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University of BRISTOL

LAW SCHOOL
Coursework Submission Coversheet

SECTION 1 - TO BE COMPLETED BY STUDENT

CANDIDATE NUMBER *(5 digits):*	3	1	8	4	7

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DATE DUE: 31st January 2017		**EXTENSION DATE (IF GIVEN):**

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Environmental principles lack legal teeth. Critically discuss in relation to one such principle.

Introduction

Environmental principles exist in international declarations (such as the Rio Declaration); policy documents, treaties, directives and the jurisprudence of the courts. However, owing to the vague and multiple definitions of these principles, there continues to be 'considerable debate'[1] as to whether these principles carry sufficient legal teeth. The Precautionary Principle is the most controversial principle in international legal developments. Many legal scholars still debate whether it is even an environmental principle at all.[2] This essay will critique the precautionary principle and evaluate whether it requires further legal foundation for it to maintain a fundamental place in environmental law.

The Precautionary Principle

The Precautionary Principle's origins date back to the Stockholm Declaration of 1972,[3] but its importance was first truly affirmed by principle 15 of the Rio Declaration of 1992:

> '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.'[4]

The precautionary principle operates on the basis that protective action should be taken before it can be shown that there is complete scientific proof of a risk.[5] The precautionary approach is therefore a logical extension of 'common sense concepts' that guide daily life: '"an ounce of prevention is worth a pound of cure"; "better safe than sorry" [illegible] Hippocratic Oath's "first, do no harm".'[6] Despite its frequent implementation, the precautionary principle has 'neither a commonly agreed definition nor a set of criteria to guide its implementation'.[7] As a principle, it challenges us to prevent environmental harm before it actually takes place. It must also be noted that the precautionary principle is usually only applicable where the following elements are evident:

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[1] Iron Rhine Arbitration, *Belgium* v *Netherlands*, Award, ICGJ 373 (PCA 2005), 24th May 2005, Permanent Court of Arbitration [PCA].

[2] M. F. Rogers, J. A. Sinden and T. De Lacy, 'The Precautionary Principle for Environmental Management: A Defensive-expenditure Application', *Journal of Environmental Management* (1997) 51, pp. 343-360.

[3] The Stockholm Declaration of the United Nations Conference on the Human Environment, U.N. Doc. A/Conf.48/14/Rev. 1(1973), 11 ILM 1416 (1972).

[4] The Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26 (vol. I)/31 ILM 874 (1992), Principle 15.

[5] United Nations Framework Convention on Climate Change, 1771 UNTS 107; S. Treaty Doc No. 102-38; U.N. Doc. A/AC.237/18 (Part II)/Add 1; 31 ILM 849 (1992).

[6] C. Smith (ed.), 'The Precautionary Principle and Environmental Policy: Science, Uncertainty, and Sustainability', *International Journal of Occupational and Environmental Health* (2000) 6(4), p 263.

[7] M. Martuzzi and J. A. Tickner, 'The precautionary principle: protecting public health, the environment and the future of our children' (World Health Organization 2004), p. 36.

- First, in situations involving a significant level of *uncertainty*. These involve scenarios where the threat is fairly certain (i.e. a causal link can be established between an action and environmental damage, the probability of occurrence can be calculated, and the damage covered against), 'measures may also need to be taken'.[8] However, these ought to be viewed as *preventive* and not *precautionary* measures; and
- Second, where there is a risk of environmental damage. In situations where there is no indication of a threat to the environment, the principle will not apply; and
- Third, where there is a threat of serious and irreparable harm. 'Where threatened damage is trivial or easily reversible, the principle will not be relevant'.[9]

To realise the legal rationale for taking environmental precautions, we must break down the precautionary principle into its constituent norms. Ethically speaking, the precautionary principle can be subdivided into three normative propositions.

Firstly, the precautionary principle demands that we anticipate environmental damage before it actually occurs.[10] To date, however, this first substantial proposition implied by the precautionary principle has surprisingly 'not received much direct attention in the academic literature of the principle'.[11]

Secondly, the precautionary principle implies a norm to pre-emptively prevent environmental damage. We can contrast this *proactive* view with the *reactive* approach, 'which suggests an obligation to remedy or compensate damage after its realisation'.[12] Edward Soule provides a similar account of this second normative proposition implied by the precautionary principle through his emphasis of "a commitment to risk avoidance in terms of some environmental risks".[13] In his opinion,

> '*sometimes* regulators should prohibit (or constrain) the commercialisation of environmentally risky technology, even though the science that identifies the risk is uncertain and even though economic or other factors might recommend otherwise'.[14]

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[8] 'Guidelines for Applying the Precautionary Principle to Biodiversity Conservation and Natural Resource Management', as approved by the 67th meeting of the IUCN Council (14-16 May 2007), p 2.

[9] Ibid.

[10] On the basis of a review of official documents and the related academic literature, the relevant types of harms include: (i) environmental damage, e.g. loss of biodiversity; (ii) human deaths and health hazards such as increased allergies; and (iii) harm to other sentient beings. Other kinds of risks such as economic ones – if acknowledged at all (see A. Nollkaemper '"What You Risk Reveals What You Value" and Other Dilemmas Encountered in the Legal Assaults on Risks' in D. Freestone & E. Hey (eds.), *The Precautionary Principle and International Law: The Challenge of Implementation* (The Hague: Kluwer Law International 1996) – are considered at most indirectly.

[11] M. Ahteensuu, 'Rationale for Taking Precautions: Normative Choices and Commitments in the Implementation of the Precautionary Principle', (University of Turku: TRAMES 2007), 11(61/56), 4, pp. 367.

[12] Ibid. 368.

[13] E. Soule, 'Assessing the Precautionary Principle in the Regulation of Genetically Modified Organisms', *International Journal of Biotechnology* (2002) 4 (1), p 21.

[14] Ibid.

* All of this is ambiguous

Pre-emptive measures may include phase-outs or outright bans, 'moratoria, pre-market testing, labelling, and requests for extra scientific information before proceeding'.[15] Other precautionary responses would include the establishment and implementation of new precautionary risk assessment methodologies. The latter reflects a heavy emphasis on the first normative proposition of the principle. The focus is not only on how to address the identified threats, but also on the methods to anticipate and assess the threats in the first place.[16]

The third normative proposition from the precautionary principle concerns the correct role of scientific knowledge in the environmental decision-making. The precautionary principle prescribes that adequate scientific understanding of an identified threat is an unnecessary condition for taking precautions.[17] This feature distinguishes the precautionary principle (or the precautionary approach) from previous institutionalised risk governance approaches.[18] However, this third proposition does not suggest that any suspicions of risks are sufficient to trigger precautions, but that we "should act based on the best available science, albeit tentative, inconclusive, or in dispute".[19]

'Precaution'

Precaution is one of the 'guiding principles of environmental laws in the European Union'.[20] There has been considerable debate concerning the concept of precaution, particularly whether it should be acknowledged as a legal principle as well as being a sound policy approach.[21] Critics have argued against the recognition of 'precaution' as a "principle" of environmental law, which implies a wide obligation to apply precaution in decision-making, favouring the designation of precaution as 'merely one particular policy/management "approach" to dealing with uncertain threats'.[22] Although it is indisputable that in an growing number of particular contexts there are strong legal requirements to apply precaution, there remains constant debate as to whether precaution has been assimilated into international customary law. The 'Guidelines for Applying the Precautionary Principle to Biodiversity Conservation and Natural Resource Management' set out main instruction for applying the precautionary principle correctly suggests that it 'requires a clear legal and policy basis and an effective system of governance'.[23] The advisory document also requires the establishment and maintenance of 'adequately resourced institutions' to conduct research into 'risk and uncertainty' in environmental decision-making and 'natural resource management'.[24]

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[15] Ahtisuu (n 11), p 368.

[16] For an example of precautionary risk assessment methodologies, see J. A. Tickner, 'Precautionary Assessment: A Framework for Integrating Science, Uncertainty, and Preventative Policy' in J. Tickner (ed.), *Precaution, Environmental Science, and Preventive Public Policy* (Washington DC: Island Press 2003). For an analysis of the implemented (narrow and broad) precautionary policies within the European Union, see L. Levidow, S. Carr, & D. Wield, 'European Union Regulation of Agri-Biotechnology: Precautionary Links between Science, Expertise and Policy', *Science and Public Policy* (2005) 32 (4).

[17] Sandle (n 13), p 21.

[18] N. A. Manson, 'Formulating the Precautionary Principle', *Environmental Ethics* (2002) 24, p 264.

[19] Sandle (n 13), p 21.

[20] D. Kriebel, J. Tickner, P. Epstein, J. Lemons, R. Levins, E. L. Loechler, M. Quinn, R. Rudel, T. Schettler and M. Stoto, 'The Precautionary Principle in Environmental Science', *Environmental Health Perspectives* (The National Institute of Environmental Health Sciences 2003) 109(9), p 871.

[21] W. Th. Douma, *The Precautionary Principle* (The Hague: T.M.C. Asser Institute 1996) 49(3/4), pp. 417-430.

[22] 'Guidelines for Applying the Precautionary Principle' (n 8), p 1.

[23] Ibid.

[24] Ibid.

Customary International Law

The precautionary principle is one of a number of embryonic primary principles of soft law 'that could develop either into widely accepted legislative treaties or into customary international law' and thereby converting them from 'aspirational' norms into legal obligations.[25] The precautionary principle is therefore already widely considered to be a non-binding principle of customary international law.[26] However, this concept is hard to justify for several reasons. The precautionary principle is still particularly vague, despite being interpreted through several different methods and is rejected by much of the world on a national level.[27] For instance, the Dispute Settlement Body of the World Trade Organisation (WTO) has expressed doubts as to whether the precautionary principle is enshrined in customary international law or is considered to be a general principle of law under the definition provided by Article 38(1)(c) of the Statute of the International Court of Justice (ICJ).[28]

The precautionary principle's wording may be unusual, like in the Paris Convention 1992, but normally the principle is restricted in international law to situations where there is "threat of serious damage" or "reasonable grounds for concern".[29] However, international policy dialogue concerning the precautionary principle is fairly clearly articulated. Significant elements of this dialogue 'include:

- taking precautionary measures even if not all cause-and-effect relationships are fully understood;
- shifting the burden of proving safety onto the proponent of a potentially harmful activity;
- making environmental and public health decisions in an open, informed, and democratic way;
- examining the full range of alternatives to a particular activity; and
- relying on a weight-of-the-evidence approach, rather than waiting for absolute certainty.'[30]

The question we should ask ourselves is whether the precautionary principle is already accepted as a general principle of international law (as described by Article 38 of the Statute of the International Court of Justice) 'or as customary international law'.[31]
By its own nature, customary law is dynamic, due to the fact that it evolves gradually or speedily, and eventually becomes codified. In emerging areas of law, state practice as

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[25] L. Guruswamy, *International Environmental Law in a Nutshell* (4th edn, Thomson Reuters 2012), at 65.

[26] A. Nollkaemper, 'The Precautionary Principle in International Environmental Law: What's New Under the Sun?', *Marine Pollution Bulletin* (Pergamon Press plc. 1991) 22(3), pp. 107-110.

[27] C. Tinker, 'State Responsibility and the Precautionary Principle', in D. Freestone & E. Hay (eds.), *The Precautionary Principle and International Law - The Challenge of Implementation* 53 (The Hague: Kluwer Law International 1996).

[28] WTO, *Appellate Body Report on EC Measures Concerning Meat and Meat Products (Hormones)*, WT/DS48/AB/R, 123 (16 January 1998); Statute of the International Court of Justice [ICJ], Art. 38(1)(c).

[29] 1992 Paris Convention for the Protection of the Marine Environment of the North-East Atlantic, 2354 UNTS 67; 32 ILM 1069 (1993).

[30] Smith (n 6), p 270.

[31] European Commission, 'Workshop on EU Legislation: Principles of EU Environmental Law', *European Commission & European Environment Agency* (European Commission 2012), p 19.

evidence of *opinio juris* quickly establishes customary international law. In such instances, customary international law may advance instantly due to 'the necessity to preserve a sense of order in the uncharted face of progress'.[32]

Distinct similarities can be drawn between 'the emergence of rules on space sovereignty and the present status of the precautionary principle'.[33] Once again, countries face a crucial challenge, affecting all and caused in some ways by all. During a case concerning space sovereignty, the mutual recognition of some 66 states led to the acceptance of a customary rule. In another case, the twelve-mile territorial sea rule was 'recognised as customary international law when accepted by 102 nations'.[34] Here, the numbers reflected the development of customary international law. Today, the precautionary principle is recognised by 34 countries, clearly indicating its emergence as customary international law.[35]

Nevertheless, the precautionary principle has received no authoritative, workable definition in international law. In international discourse, 'Canada defends the precautionary principle'.[36] Although the Canadian Environmental Protection Act (CEPA) 1999 and the Rio Declaration 1992 feature definitions of the term 'precaution',[37] many other similar international statutory definitions contain conspicuous gaps.[38] The Pest Control Products Act (PCPA) 2002 omits particular definitional elements of the precautionary principle, as does the Canada Marine Conservation Areas Act 2002, which lacks certain key principles that are contained in the CEPA/Rio definition.[39] Furthermore, in the Canada Consumer Product Safety Act 2010, the phrase 'cost-effective' is also absent.[40] In 2001, the Canadian government released a

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[32] B. Cheng, *United Nations Resolutions on Outer Space: Instant International Customary Law*, 5 Indian J INTL. L. 23 (1965), pp. 35-40; B. Cheng, *Custom: The Future of General State Practice in a Divided World*, in D. M. Johnston & R. St. MacDonald (eds.), 'The Structure and Process of International Law' (Dordrecht 1983) 513.

[33] J. Abouchar & J. Cameron, 'The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment', *Boston College International and Comparative Law Review* (1991) 14(1), p 20.

[34] United Nations Convention on the Law of the Sea, U.N. Doc. A/CONF. *62/122* (1982), 21 ILM 1261 (1982).

[35] Conference on "Action for a Common Future" Bergen, Norway, May 8-16, 1990. The Government of Norway, in cooperation with the United Nations Economic Commission for Europe (ECE), organised the Bergen Conference as a follow-up to the report of the World Commission on Environment and Development, as a preparation for the 1992 United Nations Conference on Environment and Development. *Bergen Conference, Bergen Ministerial Declaration on Sustainable Development in the ECE Region* (16 May 1990), at Art. 7. Environment ministers and officials from thirty-four ECE countries attended the Bergen Conference.

[36] Abouchar & Cameron (n 33), p 10.

[37] Canadian Environmental Protection Act 1999: "Whereas the Government of Canada is committed to implementing the precautionary principle that, 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."; the Rio Declaration (n 4), Principle 15.

[38] See the Report of the UNCED, UN Doc.A/CONF 151/26 (1992), Chapter 17.22; the preamble to the Cartagena Protocol on Biosafety to the Convention on Biodiversity, 2226 U.N.T.S. 208; 39 ILM 1027 (2000); UN Doc. UNEP/CBD/ExCOP/1/3, at 42 (2000); the Stockholm Convention on Persistent Organic Pollutants, 2256 UNTS 119; 40 ILM 532 (2001), Arts. 1, 8-9, and the United Nations Framework Convention on Climate Change (UNFCCC), 1771 UNTS 107; S. Treaty Doc No. 102-38; UN Doc. A/AC 237/18 (Part II)/Add 1; 31 ILM 849 (1992), Art. 3.

[39] Pest Control Products Act S.C. 2002, c. 28; Canada Marine Conservation Areas Act 2002.

[40] Canada Consumer Product Safety Act 2010.

discussion paper on the precautionary approach.[41] In this document, the federal government affirmed its support for the Rio definition of the precautionary principle.[42] The Canadian Chamber hopes that this support will lead to consistency across all legislation and this can only be seen as a step forward. The indeterminacy of the precautionary principle (which is also applicable to the polluter pays principle)[43] consigns it to being 'an inappropriate and ineffective regulatory decision-making tool'.[44]

The United Kingdom

With regard to domestic law, the UK government has acknowledged the existence of the precautionary principle but instead applies a 'preventive principle'.[45] The aim of the preventive principle is to prevent harm to the environment, but only 'once the damage is known or proved'.[46] Rather than adopting a precautionary approach, the UK government has adopted emission standards for 'only the most dangerous substances'.[47] 'The Red List' forms the cornerstone of the British approach towards these substances.[48] However, the Red List omits two substances with higher levels of toxicity than most of the listed substances: 'carbon tetrachloride and chloroform'.[49] The limited controls on these substances and the foundations of the Red List itself are 'both entirely inconsistent with a precautionary approach'.[50]

The United States

The United States has demonstrated through its strong opposition to the precautionary principle at the Bergen Conference[51] and again at the Second World Climate Conference[52] that it resists accepting the principle. In its place, U.S. policy towards climate change, and other environmental problems with an uncertain future, has become known as the "no regrets" policy. The former US Secretary of State James Baker asserted that the "no regrets" policy enables the United States "to take actions that are fully justified in their own right [that is,

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[41] Government of Canada, 'A Canadian Perspective on the Precautionary Approach/Principle', Canadian Government Discussion Paper (September 2001).

[42] Ibid.

[43] The Rio Declaration (n 4), Principle 16.

[44] Saruswamy (n 25), at 655.

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

[46] Ibid.

[47] Ibid.

[48] R.R. Churchill & J. Gibson, *The Implementation of the North Sea Declarations by the United Kingdom: An Assessment*, in Third North Sea Conference: Greenpeace Paper (1990) 17, at 40. The Red List contains 23 substances, including mercury, cadmium, and DDT (at 46).

[49] Ibid, at 44.

[50] Ibid.

[51] *Focus Report*, 'Global Environmental Change Rep.' (25/5/1990), at 2. A U.S. communique indicated that the United States "does not believe, as apparently some do, that we can lightly accept the ... language in the expectation that it will be forgotten with the passage of time".

[52] M. Kruhly, 'From the Archives, 1990: U.S. Deemed a Wastrel of Energy', *The New York Times* (2/12/2015) <https://www.nytimes.com/interactive/projects/cp/climate/2015-paris-climate-talks/from-the-archives-1990-us-energy> Date accessed: 18 January 2017. Ministers from more than 100 countries participated in the 1990 Second World Climate Conference in Geneva, Switzerland and debated strategies to respond to global climate change. The overwhelming majority of countries were united in calling for immediate action. The United States, however, was strongly opposed to committing itself to cutbacks.

make economic sense] and which have the added advantage of coping with greenhouse gases. They're precisely the policies we will never have cause to regret".[53]

Developments in EU Law

The Treaty of Rome, which established the EU (then EEC) in 1957, provided for preventative action by the Community for environmental protection. Article 130r, introduced by the Single European Act (SEA), demands that actions taken by the EU regarding the environment ought to be based on the principle that preventative action should be taken, that environmental damage should be corrected at its source, and that polluters should pay for the environmental harm they caused.[54] The European Commission distinguishes "preventative action" from "precautionary action".[55] This is because precautionary action entails some shift in the burden of proof, towards potential polluters, of signifying that pollution is not serious enough or likely to cause irreparable harm. "Preventative" is a slightly less radical term.

International Declarations

The United Nations Environment Program (UNEP) Governing Council has explicitly adopted the precautionary principle, which is also:

- 'accepted implicitly or explicitly by four international declarations on the dumping of waste at sea,
- reaffirmed by the North Sea Conference, and
- referred to in the preamble of the Montreal Protocol.'[56]

Crucially, the precautionary principle is evolving at the ministerial level as 'a principle upon which to base policies such as sustainable development.'[57] As argued earlier, the incorporation of the precautionary principle into the Bergen Conference Ministerial Declaration is a strong indicator of its integration into customary international law.[58]

The precautionary principle is an emerging international concept "that takes its cue from changing conceptions about the appropriate roles of science, economics, ethics, politics and the law in pro-active environmental protection and management."[59] But, in many respects, the precautionary principle represents legal concepts that are not new. Commentator James Cameron, a proponent of the principle, lists several different existing legal principles that 'he considers to be "indirect" precautionary measures'.[60] The tort concept of strict liability is the most significant of these, as it provides for absolute liability in activities, such as the burial of environmental waste, which is considered to be "abnormally dangerous."[61] Cameron clarifies that the prospect of being held strictly liable (where acting with reasonable care is immaterial)

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[53] Address by Secretary of State James Baker, National Governors Association, in Washington, D.C. (26th February 1990).

[54] Single European Act 1986, Art. 130r(2).

[55] Conversation with Ludwig Kramer, Directorate General XI, in Brussels (2nd October 1990).

[56] *Bergen Declaration* (n 35), at Art. 7.

[57] Ibid.

[58] 22.

[59] T. O'Riordan & J. Cameron, 'The History and Contemporary Significance of the Precautionary Principle', in T. O'Riordan & J. Cameron (eds.), *Interpreting the Precautionary Principle* (London: Earthscan & Trotman 1994) 12.

[60] M. Stevens, 'The Precautionary Principle in the International Arena', *Sustainable Development Law & Policy* (2002) 2(2), p 15.

[61] Ibid.

* The rewording introduces an error - it is the Single European Act which does this in 1986.

** Cameron + Abouchar had this conversation

forces state actors to exercise caution and 'consider the costs of potential liability before acting'.[62]

A Proposed Legal Definition for the Precautionary Principle

An ideal legal definition for the precautionary principle might contain the combination of two statements taken from the Bergen Declaration, which have survived to the draft Ministerial Declaration for the Second World Climate Conference.[63] The language of the Bergen Declaration and the draft Ministerial Declaration commits the participant states to 'anticipate, prevent and attack the causes of environmental degradation,' and the parties have promised that 'where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'.[64] A proposed definition should therefore include the following four key elements:

1. The Evidentiary Threshold

Threshold terms may include 'threats of serious or irreversible damage'. Terms such as 'harm' or 'injury to the environment' could be used to adjust the strength of the language of a legal document.[65] The practical test of the precautionary principle will be in its interpretation. In this regard, we are happy to not only make the word 'serious' a threshold, but the range of interpretations which will be attributed to its use as a threshold. There exists a possibility that the change of consciousness we have experienced in our philosophical, scientific and political understanding of environmental problems will encompass the interpretative perception of lawyers and decision-makers in their approach to the meaning and effect of these threshold words.

2. The Burden of Proof

Here, the burden rests on the 'proto-polluter', which, in the instance of an international declaration made by states, would be a polluting state acting on behalf of all those legal persons within its jurisdiction to demonstrate that an activity will not lead to environmental degradation. This standard of proof resembles the balance of probabilities in English civil law.

3. The Positive Obligation

This is a duty to educate decision-makers at every level so that they may make an effort to stop the causes of environmental degradation. It requires states to establish principles and procedures to guarantee that activities within their jurisdiction and control have 'overcome the burden of establishing that they do not cause serious or irreversible harm to the environment'.[66] The duty is owed to the whole of international society and not merely to other states.

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[62] J. Cameron, 'The Precautionary Principle: Core Meaning, Constitutional Framework and Procedures for Implementation', in R. Harding & E. Fisher (eds.), Perspectives on the Precautionary Principle (Federation Press 1999) 30, at 50.

[63] *Bergen Declaration* (n 35), at Art. 7.

[64] Ibid.

[65] Id.

[66] For example, the Declaration of the Hague, March 11, 1989, asserts that "the duty of the community of nations vis-a-vis present and future generations to do all that can be done to preserve the quality of the atmosphere". *Hague Declaration on the Environment*, 28 I.L.M. 1308 (1989).

4. A Policy for Action in the Face of Uncertainty

This results in a liability for omissions. An inability to act, based on the grounds of scientific uncertainty, to prevent environmental harm breaches international law under this definition.

Conclusion

An environmental principle carries different meanings in different legal jurisdictions. But, irrespective of the legal system, principles are the core concepts, signifying its coherent meaning. A principle is the main determining factor of a particular legal system because of its 'superior hierarchy, influences and resonation on all norms of the system and on the way to apply them'.[67]

Many environmental lawyers have argued that the precautionary principle is already a principle of customary international law.[68] However, the Treaty Establishing the European Community does not provide a definition of the precautionary principle.[69] But, decisions by the European Court of Justice and other EU courts denote elements of a general application of the precautionary principle in EU law. These include uncertainty, risk, and lack of a direct causal link between the risk and the perceived harm.[70] However, regulations cannot legally be based on a 'purely hypothetical approach to risk' on mere supposition 'which has not been scientifically verified'.[71]

Some of the core issues that result from the use of the precautionary principle include the fact that the requirement to take precautions is affected by the balancing of the costs and benefits of taking actions. This weaker version sadly reflects the present EU and UK court approaches. The EU has expressed it's objective to establish guidelines for the use of the precautionary principle so as to clarify arrangements for its application.[72] The application of the precautionary principle demands 'a clear legal and policy basis and an effective system of governance'.[73] A common legal understanding of the precautionary principle would improve consistency in judicial decisions in arising environmental disputes.[74]

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[67] World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), *The Precautionary Principle* (France: UNESCO 2005) p 21.

[68] Some experts argue that there is sufficient state practice to support the emergence of the precautionary principle as a principle of customary international law. See T. Christoforou, "The Precautionary Principle in EC Law and Science" in J. Tickner (ed.), *Environmental Science and Preventive Public Policy* (Island Press 2003), Chapter 16; J. Cameron and J. Abouchar, "The Status of the Precautionary Principle in International Law," in D. Freestone and E. Hey (eds.), *The Precautionary Principle in International Law* (Kluwer 1996), p 52. However, other academics consider that the precautionary principle is not yet a principle of international law particularly given the variety of interpretations. See P. Birnie and A. Boyle, *International Law and the Environment* (OUP 2002), p 98.

[69] Treaty Establishing the European Economic Community, (25/3/1957), 298 U.N.T.S. 11.

[70] Case C-157/96 *BSE* (1998) ECR1-2211; Case T-13/99 *Pfizer* (2002) ECR 11-3305, and Case T-70/99 *Alpharama* (2002) ECR 11-3945. For an in-depth treatment of these cases, see T. Christoforou, "The Precautionary Principle in EC Law and the WTO Legal System" in G. Kremlis, G. Balias and A. Sifakis (eds.), *The Precautionary Principle* (Athens: Sakkoulas 2004), pp. 99-149.

[71] Ibid.

[72] S. Shaw and R. Schwartz, 'Trading Precaution: The Precautionary Principle and the WTO', United Nations University – Institute of Advanced Studies Report 2005, p 4.

[73] 'Guidelines for Applying the Precautionary Principle' (n 8), p 6.

[74] Ibid, p 8.

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

James Cameron

Juli Abouchar

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

*James Cameron**
*Juli Abouchar***

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

Gro Harlem Brundtland
Leader of the Opposition, Norway[1]

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

Prime Minister Jan P. Syse
Leader, Conservative Party, Norway[2]

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* Barrister of the Inner Temple; Director of the Centre for International Environmental Law, King's College, London (CIEL); Director of Studies in Law, Clare Hall, Cambridge University; Honorary Lecturer in Law, King's College, London. LL.B., University College, University of London, 1985; LL.M., Queen's College, Cambridge University, 1986.

** LL.B. and B.C.L. Candidate, McGill University; B.Sc. 1987 and B.A. 1988, University of Waterloo. The authors are grateful to Dean Yves-Marie Morisette of the Faculty of Law, McGill University, whose generous financial assistance made possible Ms. Abouchar's internship at CIEL. The authors also wish to thank Jacob D. Werksman, Research Fellow at CIEL, for his assistance with the preparation of this Article.

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

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

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

3. Belgium

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

4. The United Kingdom

The United Kingdom (U.K.) took a significant stance at the Bergen Conference in debate on the precautionary principle. At Bergen, British representatives were firmly in favor of including the principle in the Ministerial Declaration.[24] Endorsement of the London Declaration and the public support offered by the U.K. at the Second World Climate Conference[25] are important as po-

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

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

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

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

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

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

5. Sweden, the Netherlands, Denmark and Norway

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

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

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

[28] *Id.* at 44.

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

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

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

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

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

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

6. Canada

Certainly in international discourse, Canada defends the precautionary principle. Canada publicly supported inclusion of the precautionary principle in the Ministerial Declaration during debate at the Bergen Conference.[34] A recent Canadian Supreme Court decision, *R v. Crown Zellerbach Canada Ltd., AG Quebec, AG BC*,[35] has interesting repercussions for the precautionary principle and may count as national application of the principle. This case and the Canadian Ocean Dumping Control Act[36] indicate that at least with respect to marine dumping, Canadian environmental policy follows a precautionary approach.

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

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

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

[35] 49 D.L.R.4th 161 (1988).

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

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

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

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

> any material of any kind into or in any well, lake, river, pond, spring, stream, reservoir or other water or watercourse or on any shore or bank thereof or into or in any place that may impair the quality of the water of any well, lake, river, pond, spring, stream, reservoir or other water or watercourse . . . .[40]

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

7. The United States

As demonstrated by its strong opposition to the precautionary principle at the Bergen Conference[41] and again at the Second World Climate Conference,[42] the United States has resisted em-

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

[38] *Id.* at 174.

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

[40] *Id.* at § 16(1).

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

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

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

B. *Developments in EEC Law*

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

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

Arguably, the proposed directive on civil liability for damage caused by waste[46] is likely to encourage precautionary measures in industry once adopted into law. The proposed directive pro-

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

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

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

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

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

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

2. Genetically Modified Organisms

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

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

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

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

[50] Directive 90/219 at arts. 7–12.

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

C. *International Declarations*

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

1. UNEP Governing Council

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

> Recognizing that waiting for scientific proof regarding the impact of pollutants discharged into the marine environment may result in irreversible damage to the marine environment and in human suffering, . . . [the Governing Council] recommends that all the governments adopt the "principle of precautionary action" as the basis of their policy with regard to prevention and elimination of marine pollution . . . .[53]

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[51] Directive 90/220 at arts. 1–12.

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

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

2. Marine Dumping Conventions

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

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

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

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

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

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

[56] *Id.* at 24.

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

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

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

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

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

5. The Bergen Conference

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

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

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

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

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

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

II. THE PRECAUTIONARY PRINCIPLE AS CUSTOMARY INTERNATIONAL LAW

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

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

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

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

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

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

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

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

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

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

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

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

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

III. DEFINITION AND STRUCTURE

A. *A Proposed Definition*

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

1. The Evidentiary Threshold

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

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

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

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

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

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

B. *A Proposed Legislative and Administrative Framework*

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

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

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

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

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

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

2. The Burden of Proof

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

3. The Positive Obligation

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

4. A Policy for Action in the Face of Uncertainty

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

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

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Rationale for Taking Precautions: Normative Choices and Commitments in the Implementation of the Precautionary Principle

Marko Ahteensuu

Abstract. The precautionary principle states that serious environmental threats and health hazards should be anticipated and that they ought to be forestalled before the realisation of damage even if scientific understanding of the risks is inadequate. Although the principle is a subject of intense debate and academic scrutiny, its normative underpinnings have received surprisingly exiguous attention. In this paper, the precautionary principle is explicated, which is followed by an introduction of a framework which both illuminates different normative commitments and choices related to the implementation of the principle, and enables ethical evaluation of specific understandings of the principle.

1. Introduction

The precautionary principle – if in doubt, decide in favour of the environment – plays a significant role in the current environmental (and health) law and policy. It is explicitly mentioned, for instance, in biotechnology law, both at national (e.g. GEA 2004/847) and international (e.g. CPB 2000) level.[1] At the same time, the principle is a subject of intense debate and academic scrutiny. On the one hand, independent research institutes and a number of academics have emphasised the necessity of the precautionary principle in well-founded environmental risk governance (e.g. EEA 2001). The principle has also been endorsed by several environmental organisations such as Greenpeace and the Science and Environment Health Network (SEHN). On the other hand, the precautionary principle and its inclusion in environmental risk governance have been subjected to substantial criticism (e.g. Holm & Harris 1999; Starr 2003; Wildavsky 1996).

Notwithstanding this, normative underpinnings of the precautionary principle have received surprisingly exiguous attention. Although the importance of the ethical discussion has been underlined in several occasions, there are only a few brief – and alone unsatisfactory – published papers on the issue. Susan Carr (2002), for instance, has criticised the European Union's negligence of the value-based aspects of the principle. Jenneth Parker (1998) shortly considers ethical assumptions of the precautionary principle in an introductory article on the principle included in *Encyclopedia of Applied Ethics* (see also Jensen 2002). Marc A. Saner (2002) relates the precautionary principle to main approaches in the Western ethical traditions, in particular to those of virtue ethics, deontology and utilitarianism. An interesting analysis can be found in René von Schomberg (2006) who discusses the normative basis of the precautionary principle in a recent article. Although Schomberg's analysis is certainly a laudable explication of the different normative choices related to the precautionary decision-making, it lacks an ethical analysis of these choices. In policymaking, in its turn, the precautionary principle has been invoked to justify a wide range of policies – sometimes even mutually contradictory ones (see e.g. Levidow et al. 2005). Furthermore, this has often been done without an explicitly stated normative framework. The Commission of the European Communities, for instance, has emphasised the scientific aspects of the precautionary decision-making and ignored almost totally the justification of its basic values.[2]

The application of the precautionary principle is fundamentally a normative choice. The degree to which we are prepared to take precautions is related to the values which we attach to the nature, society, human well-being, and social equality. Indeed, taking precautions seems to be instinctive for human beings, and it is certainly in accordance with common sense. Nonetheless, the influential role of the precautionary principle in environmental law and policy cannot be based upon mere hunches or gut feelings, but upon the fact that the taken precautions are consistent with certain values shared in a society.[3] When the principle is invoked in societal risk decision-making, evaluative and normative underpinnings should be taken into account, explicated and justified. Exactly this is the subject of the present paper. Specifically, following an explication of the precautionary principle, I will introduce a framework which both illuminates different normative commitments and choices related to the implementation of the principle, and enables ethical evaluation of specific understandings of the principle.

2. The Precautionary Principle

The precautionary principle is a principle of practical decision-making which may be justified on the basis of ethical and socio-political grounds and/or as a form of rational action. In general, the principle states that serious environmental threats and health hazards should be anticipated and that they ought to be forestalled before the realisation of damage even if scientific understanding of the risks is inadequate. Despite this commonly agreed (and non-specific) core idea, the precautionary principle has various forms. A number of formulations of the principle can be found in official documents such as international environmental treaties (see e.g. Trouwborst 2002), and several definitions have been proposed in the academic literature (Sandin 1999). Nevertheless, two particular formulations may be considered paradigm examples of the principle. The first one was adopted at the United Nations conference on environment and development in Rio de Janeiro.

> 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 (UNCED 1992, Principle 15).

This formulation is typically referred to when the principle is invoked or discussed. It is explicitly mentioned in most of the academic articles on the principle; and, it is usually presented as a basic example of the principle (e.g. Manson 2002; Myers 2002, 211; VanderZwaag 2002, 167). Furthermore, the formulation (or its equivalents) is included in several other official documents. The *Cartagena Protocol on Biosafety* (CPB 2000, Article 1), for instance, reaffirms the formulation.

The second standard formulation was introduced at a conference organised by the SEHN. According to it,

> [w]hen an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically (*Wingspread Statement on the Precautionary Principle* 1998).

The *Wingspread Statement* is also mentioned in a number of academic articles on the precautionary principle as a basic example of it (Myers 2002, 211). According to Derek

As a principle of practical decision-making, the precautionary principle implies a conduct-guiding norm. In what follows, the aim is to point out the main normative commitments and choices present – but typically not explicit – in the implementation of the precautionary principle.

To begin with, it is useful to distinguish between extrinsic and intrinsic normative components of precautionary decision-making.[7] (This distinction has not been explicated nor emphasised in the discussion, however.) First, the most basic choice of the former kind is the introduction of the precautionary principle to a particular regulatory context. This choice cannot be derived from the principle itself. At the time of invocation, the precautionary principle is not a part of the regulatory tools of a certain context. The choice is socio-political and ethical in nature, and it should be based upon commonly accepted and relevant reasons.

Second extrinsic choice is the determination of the general level of protection or of the agreed acceptable level of risk. These threshold levels are set independently (and chronologically before) of the introduction of the precautionary principle to a regulatory framework. They ultimately determine the interpretation of the damage threshold. Accordingly, in societies with varying levels of protection,[8] the application of the precautionary principle has different actual consequences. It should be borne in mind, however, that the chosen level of protection is typically expressed in general and qualitative terms. Thus, there is much space for judgement and different readings of it in practice. For instance, the European Union has defined its level of protection as *high* and *context-dependent*.[9]

Finally, extrinsic normative choices are also made when the principle is interpreted and implemented. This springs ultimately from the fact that (decision-making) principles such as the precautionary principle do not imply a context specific guidance. Thus, their application into a concrete situation presupposes deliberation and interpretation (see e.g. Beauchamp & Childress 1994, 15; Dworkin 1976; Gardiner 2006, 58; Nollkaemper 1996, 80-81).

Intrinsic normative commitments, in their turn, can be further grouped into two subcategories. On the one hand, all the understandings of the precautionary principle imply three general substantive propositions explicated below. Even if the exact meaning (or right definition) of the principle is a matter of disagreement (see e.g. Adams 2002; Kaiser 1997; Sandin 1999; VanderZwaag 2002), general core idea(s) which leaves space for different interpretations of the key concepts can be identified. Ethically speaking, three normative propositions are implied by the precautionary principle.

First, severe environmental damage (such as loss of biodiversity) and health hazards (e.g. increased allergies) should be anticipated before they actually take place.[10] This normative demand reflects a plea to narrow the scope of our ignorance and oversight. Concrete risk research and the active development of its methods can certainly increase our ability to identify and assess environmental threats and health hazards, and also tell us about what we do not know. However, there may always remain possible and unexpected outcomes that we do not know that we do not know about. It would be highly impractical (i.e. costly and resource-demanding) and also partly impossible in principle to attempt to avoid these outcomes. Surprisingly, to date, this first substantial proposition implied by the precautionary principle has not received much direct attention in the academic literature of the principle.

Second, the precautionary principle implies a norm to take pre-emptive actions in order to protect the environment and human health. This *proactive* view may be contrasted with the *reactive* approach which states an obligation to remedy or compensate damage after its realisation. (Of course, one possible position would also be not to care about these kinds of harms at all.) Similar account of the second normative proposition implied by the principle can be found in Edward Soule who emphasises "a commitment to risk avoidance in terms of some environmental risks" (Soule 2002, 21). In his view,

> *sometimes* regulators should prohibit (or constrain) the commercialization of environmentally risky technology, even though the science that identifies the risk is uncertain and even though economic or other factors might recommend otherwise (Soule 2002, 21).

In the concrete, pre-emptive measures may take the form of outright bans or phase-outs, moratoria, pre-market testing, labelling, and requests for extra scientific information before proceeding. Other kind of precautionary response would be the establishment and implementation of new precautionary risk assessment methodologies. The last mentioned reflects a heavy emphasis upon the first normative proposition of the principle – the focus is not only on how to deal with the identified threats, but also on the methods to anticipate and assess threats at the first place.[11]

The third normative proposition which is flowed from the precautionary principle concerns the right role of scientific knowledge in the environmental and health decision-making. According to the principle, adequate scientific understanding of an identified threat is not a necessary condition for taking precautions (see Soule 2002, 21). This feature distinguishes the principle (or the precautionary approach) from earlier institutionalised risk governance approaches. Following Neil A. Manson,

> [t]his idea is supposed to run counter to standard decision-making procedures (e.g., cost-benefit analysis), in which possible but unproven causal connections do not count (Manson 2002, 264).

Arie Trouwborst (2002) also distinguishes between the precautionary thinking and the traditional model of environmental decision-making:

> The main feature of this [traditional] model, which is founded upon the assumption that science can to a sufficient extent foretell the outcome in terms of environmental impacts of any given human activity, is that action to protect the environment is solely justified when conclusive evidence shows that such an activity *will* cause (substantial) damage in the absence of preventative and abatement measures. (Trouwborst 2002, 11; see also ibid. 11-12,18-19.)

With the help of critical analysis, the third proposition can be further specified. The proposition does not imply that any suspicions of risks, educated guesses or results of junk science are sufficient to trigger precautions, but that we "should act based on the best available science, albeit tentative, inconclusive, or in dispute" (Soule 2002, 21; see also Ahteensuu 2007b).

More specifically, a narrow view based upon a decision-theoretic classification suggests that the principle can be applied when (1) the (objective) probability of a risk cannot be

UNCED=*Rio Declaration on Environment and Development*. United Nations Conference on Environment and Development (Rio de Janeiro, June 3rd-14th, 1992).

VanderZwaag, D. (2002). The Precautionary Principle and Marine Environmental Protection: Slippery Shores, Rough Seas, and Rising Normative Tides. *Ocean Development & International Law*, 33, 165-188.

Wiener, J.B., & Rogers, M.D. (2002). Comparing Precaution in the United States and Europe. *Journal of Risk Research*, 5, 317-349.

Vienna Convention=*Convention for the Protection of the Ozone Layer* (Vienna, March 22nd, 1985).

Wildavsky, A. (1996). *But Is It True? A Citizen's Guide to Environmental Health and Safety Issues*. Cambridge: Harvard University Press.

Wingspread Statement on the Precautionary Principle (1998).

World Charter for Nature (United Nations General Assembly Resolution 37/7 1982).

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[1] It should be emphasised that the relevance of the precautionary principle is not limited to a single regulatory context, but it plays a role in several of them. The principle has been invoked in various fields of risk debates as well as of actual policymaking. It is mentioned in a number of official documents within different regulatory contexts. The relevance encompasses, for instance, marine and fisheries protection (see e.g. VanderZwaag 2002, 171-173); climate change and global warming debate; the protection of the ozone layer (e.g. *Montreal Protocol* 1987, Preamble, Paragraphs 6 and 8); *Vienna Convention* 1985, Preamble, Paragraph 5); the nuclear power risk; the risks of radio frequency electromagnetic fields of power lines, and of cellular telephones and cellular telephone base stations (see e.g. Balzano & Sheppard 2002; Foster et al. 2000); and the conservation of our natural environment (see e.g. The Precautionary Principle Project: Sustainable Development, Natural Resource Management and Biodiversity Conservation (in <URL: http://www.pprinciple.net/ [12.7.2006]).

[2] For a discussion, see Carr 2002.

[3] Because the precautionary principle is employed in a public policy, views about it and especially the chosen mode of implementation affect the whole society. First, the application of the precautionary principle in a regulatory framework has influential effects on the rights and freedoms of individuals, companies, and scientific community (e.g. on the limits of acceptable scientific research). Second, since the use of the precautionary principle also implies redistributing costs, the way in which the principle is interpreted and implemented has further social impacts. It is certainly worth – ethically speaking even necessary – to consider as to whether the implied redistributions of risks, rights, costs, and benefits are just and democratic.

[4] Common elements or dimensions of the precautionary principle have been proposed. Stephen M. Gardiner, for instance, distinguishes three important components of the principle: threat of harm, uncertainty and precautionary response (Gardiner 2006, 36; see also CEC 2000, 13-16; Tickner et al. 1998). More elaborated study can be found in Per Sandin who considers the dimensions of the principle and provides the following formal definition in his article "Dimensions of the Precautionary Principle".

> *If* there is (1) a threat, which is (2) uncertain, *then* (3) some kind of action (4) is mandatory (Sandin 1999, 891).

Accordingly, Sandin distinguishes between four basic dimensions (or common elements) of the principle:

> (1) the *threat dimension* that refers to "one or other undesired possible state of the world";
> (2) the *uncertainty dimension* that "expresses our (lack of) knowledge of these possible states of the world";
> (3) the *action dimension* that "concerns what response to the threat is prescribed";

(4) the *command dimension* that "states what the *status* of the action is" (Sandin 1999, 890-895).

All disputes concerning the exact meaning of the precautionary principle should be interpreted as disagreements on the proper range of the variables (1)-(4) in this structural schema. According to Sandin, the variables may vary in strength (or stringency) and precision (Sandin 1999, 895-898).

Another – and strikingly similar – formalisation is found in Neil A. Manson (2002) who tries to identify the core logical structure of the precautionary principle in his article "Formulating the Precautionary Principle". Manson proposes three shared elements. The *damage condition* specifies the characteristics of an e-effect (i.e. an effect on the environment) "in virtue of which precautionary measures should be considered". The second part, the *knowledge condition*, describes "the status of knowledge regarding the causal connections between the e-activity and the e-effect". The third element determines the *e-remedy* which decision-makers should take in response to the e-activity. (Manson 2002, 265.)

Manson argues that this three-part structure is shared by all versions of the precautionary principle. The logical form of the principle is neatly put into the following conditional statement:

> if the e-activity meets the damage condition and if the link between the e-activity and the e-effect meets the knowledge condition, then decision makers ought to enact the specified e-remedy (Manson 2002, 265).

The proposed elements, dimensions and logical core structure(s) of the precautionary principle are certainly laudable in their own, and they may provide us with a better grasp of the principle. Sandin's structural schema can, for example, be employed to explicate, compare, and evaluate different formulations of the precautionary principle. However, the chosen terms, such as 'dimension', are not illuminative. As the precautionary principle is a decision-making principle, it would be in order to speak about thresholds and prescribed actions, not about dimensions or elements whose status and interrelationships are not explicated.

Another problem shared by Sandin and Manson's structural schemata is that they seem not to exhaust all the understandings of the precautionary principle.To be fair, Sandin softens the claim about applicability of the structural schema in his later writings. According to him, "there are, however, other versions of the precautionary principle which cannot be interpreted with the aid of the four dimensional if-clause" (Sandin 2004, 470). As an example of this, Sandin considers the formulation of the precautionary principle in the *Rio Declaration* (UNCED 1992, Principle 15).

[5] As explicated by Per Sandin (1999, 895), the formulations of the precautionary principle often differ with regard to the normative status of the precautionary response. As an example of this, the application of precautionary measures may be stated as justified or obligatory (see also Cameron & Wide-Gery 1995, 100,135).

[6] Although the term 'risk' has multiple definitions and uses, generally speaking it means exposure to the chance of loss. More precisely, a risk denotes an undesirable state of affairs which may or may not occur as a result of human activities and/or natural events. For an analysis of different risk concepts, see Renn 1992; see also Stirling 2004.

[7] I do not claim that the classification introduced covers all the normative choices related to the precautionary principle and its use. This is because, in the end, every choice can be thought to include an evaluative statement or a norm to act in a certain way (see e.g. Longino 1983). Risk research upon which the precautionary decision-making is based, for instance, encompasses several normative choices of different levels (see e.g. Lemons 1997, 218). Nonetheless, the classification introduced seems to elucidate the most relevant normative choices and commitments.

[8] Every country has a sovereign right to choose its own level of protection.

[9] "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" (The EC Treaty 1992, Article 174, Paragraph 2).

[10] On the basis of a review of official documents and the related academic literature, the relevant types of harms include (i) environmental damage, e.g. loss of biodiversity; (ii) human deaths and health hazards such as increased allergies; and (iii) harm to other sentient beings. Other kinds of risks such as economic ones – if taken into account at all (see Nollkaemper 1996) – are considered at most indirectly. Different theories of ethics (e.g. anthropocentric and ecocentric approaches) assign different emphasis upon (i)-(iii).

[11] As an example of precautionary risk assessment methodologies, see Tickner 2003. For an analysis of the implemented (narrow and broad) precautionary policies within the European Union, see Levidow et al. 2005.

[12] It should be emphasised that, despite the fact that the precautionary principle is pre-eminently a principle of law, the uncertainty that triggers its application is related to limitations on scientific understanding of a risk, not to legal uncertainty and/or proof.

[13] For a more detailed discussion about different risk decision-making situations, see e.g. Stirling 2002, 77-82.

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UNU-IAS Report

Trading Precaution:

The Precautionary Principle and the WTO

DOCUMENT 3 5 to Note

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The views expressed in this article are those of the authors alone and should not be attributed to the WTO or its Members, or the Government of Ontario, Canada.

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2 Precaution as a principle of international law

Many environmental lawyers have argued that the precautionary principle is already a principle of customary international law.[12] What is clear is that the principle is certainly the underlying rationale for several MEAs. The principle has been applied to various environmental issues and has over twelve different definitions in international agreements.[13] Besides the operative use of precaution in the Biosafety Protocol,[14] the principle has been incorporated in a number of international environmental agreements.

Reference to precaution is included in the preamble of the Vienna Convention on the Protection of the Ozone Layer[15] and the Montreal Protocol on Substances that Deplete the Ozone Layer.[16] It is reflected in the articles of agreements, such as the UN Framework Convention on Climate Change and the UN Conference on Environment and Development Rio Declaration. Other treaties, such as the Convention on Biological Diversity do not mention the principle by name, but define its properties within the agreement.[17]

What is lacking is a uniform description of the precautionary principle in these agreements, leading some critics to argue that the principle is overused without a clear understanding of its meaning and consideration of its implementation. The flexible definition of the precautionary principle may be its strength, but also one of its greatest weaknesses. Several WTO Members have noted in the Committee on Trade and Environment (CTE) that the difficulty of further integrating precaution in the WTO lies in the lack of an internationally-agreed definition of the precautionary principle.[18]

International jurists writing on the principle generally rely on two similar definitions of the precautionary principle. The first is found in the *Bergen Ministerial Declaration on Sustainable Development* (1990):

> In order to achieve sustainable development, policies must be based on the *precautionary principle*. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.[19]

The second often-cited definition is found in Principle 15 of the Rio Declaration on Environment and Development (1990):

> 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.[20]

These two definitions of the precautionary principle, which at first glance seem similar, differ greatly. The Bergen Ministerial Declaration definition does not mention economics, except in reference to sustainable development. Rio Principle 15, however, promotes precaution, but only if the measures are 'cost effective,' which balances the need for the measure taken with its potential economic impact. These two definitions are consistent when it comes to what triggers precautionary action – a threat of serious or irreversible harm. The threshold of harm is not consistent, however, in all MEAs. The Biosafety Protocol, for example, has a much lower trigger as precaution may be justified "with potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity."[21]

Principles can form the basis of customary international law if they are consistently defined and applied in international treaties and in decisions of international tribunals and the International Court of Justice (ICJ). The importance of customary law is that it establishes binding obligations for states. Customary law is developed through State practice: a consistent approach to treaty negotiation and ratification; application in domestic legislation and decisions of domestic courts; and statements by government officials are all evidence of the acceptance of a principle as custom. A second way in which to discern customary law is *opinio juris*, determining whether States act as though they are bound by the principle. Consistent action on the part of States may help determine *opinio juris* as it reveals an underlying belief that the State is obligated to follow a principle, as required by law. Evidence that a principle has reached the status of customary law can also be determined by persistent objections from States that refuse to be bound by the practice.[22]

The European Union clearly has taken the position that the precautionary principle is customary international law, as evidenced by the fact that environmental policy in the European Union is based explicitly on precaution.[23] The EU presented its position on the precautionary principle in the WTO affirming that "the precautionary principle is gradually asserting itself as a principle of international law in the fields of environmental and health protection."[24] While the Treaty Establishing the European Community does not provide a definition of the precautionary principle, decisions by the European Court of Justice and other EU courts denote elements of a general application of the precautionary principle in EU law to support action. These include uncertainty, risk, and lack of a direct causal link between the risk and the perceived harm.[25] The EU has annunciated its objective to establish guidelines for use of the precautionary principle in order to clarify arrangements for its application. During the discussion on the EU *Communication on the Precautionary Principle* in the CTE, the need to further integrate this principle in the WTO or to establish guidelines was questioned. Importantly, it was pointed out that the EU had failed to provide a definition of the principle.[26]

An important aspect in implementing precaution is to use the least-trade restrictive measure available; that is to say that where there are a number of possible means of attaining the same level of health or environmental protection, the

least-trade restrictive measure should be opted for.[27] In the EU, the discretion of policy makers to use precaution may take precedence over economic interests and the principles of proportionality and non-discrimination.[28]

While the idea of exercising precaution in the face of risk and uncertainty is not new in the United States,[29] the Government maintains that precaution is an approach, as opposed to a more formalized principle. Thus, "precautionary approach" and "precautionary measures" is the language that has been negotiated into many MEAs. A report prepared by a Federal Advisory Committee to the US Environmental Protection Agency sheds some light on the reluctance of the United States to formally adopt the precautionary principle. This report recognizes American laws are "replete with examples of caution exercised in the face of scientific or technological uncertainty," but that, despite the principle's scientific and government support in Europe, "there has been some criticism that the implementation of the principle may generate litigation."[30] Perhaps the fear of providing the litigious American society with another tool to challenge governmental decisions is hindering the principle's acceptance.[31] Certainly, the economic costs of applying the precautionary principle are a genuine concern, but these costs should be balanced by the threat of irreversible harm.

While as a general rule, cost-benefit analysis is a requirement of US law, cost-benefit analysis is not applicable in most food safety decisions.[32] Although the US takes into consideration precaution when developing domestic responses to health and environmental concerns, there is a clear policy to reject the application of the precautionary principle in international law. As such, the US is not a Party to several MEAs that are based on precaution, such as the Convention on Biological Diversity and its Biosafety Protocol.

Canada has taken the middle ground in recognizing the precautionary principle. Despite acceptance of the principle domestically, Canada has twice challenged the invocation of precaution by the EU at the WTO. Canada took the position before the WTO Appellate Body that the principle is "an emerging principle of international law, which may further crystallize into one of the general principles of law recognized by civilized nations."[33] The precautionary principle is reflected in Canada's federal environmental laws,[34] and Canada's highest Court seems persuaded that the principle is, in fact, international custom.[35] However, a discussion paper prepared by the Canadian Government exemplifies the struggle of formally adopting the principle as government policy: "[t]here are concerns that the precautionary approach could be applied to perceived risks for which there is no sound scientific basis, which would unnecessarily stifle innovation or impose unfair costs on sectors of society." On the other hand, many "may view the precautionary principle as a new approach that can lead to more responsive decision making."[36] This discussion paper also refers to the need to choose the "least-trade restrictive" option, if an alternative measure would adequately respond to the risk.

The judiciaries of several developing countries have also recognized the precautionary principle, as illustrated by recent decisions of the Supreme Court of India. The Indian Supreme Court has acknowledged that the precautionary principle has emerged as customary law. The Court has referred to the Indian Constitution and environmental statues to show that the precautionary principle was already implied and that, in view of these constitutional and statutory provisions, it had "no hesitation in holding that the Precautionary Principle and the Polluter Pays Principle are part of the environmental law of the country."[37]

Although some international scholars do not believe that there is significance to the debate between the terminology "approach" and "principle,"[38] in its decision on *Reformulated Gasoline*, the WTO Appellate Body recognized that the Dispute Settlement Understanding directed them to apply the "customary rules of interpretation of public international law" to clarify WTO provisions.[39] The Appellate Body further noted that the WTO Agreements were not to be read "in clinical isolation from public international law."[40] This is a welcome step to integrating WTO law into the broader framework of public international law, so that the WTO does not become hermetically sealed.[41] Nevertheless, in the *Hormones* dispute, the Appellate Body noted that the precautionary principle "at least outside the field of international environmental law," still awaits "authorative formulation as a customary principle of international law."[42]

The lack of a determination by the ICJ that the precautionary principle is (or is not) customary international law, despite the fact that the principle has been raised in more than one hearing,[43] supports the Appellate Body's conclusion that the status of this principle as custom is still "emerging." While it is clear that the WTO Agreements, including the Agreements on Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT), are to be interpreted in the broader context of customary international law,[44] the status of the precautionary principle as custom has yet to unequivocally be solidified.

The significance of the term "principle" is that principles create obligations. This is evidenced by the Supreme Court decisions in Canada and India, which used similar reasoning to apply an international principle to domestic law. The Canadian decision, for example, interpreted a municipal by-law that limited the use of pesticides in a manner that was consistent with the precautionary principle. What types of obligations would ensue for Member States if the WTO Appellate Body were to accept that precaution is not merely an "approach," but a "principle"? Could the acceptance of the precautionary principle change existing WTO obligations with respect to risk assessment in the Agreement on Sanitary and Phytosanitary Measures?

the EU wished to reduce the risk closer to zero. Which government was acting from the perspective of prudence? The Appellate Body found the EU ban on hormone-treated beef to be inconsistent with the requirements of the SPS Agreement under Article 5.1.[61] This signals that a zero-risk policy has to be based on a foundation of science. Even though the EU was ordered to bring the measure into conformity with its obligations under the WTO, Europeans do not seem to be willing to accept beef enhanced with hormones in the dining rooms of their citizens. Thus, the EU has maintained the import ban and has continued to pursue risk assessment to support its ban.[62]

Although the Government of the United States might vehemently deny it, it would seem that recognition of the precautionary principle made its way into WTO law, or, at least was considered an exception to WTO rules, when the Appellate Body allowed a European moratorium on asbestos products from Canada. The Appellate Body effectively broadened the interpretation of what is "necessary" to include preventative action in the face of a health risk.

In the *EC – Asbestos* case, the Appellate Body interpreted Article XX alongside the provisions of the SPS Agreement and arguably "read in" precaution. The Appellate Body stated that "responsible and representative governments may act in good faith on the basis of what, at a given time, may be a divergent opinion coming from qualified and respected sources."[63] Furthermore, on the role of science vis-à-vis justifying a measure under Article XX(b), "a Member may also rely, in good faith, on scientific sources which, at that time, may represent a divergent, but qualified and respected, opinion."[64] Thus a Member is not obligated, in setting health policy, "automatically to follow what, at a given time, may constitute a majority scientific opinion."[65] These are strong statements towards permitting countries to implement precaution while not abrogating their WTO obligations.

The panel in *EC – Asbestos* also recognized that, for a Member to be entitled to apply Article XX, an absolute level of certainty cannot be required as "to make the adoption of health measures concerning a definite risk depend upon establishing with certainty a risk [...] would have the effect of preventing any possibility of legislating in the field of public health."[66]

The controversial *Biotech* case was brought by Argentina, Canada and the US against the EU's alleged *de facto* moratorium on the approval of new agricultural biotech products. The claim is that the EU had failed to approve any new GMOs between 1998 and 2004, which constitutes a *de facto* moratorium that has not been justified scientifically and, therefore, is not in conformity with WTO rules. The *Biotech* dispute is a test case for the treatment of precaution in the multilateral trading system.

The *Hormones* and *Asbestos* decisions and the current *Biotech* dispute in the WTO raise crucial issues with respect to the role of science in managing public risk. There needs to be a balanced approach to regulation, whereby health and safety concerns are addressed while allowing scope for the development of technology. The question is how to go about ensuring the appropriateness of domestic regulation in the face of scientific uncertainty and in view of public demands to take precautionary measures.[67] If scientific evaluation does not permit the determination of the existence of risk with sufficient certainty, recourse to precautionary action will depend on the level of protection chosen by the government authority and the exercise of its discretion. This is a normative decision – a political choice.[68]

As noted above, it has been suggested that the solution for some precautionary action is to assess the idea of "least-trade restrictive" for implementing precautionary measures. However, choosing the "least-trade restrictive" option is only a partial solution. States also need to work towards adopting a common understanding of precaution. Notwithstanding work towards a common understanding of precaution, interpretations may well continue to vary between States. In the context of the WTO, for example, Members may interpret their obligations under the rules of the trading system differently; hence the recourse to dispute settlement. However, a common understanding or rules allow WTO panels and the Appellate Body to render consistent judgments when disputes arise. In the same manner, a common understanding of the precautionary principle would further consistency in judicial decisions in the event of disputes.

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It would seem that it is only possible to work towards developing agreement on a common application of the precautionary principle in the context of bilateral, regional and multilateral agreements. As noted earlier, precaution is a cornerstone of many MEAs, and thus far, measures taken pursuant to these agreements have not been challenged at the WTO. However, the tenuous relationship between trade and environment may be further threatened by the interplay between WTO rules and the Biosafety Protocol, with its emphasis on the precautionary principle.

4 The *status quo* - can it be maintained?

As an underlying principle of the Convention on Biological Diversity's (CBD) Cartagena Protocol on Biosafety, precaution has real economic and social implications in its interface with international trade. Compatibility between the WTO Agreements and MEAs, such as the CBD, has long been a prominent feature in the discussions in the CTE.[69] Following the mandate in the WTO Doha Declaration, the relationship between the WTO and MEAs is the subject of negotiation in the CTE Special Session.[70] The majority of countries have adopted the position at the WTO that there is already sufficient scope under WTO provisions to use trade measures for environmental purposes in MEAs. Therefore, there is no need to alter existing WTO rules to accommodate MEAs. The approach not to amend or clarify WTO rules has been labelled the *status quo*.

Maintaining the *status quo* between MEAs and the WTO is built around the premise that only a small number of MEAs contain trade measures and that thus far there has not been any conflict between MEAs and the WTO. Although the relationship between MEAs and the WTO has often seemed theoretical, without any real world examples, there are several recent cases to indicate that this is changing. The belief that the two spheres can coexist without incident is being sorely tested for example in the *Biotech* dispute unfolding at the WTO between the European Union, on the one hand, and the United States, Canada and Argentina, on the other, over genetically modified organisms. Although the United States is not a signatory to the Biosafety Protocol, Argentina, the European Union and Canada have ratified the Protocol, indicating its general acceptance in the international community.[71]

The relationship between the Biosafety Protocol and international agreements, including the WTO, is addressed in the Protocol's preamble. The preamble recalls the concept of mutual supportiveness between trade and environment agreements, affirms that the Protocol shall not be interpreted as implying a change in rights and obligations of parties under any other existing international agreements, and takes into account that this shall not mean that the Protocol is subordinate to other international agreements. The relationship between the Protocol and WTO rules was one of the crucial issues during the negotiation of the Protocol.[72]

According to the arguments presented by the EU to the *Biotech* panel, "there is authority to support the proposition that the Protocol and the SPS Agreement (as well as the TBT Agreement and the GATT) are so closely connected that they should be interpreted and applied consistently with each other, to the extent that is possible."[73] In effect, the EU is arguing that MEAs, in this case the Biosafety Protocol, are setting international standards. In keeping with the preamble to the Biosafety Protocol, the EU maintains that its own internal processes are consistent, therefore, with both WTO rules and the Biosafety Protocol.

A desire for precaution in taking decisions related to biotechnology clearly has been expressed by Parties to the Convention on Biological Diversity in drafting the Biosafety Protocol, as well as by NGOs.[74] Indeed, the report by the WTO panel adjudicating the *Biotech* case has once again been delayed to December 2005.[75] Originally, the Panel was to have presented its findings in September 2004. As a result, this long-awaited ruling will not be released before the Hong Kong WTO Ministerial Conference in December 2005. In large part, the cause of the delay is the enormous amount of scientific data presented by the EU in its defense and the Panel's decision to consult experts.[76]

The battle lines seem to be drawn – with the precautionary principle and the Biosafety Protocol on one side and "science-based risk assessment" and WTO rules on the other. However, the approval by the EU of a variety of GMO maize for use as feed in the Spring of 2004,[77] and a second maize variety in the Summer of 2004,[78] may mean that no country would be willing to finalize this dispute in the WTO, despite the important principles at issue.

Endnotes

[1] Sabrina Shaw and Risa Schwartz, "Trade and Environment in the WTO: State of Play," *Journal of World Trade*, 36(1), 2002, pages 129-154.

[2] Report of the Appellate Body, *European Communities – Measures Affecting Asbestos and Asbestos Containing Products (EC – Asbestos)*, WT/DS135/AB/R, 12 March 2001, paragraph 142.

[3] EC Press Release, dated 8 November 2004, at www.europa.eu.int/comm/food/fs/gmo/_index_en.html.

[4] United Nations Development Programme, *Human Development Report 2001: Making New Technologies Work for Human Development*, New York: UNDP, 2001.

[5] United Nations, *Report of the UN Millennium Project, Task Force on Science, Technology, and Innovation*, New York: UN, 2005, page 175.

[6] Theofanis Christoforou, "The Precautionary Principle and Democratizing Expertise: A European Legal Perspective," *Science and Public Policy*, 30(3), 2003, page 206.

[7] EC Directive 2001/18 as amended by Regulation 1830/2003 at www.europa.eu.int/comm/food/fs/gmo/gmo_index_en.html. For a thorough treatment of risk governance and the interplay of science, law and politics in the regulation of GMOs in the European Union see Theofanis Christoforou, "The Regulation of GMOs in the EU: The Interplay of Science, Law and Politics," *Common Market Law Review*, 41, 2004, pages 637-709. Also see Konrad von Moltke, "The relationship between policy, science, technology, economics and law in the implementation of the precautionary principle," in Freestone, D. and E. Hey, (eds.), *The Precautionary Principle and International Law, the Challenges of Implementation*, 1996.

[8] Calestous Juma, "Biotechnology in a Globalizing World: The Coevolution of Technology and Social Institutions," *BioScience*, 55(3), March 2005, page 4.

[9] *Ibid.*, pages 2-9.

[10] For an in-depth treatment of the Transatlantic divergences on precaution see Theofanis Christoforou, "The Precautionary Principle, Risk Assessment, and the Comparative Role of Science in the EC and the US Legal Systems," in Norman Vig and Michael Faure (eds.), *Green Giants?: Environmental Policies of the US and the* EU, MIT, 2004, Chapter 1; Nigel Purvis, "Building a Transatlantic Biotech Partnership," *Biotechnology Regulation*, Fall 2004, pages 67-74; Lawrence Kogan, "The Precautionary Principle and WTO Law: Divergent Views Toward the Role of Science in Assessing and Managing Risk," *Seton Hall Journal of Diplomacy and International Relations*, V(1), Winter/Spring 2004, pages 77-123.

[11] T. O'Riordan and James Cameron, "The History and Contemporary Significance of the Precautionary Principle," *Interpreting the Precautionary Principle*, in T. O'Riordan and J. Cameron (eds.), Earthscan, London, 1994.

[12] Some experts argue that there is sufficient state practice to support the emergence of the precautionary principle as a principle of customary international law. See Theofanis Christoforou, "The Precautionary Principle in EC Law and Science," in Joel Tickner (ed.), *Environmental Science and Preventive Public Policy*, Island Press, 2003, Chapter 16; J. Cameron and J. Abouchar, "The Status of the Precautionary Principle in International Law," in D. Freestone and E. Hey (eds.), *The Precautionary Principle in International Law*, Kluwer, 1996, p. 52. Other academics consider that the precautionary principle is not yet a principle of international law particularly given the variety of interpretations. See P. Birnie and A. Boyle, *International Law and the Environment*, Oxford University Press, 2002, page 98.

[13] For a discussion of the precautionary principle in international environmental instruments see OECD, *Uncertainty and Precaution: Implications for Trade and Environment*, Joint Working Party on Trade and Environment, COM/ENVTD(2000)114/FINAL, Paris, 5 September 2002, Annex 1, pages 37-50.

[14] Articles 1, 10 and 11 of the Cartagena Protocol on Biosafety (2000) of the Convention on Biological Diversity (1992).

[15] *Mindful also* of the **precautionary** measures for the protection of the ozone layer which have already been taken at the national and international levels. The Vienna Convention (1985) serves as an example of the importance of science in permitting the international community to negotiate preventative action to address ozone layer depletion in the light of scientific uncertainty.

[16] *Determined* to protect the ozone layer by taking **precautionary** measures, and *Noting* the **precautionary** measures for controlling emissions of certain chlorofluorocarbons that have already been taken at national and regional levels.

[17] The Preamble to the CBD states that: "Noting also 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 a threat."

[18] *See* the Report of the meeting of the WTO Committee on Trade and Environment held on 5-6 July 2000, WT/CTE/M/24; *Trade and Environment Bulletin No.33*.

[19] Bergen Ministerial Declaration on Sustainable Development in the ECE Region (Norway), Paragraph 7, done 16 May 1990, reprinted in UN document A/CONF.151/PC/10, Annex I; *Yearbook of International Environmental Law*, Oxford University Press, 1990, page 429.

[20] Report of the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, 3-14 June 1992, Annex I.

[21] See, for example, Article 11, paragraph 8 of the Cartagena Protocol on Biosafety (2000) of the Convention on Biological Diversity (1992).

[22] For more detail on the development of customary international law relating to environmental law, see

Phillipe Sands, *Principles of International Environmental Law*, Manchester University Press, 1995.

[23] *Treaty Establishing the European Community*, Title XVI, Environment, Article 130r (2) states that: "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 the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay. Environmental protection requirements must be integrated into the Community's other policies."

[24] *Communication from the EC on the Precautionary Principle*, G/SPS/GEN/225-G/TBT/W/154-WT/CTE/W/181, 31 January 2001, page 3. This document was circulated and discussed in the CTE, as well as the TBT and SPS Committees, indicating the breadth of the issues invoked. This WTO document contains the 2 February 2000 EC Communication on the Precautionary Principle, which was endorsed by the Nice European Council Resolution in December 2000.

[25] Case C-157/96, BSE (1998), ECR1-2211; Case T-13/99 Pifzer (2002) ECR 11-3305, and Case T-70/99 Alpharama (2002) ECR 11-3945. For an in-depth treatment of these cases see Theofanis Christoforou, "The Precautionary Principle in EC Law and the WTO Legal System," in G. Kremlis, G. Balias and A. Sifakis (eds.), *The Precautionary Principle*, Athens: Sakkoulas, 2004, pages 99-149.

[26] Report of the meeting of the WTO Committee on Trade and Environment held on 13-14 February 2001, WT/CTE/M/26, page 16.

[27] The idea of least-trade restrictive is also set out as optimal in the position of the EU on precaution, WT/CTE/W/181, page 4. It is also addressed in a Canadian discussion paper, *A Canadian Perspective on the Precautionary Approach/Principle*, Discussion document, Regulatory Affairs and Orders in Council Secretariat, Privy Council Office, Government of Canada, September 2001.

[28] Theofanis Christoforou, "The Precautionary Principle in EC Law and the WTO Legal System," in G. Kremlis, G. Balias and A. Sifakis (eds.), *The Precautionary Principle*, Athens: Sakkoulas, 2004, page 116.

[29] The United States was among the pioneers of a precautionary approach to environmental concerns in its laws to protect air and water quality in the 1970´s.

[30] *Advancing Environmental Justice through Prevention*, Pollution Prevention Report, June 2003, Report developed from the National Environmental Justice Advisory Council meeting of 9-13 December 2002.

[31] As noted by Sanderson and Solomon, the precautionary principle can be seen as an attempt to litigate and accelerate the tension between environmental policymaking and environmental science. Hans Sanderson and Keith Solomon, "Precautionary Limits to Environmental Science and Risk Management – Three Types of Errors," *Journal of Transdisciplinary Environmental Studies*, 2(1), 2003.

[32] Executive Order 12866, Regulatory Flexibility Act. See Food and Drug Administration, US Department of Agriculture, *US Food Safety System: Precaution in US Food Safety Decision Making: Annex II to the US National Food Safety System Paper*, 3 March 2000, presented to the OECD *ad hoc* Committee on Food Safety, 24-25 January 2000, paragraphs 209-213 at http://www.foodsafety.gov/~fsg/fssyst4.html#c-precaution.

[33] Report of the Appellate Body in *EC – Measures Concerning Meat and Meat Products (EC – Hormones)*, WT/DS48/AB/R, 13 February 1998, paragraph 60.

[34] See, for example, the *Oceans Act*, S.C. 1996, c. 31, Preamble (para. 6); *Canadian Environmental Protection Act, 1999*, S.C. 1999, c. 33, Preamble, s. 2(1)(*a*) and s.6 (1.1); *Canadian Environmental Assessment Act 1992*, cc. 37, s. 4(1)(a) and 4(2).

[35] See the decision of L'Heureux-Dubé in *114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)*, 2001, 2 S.C.R. 241, 2001 SCC 40, which also states that "scholars have documented the precautionary principle's inclusion in virtually every recently adopted treaty and policy document related to the protection and preservation of the environment. As a result, there may be currently sufficient state practice to allow a good argument that the precautionary principle is a principle of customary international law."

[36] *A Canadian Perspective on the Precautionary Approach/Principle*, Discussion document, Regulatory Affairs and Orders in Council Secretariat, Privy Council Office, Government of Canada, September 2001.

[37] *Vellore Citizens' Welfare Forum* v. *Union of India and Others*, 1996 (5) SCC 647. The status of the precautionary principle in Indian law was recently confirmed by *T.N. Godavarman Thirumalpad* v. *Union of India*, 2002 (10) SCC 606.

[38] P.W. Birnie and A.E. Boyle, *International Law and the Environment*, Oxford University Press, 2002, page 116; and James Cameron, "The Precautionary Principle," in Gary Sampson and Bradnee Chambers, *Trade, Environment and the Millennium*, Tokyo: United Nations University Press, 1999.

[39] Article 3(2) of the Dispute Settlement Understanding, *Marrakesh Agreement Establishing the World Trade Organization*, 15 April 1994.

[40] Report of the Appellate Body in *United States – Standards for Reformulated and Conventional Gasoline*, WT/DS2/AB/R, 29 April 1996, page 16.

[41] For an extensive discussion of coherence in international law as between the WTO and MEAs, see Gabrielle Marceau, "A Call for Coherence in International Law – Praises for the Prohibition Against "Clinical Isolation" in WTO Dispute Settlement," *Journal of World Trade*, 33(5), October 1999. Also see Jost Pauwelyn, *Conflict of Norms in Public International Law*

DOCUMENT 4

GUIDELINES FOR APPLYING THE PRECAUTIONARY PRINCIPLE TO BIODIVERSITY CONSERVATION AND NATURAL RESOURCE MANAGEMENT

As approved by the 67th meeting of the IUCN Council
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I. INTRODUCTION

The meaning of the precautionary principle

The uncertainty surrounding potential threats to the environment has frequently been used as a reason to avoid taking action to protect the environment. However, it is not always possible to have clear evidence of a threat to the environment before the damage occurs. Precaution – the "Precautionary Principle" or "Precautionary Approach" – is a response to this uncertainty.

The Precautionary Principle has been widely incorporated, in various forms, in international environmental agreements and declarations and further developed in a number of national laws. An element common to the various formulations of the Precautionary Principle is the recognition that lack of certainty regarding the threat of environmental harm should not be used as an excuse for not taking action to avert that threat (See Box 1).

The Precautionary Principle recognizes that delaying action until there is compelling evidence of harm will often mean that it is then too costly or impossible to avert the threat. Use of the principle promotes action to avert risks of serious or irreversible harm to the environment in such cases.

The Principle is based on the recognition that a false prediction that a human activity *will not* result in significant environmental harm will typically be more harmful to society than a false prediction that it *will* result in significant environmental harm.

The Principle therefore provides a fundamental policy basis to anticipate, avoid and mitigate threats to the environment.

(20) There has been much debate about the nature of the concept of precaution, in particular whether it should be accepted as a legal principle in addition to being a sound policy approach. Some have argued against the recognition of precaution as a "principle" of environmental law, which implies a broad obligation to apply precaution in decision-making, in favour of viewing precaution as merely one particular policy/management "approach" to dealing with uncertain threats. While it is undisputed that in an increasing number of specific contexts there are clear

legal requirements to apply precaution, there is an ongoing debate on whether precaution has become part of international customary law. The development of these guidelines has not been shaped by this distinction. The term 'Precautionary Principle' has been used throughout these guidelines for consistency.

Finally, it must be borne in mind that the precautionary principle is generally only relevant where the following elements are present:

- First, in situations where there is *uncertainty*. Where the threat is relatively certain (i.e. a causal link between an action and environmental damage can be established, the probability of occurrence can be calculated, and the damage insured against), measures may also need to be taken. However, these should be seen as *preventive*, not *precautionary* measures; and.
- Second, where there is a threat of environmental damage. Where there is no indication of a threat of environmental harm, the principle will not apply; and.
- Third, where the threatened harm is of a serious or irreversible nature. Where threatened damage is trivial or easily reversible, the principle will not be relevant.

BOX 1: Some examples of different formulations of the Precautionary Principle

Rio Declaration, 1992 Principle 15
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.

Convention on Biological Diversity 1992, Preamble
[W]here 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 a threat.

Framework Convention on Climate Change 1992, Article 3.3
3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.

UK Biodiversity Action Plan, 1994, para 6.8
In line with the precautionary principle, where interactions are complex and where the available evidence suggests that there is a significant chance of damage to our

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The Precautionary Principle in the International Arena

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THE PRECAUTIONARY PRINCIPLE IN THE INTERNATIONAL ARENA

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"WHEN AN ACTIVITY RAISES THREATS OF HARM TO THE ENVIRONMENT OR HUMAN HEALTH, PRECAUTIONARY MEASURES SHOULD BE TAKEN EVEN IF SOME CAUSE AND EFFECT RELATIONSHIPS ARE NOT FULLY ESTABLISHED SCIENTIFICALLY."
WINGSPREAD STATEMENT ON THE PRECAUTIONARY PRINCIPLE, 1998.

The purpose of this paper is to introduce the precautionary principle in terms of its history, use, and application in several different international agreements. The precautionary principle is preventative in nature and stems from the idea that just because an activity cannot be proven unsafe does not mean that it does not have any negative effects. It has been heralded and criticized by scientists alike, and it has been applied in so many different ways that its definition depends on which international agreement one is reading.

DEVELOPMENT OF THE PRECAUTIONARY PRINCIPLE

BEGINNINGS

The "precautionary principle" has not been present in the field of international environmental law for very long, yet it has achieved a prominent position as a major topic of debate over the past ten years. In essence, it advocates the use of precaution in situations where some scientific uncertainty exists.

The point of the precautionary principle is to anticipate and avoid environmental damage before it occurs. This preventive measure, which is novel in many ways, would ultimately serve to lower mitigation costs of resultant environmental damage. The implementation of the precautionary principle is problematic in an economic sense because it places more responsibility on those who create potential risks than in the past. Its most important – and debatable - feature is that it shifts the burden of scientific proof from those who would like to prohibit or slow down a potentially dangerous activity to those who conduct the activity.[1]

Most commentators agree that the precautionary principle originally emerged from Germany in the mid-1970's.[2] A decade later, during international conferences held to discuss the protection of the North Sea, Germany introduced its precautionary principle to the rest of the world. At first, the word "precaution" was not even used; the parties agreed instead that "damage to the environment can be irreversible or remediable only at considerable expense and over long periods and that, therefore, coastal states and the EEC must not wait for proof of harmful effects before taking action."[3]

In 1987, at the second conference where the London Declaration was adopted, a "precautionary approach" was introduced.[4] Even with regard to the protection of the ozone layer, the Preamble to the Montreal Protocol provided for precautionary measures to be taken in controlling CFCs.[5] By 1990, the Precautionary Principle was being referenced in its own right: the parties to the third conference at the Hague stated that they "will continue to apply the precautionary principle, that is to take action to avoid potentially damaging impacts of substances that are persistent, toxic, and liable to bioaccumulate even when there is no scientific evidence to prove that a causal link exists between emissions and effects."[6] It could also be found in the 1990 Bergen Declaration on Sustainable Development, which connected the importance of taking caution in innovation with the achievement of sustainable development.

> In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.[7]

The precautionary principle has been referenced in dealing with the protection of the marine environment. Article 2 of the OSPAR Convention states:

> The precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects.[8]

Also in 1990, the principle of precaution was included in the White Paper on Britain's Environmental strategy

("White Paper").[9] In the paper, it was written that:

> We must analyze the possible benefits and costs both of action and of inaction. Where there are significant risks of damage to the environment, the Government will be prepared to take precautionary action to limit the use of potentially dangerous pollutants, even where scientific knowledge is not conclusive, if the balance of the likely costs and benefits justifies it. This precautionary principle applies particularly where there are good grounds for judging either that action taken promptly at comparatively low cost may avoid more costly damage later, or that irreversible effects may follow if action is delayed.[10]

Europe expressed its belief in the precautionary principle again in 1991 during a meeting between the parties to the 1972 London Dumping Convention. There the parties agreed that "appropriate measures are taken where there is reason to believe that substances or energy introduced into the marine environment are likely to cause harm, even when there is no conclusive evidence to prove a causal relation between inputs and their effects."[11] Also in 1991, the Bamako Convention, which was convened to discuss problems of hazardous waste shipments to African countries by wealthier, industrialized ones, employed a strict version of the precautionary principle. Under this convention, the parties agreed to prevent "the release into the environment of substances which may cause harm to humans or the environment *without waiting for scientific proof* regarding such harm."[12]

1992 and Beyond

1992 was a big year for international environmental agreements and the precautionary principle is found throughout. In 1992, the landmark Rio Declaration was signed at the United Nations Conference on Environment and Development ("UNCED"), which was the second significant worldwide conference on the environment. Twenty years prior, the United Nations Conference on the Human Environment took place in Stockholm, Sweden. This first conference was motivated primarily by concern over transboundary pollution, particularly in the form of acid rain. The precautionary principle was not yet developed at the time of the Stockholm Convention.

However, the precautionary principle did emerge from the Rio Conference.[13] Article 15 of the Rio Declaration elaborated upon this constantly-evolving concept. Article 15 is extremely important because it was the first time that the United States joined an international agreement that utilized the precautionary principle. Because of this, Article 15 was the result of painstaking negotiations and compromise.

> 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.[14]

During 1992, international parties convened for the United Nations Framework Convention on Climate Change. This Convention dealt with the problem of pollution, specifically that of greenhouse gases which are causing temperatures to rise on a global level. The precautionary principle was referenced at this convention as well. The text provides that

> The parties should take precautionary measures to anticipate, prevent, or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measure, taking into account that policies and measure to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.[15]

The Biodiversity Convention was also agreed to in 1992. Once again, the precautionary principle was mentioned. Interestingly, the use of the principle in the preamble of this agreement did not include the cost-benefit language found in Principle 15 of the Rio Declaration.

> 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 a threat.

The principle was also found in the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, stating that precaution will be taken regardless of whether "scientific research has not fully proved a causal link . . . ."[16] Finally, it was also included in the 1992 Maastricht Treaty and has continued to be an important principle guiding the European Union:

> The Community policy on the environment . . . shall be based on the precautionary principle and on the principles that preventative action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay. Environmental protection requirements must be integrated into the definition and implementation of other Community policies.[17]

IMPLICATIONS

Some legal commentators have argued that the precautionary principle has approached the level of customary international law.[18] On the other hand, it is also pointed out that this status has not yet been achieved due to the fact that

the precautionary principle is somewhat vague, has been interpreted in several different ways, and is not accepted by much of the world on a national level.[19] One description of the precautionary principle is that it is an evolving, culturally-framed concept "that takes its cue from changing conceptions about the appropriate roles of science, economics, ethics, politics and the law in pro-active environmental protection and management."[20]

In many ways, the precautionary principle represents legal concepts that are not new. James Cameron, a proponent of the principle, points out several different existing legal principles that he believes are "indirect" precautionary measures. Most significant is the tort concept of strict liability, which provides for absolute liability in activities, such as the burial of environmental waste, that are considered to be "abnormally dangerous." Cameron explains that the possibility of being held strictly liable, where acting with reasonable care does not matter, causes actors to be more careful and consider the costs of potential liability before acting.[21]

Cameron makes a second point. He believes that insurance mechanisms are also evidence of precautionary measures already in the system. "[I]nsurance schemes . . . create substantial financial incentives against generating environmental inputs that may subsequently have a degrading effect, but which cannot currently be conclusively shown to do so."[22]

Thirdly, the precautionary principle has been analogized to environmental impact assessments. This is an important connection as well. The National Environmental Protection Act[23] ("NEPA") is an example. NEPA requires agencies of the United States government to prepare an environmental impact statement with respect to "major federal actions significantly affecting the quality of the human environment."[24] NEPA has been a model for several countries that have instituted similar laws and now can be found in various international treaties and declarations. Principle 17 of the Rio Declaration is instructive.[25] Cameron points out that "in themselves . . . environmental impact assessments amount to a form of mandated information provision, with precautionary effects similar to those made possible by environmental empowerment; they are precautionary enabling devices."[26]

One final point needs to be made about the principle. It is most commonly criticized on the grounds that uncertainty is something that is inherent to the scientific process and that it is not scientifically possible to prove any fact with 100% certainty. The fundamental basis of science is to disprove a theory not prove it conclusively. Even when broad consensus of the scientific community is found, there will always be a few who disagree and some level of uncertainty will always exist.[27]

Proponents of using precaution acknowledge this undeniable reality but point out that some problems have several layers of different types of scientific issues and therefore, several layers of uncertainty. It is this complexity of uncertainties that cause concern to many. The more uncertainties that exist increase the possibility that some unforeseen or otherwise unrelated factor could change the outcome or prediction of potential harm. In other words, the risk profile of the problem changes. Because of this added complexity, advocates say that the precautionary principle is a theory that should be essential in its guidance of policy, however imperfect it may be.[28]

[1] This shift of the burden of proof is not common in environmental law. For example, in the United States, environmental impact assessments, which are required under the National Environmental Protection Act ("NEPA") and are extremely important mechanisms for determining the environmental, social and economic viability of a major project, do not shift the burden of proof where there is scientific uncertainty. Normally, the burden of proving that an activity will be harmful falls on those who suggest the potential harm, instead a requirement that the party proposing the project prove its harm*less*ness. See generally NEPA, Ronnie Harding & Elizabeth Fisher, *Introducing the Precautionary Principle*, *in* RONNIE HARDING & ELIZABETH FISHER, EDS., PERSPECTIVES ON THE PRECAUTIONARY PRINCIPLE 2-22 (1999).

[2] *See* Wybe T. Douma, *The Precautionary Principle*, T.M.C. Asser Institute, *available at* http://www.asser.nl/EEL/virtue/precprin.htm. The German conception of the precautionary principle, Vorsorgeprinzip, distinguished between human behavior that causes danger and human behavior that causes risk. Dangerous effects are to be prevented by the government by all possible means (Gefahrenvorsorge). If there is a risk of dangerous effects, the government must investigate the possibilities of risk prevention and take preventative measures if the risk is great enough (Risikovorsorge). *See id.*; *See also* Harding & Fisher, *supra* note 1. Some scholars also assert that the basic concepts behind the precautionary principle were discussed at the United Nations Convention on the Human Environment in Stockholm, 1972.

[3] *See* First International Conference on the Protection of the North Sea, Bremen, 1984; *See also* DAVID HUNTER, JAMES SALZMAN & DURWOOD ZAELKE, INTERNATIONAL ENVIRONMENTAL LAW & POLICY 360-61 (1998); Douma, *supra* note 1. *See generally* James Cameron & Juli Abouchar, *The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment*, 14 B.C. INT'L & COMP. L. REV. 1 (1991).

[4] *See* Ministerial Declaration for the Second International Conference on the Protection of the North Sea (Nov. 25, 1987); *See also* Douma, *supra* note 1. Furthermore, the OSPAR Convention was organized for the protection of the marine environment and included the precautionary principle in Article 2.

> The precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects.

[5] *See Montreal Protocol on Substances that Deplete the Ozone Layer*, 1987. The Preamble states "[n]oting the precautionary measures for controlling emission of certain chorlorflourocarbons that have already been taken at national and regional levels."

[6] Final Declaration of the Third International Conference on Protection of the North Sea, Mar. 7-8, 1990. 1 YB Int'l Envtl Law 658, 662-73 (1990).

[7] *See* Bergen Conference on Sustainable Development.

[8] Convention for the Protection of the Marine Environment of the North-east Atlantic, Art. 2, Sept. 22, 1992, 32 I.L.M. 1069 (1993).

[9] *See This Common Inheritance: Britain's Environmental Strategy*, Sept. 1990.

[10] *Id.* at § 1.18.

[11] *See* London Dumping Convention Amendments (1991).

[12] Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and the Management of Hazardous Wastes Within Africa, Jan. 30, 1991, OAU/CONF/COOR/ENV/MIN/AFRI/CONV.1(1) Rev.1, *reprinted in* 30 I.L.M. 773