The Precautionary Principle

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1) Introduction

Environmental problems tend not to stop at national borders and pollution created in one country often causes problems far away. The pollution of the oceans form a good example of this; substances which are introduced into the water in Sweden or Germany can very well effect the quality of the waters around the Netherlands.
This spatial dimension is one of the reasons why it is often so hard to come up with solutions for environmental problems. In section 2, some other characteristics will be dealt with and a few general remarks on environmental policy will be made. After that, the legal side of the matter will be turned to. In section 3, a brief overview of the history of environmental policy and law is presented. It will be explained, that environmental law is developing into the broader concept of the law with regard to sustainable development.
As the state of the environment is still declining, it is clear that the law as it stands today has its shortcomings. Solutions which are often discussed are the introduction of new legal or other instruments, the improvement of existing legal instruments and better enforcement measures. One possible way of improving the quality of legal instruments which this paper will focus on is the use of the precautionary principle. In non-legal terms, this principle indicates that it is better to be safe than sorry. Section 4 of this paper deals with the emergence of the precautionary principle and will show that at the international level, it originates from the North Sea conferences which were first held in the 1980s. In section 5, the legal significance of the precautionary principle will be discussed and finally in the section 6 some conclusions will be drawn.

2) Environmental science: dealing with uncertainties

Characteristics
The first characteristic of environmental problems was already mentioned in the introduction, *i.e.* the spatial dimension. A second characteristic is the fact that there often exists a time-lag between the human behaviour and the moment at which the problem caused by this behaviour becomes clear. In the Netherlands, a clear example of this is the chemical time bomb which is ticking where the use of pesticides is concerned. When these pesticides reach the ground water, used for producing drinking water, they cause huge costs for water companies which have to filter and clean the water.
A third characteristic is the quantitative side of matters. The behaviour of one single person or factory might be harmless, but combined with behaviour of others the effects might be disastrous. As far as the introduction of pollutants to the environment is concerned, a fourth characteristic is referred to as the cumulative effect. In themselves, the introduction might be harmless, but together with other substances a toxic mix might be formed.
A fifth feature is the irreversibility of some effects of human behaviour. The clearest example here is the extinction of species. Once a particular animal or plant species has disappeared, the potential benefits mankind could derive from it is lost forever. Pharmaceutical firms therefore are scanning rainforests for plants with curing effects before it is too late.
The abovementioned characteristics make it hard to find precise answers to questions such as where and when effects on the environment will occur and how large they will they be. It did take quite some time before we were beginning to understand that these inherent uncertainties make it unable for science to make accurate and precise predictions as to the results of human behaviour on the environment.(1) In the past, it was felt that for each specific environmental problem, science could come up with a solution. But the more we learn about the complexity of ecosystems, the more it becomes clear that policy makers will have to find a way to deal with scientific uncertainties in order not to be too late. This holds true for decisions on how much air pollution cars or industry are to produce, but also where the establishment of maximum amounts of fish to be caught are concerned. In all of these matters, the precautionary principle can be of help.

Environmental policies

Who is responsible for the protection of the environment? It is felt nowadays, that the protection of the environment is a task for citizens, companies as well as governments. Ideally, a private property approach would have citizens and companies sort out the matters themselves. But especially where nature is not owned by anyone, it will be hard to realise a person bringing a case to court where nature is damaged by someone else, like is the case with air and ocean pollution.(2) Where market forces alone do not provide for sufficient incentives to protect the environment, governments have a responsibility to act. They can make use of several types of instruments to do so. One division which is often used to describe the different types of instruments available is the following:
- legal instruments (permits, general rules such as prohibitions, principles)
- communicative instruments (persuasion, education, information, voluntary agreements etc)
- economic instruments (green taxes, tradeable emission rights etc).

As was already mentioned, the fact that the state of the world's environment is still decreasing shows that the action taken so far has not been as successful as it should be. The use of principles of environmental law, such as the precautionary principle, is expected to bring about improvements. The principle indicates how policy makers can deal with scientific uncertainty: how much pollution is too much, how many codfish (or whales) can safely be caught without endangering the survival of the species?
The main questions which will therefore be discussed in this paper are: what exactly does the precautionary principle mean, which legal significance does the precautionary principle have and how can it help to improve the protection of the environment? In order to answer these questions, the next section will sketch the background against which the principle came into being.

3) From environmental protection to sustainable development

Only in the 1960s people began to realise that economic development was damaging the environment and threatening the quality of life and sometimes even the life of people, for instance where the use of chemicals such as DDT in agriculture and substances such as asbestos in constructing houses was concerned.
Individual countries, organisations such as the EEC and the UN began initiating measures, often of an ad hoc nature. In 1972, two important events took place. Firstly, the report to the Club of Rome entitled *Limits to growth* was published.(3) In the report, warning that if production and consumption were to develop further, catastrophes would happen. Secondly, the UN Conference on the Human Environment took place in Stockholm. Here, the so-called Stockholm Declaration was adopted, a non-binding set of principles which the participating states promised to abide by. For lawyers, the most interesting one is Principle 21, in which it is affirmed that states are obliged to ensure that activities within their jurisdiction or control do not cause damage in another state or beyond national jurisdiction, such as on the high seas. In principle 7, states are urged to prevent pollution of seas. Another result of the conference was the creation of UNEP, the United Nations Environmental Programme.
By the year 1987, the state of the world environment was still decreasing. Like the *Limits to growth* report of 1972, the Brundtland report *Our Common Future* (1987) issued a warning against a continuation of the modes of production and consumption.(4) This time, an attractive and acceptable solution is presented, namely a shift towards sustainable development. The report defines this solution as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. What the report did not clarify is how much pollution is sustainable, how many fish can be caught without endangering rights of future generations and how exactly production and consumption patterns can be made sustainable. Nevertheless, the idea of sustainable development was welcomed worldwide. It has even been suggested that the consensus about the need for sustainable development exists because the only thing sustainable about it is the multitude of opinions on what it actually means.
By the year 1992, twenty years after the Stockholm conference, the UN convened the UN Conference on Environment and Development in Rio de Janeiro. Several binding treaties were concluded here (such as the Convention on Biological Diversity). In addition, a detailed working programme entitled Agenda 21 was agreed upon, which indicates the concrete action to be taken in order to move over to more sustainable types of development. The plans to create a binding Earth Charter, which was to be comparable to the Human Rights Charter, could not be realised. Instead, the non-binding Rio Declaration was adopted. This Declaration lists a number of principles which states are to observe. After much debate, the precautionary principle was also included among these principles (Principle 15). The controversy surrounding the precautionary principle is understandable when we look at the history of the principle in the next section.

4)The emergence of the precautionary principle

In this section, the way in which the precautionary principle made it to one of the most important principles of international environmental law in a relatively short period of time will be discussed. It will show, that it is developing from 'soft law' to 'hard law' in spite of the fact that it is not (yet) customary international law. The same is often the case with environmental rules at the international level. Environmental rules frequently start of as part of non-binding declarations and are turned into legally binding rules via treaties or national law.

German origins
The origins of the precautionary principle are to be found in Germany, where the principle formed one of the basic principles of environmental policy already since the mid 1970s, together with the cooperation principle and the polluter pays principle. It has to be stressed that the German equivalent of the precautionary principle, the Vorsorgeprinzip, is used in a specific setting, whereby a difference is made between human behaviour which causes dangers on the one hand or risks on the other hand. When dangers are at stake, the government is to prevent these by all means (Gefahrenvorsorge). If there is only a risk of effects occurring, the possibilities of risk prevention have to be investigated and if the risk is high enough, preventive measures can be ordered (Risikovorsorge).

The North-Sea conferences
The protection of the North Sea was discussed at a number of international conferences held in Bremen (1984), London (1987), The Hague (1990) and Esbjerg (1995).(5) It was at these conferences, that Germany introduced the concept of precaution at the international level. At the first conference, one of the conclusions drawn was 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'. The word precaution was not used yet. At the second conference in 1987, the London Declaration was adopted. This time, an express reference to the necessity of a 'precautionary approach' is made. This may require action to control inputs of the 'most dangerous substances (...) even before a causal link has been established by absolutely clear scientific evidence'. By 1990, at the third conference in The Hague, the parties declared 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 between emissions and effects'. At the most recent North-Sea Conference, the Esbjerg Declaration of 1995 was adopted. It recommends that the precautionary principle is also applied where fisheries management policies are concerned. One of the reasons for this is that there is a recognized connection between fisheries and the marine ecosystem but gaps exist in the scientific knowledge of the impact of fisheries upon the ecosystems and (a conclusion of special importance to nations dependent on fisheries) of the impacts of environmental changes and pollution upon fisheries.

London Dumping Convention
In 1991, the parties to the London Dumping Convention of 1972 agreed on implementation of the Convention with the guidance of the precautionary principle. They agreed that this implies that

> appropriate preventive 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 imputs and their effects.

It can also be noted, that one year later Agenda 21 asked the parties to the Convention for a change of the voluntary moratorium on the dumping of low radioactive wastes into a binding stop in the light of the precautionary principle.
Bergen Declaration on Sustainable Development
In 1990, the Economic Commission for Europe (ECE) of the UN convened a conference where the implementation of the Brundtland report was. The participants agreed on a (non-binding) declaration, which was called after the town where the conference took place. In the Bergen Declaration, we can find the following passage:

> 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 postposing measures to prevent environmental degradation.

Achieving sustainable development is thus inextricably linked to the precautionary principle. The definition of precaution presented here is more limited in scope than the one used at the third North Sea Conference of 1990 discussed above, as only measures to prevent possible damage which is either serious or irreversible are mentioned.

Rio Declaration

In spite of the wide recognition of precaution by the start of the 1990s, the principle was still hard to accept for the USA. At the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, this is believed to be caused by the fear of the influence of the principle on the discussion of measures against the greenhouse effect. According to the USA, the fact that there was not sufficient scientific evidence for the causal relationship between human behaviour and the greenhouse effect meant that taking expensive measures was not acceptable. Other states were more willing to take a precautionary approach as they suspected that waiting for proof might result in irreversible harm. The result of the discussions was a compromise. In the (non-binding) Rio Declaration of 1992, we find the following text:

> **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.

Again, the scope of the precautionary principle is limited to damage which is either serious or irreversible. On top of that, yet another limitation is introduced. The measures which are to prevent possible damages are to be cost-effective. As the whole idea of precaution is linked with the notion that preventing damages is often less expensive than cleaning up afterwards, this new element seems to be reasonable. However, it is to be kept in mind that we are talking about damages of which it is uncertain if they will occur or not, first of all. Secondly, it will often be uncertain how serious the possible damage might be. Bearing this in mind, the cost-effectiveness examination could be understood to imply that the more serious the possible damages might be, the more is to be spend on precautionary measures.(6) The inability to prove how much mankind will gain from taking specific precautionary measures should not stand in the way of taking measures though.

European Community Treaty

In the 1990s, more and more binding international treaties contain references to the precautionary principle. One important treaty which does so, is the Treaty on the European Union, otherwise known as the Treaty of Maastricht. This treaty altered the original EEC Treaty. One of the changes which took place was the changing of the old name 'European Economic Community' into 'European Community'. By this change, it was made clear that the Community was not only there for economic reasons, but also to achieve other goals. In the new EC Treaty, Article 2 expressly calls for an economic growth which is both sustainable and respects the environment. Strangely enough, the wording sustainable growth is employed, instead of the more common expression sustainable development. Most commentators agree however, that this anomaly does not have repercussions on the way the EC envisages its environmental policies.(7) Another new feature of the EC Treaty is the fact that in Article 130 R, the precautionary principle is added to the list of environmental principles which was introduced at an earlier stage in 1987 via the Single European Act. The text of this article now reads as follows:

> **Article 130 R**
> 1. Community policy on the environment shall contribute to pursuit of the following objectives:
> - preserving, protecting and improving the quality of the environment;
> - protecting human health;
> - prudent and rational utilization of natural resources;
> - promoting measures at international level to deal with regional or worldwide environmental problems.
>
> 2. 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 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. In this context, harmonization measures answering these requirements shall include, where appropriate, a safeguard clause allowing

> Member States to take provisional measures, for non-economic environmental reasons, subject to a Community inspection procedure.
> 3. In preparing its policy on the environment, the Community shall take account of:
> - available scientific and technical data;
> - environmental conditions in the various regions of the Community;
> - the potential benefits and costs of action or lack of action;
> - the economic and social development of the Community as a whole and the balanced development of its region. (...)

The fact that the principle came side by side to the prevention principle implies that these two principles do not mean the same. As no definitions were given, other sources have to be turned to in order to find out what is meant by the precautionary principle here and which legal consequences it might have. As the EC is a party to several treaties in which the precautionary principle is to be found, and also signatory to the Bergen Declaration discussed above, one might assume that the definitions employed there also apply to the EC. However, as will be shown below in section 5 sub B, the Commission has a differing opinion as to the meaning of precaution. The way in which the European Court of Justice uses principles of environmental law will also be shown.

Helsinki Convention 1992
The ECE Convention on the protection and use of transboundary watercourses and international lakes (Helsinki, 1992) underlines the importance of precaution at several stages. First of all, the parties to it shall take all appropriate measures to prevent, control and reduce pollution of waters causing *or likely to cause* transboundary impact (Article 2(2)(a), emphasis added). Secondly, Article 2(5)(a) expressly states that in taking the measures called for, the parties "shall be guided by" a number of principles. The first one to be mentioned is the precautionary principle,

> by virtue of which action to avoid the potential transboundary impact of the release of hazardous substances shall not be postponed on the ground that scientific research has not fully proved a causal link between those substances, on the one hand, and the potential transboundary impact, on the other hand.

The Helsinki Convention thus employs a definition with a broader scope than the Rio and Bergen Declaration, as it does not limit itself to serious or irreversible damage.(8)

Framework Convention on Climate Change
The parties to the UN Framework Climate Convention (New York, 1992) agree that there are many uncertainties in predictions of climate change, particularly with regard to the timing, magnitude and regional patterns thereof. To this end, the Convention calls upon the parties to take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. The same definition as used in the Rio Declaration then follows, with a more specific explanation of the cost-effectiveness criterium:

> 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, 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.

Again, the question which remains to be answered when narrowing down the scope of the precautionary principle by using the cost-effectiveness criterium is how one is to decide, whether or not the measures are cost-effective if it is not certain how much damages will occur, or if they will occur at all.

The Hague Declaration on Principles of Environmental Law
In May 1996, a conference on Principles of Environmental Law was convened by the Dutch Ministry for the Environment. Legal experts from over 80 countries gathered in The Hague to talk about the role of principles in environmental policies. At the end of the conference, a declaration was adopted. In this declaration, it is stressed that the Rio Declaration should be given the fullest possible legal effect. One way of doing so, is incorporating environmental principles both into national law systems and policies. Principles to be included according to the conference participants are among others the precautionary principle and the internalisation of environmental costs.(9)

5) Legal significance of the precautionary principle

Environmental principles can serve several functions. Their significance ranges from mere guiding policy incentives without any legal consequences as such to legally binding principles which can be invoked before the judiciary. Of special interest to lawyers are the questions under which circumstances environmental principles can be used before a court and what good they can do. The following examples show whether or not the precautionary principle can be invoked before the judiciary at the international (A), the European Community (B) and the national level (C), and what the actual use of the principle can be.

A) International level

- French nuclear tests
The first case to be discussed has to do with the nuclear tests conducted by France in the year 1995; under the following heading on the European case law, a second case dealing with the same matter will also be discussed below. Here, the Order of the International Court of Justice of 22 September 1995 serves as a first example of the possible legal significance of the precautionary principle. New Zealand had obtained a decision by the International Court of Justice (ICJ) on French Nuclear test in the past: the Nuclear Tests case of 1974.(10) This time however, the ICJ did not allow the case to be re-opened, so no substantive decisions were taken. However, from the dissenting opinions we can learn that the role of the precautionary principle in a case which would not stumble over procedural blockades might be important in the future.

- Beef hormones
An interesting example of the precautionary principle in practice is the dispute between the USA and Canada on the one hand and the EC on the other hand on the safety of beef raised using growth hormones. The EC claimed it was not safe for human health to eat such meet, the USA and Canada claimed the opposite and brought a case before a WTO panel. That panel concluded that the EC the import ban was violating WTO law. The appeal body came to a similar conclusion. The EC had brought forward that its import ban was justified in the light of the precautionary principle, which they presented as a binding rule of international customary law. The USA and Canada denied that the principle already had such a status. Canada did admit that it was an emerging principle. At the WTO website you can download the text of these decisions.

B) European level(11)

- French nuclear tests
The second example of case law again deals with the French nuclear tests.(12) This time, a private person, living in the vicinity of the place where the tests were carried out, tried to get the European Commission to prohibit the testings. The plaintiff claimed, that the Commission had violated the precautionary principle (codified in Article 130R(2) EC Treaty, see section 4 above) by allowing France to carry out its tests. However, the ECJ never got to answer on the substantial side of this matter, as the plaintiff was denied legal standing in the case for the following reasons:

> Even on the assumption that the applicants might suffer personal damage linked to the alleged harmful effects of the nuclear tests in question on the environment or on the health of the general public, that circumstance alone would not be sufficient to distinguish them individually in the same way as a person to whom the contested decision is addressed, as is required by the fourth paragraph of Article 146 of the Treaty, since damage of the kind they cite could affect, in the same way, any person residing in the area in question.

Meanwhile, the Commission had alleged that it did comply with the precautionary principle. The reasoning they used was peculiar though, as they defined precaution as investigating the worst case scenario. As has been shown above, there is a lot more to precaution than merely the worst case scenario, even in the more limited definition employed in for instance the Rio Declaration.

- Validity of EC measures to protect the ozone layer
In the more recent **Case C-341/95, *Gianni Bettati* v *Safety Hi-Tech Srl*** (ECJ 14 July 1998**,** n.y.r.), the ECJ was asked to see whether an EC measure, the Regulation No 3093/94 of 15 December 1994 on substances that deplete the ozone layer (OJ 1994 L 333, p. 1), was not violating the environmental principles of Article 130R(2). Some authors had doubted that these principles could have such a

practical use as a test, but the ECJ did see it as a possibility to perform such a test. The Court did state that

> in view of the need to strike a balance between certain of the objectives and principles mentioned in Article 130r and of the complexity of the implementation of those criteria, review by the Court must necessarily be limited to the question whether the Council, by adopting the Regulation, committed a manifest error of appraisal regarding the conditions for the application of Article 130r of the Treaty.

Nevertheless, it follows from this case that the principles can serve as a means of verifying the validity of EC measures.

C) The national level

- Sellafield
The case *Reay and Hope* v. *British Nuclear Fuels plc (BNFL)*(13) concerned an action for personal injury. Two families residing in the vicinity of the Sellafield plant had suffered the death of a child and had developed blood cancer (leukaemia and lymphoma) themselves. They claimed that this was due to releases of radiation from the notorious plant and that BNFL were in breach of their statutory duty. The High Court's judge did agree that the cluster of childhood leukaemias in the region could not be put down to chance, but as it was not possible to proof that this was caused by mutation of the father's sperm creating a predisposition to the diseases as the applicants had argued, the claim was dismissed. The plaintiffs had failed to prove on the balance of probabilities that the cancers were caused by the Sellafield emissions. In fact, the claim that there did exist such a link was rejected as "pure speculation" and "unchartered waters" as it "presupposes but does not explain the data".

- Kernkraftwerk Krümmel
In the vicinity of the nuclear power station Krümmel near Hamburg, an increase of leukaemia was noted as well. When a new supplementary permit was issued, a person living 20 kilometres away issued a complaint stating that the increased leukaemia is likely to be caused by radiation from the power station. The administration noted that the already existing permit conditions limits would still be observed after the planned changes, so there was nothing to worry about. Subsequently, the German Higher Administrative Court of Schleswig-Holstein dismissed the complaint.(14) In the appeal case, this decision was overturned. On 21 August 1996, the Supreme Administrative Court(15) ordered that the administration is under the obligation to check whether or not the radiation from the nuclear power station Krümmel stays within the limits of the precaution required for by the Atomic Energy Act.(16) If the latest scientific findings indicate that the norms set at an earlier date are not sufficient any more, the administration is to set higher precautionary standards. The Court does stress, that the investigations and weighing of the risks is a task for the administration, the outcome of which cannot be replaced by a subsequent assessment by the judiciary. The administrative court should have checked whether or not the administration has ignored or payed unacceptable little interest to the leukaemia cases.

- Yellow-bellied gliders and giant burrowing frogs
The third and final national case is an Australian one which deals with endangered species.(17) A third party had objected to the issuing of a license to take and kill endangered fauna (the yellow-bellied glider and the giant burrowing frog). The judge in question, J. Stein, examined the extent to which the precautionary principle had been received into Australian law and policy at both the national and the state level. He examined in particular the non-binding Commonwealth Strategies on Endangered Species and Biological Diversity and the Intergovernmental Agreement on the Environment (IGAE) and the implications of this agreement on decision-making. Although in the National Parks and Wildlife Act of 1974 which governed the decision the precautionary principle was not expressly mentioned, the subject matter, scope and purpose of the Act made consideration of the precautionary principle clearly relevant. Judge Stein remarked that in his opinion,

> the precautionary principle is a statement of commonsense and has already been applied by decision-makers in appropriate circumstances prior to the principle being spelt out. It is directed towards the prevention of serious or irreversible harm to the environment in situations of scientific uncertainty. Its premise is that where uncertainty or ignorance exists concerning the nature or scope of environmental harm (whether this follows from policies, decisions or activities), decision-makers should be cautious.

After thus having established that the precautionary principle was of legal importance, judge Stein used the principle to check whether or not the decision to take or kill the species should have been granted. Note that this seems to go one step further than the case discussed previously, where the Bundesverwaltungsgericht ordered that there was a duty for the administration to make use of the precautionary principle in assessing the situation. Here, judge Stein states that as the species are endangered,

> caution should be the keystone to the Court's approach. Application of the precautionary principle appears to me to be most apt in a situation of a scarcity of scientific knowledge of species population, habitat and impacts. Indeed, one permissible approach is to conclude that the state of knowledge is such that one should not grant a licence to "take or kill" the species until much more is known.

The appeal was thus upheld and the license refused, through the application of the precautionary principle.

6) Conclusion

The saying that it is better to be safe than sorry has been legally translated via the precautionary principle. The principle implies that governments are not to refrain from taking action against possible damages, even if the causal link between the human behaviour and those damages is not 100% clear.

By applying the precautionary principle, it will become easier to set course for a society which is characterised by sustainable development. Applying the principle in a sensible way means that a number of conditions is to be met. First of all, when the principle is used, its meaning and scope are to be clarified. As far as the meaning is concerned, a definition is to be presented. This will prevent confusion and novel interpretations such as the one given to precaution by the Commission with regard to the French nuclear tests.
As for the (limitations to) the scope of the principle, the following can be said. When the cost-effectiveness criterium is applied, it is to be understood as a proportionality test in the sense that the more serious the possible damages could be, the more should be done to prevent them from coming into being. As the precautionary principle applies in situations where it is not certain in advance how high the damages will be, the cost-effectiveness test can not mean that certainty is achieved as to exactly how cost-effective the measures will be.
Secondly, the principle is to be codified into law systems so that discussions on its legal status are overcome and it will become easier for the judiciary to make use of the principle. The results of the The Hague conference make this clear. Via such codifications, which have taken place at many levels already, the precautionary principle is developing from a mere policy guidance ('soft law') into 'hard law'. This is necessary all the more, where the line of reasoning followed by New Zealand in the Nuclear Tests Case of 1995 before the ICJ indicate that the principle is not yet a part of international customary law and the opinions of the USA and Canada in the Beef Hormones cases.
A third and final condition which is to be met if the precautionary principle is to be used in a sensible way is the following. As the principle is not widely known yet, information on the meaning and legal significance of the precautionary principle is to be disseminated.
If these conditions are met, the precautionary principle will enhance the legal contribution to sustainable development for present as well as future generations.

Notes

1. One could compare the matter with weather forecasts: the longer ahead, the less reliable these tend to be.
2. The question whether or not trees, environmental protection groups or persons with a special or general interest should have standing has an extensive history. See for instance Ph. Sands, *Principles of international environmental law I. Frameworks, standards and implementation,* Manchester University Press, Manchester/New York, 1995, p. 97-102 and 158-160. The Dutch Environmental Protection Act opens the possibility for each and every person to raise objections to permits and go to court. In the EC on the contrary, it is virtually impossible to get access to justice in environmental matters for individuals, as the discussion of the French Nuclear Tests case will show below in section 5.
3. D.H. Meadows, D.L. Meadows, J. Randers and W.W. Behrens (eds.), *The limits to growth : a report for the Club of Rome's project on the predicament of mankind*, Earth Island Limited, London, 1972.

4. The World Commission on Environment and Development, *Our Common Future*, Oxford University Press, Oxford/New York, 1987.
5. See for the text of the Declarations on Conclusions: Ministry of Environment and Energy, Danish Environmental Protection Agency, *Ministerial Declarations* and *Esbjerg Declaration*, Copenhagen, 1995.
6. In this sense, if human lifes are at stake such is the case with BSE infected cow meat, far reaching instruments are justified until more certainty is gained.
7. See for instance L. Krämer, *E.C. Treaty and environmental law*, Sweet & Maxwell, London, 1995, p. 63, 64 and J.H. Jans, *European Environmental Law*, Kluwer Law International, The Hague/London/Boston, 1995, p. 6.
8. Transboundary impact is defined in Article 1(2) as any "significant adverse effect on the environment".
9. For the results of the conference see: Dutch Ministry of the Environment, *International Environmental Conference on Codifying Rio Principles in National Legislation*, Publication Series 'milieubeheer', 1996/ 2, The Hague, 1996 and the text of the conclusions adopted there on the European Environmental Law homepage.
10. ICJ Reports, 1974, p. 253. See for a more extensive discussion of this case W. Th. Douma, *Status des Vorsorgeprinzips im internationalen Recht anhand des Urteils des IGH zu den Französischen Atomtests des Jahres 1995*, Humanitäres Völkerrecht - Informationsschriften, nr 4, 1996, p 187 - 192.
11. The full text of the judgments of the European Court of Justice and the Court of First Instance can be found at my European Environmental Law homepage (http://www.eel.nl).
12. *Danielsson* v. *Commission*, Case T-219/95 R, [1996] ECR II-3051(French Nuclear tests)
13. (1993) QBD; [1993] *Current Law* 2978; *The Guardian*, 15 October 1993; *The Independent* 22 November 1993.
14. Oberverwaltungsgericht Schleswig-Holstein, 8 November 1994 (OVG 4 K 5/91).
15. Bundesverwaltungsgericht, 21 August 1996 (BverwG 11 C 9.95).
16. Paragraph 7(2)(3) Atomgesetz.
17. *Leatch v National Parks and Wildlife Service and Shoalhaven City Council* (1993) 81 LGERA 270 at 281-285 Stein J of Land and Environment Court.

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- Environmental research foundation: Environmental Research Foundation (ERF) was founded in 1980 to provide understandable scientific information about the influence of toxic substances on human health and the environment. Their main goal is to strengthen democracy by helping people find the information they need to fight for environmental justice in their own communities.
- Ag BioTech InfoNet : Ag BioTech InfoNet covers all aspects of the application of biotechnology and genetic engineering in agricultural production and food processing and marketing, including on precautionary principle.
- Centre for progressive regulation: The Center for Progressive Regulation is a non-profit research and educational organization of university-affiliated academics with expertise in the legal, economic, and scientific issues related to regulation of health, safety, and the environment, including the precautionary principle.