of the product rests upon the exporter; implicitly, GMOs are considered *prima facie* as unsafe products. Article 8.2 ambiguously addresses the issue of legal responsibility if the exporter misrepresents information about his products, it is suggested that the state of origin of the exports bears an obligation to offer a remedy in case of such a fraud.[32] Although it is somewhat awkward, this provision is a first attempt to link a precautionary regime to state responsibility.

At the same time, the Protocol seeks to put clear limits on the application of the principle. Annex III, section 3 specifies that the existence, absence, or gravity of a risk should not be implied solely because of scientific uncertainty.[33] Therefore, the Protocol states both that scientific uncertainties should not be used as a reason to postpone action but that they are also not a reason to take action. As a result, the only clear requirements are the risk evaluation procedures. The Member States remain free to take whatever stand they wish on the GMOs exports, so

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31. Cartagena Protocol, *supra* note 28. Article 10.6 states:

> Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of the living modified organism in question as referred to in paragraph 3 above, in order to avoid or minimize such potential adverse effects.

Id. art. 10.7

Article 11.8 states:

> Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of that living modified organism intended for direct use as food or feed, or for processing, in order to avoid or minimize such potential adverse effects.

Id. art. 11.8

32. Cartagena Protocol, *supra* note 28, at 1030.

33. *Id.* at 1045.

long as the policies are consistent with the results of the evaluation. The effect is to substantially weaken the impact that the principle could have on the agreement. Adler still voices the traditional complaint that inserting the principle in the Protocol is only an excuse to delay the diffusion of new technology.[34] It seems that the Protocol bears a much more restrictive interpretation of the principle than that feared by Adler. The foremost feature is the reversal of the burden of proof, which essentially leaves it to those who are the best informed to prove the harmlessness of their products.

This brief overview already suggests some of the substantive issues raised by the precautionary principle. The next Part examines the components of the principle and shows that they form an ensemble much like a standard.

B. *The Articulation of the Precautionary Principle with Other Environmental Norms*

In the international legal references presented above, citation to the precautionary principle is almost always accompanied by references to other norms. Indeed, the exponential development of environmental law over the last decade resulted in the promotion of related concepts that are progressively taking a legal form. Concerns about intergenerational equity and sustainable development are examples of recent trends, and they are closely articulated with the notion of precaution.

The principle proves a useful tool from a sustainable development perspective. Because it seeks to prevent irreversible harm to the environment, it poses limits to the use of unsafe new technology, as well as the spread of older technologies that have proven harmful. Principle 15 of the Rio Declaration shows awareness of the particular situation of developing countries when it links the precautionary principle to capacity building. Similarly, the Montreal Protocol introduces precautionary measures to "control *equitably* total global emissions of substances that deplete it."[35] These limits are intrinsic elements of a workable precautionary principle.

Intergenerational equity raises the issue of the temporal allocation of environmental resources. Setting aside the moral motive, the basic economic insight is that goods should be preserved today that will have an equal or higher value later, or the lack of which will be very costly. This concern does not appear in the basic formulation of the precautionary

34. Jonathan H. Adler, *The Cartagena Protocol and Biological Diversity: Biosafe or Biosorry?*, 12 GEO. INT'L ENVTL. L. REV. 761, 776–77 (2000).

35. Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 26 I.L.M. 1541, 1550 (entered into force Jan. 1, 1989) (emphasis added).

principle as stated in the Rio Declaration.[36] However, if the principle is to be an efficient tool of environmental law, it requires some cost effectiveness limitation. This criterion will be further studied below but it is useful to allude to it here to develop the link between the precaution and intergenerational equity. The cost-effective precautionary policy enables incorporation of future costs induced by a failure to prevent the damage today. The principle could therefore give a value to the future environment, so that grave or irreversible impairment of this future resource has a cost now. Prevention of a potential future harm would be evaluated not only in terms of its impact on the environment or health, but also in terms of the economic cost over time of a failure to take action.

Many formulations of the principle also call for the continuation of scientific research, to remove the remaining uncertainties and thus re-evaluate the policies taken in the context of uncertainty. By worrying today about the later effects of a substance, coming generations are given a chance to reassess the regulations with better tools in their hands. The Cartagena Protocol explicitly provides that an importation decision may be re-evaluated at any time, should further information be available.[37] In the *Beef Hormones* case before the World Trade Organization (WTO),[38] the European Community (EC) committed itself to continuing research on the possible carcinogenic effects of the growth hormones on human health.

Finally, the Rio Declaration formulated the Participation Principle (Principle 10) to promote public information and consultation. The precautionary principle may be fed by this norm since the choice of an acceptable level of risk requires a social debate. This public debate may be stimulated pursuant to the participation principle. Again, the Cartagena Protocol offers the best example of this linkage. At the core of the Protocol is the exchange of data between the potential exporter and the authorities that will allow or refuse the product. Even though the receiving party has a duty to protect the confidentiality of this information, this

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36. Rio Declaration, *supra* note 5.

37. Cartagena Protocol, *supra* note 28, art. 12.2:

> A Party of export or a notifier may request the Party of import to review a decision it has made in respect of it under Article 10 where the Party of export or the notifier considers that: (a) A change in circumstances has occurred that may influence the outcome of the risk assessment upon which the decision was based; or (b) Additional relevant scientific or technical information has become available.

Id.

38. Panel Report, European Communities—Measures Concerning Meat and Meat Products, WT/DS26/R/USA and WT/DS48/R/CAN (Aug. 18, 1997), http://www.wto.org [hereinafter Hormones Panel report]; Report of the Appellate Body, European Communities—Measures Concerning Meat and Meat Products, WT/DS26/AB/R and WT/DS48/AB/R (Jan. 16, 1998), http://www.wto.org [hereinafter Appellate Body Hormones report].

only goes so far as the domestic standard. In other words, the information will be protected on a national treatment basis, which means that if a State's legislature authorizes the release of certain data, the foreign exporter will be treated according to that legislation as well.[39] Article 23 on public participation and the access to the Exchange Center for Technological Risk are additional elements in this perspective.[40]

This first appreciation of the precautionary principle leads to the conclusion that it has a formal as well as a substantive existence, although numerous aspects remain undefined. The principle does not stand alone as a political pretense but is indeed interwoven with other international law norms. Because of the nature of this network of norms, the precautionary principle appears as a process more than a bright line rule, as a matrix rather than as a solution. The next Part attempts to give a legal qualification to this still evolving norm.

II. THE DOCTRINAL DEBATE: WHAT LEGAL STATUS FOR THE PRECAUTIONARY PRINCIPLE?

Parallel to the debate on the content of the principle is a debate on its legal value. This Part stresses that the normativity of the principle is not necessarily exhausted by its legality. If the current development of the principle may not allow it to belong to the traditional sources of international law, its role may be derived from other normative categories. Part of the doctrine sees the principle as a political guideline while a growing number of analyses construe precaution as a standard.

A. *The Principle as Traditional International Law?*

Treaties, custom, and *jus cogens* are usually considered the only sources of international law. The precautionary principle, as seen above, is included in numerous treaties, and certain authors have argued that the principle is emerging as a customary rule. If such were the case, States would be bound by this customary obligation, and violating it would trigger their responsibility at the international level. Considering the uncertainties surrounding the exact content of a precautionary obligation, it seems difficult to determine exactly what responsibilities and what remedies would be appropriate. Indeed, at this time, responsibility issues in relation to the precautionary principle remain largely unresolved. As to *jus cogens*, it is a category restricted to very few norms recognized as

39. *See* Cartagena Protocol, *supra* note 28, art. 21 (on confidentiality), art. 21.3 (which introduces a clause similar to a national treatment obligation).

40. *Id.* at 1038.

fundamentals of society; precaution is certainly nowhere near such status.

1. A Treaty Rule? Customary Law?

Despite its presence in several treaties, the precautionary principle is often not interpreted as a binding rule. As it has been shown, imprecise formulations account for this exclusion. In such circumstances, article 31(3)(c) of the Vienna Convention on the Law of Treaties is powerless to translate the provision into an obligation.[41] An exception to this general trend appears in article XVI (21)(b) and (22)(a) of the Ministerial Declaration for the Protection of the North Sea,[42] which reverses the burden of proof for dumping of waste at sea.

Few authors advocate the formation of a custom of precaution. Cameron and Abouchar establish a parallel between the emergence of the principle as customary law and the formation of "instant custom" in the law of space sovereignty.[43] The authors highlight the number of States recognizing the principle, based on the signatories of the Bergen Declaration (34 States). To them, this indicates the fulfillment of the conditions set forth in article 38 of the International Court of Justice (ICJ) Statute.[44] Several critiques can be made. First, the authors seem to consider State practice as a manifestation of the *opinio juris,* whereas both elements are separate and complementary. Second, the mere number of signatories of an international agreement appears insufficient to indicate the formation of a custom, or its exact content and the obligations it carries. A safer hypothesis is that such elements may only indicate the genesis of the customary process. Hohmann and Sands also defend the principle as a customary norm.[45]

If the principle is to be considered as a binding legal obligation, whether it is of customary origin or not, it entails first that it has a content specific enough to prescribe a particular behavior, and second, that

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41. Vienna Convention on the Law of Treaties, May 23, 1969, art. 31(3)(c), 1155 U.N.T.S. 331, 340.

42. North Sea Conference, *supra* note 19, at 842.

43. James Cameron & Julie Abouchar, *The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of Global Environment*, 14 B.C. INT'L & COMP. L. REV. 1, 19–20 (1991). "Instant custom" was a term coined to describe the process of acceptance of the twelve nautical miles limit for the territorial sea as a binding rule while the Montego Bay Convention was negotiated and before the norm was formally integrated into the instrument.

44. ICJ STATUTE art. 38.

45. HAROLD HOHMANN, PRECAUTIONARY LEGAL DUTIES AND PRINCIPLES OF MODERN INTERNATIONAL ENVIRONMENTAL LAW 342–44 (1994); Philippe Sands, *L'affaire des essais nucléaires II (Nouvelle-Zélande c. France): contribution de l'instance du droit international de l'environnement*, 1997 REVUE GÉNÉRALE DE DROIT INTERNATIONAL PUBLIC [R.G.D.I.P.] 447, 473.

State responsibility can be invoked for violation of the norm. The following Section will examine the precautionary principle alternatively as a procedural obligation and as an obligation of result. It will then identify some of the responsibility issues.

2. A Procedural Obligation; an Obligation of Result

The Cartagena Protocol is the closest expression of a procedural version of the principle.[46] It prescribes a risk evaluation and defines the boundaries of the obligation. As we have seen, the spirit of such obligations is precautionary. However, the States remain free to implement precaution, or not, depending on the results yielded by the evaluation. Reversing of the burden of proof is another procedural application of the principle. Nonetheless, it seems that these procedures fail to fully materialize the concept of precaution and might miss the essential target: preventing potentially irreversible damage.

In this perspective, a substantive obligation would be more appropriate. The issue is then to specify the goal to be achieved. Is it the effective prevention of a hypothetical danger, which might not be at all possible; is it ensuring that the risk remains at an acceptable level;[47] is it implementing all possible means to avoid the damage? The possibilities are many. Another question is the evaluation of the result, knowing that the danger might not occur at all, regardless of the measures implemented or, conversely, that the available resources may be powerless to avoid the damage. In the latter case, the obligation would be breached without fault of the breaching party. This offers a transition to the issue of responsibility.

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46. Cartagena Protocol, *supra* note 28.

47. On the difficulty to agree on an acceptable level of risk, see the example of the aflatoxins in Jean-Pierre Doussin & Philippe Verger, *Le rôle de l'analyse des risques dans le processus d'élaboration des règlementations concernant les aliments*, REVUE DE LA CONCURRENCE ET DE LA COMMUNAUTÉ, No. 112 (1998), at 34–35. The aflatoxins are a notoriously carcinogenic contaminant present in mold, cereals, and nuts. States agreed to reduce the risk for human health generated by this substance to the lowest possible level but are unable to agree on a uniform international standard, which would define good agricultural practices. The European countries advocate very strict standards, which is consistent with the agricultural conditions in the region (deterioration of the cereals is contingent on the climate and Europe offers a more favorable environment to prevent the toxin from developing). The United States proposes a less stringent standard corresponding to their climatic conditions. Europe must now demonstrate the benefit for consumers of a lower level of risk. The difference would be two additional cases of cancer per million individuals with the United States standard, compared to one case per million individuals with the stricter standard. The Europeans argue that any risk higher than one case per million is unacceptable since it is technically avoidable.

3. State Responsibility

If the principle is understood as a procedural obligation, it is relatively easy to build a system of responsibility, as the violation of the procedures will trigger the legal responsibility of the violator. The Resolution on Responsibility and Liability for Environmental Damage[48] attempts to define such a regime and a recent report to the French government[49] follows the same lines at the domestic level.

If the principle comprises an obligation of result, failure to achieve the specific end would trigger responsibility and in turn, require reparation. Yet, if the irreversible damage has occurred, what kind of sanction can possibly make sense? The traditional remedy of the *restitutio in integrum* becomes utterly meaningless. A solution would be to impose responsibility prior to the damage, when it becomes clear that a party will not meet its obligations, but it would be very difficult to monitor this exceptional regime.

B. *A Political Guideline*

Interpretation of the precautionary principle as a political guideline prevailed until the mid-1990s, before the doctrine evolved in the direction of giving a legal value to the concept of precaution. The numerous treaties and declarations endorsing the principle at the beginning of the 1990s can be seen as the reflection of a certain international consensus on the ethical meaning of the principle. At the same time, such vague formulations enabled parties to keep open the substantive interpretation. As the meaning of the principle became more particular, countries like the United States became strongly opposed to it. Nollkaemper illustrates this position by explaining that principles are meant as guidelines rather than as concrete obligations.[50] According to him, the precautionary principle gives reasons to act in the way of precaution but does not permit a specific decision leading to a total protection. Two types of arguments support the purely political and ethical interpretation of the principle: the first one is based on nonlegal analysis of the principle by economists,

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48. *Responsibility and Liability Under International Law for Environmental Damage*, Institut du Droit International, Sept. 4, 1997, 37 I.L.M. 1473. The text sets out guidelines to create international regimes of responsibility, focusing on the precautionary principle, common but differentiated responsibilities, damages and reparation, and the principle of participation.

49. PHILIPPE KOURILSKY & GENEVIÈVE VINEY, LE PRINCIPE DE PRÉCAUTION, RAPPORT AU PREMIER MINISTRE (1999).

50. Andre Nollkaemper, *'What You Risk Reflects What You Value' and Other Dilemmas Encountered in the Legal Assault on Risk*, *in* THE PRECAUTIONARY PRINCIPLE AND INTERNATIONAL LAW: THE CHALLENGE OF IMPLEMENTATION 80 (David Freestone & Ellen Hey eds., 1996). Nollkaemper's contribution is all the more striking given that the rest of the book and its coordinators advocate the recognition of the principle as a legal standard.

sociologists and other specialists; the second one emphasizes that the principle is yet too imprecise to be given a legal value.

Adams proposes a cultural interpretation of the principle.[51] His model assumes a liberal laissez-faire environment, where each society has "risk thermostats" (a tradeoff between the propensity to take risk and the resulting accidents; the level of risk will correspond to the highest number of accidents that society can tolerate) which form the basis for a cost-benefit analysis. Risks represent anticipated benefits, whereas accidents are costs. However, Adams modulates this analysis by introducing the notion of "cultural filters," which alter the perception of danger with respect to the accidents and the propensity to take risks.[52] The cultural filters flaw the strict economic cost-benefit analysis. The precautionary principle is interpreted as a cultural filter to regulate, for certain societal groups, their likelihood to take risks. Adams concludes that the principle does not impose one specific behavior but can be used to justify any risk regulation.[53] This analysis rules out both the scientific and the legal debates, to the benefit of cultural relativism.

Support for this view can be found in instruments such as the Agenda 21, which result from a political reflection, are disconnected from a specific scientific problem, and do not measure the benefits and costs of a given activity for the environment. They are often used as examples for advocates of paralegal interpretations of the principle.

Part I described the variations on the formulation of the principle. Some authors argue that these nuances mean that the notion is not settled and is thus deprived of any legal meaning. In a number of cases, the principle is incompletely formulated or not sufficiently specific to impose an obligation upon a State. An additional factor reinforces this analysis: most agreements endorsing the concept are only soft law.[54]

Birnie & Boyle and Bodansky took strong positions against according any legal value to the principle because of the uncertainties of its formulation.[55] However, in a later work, Boyle & Freestone turned away

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51. John Adams, *The Precautionary Principle*, 16 ECON. AFFAIRS 6, 6–10 (1995). The author is a Professor of Geography at University College, London.

52. *Id.* at 8 (fig. 4), 9.

53. *Id.* at 10.

54. *See, e.g.*, MANUEL DE PROTECTION DE LA BIODIVERSITÉ—CONCEPT ET MISE EN ŒUVRE DES MESURES INCITATIVES, Organization for Economic Cooperation and Development (O.E.C.D.)(1999). Chapter III.2 notes that given the uncertainties on the evolution of biological diversity, successful policies were based on the precautionary principle and on the notion of minimal security norm, in order to avoid irreversible damages. The text is not binding and the content of the precautionary measures referred to are specified nowhere.

55. *See* David Freestone, *International Fisheries Law Since Rio: The Continued Rise of the Precautionary Principle*, *in* INTERNATIONAL LAW AND SUSTAINABLE DEVELOPMENT: PAST ACHIEVEMENTS AND FUTURE CHALLENGES 135, 136 (Alan E. Boyle & David Freestone eds., 1999) (referring to PATRICIA W. BIRNIE & ALAN E. BOYLE, INTERNATIONAL LAW AND

from this trend to recognize that it is in the very nature of principles to remain flexible, both in their content and in their wording, without these characteristics automatically excluding them from the legal sphere.[56] Freestone makes a comparison with U.N. Resolution 1514 (XV) (1960) on the independence of colonial people, which is not hard law and is yet considered as a principle of international law.[57] He concludes that lack of precision is not sufficient in itself to rule out the legalism of a concept.[58]

Martin-Bidou tries to determine the legal value of the principle by examining the place that it takes in the conventions and declarations, together with the actual formula.[59] She notes that the principle is found in preambles (Convention on Biological Diversity, Oslo Protocol on Atmospheric Pollution) or in general obligations (Bamako Convention, OSPAR Convention, Barcelona Convention on the Protection of the Marine Environment in the Mediterranean Sea).[60] This is insufficient to indicate the legal characteristics of the principle, but according to the author, the imprecision of the principle classifies it as a mere guideline.[61] Either the formulation clearly imposes no legal burden or, if the terms suggest a binding obligation, the vagueness of the substance still gives rise to no liability.[62] Finally, Martin-Bidou observes that environmental law often develops through framework conventions designed to promote new norms.[63] The inclusion of the principle in such instruments similarly reveals it as an emerging norm, not an obligation.

This type of analysis is still strong among opponents of the principle, but the evolution of the doctrine may have given some autonomy to the concept, as will be shown in the next Part. Moreover, even considering the principle as a guideline means that States' engagements may be interpreted in the light of precaution. If conflicting interpretations of an obligation arise and the convention is in the spirit of the principle, an interpretation compatible with the logic of precaution should prevail.

THE ENVIRONMENT 98 (1992)); Daniel Bodansky, *Scientific Uncertainty and the Precautionary Principle*, 33 ENV'T 4 (1991). *See also* HOHMANN, *supra* note 45, at 344.

56. Alan E. Boyle & David Freestone, *Introduction, in* INTERNATIONAL LAW AND SUSTAINABLE DEVELOPMENT: PAST ACHIEVEMENTS AND FUTURE CHALLENGES, *supra* note 55, at 17–18 (discussing the legal status of sustainable development in general). The precautionary principle is closely articulated with sustainable development. *See supra* Section I.B.

57. Freestone, *supra* note 55, at 136.

58. *Id.* at 135–42, 154–64.

59. Pascale Martin-Bidou, *Le principe de précaution en droit international de l'environnement* 1999 R.G.D.I.P. 631, 659–62.

60. *Id.* at 660.

61. *Id.* at 661.

62. *Id.* at 664.

63. *Id.* at 661.

C. *A Standard*

After a few words on the notion of a standard in international law, this section will examine how the precautionary principle fits into this normative category.

Understood in reference to the judiciary, a standard is a framework, which enables judges to weigh competing interests.[64] Godard proposes another definition: a standard is a norm that needs to be completed by nonlegal information to produce legal effects.[65] This outside information can be of a social, economic, or scientific nature.[66] For Godard, however, a standard is not a legal norm.[67] Boy, on the contrary, notes that standards retain the characteristics of legal norms. A standard is "normatively closed" (it is conformed to other legal rules) and "cognitively open" (it calls for references to other systems like morals, economics, science, etc.).[68] It is a reference for judgment that introduces outside information. Lascoumes follows the same path by concluding that standards are voluntarily indeterminate, so that legal and nonlegal information may be built into the norm.[69] Lastly, a less doctrinal, although quite broad definition of international standards is mentioned in Annex 1A to the Agreement on Technical Barriers to Trade and includes "rules, guidelines, or characteristics for products or related processes and production methods."[70]

These somewhat obscure definitions are clarified by the example of the precautionary principle. Part I highlighted certain recurring elements of the principle: these are the components of the standard. The main features are the need for risk evaluation, the requirement of cost-effectiveness, and continuing scientific research.

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64. Gilles Martin, Colloquium, *Le principe de précaution ou la transformation des rapports entre science et décision*, Paris, Fr. (Apr. 5, 2000).

65. OLIVIER GODARD, LE PRINCIPE DE PRÉCAUTION DANS LA CONDUITE DES AFFAIRES HUMAINES (1997). "Norme qui a besoin d'être complétée par des informations extérieures au droit pour produire des effets juridiques." *Id.*

66. *Id.*

67. Olivier Godard, *Réponse à Pierre Lascoumes-Rubrique Controverse*, 248 ESPRIT (1998).

68. Laurence Boy, *La nature juridique du principe de précaution*, 7 NATURE, SCIENCE ET SOCIÉTÉ 5, 9 (1999).

69. Pierre Lascoumes, *La précaution, un nouveau standard de jugement*, 237 ESPRIT 129, 133 (1997).

70. This definition is targeted more at technical standards than at normative standards like the precautionary principle. Agreement on Technical Barriers to Trade, Apr. 15, 1994, Annex 1A, LEGAL INSTRUMENTS–RESULTS OF THE URUGUAY ROUND vol. 27 (1994), *at* http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf (last visited Mar. 12, 2002) [hereinafter TBT Agreement].

1. Environmental Impact Assessment

Environmental Impact Assessment (EIA) procedures are a common feature in modern environmental protection. Together with risk evaluation, EIAs are the basis for a rigorous precautionary policy. Belvèze proposes a four-step model of a risk evaluation preceding precautionary action.[71] The first step consists of identifying the dangers.[72] This can be done through the observation of the symptoms, even if the causes remain unclear. The BSE disease (Mad Cow Disease) exemplifies this approach. The pathology (symptom) is known but the channels of the contamination (causation) are still obscure. A second step characterizes the dangers, qualitatively and quantitatively.[73] The propagation of the adverse effects might be difficult to assess, particularly if the cause of the symptoms is not clearly identified. The third step focuses on the exposure to the pathological agent.[74] Combining these three elements results in the characterization of the risk, which is the last step of the process.[75] Belvèze recommends that the worse case scenario be taken into account, given the uncertainties of the data.[76]

This type of analysis coincides with the definitions of a standard discussed above. The norm imposes a certain conduct (i.e. carrying out a risk evaluation in a specific way) but does not predetermine the result of the action.

2. Cost-effectiveness

The risk evaluation was an analysis *ex ante*, whereas the cost-benefit analysis is an anticipation of the implementation of a policy. The inclusion of a cost-conscious criterion is a crucial element to build a workable precautionary standard. The framework Convention on Climate Change and the Second Ministerial Conference insist that consideration of costs should be built into the principle. Domestic legislation such as the French Law 95–101[77] also requires that precautionary action be cost effective. Underlying this is a desire for proportionality between the costs induced and the benefits expected. Although this is a necessary and pragmatic limit to the principle, it is often ambiguously stated. The costs should be related to the benefits of implementing the policy or to the cost

71. Henri Belvèze, *Lignes directrices pour l'application du principe de précaution*, 7 NATURE, SCIENCE ET SOCIÉTÉ 71, 74 (1999).

72. *Id.*

73. *Id.*

74. *Id.*

75. *Id.*

76. *Id.*

77. Law No. 95–101 of Feb. 2, 1995, J.O., Feb. 3, 1995, p. 1840; D.S.L. 1995, 124 (amending the Code Rural [C. Rural] art. 200–1 (Fr.), so-called "Loi Barnier").

of permanently deteriorating the environment. Both costs and benefits may have ripple effects for which it is difficult to account. Another problem is that the cost of a precautionary approach in one domain will be compared to the benefits that could be yielded by action in another area, at the same costs.

The economic analysis and the choice of cost-effective solutions pose infinite problems. Setbon studied a series of alternative scenarios in relation to the use of HIV-contaminated blood for transfusions.[78] Supposing that the precautionary principle had been applied as early as 1982, when the contamination risk became known, the solution would have been to reduce dramatically the number of blood transfusions. Setbon calculated that the cost of such a measure would have been unacceptable at the time. After 1983, it was possible to avoid certain high-risk donors (refuse blood donations originated from prison inmates, in particular) but the decision to exclude these populations was very controversial. The author concludes that precaution translates into a redistribution of "wealth" (considering health or a clean environment as a good) from one population to another. The cost-benefit analysis should therefore reflect the net result of this reallocation.

Again, cost evaluation and the obligation to restrict precautionary policies to cost-effective measures does not indicate what action should be taken but merely channels behavior in the direction of precaution.

3. Pursuing Research

Scientific uncertainty is at the core of the precautionary principle; the logical counterpart is that resolution of the scientific gaps will naturally lead to the abandonment of precaution-based policies. To ensure that the latter are not pretextual, it is therefore necessary to correlate the implementation of the policy with the continuation of the research. The WTO Dispute Resolution Body has taken such a stand in the *Beef Hormones* case,[79] whereby the EC is bound to pursue research to justify its trade restriction or abandon the ban on beef products if science finds the products innocuous. Another example would be fisheries management: it is in the best interest of the present and future generations to gain rapid knowledge of the sustainable level of exploitation of new stocks. Restrictive fishing of newly found stocks should therefore go together with a scientific assessment of the resource.

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78. Michel Setbon, "Approche sociologique du principe de précaution," Colloquium, *Le principe de précaution ou la transformation des rapports entre science et décision*, Paris, Fr. (April 5, 2000).

79. *See* Hormones Panel report, *supra* note 38; Appellate Body Hormones report, *supra* note 38.

4. A Baseline for Precaution?

A reasoned application of the precautionary principle also calls for criteria to trigger the implementation of the principle. Hickey and Walker focus on the scientific basis justifying the implementation of precautionary action.[80] The first standard that they advocate is the "reasonable scientific possibility" that the alleged danger has a tangible ground.[81] Under this standard, there is not necessarily the need for scientific unanimity, as the reasonable scientific possibility may emanate from a minority of experts, or there may be a disagreement between a mainstream current and critical alternatives. The authors propose a second, more stringent test: "reasonable scientific probability."[82] In this case, the scientific community must largely agree that the available data and the methods used are pertinent and that the conclusion of the analysis is consistent with these methods. It is for the mainstream experts to guarantee the scientific basis of a precautionary action.

Martin has a more holistic conception of the degree of uncertainty necessary to trigger precaution.[83] His standard, "reasonable doubt,"[84] includes both the facts that cast doubt on the legitimacy of a certain activity or substance, and social factors (national culture as well as public reaction to a problem or environmental threat). This approach is in complete opposition to the standard of the Agreement on Sanitary and Phytosanitary Measures (SPS), for instance, which requires a scientific basis for precautionary measures.[85]

5. Reversed Burden of Proof

Closely linked to the previous issue is the question of who has to bring the scientific justification for implementing precaution. The principle is often associated with the reversal of the burden of proof; that is, instead of putting it on those who seek to regulate an activity to show its potential dangers, it is on those who want to carry out the activity to prove it safe. The first group would advance scientific theories supporting their claim of harmfulness, whereas the second group would attempt to show that there is no valid technical ground for regulating their activ-

80. James E. Hickey, Jr. & Vern R. Walker, *Refining the Precautionary Principle in International Environmental Law*, 14 VA. ENVTL. L.J. 423, 448–52 (1995).

81. *Id.* at 449.

82. *Id.* at 449–50.

83. Martin, *supra* note 64.

84. "Doute légitime" in French, the translation is Martin's and may not reflect a strict equivalence in civil trial procedures with the American standard of "reasonable doubt." *Id.*

85. Agreement on the Application of Sanitary and Phytosanitary Measures, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization [hereinafter WTO Agreement], Annex 1A, LEGAL INSTRUMENTS–RESULTS OF THE URUGUAY ROUND vol. 1 (1994) [hereinafter SPS Agreement].

ity (claiming that there is contradictory evidence might not be enough). Belvèze has a very balanced approach, observing that reversing the burden of proof is in itself applying the precautionary principle since it presupposes a risk, but he also notes that it is still generally left to the administrative regulators or State policymakers to justify their restrictions by proving the dangers of the product.[86] Thus, shifting the burden of proof is not necessarily of the essence of the precautionary principle.

The elements analyzed above show that the precautionary principle already has a structure corresponding to a legal standard. This gives it more efficiency as a tool to protect the environment and yet, by nature, it remains flexible enough to accommodate diverging notions of interventionism.

Construing the precautionary principle as a binding obligation unravels a chain of conceptual problems and material difficulties that suggest that the principle is not yet ripe for such a status. Nonetheless, the principle has moved from the academic sphere to the judicial world, where it is challenged, discussed, and even applied, depending on the jurisdiction. The next Part compares these various treatments of the principle.

III. THE GROWING RECOGNITION OF THE PRINCIPLE

A study of the attitude of international tribunals toward the precautionary principle is a fundamental test to help determine the legal implications of the principle. This Part shows that the practice is very heterogeneous, revealing the emerging nature of the norm.

The principle was brought up in several instances in the ICJ in relation with environmental litigation, but the court refused to incorporate the principle in its legal discussion of those cases. The Dispute Settlement Body (DSB) at the WTO deals with the principle in as much as it is alluded to in the SPS Agreement but the EC has repeatedly tried to invoke precaution without reference to the SPS Agreement. The European Court of Justice (ECJ) exercises its control with respect to article 174 of the Treaty, which calls for precautionary action in environmental matters, and the European Commission works to further develop the concept in conjunction with the ECJ's enforcement action.[87] Last, the ITLOS recently took a radical stand by clearly endorsing and prescribing precautionary action as a legal remedy in a fisheries dispute. These examples of the disparities of judicial treatment of the principle are developed below.

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86. Belvèze, *supra* note 71, at 76.

87. E.C. TREATY art. 174.

A. *The Silence of the ICJ*

Two cases came before the ICJ with a party referring to the precautionary principle, but in each occurrence the majority opinions declined to address the precautionary arguments and instead decided the cases on other grounds.

Chronologically, the second *Nuclear Tests* case, between New Zealand and France was the first occasion for the court to examine the principle.[88] New Zealand pled that France should prove the absolute innocuity of nuclear tests in the South Pacific (on the Mururoa atoll) or abstain from carrying out the tests. The court dismissed the claim on procedural grounds and thus did not have to deal with the substantive arguments.[89] In its memorandum, New Zealand argued that the principle was widely recognized in international law,[90] making it an obligation to evaluate the impact on the environment before undertaking a potentially dangerous activity and to demonstrate that this activity poses no risk to the environment.[91] This interpretation advocated a shift in the burden of proof and called for zero tolerance of risk. France responded that the legal value of the principle remained most uncertain and that, in any case, there was no environmental exception with respect to reversing the burden of proof.[92] Although it refused to recognize the principle, the French memorandum still presented technical arguments tending to demonstrate the harmlessness of the tests for the environment in the short and long term. The goal was to take the principle into account at a policy and diplomatic level, but not at a judicial level. The majority opinion simply did not adjudicate the issue.

Notwithstanding this shortcoming, Judge Weeramantry, in his dissenting opinion, insisted that reversing the burden of proof was an essential element to guarantee an effective protection of the environment and give full force to the legal obligations tending to ensure this protection.[93] He presented a second argument in favor of shifting the burden of proof, noting that it is often the party proposing to carry out a potentially damaging activity who holds the most pertinent information on this activity and who is most apt to prove it safe.[94] Judge Weeramantry also sought to rebut the French argument by listing the number of interna-

88. Request for Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests Case (N.Z. v. Fr.), 1995 I.C.J. 288 (Order of Sept. 22).

89. *Id.* at 307, Order para. 68.

90. *Id.* at 298 (referring to the New Zealand submissions).

91. *Id.* at 298, Order para. 35.

92. *Id.* at 298, Order para. 38.

93. *Id.* at 343 (Weeramantry, J., dissenting).

94. *Id.* at 342.

tional and regional agreements endorsing the principle and to which France was a party.[95] Particularly, he called attention to a provision of the OSPAR Convention whereby France and the United Kingdom reserved for themselves the possibility to immerse low-level radioactive waste if they could demonstrate that such disposal would not jeopardize the environment.[96] This provision does implement a reversal of the burden of proof similar to the procedure advocated by New Zealand in the *Nuclear Tests*. The dissenting opinion therefore concluded that the precautionary principle was already a standard of international law.

The *Gabcikovo-Nagymaros* case[97] between Hungary and Slovakia offers a second example of the reluctance of the ICJ to address the issue of the precautionary principle. This complex case resulted in a controversial judgment that many lawyers have deemed incomplete.[98] In 1989, Hungary suspended the construction work on the Gabcikovo-Nagymaros Dam, alleging that the project would result in substantial damage of the unique ecosystem of the Danube, would diminish the water supply, and would deteriorate the quality of the water downstream from the dam. Slovakia replied that these threats to the environment were nonexistent, and unilaterally proceeded to continue the construction following the "Variant C" of the 1977 Agreement between the two States. This variance resulted in the diversion of eighty percent of the Danube waters (formerly shared by the two neighboring states) to Slovakia. In order to suppress the legal grounds of operation, Hungary terminated the 1977 Agreement.

Although both parties seemed relatively favorable to the precautionary principle, the court did not use it as a test to determine the case. The court indicated that "ecological necessity" could excuse a State from legal responsibility for acts that would otherwise be illegal.[99] This "necessity" is declared if the State can prove the reality and imminence of a grave danger at the time when the necessity is claimed and that the measures taken at that point were the only possible response to the threat. This line of reasoning is fairly distant from the notion of precaution, where the

95. *Id.* at 343–44.

96. *Id.* at 343 (referring to OSPAR Convention, *supra* note 20, Annex II, art. 3, §3(c)). The said parties could present to the Commission created by the Convention "the results of scientific studies demonstrating that all potential immersion operations would not create a risk for human health, would not damage biological resources and marine ecosystems." *Id.*

97. Gabcikovo-Nagymaros Project (Hung. v. Slovk.), 1997 I.C.J. 7 (Judgment of Sept. 25).

98. *See* Philippe Sands, *International Environmental Litigation and Its Future*, 19 U. RICH. L. REV. 1619, 1629–33 (1999) (critiquing the majority opinion).

99. Gabcikovo-Nagymaros Project, 1997 I.C.J. at 37–42, paras. 51–54. The court ultimately finds that in the specific instance of Hungary, the necessity was not such as to warrant a suspension of the State's obligations under the treaty binding Hungary and Slovakia.

danger is not clearly ascertained. In any case, the analysis remained *in abstracto*, since the Court did not characterize the situation as an "ecological necessity." Similarly, the court subscribed to the "recently developed standards of environmental law" but did not mention EIA, which seems to be the prerequisite to "ecological necessity" measures. The parties' positions as to the precautionary principle consisted of an agreement on the need for a precautionary approach, but Slovakia considered the conditions for implementation not to be present, contrary to the Hungarian claim.[100] Hungary further gave an interesting twist to the argument by linking the precautionary principle to the concept of prevention, less controversial in environmental law. Slovakia would have violated its obligation to prevent environmental damages by refusing to examine the potential ecological effects of the project.[101] The court merely acknowledged that prevention was a fundamental feature of environmental protection, due to the often irreversible nature of the damage.[102] Here, the court drew closer to the concept of precaution but remained vague. In addition, it noted the impracticability of traditional remedies in the face of irreversible damages. The court was obviously concerned with the implications of a precautionary obligation in terms of responsibility.

Here again, Judge Weeramantry, then Vice President of the court, issued a separate opinion, which referred to the *Nuclear Tests* dissent and asserted the existence of the sustainable development principle and the "Continuing Environmental Impact Assessment" obligation. Since, as we have seen, such concepts may be fully integrated into a precautionary standard, it is logical to find them developed in this later case. Continuing Environmental Impact Assessment consists of monitoring the effects of a measure on the environment and also takes into account possible enhancement in the available scientific data.

These cases testify to the inability of the court to fit the principle in the traditional categories of international obligations. In direct contradiction with this approach, the ITLOS used precaution both as a legal argument and as a remedy, as will now be examined.

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100. Submissions for Slovakia: M.C. Caffrey, CR 97/9, sec. 4, applicable law §3(c), http://www.icj-cij.org; Argument for Hungary: P. Sands, CR 97/12 §12, http://www.icj-cij.org.

101. Submissions for Hungary, §§ 6.64, 6.69.

102. Gabcikovo-Nagymaros Project, 1997 I.C.J. at 78, para. 140 ("The Court is mindful that, in the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage.").

B. *The Application by the Law of the Sea Tribunal*

In 1999, New Zealand brought an action against Japan alleging that Japanese fishermen engaged in unilateral experimental fishing of Southern Bluefin Tuna (SBT), thus possibly endangering the viability of new fish stocks. Soon thereafter, Australia filed a complaint on the same grounds and the cases were treated jointly.[103] Among other claims, the plaintiffs alleged that the catches authorized by Japan violated its obligation to ensure preservation and an optimal exploitation of the fisheries, and that Japan further violated its precautionary obligations under the Law of the Sea Convention.[104] Under this Convention, the principle is treated as a norm binding upon the parties that entails responsibility if it is violated. The plaintiffs then requested the Tribunal to enjoin Japan from further illegal fishing and to order Japan to comply with the fishing quotas defined in a previously existing agreement between the parties. Additionally, Australia and New Zealand asked that Japan act in a manner consistent with the precautionary principle with respect to new fisheries.[105]

The Tribunal first proceeded to characterize the situation as one calling for precautionary action, and then, based on a direct implementation of the principle, it enjoined Japan from further illegal fishing.[106] The Order noted that under the circumstances, the parties should use precaution to ensure effective preservation of the resources.[107] The goal is to prevent permanent depletion of the SBT stocks. The Tribunal also highlighted scientific uncertainty regarding the measures to take to maintain the stocks.[108] This is the typical setting from which originates the precautionary principle. Accordingly the Tribunal concluded that due to the grave damage at stake, scientific uncertainty was not a ground for failing to protect the rights of the parties and to prevent a future depletion of the resource.[109]

The principle is used as a gap-filling measure between the discovery of resources and their scientific management. Hern views the principle as an "attempt to buy science a little time" and denotes the acknowledgement

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103. Southern Bluefin Tuna Cases (N.Z. v. Japan; Austl. v. Japan), Request for Provisional Measures, 117 I.L.R. 148 (Int'l Trib. for the Law of the Sea)[hereinafter Tuna Cases].

104. *Id.* at 156–57, paras. 28.1.e (N.Z.), 29.1.e (Austl.).

105. *Id.* at 157–58, paras. 31.3, 32.3 (where plaintiffs request "that the parties act consistently with the precautionary principle in fishing for SBT pending a final settlement of the dispute").

106. *See* Moritaka Hayashi, *The Southern Bluefin Tuna Cases: Prescription of Provisional Measures by the International Tribunal for the Law of the Sea*, 13 TUL. ENVTL. L.J. 361 (2000) (analyzing the case).

107. Tuna Cases, 117 I.L.R. at 163–64, Order para. 77.

108. *Id.* at 164, Order para. 79.

109. *Id.*, Order para. 80.

that the understanding of the marine resources has not progressed fast enough.[110] The principle is thus a deviation from the traditional conceptual setting of the Law of the Sea embodied in article 61(2) of the Convention, where conservation and management measures should be based on the scientific evidence available.[111] However, this departure can only be implemented on a temporary basis, leaving the 1982 regime undisturbed, according to Hern.

The Tuna Cases are groundbreaking in several respects. First, it uses the precautionary principle as a standard, giving it a normative value. Second, it implements the principle as a remedy. Finally, the principle is a particularly adequate tool to preserve the situation and avoid further deterioration of the resource while awaiting the final decision on the substantive issues of the case (the current decision is only for provisional measures). This perspective on the principle shows that it can play a neutral role, contrary to the common criticism that precaution is only an abstention and prohibition principle.

C. *The Debate at the WTO*

The SPS Agreement refers to the precautionary principle in article 5, section 7.[112] This provision is to be read jointly with article 2, section 2, which provides that members adopting sanitary measures will ensure that such measures are based on scientific principles and are not maintained without sufficient scientific proof. Article 5, section 7 appears as an exception, available to the Member States on a temporary basis, when the situation is not fully understood scientifically. This provision incorporates various elements of the precautionary standard, like the acknowledgment of uncertainty and the requirement to pursue research, if measures are implemented on the basis of precaution. The article does not specify that the risk should be grave or irreversible, which is consistent with the spirit of the agreement allowing each State to set its own level of protection, so long as it is justified. Several features of the pre-

110. Sean Hern, *Competing Values: Taking a Broad View on the Narrowing Conservation Regime of the 1982 UNCLOS*, 16 AM. U. INT'L L. REV. 177, 193–94 (2000).

111. U.N. Convention on the Law of the Sea, *supra* note 23, art. 61(2).

112. SPS Agreement art. 5, sec. 7:

> In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time.

Id.

cautionary principle are not addressed in article 5, section 7, particularly the reversal of the burden of proof and the cost-efficiency requirement. Article 3, section 2 and article 5, section 8 establish a presumption that State measures are compatible with the SPS Agreement. *United States Shirts and Blouses* discussed this standard and concluded that the party alleging a violation must prove its prima facie case; only then is the burden shifted to the other party to refute the allegations .[113] There is no mention of an evidentiary exception for measures adopted under article 5, section 7. Cost restrictions, an important part of the precautionary standard, are also neglected in the SPS Agreement.[114] Such omissions impede a practical application of the principle.

Three major cases raised discussion on the articulation and treatment of these provisions: *Beef Hormones*, *Japan-Agricultural Products*, and *Asbestos*. In the *Beef Hormones* case, the European Communities did not base their defense on the exceptions of article 5, section 7, but the precautionary principle was explicitly debated and was invoked by the Communities as a ground for banning imports of hormone treated beef products.[115] Conversely, Japan, in *Agricultural Products*, defended its policies under article 5, section 7, but the principle is nowhere mentioned in the reports.[116] Finally, in *Asbestos*, the Appellate Body relied upon the precautionary principle as a standard in its analysis.[117]

1. The *Beef Hormones* Case

The relevant aspects of the *Beef Hormones* case focus on risk evaluation and management. Under article 5, sections 1–2, the European Communities had to bring scientific proof of the harmfulness of the products to justify restrictive trade measures. The United States and Canada deemed that Europe had not gathered sufficient proof and therefore was in violation of its WTO obligations. The Panel agreed with the plaintiffs. The European Communities based their appeal on the claim

113. United States—Measures Affecting Imports of Woven Wool Shirts and Blouses from India, WT/DS33/AB/R (May 23, 1997), n.18, http://www.wto.org.

114. Steve Charnovitz, *The Supervision of Health and Biosafety Regulations by World Trade Rules*, 13 TUL. ENVTL. L.J. 271, 294 (2000).

115. Hormones Panel report, *supra* note 38; Appellate Body Hormones report, *supra* note 38.

116. Panel Report, Japan—Measures Affecting Agricultural Products, WT/DC76/R (Oct. 27, 1998), http://www.wto.org [hereinafter Agricultural Products Panel report]; Report of the Appellate Body, Japan—Measures Affecting Agricultural Products, WT/DC76/AB/R (Feb. 22, 1999), http://www.wto.org [hereinafter Appellate Body Agricultural Products report].

117. Panel Report, European Communities—Measures Affecting Asbestos and Asbestos-Containing Products, WT/DC135/R (Sept. 18, 2000), http://www.wto.org [hereinafter Asbestos Products Panel report]; Report of the Appellate Body, European Communities—Measures Affecting Asbestos and Asbestos-Containing Products, WT/DC135/AB/R (Mar. 12, 2001), http://www.wto.org [hereinafter Appellate Body Asbestos Products report].

that the precautionary principle had not been fully taken into account in the interpretation of the SPS Agreement and that the Panel had not given a fair assessment of the scientific data gathered by the EC. The EC also offered to implement a continuing research program in accordance with the standard of precaution as discussed above. The Appellate Body refuted the first two arguments but did recognize that the principle was not exhausted by article 5, section 7. This statement was immediately qualified with the note that the principle did not, however, trump the treaty but may be used for interpretation where appropriate. Furthermore, the Appellate Body reaffirmed the right for a Member State to choose protection levels higher than the international standards[118] and that the treaty did not prescribe a specific level of acceptable risk. The report suggested that even a scientific minority opinion could justify higher levels of sanitary protection.[119]

As noted above, the EC's measures were not based on article 5, section 7, since they were not meant to be temporary measures. Rather, the EC argued that the precautionary principle was a general principle of international law and cited to the book by Freestone and Hey for doctrinal reference.[120] Canada refuted this argument,[121] and referred to Birnie and Boyle.[122]

Annex A, section 4 of the SPS Agreement specifies the proper risk evaluation procedure. It involves a qualitative and quantitative study of the risk and of its probability of occurrence. The Appellate Body Hormones report endorses this approach[123] and also refers to the report issued by the Food and Agricultural Organization (FAO) and the World Health Organization (WHO) on the application of risk analysis in the domain of food regulation.[124] This document recommends a four-step procedure: (1) identification of the dangers; (2) characterization of the dangers; (3) evaluation of the exposure; and (4) characterization of the risks. Finally, article 5, section 2 lists the technical information to take into account in the evaluation.[125] The EC claims that in order to achieve

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118. Appellate Body Hormones report, *supra* note 38, paras. 172–177.

119. *Id.* paras. 182–194.

120. For particular relevance, see James Cameron & Julie Abouchar, *The Status of the Precautionary Principle in International Law*, *in* THE PRECAUTIONARY PRINCIPLE AND INTERNATIONAL LAW: THE CHALLENGE OF IMPLEMENTATION, *supra* note 50, at 29.

121. Hormones Panel report, *supra* note 38, sec. IV.2.i.vii, The Precautionary Principle.

122. BIRNIE & BOYLE, *supra* note 55.

123. *See* Appellate Body Hormones report, *supra* note 38, § 8.101.

124. APPLICATION OF RISK ANALYSIS TO FOOD STANDARDS ISSUES, REPORT OF THE JOINT FAO/WHO EXPERT CONSULTATION, 1995.

125. The list includes available scientific proofs, pertinent production methods and procedures, the existence or absence of specific diseases and parasites, ecological and environmental conditions. SPS Agreement art 5, sec. 2.

the zero-risk goal that it has, and to ensure that these products are completely free from any hormones residue, it will not tolerate any use of hormones in meat products regardless of whether the animals were treated in a manner conforming with good agricultural practices. The Appellate Body's analysis finds an inconsistency between the EC's measures and compliance with the risk evaluation results.[126] If a hormone treatment procedure has been approved and recognized as a good practice, a ban on the derived products cannot be considered based on a risk evaluation as set out by the SPS Agreement and the Codex. The precautionary principle cannot trump the conclusion of a risk evaluation procedure, except as provided under article 5, section 7.

This case opens the way for a wider recognition of the principle and crystallizes the international debate on the principle. The EC wants the precautionary principle to be fully integrated into the agreement, while other States view article 5, section 7 as a loophole for taking illegal protectionist measures.[127] However, if the Appellate Body declined to confine the principle to its expression in article 5, section 7, it did not fully develop the consequences of its role as an interpretative principle.

2. The *Japan-Agricultural Products* Case

In an attempt to prevent a fruit parasite from being imported along with certain fruit varieties (apples, cherries, peaches, apricots, plums, pears, and walnuts), Japan banned imports of these products from the United States. A replacement phytosanitary treatment, if applied to the fruits, enabled the attainment of the domestic level of protection and thus opened the Japanese market to American fruits. However, in 1987, the Ministry of Agriculture developed a confirmation procedure to test the imported products and to ensure that the replacement treatment was fully efficient. The disputed provision consisted of the obligation, in this new procedure, to test each variety of fruit, which the United States claimed was not justified. Japan defended on the ground that it had brought sufficient proof of the scientific need for this procedure, and in the alternative, that the measure could be maintained under article 5, section 7. This strategy may well be derived from the lessons of the *Beef Hormones* case, where the EC had not backed up its claim with a reference to the exception of article 5.

The Appellate Body, confirming the Panel below, concluded that the per-variety testing measure was not supported by scientific proof and that even if the measures were temporary under article 5, section 7, Japan had not complied with the requirements of the second sentence of

126. Appellate Body Hormones report, *supra* note 38, § 8.161.

127. Charnovitz, *supra* note 114, at 292.

the provision.[128] The latter requires that the state implementing the exception seek additional information and reexamines the phytosanitary measure "in a reasonable delay" (apparently, the eleven year interval between the creation of the Japanese program and the WTO claim exceeded the notion of reasonable delay for reconsidering a temporary measure).[129] The Appellate Body interpreted article 5, section 7 as four cumulative obligations.[130] The exceptional measure may be *taken* (1) in relation with a situation where available scientific information is insufficient, (2) and in any case, the measure must be based on the available information. The exception may be *maintained* (3) if the State strives to gather additional data to make a more accurate risk assessment, (4) and in any case, the measure must be reexamined within a reasonable delay. By contrast, Japan interpreted article 5, section 7 only in the light of article 2, section 2 of the SPS Agreement (requiring that measures be taken on the basis of scientific proof, with the exception of article 5, section 7). In this perspective, the only legally relevant portion of article 5, section 7 is the first sentence, emphasizing scientific uncertainty.

Another important discussion focuses on the interpretation of "sufficient scientific proof." Both article 2, section 2 and article 5, section 7 use the expression and Japan contended that it had the same meaning in both instances, but the United States claimed that the expression referred to different contents in each provision. Under the American interpretation, the scientific proofs in article 5, section 7 are insufficient if they do not permit the undertaking of a satisfactory risk evaluation. The Appellate Body endorses this opinion but does not take a position on whether this is different from the meaning of "sufficient scientific proof" in article 2, section 2.[131] Surprisingly, this interpretation is consistent with the European Commission's analysis of the precautionary principle: the European position is that the principle is part of risk management (the political decisionmaking process) when uncertainty precludes a fully informed risk assessment and there is a major risk.[132]

This decision does contribute to particularizing the content and the application of the precautionary approach as formulated in article 5, section 7. *Japan-Agricultural Products* also tries to define the meaning of scientific uncertainty but fails to articulate it with other provisions of the WTO law. Finally, it does not solve the problems raised by the *Beef*

128. Appellate Body Agricultural Products report, *supra* note 116, paras. 86–88.

129. *Id.* para. 143(b).

130. *Id.* para. 89.

131. *Id.* paras. 72–74.

132. Communication on the Precautionary Principle, COM (2000)1 final at 13–14 [hereinafter Communication].

Hormones case and rather appears to restrict precaution to the exception of article 5, section 7.

3. The *Asbestos* Case

Recently, France has implemented a significant anti-asbestos program, both removing asbestos from existing structures and prohibiting the use of this notorious carcinogen in future constructions. It also banned domestic production and foreign imports of this substance as part of the program. The material, known for decades to have deadly consequences on human health, is to be replaced by substitute products, which are safer. Canada provided about two thirds of one of the asbestos products, the chrysotile fiber. Canada challenged the French ban on the grounds that it violated article III.4 of the GATT (national treatment),[133] claiming that the chrysotile fibers and the domestically used asbestos-free substitutes were "like products". Canada also claimed that the fiber, used in high-density cements, posed no identifiable risk to human health, a statement that the EC challenged. The existence of a risk was in dispute and the subsequent issue was to determine, if the French measure was justified under article XX(b) of the GATT (public health protection),[134] whether an alternative less restrictive to trade was available to achieve the same level of protection. As in the *Beef Hormones* case, the EC did not rely on article 5, section 7, nor did it invoke the precautionary principle, since the ban is permanent and the risk scientifically ascertained.[135] However, it can be argued that the Appellate Body used precaution as a standard in its analysis.

On the face of the Panel's report, the precautionary principle has no place in the article XX(b) interpretation.[136] First, article XX(b) can be invoked only when there is a verified risk to human or animal health. The principle is therefore incompatible with measures based on this article. Second, the report, relying on numerous international organizations' documents, determined that there was sufficient evidence of the risk to human health posed by the fibers. In other words, this is not a context of scientific uncertainty as to the nature and extent of the risk. For these reasons, the Panel found that the French measures, discriminatory under article III.4 of the GATT (the Panel had rejected the distinction of products

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133. General Agreement on Tariffs and Trade, art. III.4, Oct. 30, 1947, 61 Stat. A-11, T.I.A.S. 1700, 55 U.N.T.S. 194 [hereinafter GATT].

134. GATT art. XX(b).

135. The *Asbestos* case did not rely on the SPS Agreement but was argued under TBT and GATT. *See* TBT Agreement; GATT.

136. Hans-Joachim Priess & Christian Pitschas, *Protection of Public Health and the Role of the Precautionary Principle in WTO Law: A Trojan Horse Before Geneva's Walls?*, 24 FORDHAM INT'L L.J. 519, 539 (2000).

based on their harmfulness to human health), were justified under article XX(b) of the GATT.[137]

The Appellate Body's report reversed the Panel on the finding that the chrysotile and the substitutes were like products.[138] It found that not only should the diverse impact on human health be taken into consideration to differentiate the products, but the consumer perception and behavior, with respect to the substance, was also an indication that they were not equivalent.[139] This makes the article XX(b) analysis unnecessary, but the Appellate Body nevertheless reviewed this provision as well.

The TBT Agreement addresses specifically *de facto* discrimination claims of the type at bar. Its article 2.2 sets the obligation not to adopt technical regulations for the purpose of creating unnecessary obstacles to trade. However, this obligation is limited: "technical regulations shall not be more trade-restrictive than necessary to fulfill a legitimate objective, *taking into account of the risks non-fulfillment would create . . . . In assessing such risks relevant elements of consideration are,* inter alia: *available scientific and technical information,* related processing technology or intended end-use products."[140] This approach differs from the strict requirements of article XX(b) of the GATT and it opens the way to a precautionary analysis. Because states have to take into account the risks at stake when searching for alternative regulations, they may limit their search and implement measures that might not be trade-optimal but that are proof with respect to the regulatory objective. Following the same logic, the Appellate Body, in the *Beef Hormones* case, stated that "responsible, representative governments commonly act from perspectives of prudence and precaution where risks of irreversible, e.g. life-terminating, damage to human health are concerned."[141] In the *Asbestos* case, the risk is indeed life-terminating[142] and the need for speedy action may justify the implementation of a trade-restrictive measure without the

137. Asbestos Products Panel report, *supra* note 117, paras. 8.193–194.

138. Appellate Body Asbestos Products report, *supra* note 117, para. 131.

139. *Id.* paras. 127–130. The Appellate Body had already indicated that a series of factors could be taken into account to determine whether products are "like." Report of the Appellate Body, Japan—Taxes on Alcoholic Beverages, WT/DS8/AB/R (Oct. 4, 1996), http://www.wto.org. *See also* Robert Howse & Petros C. Mavroidis, *Europe's Evolving Regulatory Strategy for GMOs—The Issue of Consistency With WTO Law: Of Kine and Brine*, 24 FORDHAM INT'L L.J. 317, 319 n.7 (2000).

140. TBT Agreement art. 2.2. (emphasis added).

141. Appellate Body Hormones report, *supra* note 38, § 124.

142. The Appellate Body report in the *Asbestos* case notes that the interest for regulation "is both vital and important to the highest degree." Appellate Body Asbestos Products report, *supra* note 117, para. 172.

delays entailed by looking for speculative alternatives.[143] This analysis defeats the Canadian claim that France should have further examined less restrictive measures. The underlying rational is precaution: the risk is irreversible and scientific basis points to a substantial risk; waiting to take action is therefore inappropriate.[144]

Article XX(b) does not refer to "available information," as opposed to the TBT Agreement provision. The Appellate Body rejected the Canadian interpretation of article XX and thus recognized that in the case at stake, states could act on the basis of available and incomplete information to eliminate the higher risks.[145] Here, the Appellate Body alludes to the uncertainty surrounding the substitute products that may not be much safer than the asbestos products. The difference is that the risks triggered by using asbestos products are sufficiently evidenced, whereas the risks created by the substitutes are not precisely known.

Although these three cases are consistent in their interpretation of precaution, they point to an extension of the precautionary principle, outside of article 5, section 7 of the SPS Agreement, without clearly delineating the new role assigned to it. The *Beef Hormones* case presented the principle as possibly an interpretative one and the *Asbestos* case fits in this new trend. The issue is now whether WTO law should further formalize the interpretative function of the principle and, if so, control its domain of application. The *Asbestos* case already shows that use of the principle is not limited to provisions related to scientific uncertainty. Perhaps it is the recognition that available information is always limited and that regulatory decisions are taken to the best of our knowledge, not in the perfect information context, which serves as an assumption in numerous economic models. Given the many remaining issues about the definition of the principle, it seems utopian to contemplate the formulation of a full-fledged principle in WTO law. Precaution cannot yet translate into a bright line rule. On the other hand, if it is accepted as a judgment guide, it could find a place as an analytic principle that Panels and the Appellate Body would use to adjudicate cases. The precautionary principle, as an interpretative tool, would be understood as a standard of reasonableness in the face of grave risks and uncertainty.

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143. Robert Howse & Elisabeth Tuerk, *The WTO Impact on Internal Regulations—A Case Study of the Canada-EC Asbestos Dispute*, *in* THE EU AND THE WTO: LEGAL AND CONSTITUTIONAL ASPECTS, ARTICLE III—NATIONAL TREATMENT (Grainne De Burca & Joanna Scott eds., forthcoming 2001) (manuscript at 315, on file with author).

144. Appellate Body Asbestos Products report, *supra* note 117, paras. 155–167 (showing that health is a compelling objective in the article XX(b) analysis).

145. Appellate Body Asbestos Products report, *supra* note 117, para. 168.

D. *The Endorsement by the European Communities*

European Community law has evolved steadily towards the recognition of the precautionary principle[146] at the same time as the latter has diffused in the domestic laws of Member States. The ECJ pioneered this trend by referring to the principle, implicitly at first and later more explicitly. As a result, the European Commission published a *Communication on the Precautionary Principle* in 2000 to formalize and integrate the position of the Communities on the issue. The first section presents the judicial evolution and the second section focuses on the Commission's action and the secondary law.

1. The ECJ Jurisprudence: Toward a Precautionary Analysis

A first case, on the prohibition of drift-nets,[147] involved tuna fishermen who were put at a disadvantage by the prohibition of this fishing technique in the North Atlantic Ocean.[148] Use of drift-nets longer than 2.5 kilometers was thought to lead to overexploitation of albacore. The plaintiffs claimed that the Commission had no scientific basis for implementing the regulation, since the particular variety of tuna at stake was not classified as endangered. The Attorney General opposed the precautionary principle as a defense, claiming that the measure was necessary to prevent a depletion of the tuna stocks. The court maintained the regulation without explicitly referring to precaution but stated that conservation measures need not be in full conformity with scientific opinions and that the absence or inconclusiveness of such opinions should not prevent the Council from adopting necessary measures.[149]

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146. E.C. TREATY art. 174, § 2. This section of the E.C. Treaty is the basis for much of the European environmental law regulation:

> Community policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on the precautionary principle and on principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

Id.

147. Council Regulation 1239/98, 1998 O.J. (L 171) 1.

148. Case C-405/92, Armand Mondiet SA v. Armement Islais SARL, 1993 E.C.R. I-6133. This case was followed by a second case, Case T-138/98, ACAV v. Council, 2000 E.C.R. II-341, which maintained the challenged regulation.

149. Armand Mondiet SA, 1993 E.C.R. at I-6134.

> It follows from the wording of Article 2 of Regulation No. 170/83 establishing a Community system for the conservation and management of fishery resources that the measures for the conservation of fishery resources need not be completely consistent with the scientific advice and the absence of such advice or the fact that it is inconclusive cannot prevent the Council from adopting such measures as deems necessary for achieving the objectives of the common fisheries policy.

Id.

Even though the court did not label this analysis as precautionary, the allusion to the principle is quite transparent.

The court went one step further in the BSE disease case.[150] The court rejected the request for provisional measures despite the scientific uncertainty surrounding the Creutzfeld-Jakob disease (i.e. the human version of the BSE disease). The lack of scientific certainty was not a sufficent basis for lifting the ban on British beef. The court further recognized that the most probable explanation for the contamination to human beings is exposure to BSE, which justifies the continuation of the ban, regardless of the economic consequences for the plaintiffs. The court stated that scientific uncertainties were not a reason to postpone action.[151] Finally, the court noted that the Commission's regulation is "transitory," called for continuing scientific research, and issued an invitation to take new information into account in future decisions.[152] These elements participate in the precautionary standard, and the analysis sets a binding precedent. In fact, it has already been referred to by the Court of First Instance in *Bergaderm*, which prohibited the use of certain chemicals in sunscreen cosmetics.[153]

The ECJ derived the precautionary principle from article 174 of the E.C. Treaty, but also applied it as an interpretation of the Commission's regulations. A parallel could be made with the WTO, where the principle is endorsed specifically in one provision (article 5, section 7 of the SPS Agreement) but also used for interpretation of other provisions or situations. However, the ECJ took a more pro-active stand than the DSB.

2. The Formalization by the Commission

The principle has been progressively incorporated into the decision-making process, and is fully discussed in the recent Communication.

In 1997, the Commission published a Green Book on the General Principles of Food Legislation in the European Union, which alludes to the precautionary principle and, more generally, insists on the need for scientific consultation in the elaboration of regulations to achieve better

150. After the embargo against British beef was implemented, a series of cases challenged this ban. First, came a request for provisional measures to lift the ban. Case C-180/96, U.K. v. Comm'n, 1996 E.C.R. I-3903. This was followed by the substantive analysis. Case C-157/96, The Queen v. Ministry of Agric., Fisheries & Food, 1998 E.C.R. I-2211.

151. The Queen v. Ministry of Agric., Fisheries & Food, 1998 E.C.R. at 2298 ("Where there is uncertainty as to the existence or extent of risks to human health, the institutions may take protective measures without having to wait until the reality and seriousness of those risks become fully apparent.").

152. *Id.* at 2298.

153. Case T-199/96, Labs. Pharmaceutiques Bergaderm S.A. & J.J. Goupil v. Comm'n, 1998 E.C.R. II-2805.

risk management.[154] Similarly, the Communication on Consumers' Health and Food Safety states that the Commission should consider the principle when analyzing risks in the face of uncertainty.[155] The Communication on the Precautionary Principle (the Communication) followed a speech by Romano Prodi at the European Parliament and a Resolution taken by the Council.[156] It also came as an official statement in the aftermath of the Cartagena Protocol.

The Communication aims at guaranteeing that the precautionary principle will not be used to justify arbitrary decisions but is actually implemented in circumstances where a risk has been evidenced but is not fully qualified. For the sake of legal predictability, it is essential to specify how and when the principle intervenes. Following a traditional analysis of the principle, the Communication establishes two conditions to the implementation of precaution: (1) the identification of a potential damage; and (2) the insufficiency of information on this risk.[157] In the risk evaluation, special attention should be given to scientific dissidence and minority opinions, so long as they offer appropriate credentials. At the same time, the Communication recommends identifying and circumscribing the uncertainties themselves.[158] Contrary to the Anglo-Saxon approach, the Commission rejects the notion of a "no need for intervention" level and reserves the option to define whatever level of risk is socially acceptable. If the precautionary principle is articulated with a scientific analysis, it remains within the realm of the political power to judge whether society calls for precaution or not.

So far, the Communication does not appear groundbreaking. However, it presents creative options for the implementation of the precautionary measures themselves. The Commission obviously wants to preserve a wide panel of actions, ranging from funding a research program, simply informing the public on the potential toxicity of a product (the labeling of GMO products is an example), to banning a product (e.g. the British beef case) or a substance. Moreover, the Communication af-

154. Green Book on the General Principles of Food Legislation in the European Union, COM (97)176 final at part 4, ch. II ("In order to achieve a high level of protection and in cases where scientific uncertainty precludes a full risk evaluation, it is necessary to proceed with prudence with respect to risk management and to apply the precautionary principle.").

155. Communication on Consumers' Health and Food Safety, COM (97)183 final at 20.

156. Communication, *supra* note 132.

157. *Id.* at 14.

158. The Communication specifies that certain elements should be taken into account when evaluating the risk and available data. These include animals, models, and reactions to extrapolate the effect of a product on human health; weight charts to make comparison between species, considering substantial security margins when assessing admissible daily dose of a product; and adoption of the "as low as reasonably achievable" (ALARA) standard for toxic contaminant. The text also rejects the admissible daily dose analysis for substances that are known genotoxics and carcinogens.

firms that a conscious decision not to take action may also be within the realm of precaution.

Last, the Communication integrates a number of principles into the precautionary approach. Some are long-standing fundamentals of EC law, such as proportionality and nondiscrimination, but others are more specific to the topic, such as cost-benefit analysis, continuing scientific research, and coherence of the measures.[159] The measures must be proportional to the level of protection chosen, with a special attention paid to the economic implications of the action.[160] Cost-benefit study is a constant of precautionary analysis, as well as monitoring the measures implemented and following up on research. As to reversing the burden of proof, the Commission expressed strong reservations with respect to a systematic reversal.[161] Some regulations already provide for a reversal, for substances considered *a priori* risky or dangerous, but the Communication does not recommend a generalization of the procedure.

3. Secondary Law

Notwithstanding the attempt of the Commission to formulate a homogeneous European policy on the precautionary principle, recent debates regarding GMO regulations have shown that the consensus is less than perfect. The current revision of 1990 Directives on the confined use and voluntary dissemination of GMOs[162] created an opposition between the European Parliament, which wanted to give the principle an essential role in the new procedure, and the Commission, which only endorsed the principle at a general level. In the final compromise, the principle was included in the preamble and meant to irrigate the whole text. Domestic legislation taking measures in application of the Communities' regulations provide leeway for the treatment of the precautionary principle. In fact, this articulation of European and domestic legislation on this topic gave rise to a growing number of litigation procedures.[163] For example, France recorded genetically modified corn as a variety legally grown in the country. Greenpeace filed a complaint in the highest administrative court to protest against this measure and obtained a stay order. The

159. Communication, *supra* note 132, at 17–20.

160. The Commission still has hesitations with respect to the "zero-risk" goal. It seemed to require such a stringent level of protection in the *Beef Hormones* case, but the Communication acknowledges that zero tolerance to risk can rarely be achieved.

161. Communication, *supra* note 132, at 20–21.

162. Council Directive 90/219, 1990 O.J. (L117) 1. Council Directive 90/220, 1990 O.J. (L 117) 15.

163. Patrick Thieffry, *Le contentieux naissant des organismes génétiquement modifiés*, 1 REVUE TRIMESTRIELLE DE DROIT EUROPÉEN 81, 85–93 (Jan.–Mar. 1999) (discussing the legal effect of EU regulations and cases involving precautionary obligations on discrepant French regulations).

judgment was founded on a precautionary analysis emphasizing the potentially adverse effects of cultivating this genetically engineered corn. However, the allusion to the principle disappeared in the substantive judgment.[164]

The European Communities are probably the most active political and judicial bodies with respect to the precautionary principle, together with the ITLOS. The Appellate Body of the WTO has been more receptive to precautionary arguments, especially in the recent *Asbestos* case, but an overt codification of precaution outside the scope of article 5, section 7 of the SPS Agreement is not yet contemplated. The European Communities maneuver to export their conception of the principle in the WTO, both through the cases discussed above, to which the EC was a party, and through policy submissions to the General Council of the organization.

CONCLUSION

Although it is still evolving, the precautionary principle appears as a standard of international law at the doctrinal level as well as in practice. It is interesting to note a convergence between American and European academia regarding the legal status of the principle. On both sides of the Atlantic, a consensus is developing around the notion of the standard but dissent remains on either end of the spectrum, considering the principle as a guideline or claiming its binding force.

In the international law practice and at the political level, the conception of the principle tends to diverge. The European Communities work to export their notion of the principle, at the same time that they strengthen its application on a domestic level. This strategy is not always successful, particularly at the WTO.

More generally, the principle introduces a radical shift in the relationship between science and policymaking. It opens many possibilities for the regulators, hence the need for a precise framework of application. Key elements of such a regime would be following objective risk assessment procedures, defining a socially acceptable level of risk, continuing scientific research, and reexamining the precautionary measures as information becomes available. The issue of the burden of proof remains perhaps the most controversial aspect of the precautionary principle as reversing the burden of proof is often considered the foremost expression of the principle.

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164. *Association Greenpeace France*, 25 Sept. 1998, Gaz. Pal. [1999], 22–23, pan. jurispr. 27.

The analysis of WTO and ECJ cases has shown that the WTO and the European Communities have different capacities to develop a precautionary approach. The ECJ took the lead in incorporating precaution in its reasoning, even though the statutory basis (the E.C. Treaty) was not very specific. In contrast, the DSB still struggles to apply article 5, section 7 of the SPS Agreement and hesitates to extend precaution outside of this provision. The ECJ can blend environmental and trade issues without being limited by article 174 of the E.C. Treaty or even having to refer explicitly to the treaty. Environment or sanitary issues fall within the jurisdiction of the WTO adjudication body only in as much as they are side issues of a trade dispute, whereas the ECJ has full jurisdiction on environment claims. This may be an explanation for the leeway that the court has to develop precautionary analysis. Because the precautionary principle is considered an environmental question, the WTO body has to justify its legal analysis with article XX(g) of the GATT or other environmental or sanitary exceptions. These narrow bases prove more and more inadequate to treat complex questions where environment or public health concerns and trade are intricately linked. Incorporating environmental rules more fully into general trade regulations might open new possibilities for the DSB.

Finally, this Note presented precaution as an example of an emerging category of international norms: the standards. It also argued that the legal status of the principle was evolving from a policy discourse to a binding form. It is important to note that the status of the principle as a standard is not necessarily a step on the way to the creation of a rule. The fact that a treaty makes it a rule to use precaution does not alter the nature of precaution as a standard. The reference to reasonableness in domestic law, for example, derives its force from being a standard of judgment and cannot become a hard line rule. International standards operate in a similar way. The precautionary principle will therefore gain its legal value from being refined by negotiators and interpreted by adjudicators rather than being turned into a traditional rule.