



Caribbean Environment Programme
United Nations Environment Programme

**RELEVANCE AND APPLICATION OF THE PRINCIPLE OF
PRECAUTIONARY ACTION TO THE CARIBBEAN
ENVIRONMENT PROGRAMME**

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PREAMBLE

The Fifth Intergovernmental Meeting on the Caribbean Environment Programme and Second Meeting of the Contracting Parties to the Cartagena Convention, Kingston, 17-18 January 1990, requested the Secretariat by Decision 16 to study in depth the mechanism of application of the Principle of Precautionary Action and to prepare a document for consideration by the next Intergovernmental and Contracting Parties Meeting.

This document responds to this request by providing:

A definition of the precautionary principle and an explanation of its working, together with an outline of approaches taken in defining the principle by other institutions;

- **An analysis of the probable advantages and disadvantages to the Wider Caribbean region of the adoption of the precautionary principle; and**
- **Mechanisms for the application of a precautionary approach by States and Territories within the Wider Caribbean region.**

Presently there exists a large body of literature on this subject and it is important to note that a similar exercise was conducted for the Parties to the London Dumping Convention (LDC) in 1991. In preparing this document the Secretariat drew heavily on the existing literature, the LDC Report as well as information from UNEP. The bibliography is contained in Annex I to this document. The

document was presented and endorsed at the Sixth Intergovernmental and Third Contracting Parties Meeting, convened in Kingston, 16-18 November 1992.

I. INTRODUCTION

The UN Secretary General in his 1990 Report on the Law of the Sea expressly recognized the "considerable significance" of the precautionary principle for future approaches to marine environmental protection and resource conservation and reported that it had been "endorsed by virtually all recent international fora." Additionally, in June 1992 the Rio Declaration endorsed the precautionary approach (Principle 15) and a number of international environmental treaties have also included reference to, or acceptance of the principle.

Recent examples of the acceptance of this principle include: the Framework Convention on Climate Change and the Convention on Biological Diversity (both signed in Rio in June 1992); the 1992 Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area; the 1992 Helsinki Convention on the Protection and Use of Transboundary Watercourses and Lakes; the 1992 Maastricht Treaty on European Union; the 1992 Paris Convention for the Protection of the Marine Environment of the North East Atlantic. Indeed, the Secretariat notes that a number of international environmental lawyers would now argue that the precautionary principle is moving from the sphere of international policy to that of customary international law.

II. THE PRECAUTIONARY PRINCIPLE

WHAT IS THE PRECAUTIONARY PRINCIPLE/APPROACH

Despite the widespread approval of the precautionary principle/approach which has been called "the most important new policy approach in international environmental co-operation" (Freestone, 1990) commentators are still unclear as to its precise meaning. Nevertheless it has been discussed in a number of international environmental bodies and it is possible to outline its general thrust; more detailed aspects of it will be considered in the section on definitions.

The precautionary principle first emerged as an international environmental instrument in the context of regional discussions on the status of the North Sea. Despite regulation of both land based pollution and ocean dumping by regional bodies the quality of the North Sea continued to decline, raising questions as to the effectiveness of the traditional approaches to environmental regulation based on the assimilative capacity of the environment. This traditional approach can be seen in the preamble to the London Dumping Convention which contains the statement that "the capacity of the sea to assimilate wastes and render them harmless, and its ability to regenerate natural resources, is not unlimited." This phrase was originally interpreted to mean that although the capacity of the oceans was accepted as finite, nevertheless actions were permissible unless evidence could be adduced that they caused harm. However scientific evidence is seldom conclusive and some scientists in any event argue that once detrimental effects are registered, the assimilative capacity of the environment has already

been exceeded.

The precautionary approach is innovative in that it changes the role of scientific evidence. It requires that once environmental damage is threatened action should be taken to control or abate possible environmental interference even though there may still be scientific uncertainty as to the effects of the activities. Hence the policy response will be to adopt or develop clean technologies rather than simply to assess the risks of various levels of pollutant emissions.

Such an approach is reflected in Article 4(3)(2) of the Bamako Convention . The precautionary approach may also be used to reverse the traditional burden of proof, so that in cases of scientific uncertainty as to possible effect of certain activities, the burden of proof is passed on to the potential polluter, who needs to prove that his activities will not damage the environment. This approach is also to be found in the Prior Justification Procedure of the Oslo Convention.

The adoption of the precautionary principle and the implementation of a precautionary approach therefore entails a shift in decision-making in favour of a bias towards safety and prevention. It means that in the case of doubt as to the effects on the environment, preventive and remedial action is taken. In accordance with Resolution 14/4 of 4 September 1991 of the London Dumping Convention:

The precautionary approach makes explicit that preventive or remedial action does not have to await the presentation of conclusive scientific evidence of detrimental effects for the environment; instead, preventive or remedial action is to be taken if scientific evidence

makes it plausible that detrimental effects to the marine environment may result. This means that policy makers cannot hide behind the uncertainties inherent in the conclusions of scientific research and that they have to take decisions on the basis of probabilities and uncertainties.

Although a precautionary approach has been most frequently applied in the area of marine pollution, its incorporation into the Rio Declaration as Principle 15 demonstrates clearly that it can be applied to the entire spectrum of environmental policy making and to all types of human impacts on the environment. The distinctive feature of the precautionary principle/approach is not that it dictates specific regulatory measures (as many different types of measures can be used for implementation), but rather, the way in which and the time at which the measures are adopted. (Hey 1991; Nollkaemper, 1991). The implementing measures and mechanisms that were originally developed in response to the problems of harmful wastes most commonly refer to: clean production, no waste technology, best available technology (BAT) and best environmental practice (BEP). In its broader application no single regulatory approach is called for and, indeed, a variety of approaches may be necessary.

PRECAUTIONARY PRINCIPLE OR PRECAUTIONARY APPROACH

A considerable amount of energy has been expended on distinguishing between the precautionary principle and or the precautionary approach. A common sense distinction suggested by a recent commentator (Hey, 1992) is that a principle is a "general law

or rule adopted or professed as a guide to action", whereas an approach is "a way of considering or handling something". A precautionary policy therefore is one which includes both, i.e. it is based upon the principle and approaches environmental problems in a precautionary manner. The policy would also include measures -specific regulatory techniques, mechanisms or procedures - which result from the application of a precautionary approach to a specific problem - such as land based sources of pollution. This terminology will be used in this paper.

TOWARDS A DEFINITION OF A PRECAUTIONARY POLICY

While broad agreement appears to exist that the precautionary approach involves the rejection of the traditional assimilative capacity approach, there is nevertheless considerable variation in the use of these terms which have been endorsed by various policy fora and in the legal texts in which they have been incorporated (see Annex I). A cursory examination of these texts indicates that a single definition is not easy to elaborate. In this regard, a number of suggested definitions have been elaborated in this document and will be discussed later, however, at the outset it might be more fruitful to analyze the common elements of existing definitions as well as areas of disagreement.

In the report to the Parties to the London Dumping Convention, a number of common elements were identified in all the instruments:

The vulnerability of the environment;

- The limitations of science to predict accurately threats to the**

environment and the measures required to prevent such threats;

- **The availability of practical alternatives (both methods of production and products) which enable the termination or minimisation of inputs into the environment; and**
- **The need for long term holistic economic considerations, accounting for, among others, environmental degradation and the costs of waste treatment.**

In summary, the precautionary approach can thus be characterized as assuming that science does not always provide the data or information needed in a timely manner to effectively protect the environment and that undesirable effects may be caused if measures are taken only when science does provide such data or information. It stresses the need for practical alternatives to complex research and monitoring procedures which do not always pick up signals of environmental degradation in light of the technical difficulty and cost of monitoring more than a limited number of parameters.

Furthermore, it assumes that the cost of remedial clean-up measures may be prohibitive, or that essential biological life-supporting services may already be irreplaceable if action to protect the environment is taken only when scientific certainty is available. It also argues that current economic accounting methods do not adequately recognize the true costs of resource depletion, frequently underestimating the future environmental costs of substituting man-made systems for damaged natural ones and overemphasizing short term economic costs of remedial measures.

However the implementation of such an approach does involve a number of policy choices: most importantly a choice as to the level of threat posed to the environment before the precautionary measures are adopted. The different approaches adopted to this crucial question are reflected in the various formulations adopted by various instruments: States "must not wait for proof of harmful effects"; they should take "action ... even before a causal link has been established by absolutely clear scientific evidence"; or "when there is reason to assume that certain damage or harmful effects ... are likely to be caused ..., even where there is no scientific evidence to prove a causal link..."; they must "avoid potentially damaging effects ... even where there is no scientific evidence to prove a causal link"; and are committed to "eliminating and preventing pollution emissions where there is reason to believe that damage or harmful effects are likely ... even where there is inadequate or inconclusive scientific evidence to prove a causal link ..." and "preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm."

The LDC Report listed the main divergencies between the definitions as follows:

- The type of scientific evidence required (where there is scientific debate, where there is inadequate or inconclusive scientific evidence", "lack of full scientific certainty should not be used as a reason for postponing measures)";**
- The type of effects to be identified ("may result in irreversible damage to the marine environment and human suffering",**

"threats of serious or irreversible damage", safeguarding the marine ecosystem ... 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", "reason to believe that damage or harmful effects are likely to be caused", "significant risk of damage to the environment");

- **The substances involved ("the most dangerous substances", "polluting emissions of substances that are persistent, toxic and liable to bio-accumulate", "polluting emissions", "release of substances, especially synthetic and persistent substances", "potentially dangerous materials or the spread of potentially dangerous pollutants", "activities which may irreversibly jeopardize the environment"); and**
- **Economic considerations - although note that some definitions do not refer to economic considerations at all ("taking economic costs into consideration", "by the use of the best available technology..." which "... is understood to take into account economic availability", "if the balance of costs and benefits justifies it").**

PRECEDENTS FOR DEFINITIONS

Should the Contracting Parties decide to adopt the precautionary approach, the Secretariat would like to propose two main means by which this could be accomplished:

Formal amendment to the Cartagena Convention

- **This would require the convening of a Conference of**

Plenipotentiaries for this purpose in keeping with Article 18(1) of the Convention. Article 4(3) of the Bamako Convention might provide a precedent (although its strategies are primarily directed at hazardous waste and relate to industrial pollution and waste management - it does not assist with diffuse source pollution such as that arising from agriculture); or

The Adoption of an Interpretive Resolution or Declaration

- **Such a resolution or declaration would commit the States and Territories participating in the Caribbean Environment Programme to the use of the precautionary approach. For such an approach The London Dumping Convention Resolution might be a starting point.**

The relevant Articles of the Bamako Convention and Resolution 44/14 of the London Dumping Convention are outlined below:

The Bamako Convention

The Convention on the Ban of the import into Africa and the control of transboundary movement and management of hazardous wastes within Africa, was adopted 29 January 1991, in Bamako, Mali under the auspices of the Organization of African Unity. The Convention explicitly adopts the precautionary approach as reflected in Article 4(3)(f)(g) and(h) which contains the following obligations:

"The Adoption of Precautionary Measures:

(f) Each Party shall strive to adopt and implement the preventative,

precautionary approach to pollution problems which entails, inter alia, preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm. The Parties shall co-operate with each other in taking the appropriate measures to implement the precautionary principle to pollution prevention through the application of clean production methods, rather than the pursuit of a permissible emissions approach based on assimilative capacity assumptions;

(g) In this respect Parties shall promote clean production methods applicable to entire product life-cycles including:

- Raw material selection, extraction and processing;**
- Product conceptualization, design, manufacture and assemblage;**
 - Materials transport during all phases;**
 - Industrial and household usage;**
- Reintroduction of the product into industrial systems or nature when it no longer serves a useful function;**
- Clean production shall not include "end of pipe" pollution controls such as filters and scrubbers, or chemical, physical or biological treatment. Measures which reduce the volume of waste by incineration or concentration, mask the hazard by dilution, to transfer pollutants from one environmental medium**

to another, are also excluded.

(h) The issue of preventing the transfer to Africa of polluting technologies shall be kept under systematic review by the Secretariat of the Conference and periodic reports shall be made to the Conference by the Parties."

Resolution 44/14 of the London Dumping Convention

At their Fourteenth Consultative Meeting in 1991 the Parties to the London Dumping Convention adopted a Resolution which was predicated upon recognition of, inter alia, the following:

"That human activities and social development need to be managed in a manner that will limit contamination of the marine environment by wastes and other matter, and thereby ensure that the viability of marine ecosystems and the legitimate uses of the sea are sustained for the benefit of present and future generations" ...and

"That existing pollution control measures, under the London Dumping Convention, have been strengthened by shifting the emphasis from a system of controlled dumping based on assumptions of the assimilative capacity of the oceans, to approaches based on precaution and prevention."

The Parties then adopted the following language in Resolution 44/14 regarding the application of a precautionary approach in environmental protection within the framework of the London Dumping Convention:

"AGREE that in implementing the London Dumping Convention the Contracting Parties shall be guided by a precautionary approach to environmental protection whereby appropriate preventative measures are taken when 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 relationship between inputs and their effects; and

AGREE FURTHER that Contracting Parties shall take all necessary steps to ensure the effective implementation of the precautionary approach to environmental protection and to this end they shall:

- **encourage prevention of pollution at the source, by the application of clean production methods, including raw materials selection, product substitution and clean production technologies and processes and waste minimisation throughout society;**
- **evaluate the environmental and economic consequences of alternative methods of waste management, including long term consequences;**
- **encourage and use as fully as possible scientific and socio-economic research in order to achieve an improved understanding on which to base long-range policy options;**
- **endeavour to reduce risk and scientific uncertainty relating to proposed disposal operations; and**
- **continue to take measures to ensure that potential adverse impacts**

of any dumping are minimized, and that adequate monitoring is provided for early detection and mitigation of these impacts."

III. PROBABLE ADVANTAGES AND DISADVANTAGES TO THE WIDER CARIBBEAN REGION OF ADOPTION OF THE PRECAUTIONARY PRINCIPLE BY THE REGION.

In order to assist governments in assessing the significance of the precautionary approach for the Wider Caribbean region, the Secretariat has outlined a number of the probable advantages and disadvantages. Please note that this is not a definitive list, nor have the factors been listed in order of importance:

ADVANTAGES:

The coastal areas of the region are rich in fragile marine ecosystems, particularly corals, which have taken hundreds of years to develop and which are highly susceptible to land or marine generated pollution. Given the close proximity of many of the countries of the region and the interrelationship of many of their ecosystem support mechanisms (such as fish spawning areas), a general commitment to the precautionary approach to any marine environmental interference is consistent with the goal of sustainability;

- **The economies of a large number of the countries of the region are highly dependent upon the marine environment primarily through tourism and fishing. These major economic sectors are the first to be affected as a result of degraded ecosystems such as coral reefs, mangrove forests and sea grass beds. Remedial action, taken after harmful effects are evident in a fragile system, may involve very expensive clean-up operations or, at worst, the damage to essential life-supporting systems may be irreparable. Remedial measures for the environment will not necessarily revive a damaged tourist**

industry, particularly in the short term;

- **In the light of the relatively weak science base of the region and the shortage of personnel to conduct the extensive and expensive processes of effective monitoring, the placing of the burden of proof on those advocating potentially damaging emissions or other activities having environmental effects would be a cheaper more practical alternative to extensive monitoring activities ex post facto;**
- **The States and Territories participating in the Caribbean Environment Programme have already indicated their disquiet at a number of activities which the precautionary approach would regulate, such as land based sources of pollution and the transboundary movement of hazardous wastes. The formal adoption of the principle would allow a more holistic and consistent approach to be taken to these types of activities; and**
- **The region has already committed itself to a number of the key concepts involved in a precautionary approach, such as Environmental Impact Assessment (EIA), research and monitoring, protection of fragile and endangered ecosystems and habitats. The adoption of the principle by the States and Territories of the region acting through the Cartagena Convention would assist individual countries in maintaining these principles in the face of possible pressure from extra-regional investors and others. It may also provide a conduit for donor assistance at a regional level to assist with short term costs while we adopt this approach.**

DISADVANTAGES:

- **Uncertainty remains as to the exact content of the principle. Concentration on principles rather than measures might, it has been argued, detract attention from the more concrete actions which may be taken to address environmental degradation in the region;**
- **The region is heavily dependent upon capital imports. The commitment to a precautionary approach including for example a Best Environmental Practice (BEP) or Best Available Technology (BAT) principle might well discourage investment by companies seeking to relocate industries from other regions;**
- **BEP, BAT and other precautionary measures often cost money to install or implement. Thus they may be more expensive in the short term than a "wait and see" approach;**
- **Some economists argue (OECD, 1991) that it is economically more prudent to spend money in the future on the scientific means to address specific environmental hazards once they have been clearly and scientifically identified than on expensive precautionary measures in the short term, some of which may not prove necessary; and**
- **Producers may try to shift the added costs of cleaner technologies onto the consumer, thus making certain products more expensive, or onto government, with the consequence of needing greater "start-up" assistance.**

IV. MECHANISMS FOR THE APPLICATION OF A PRECAUTIONARY APPROACH BY THE STATES AND TERRITORIES OF THE WIDER CARIBBEAN REGION

A precautionary approach may be applied within the region at a number of different levels and through a wide variety of mechanisms. The Secretariat would like to offer the following non exhaustive framework.

There are two main levels at which such an approach can be applied. Firstly, it would provide a guiding philosophy against which various activities of the Caribbean Environment Programme (CEP) can be measured. Secondly, procedures within existing instruments or in new instruments may be developed to ensure that scientific uncertainty does not act as an obstacle to actions intended to protect the environment. The burden of proof could be passed to those opposing remedial or preventive measures.

These procedures could be of the following kinds:

- **Technical procedures, such as environmental impact procedures, prior justification procedures (such as that used by the Oslo Convention) and assessment procedures (as in the LDC "new assessment procedures" (Thorne-Miller, 1992);**
- **Administrative procedures such as prior consultation, donor funding arrangements and arrangements for technology transfer and exchange of information;**
- **Legal procedures, voting procedures (e.g. movement to majority voting), enforcement mechanisms, strict liability regimes,**

relationship with other environmental conventions.

In relation to the North Sea and North Atlantic region it has been suggested that majority-voting (with or without an "opt-out" provision for those outvoted) would assist a precautionary approach in that it would ensure stronger decisions by eliminating the "lowest common denominator approach" (whereby the decision reflects the view of the most reluctant party) and allow actions to be taken despite the unwillingness of a minority or even one party (Hey, 1991). Procedures for amending annexes under the Cartagena Convention (Article 19) already reflect such a procedure.

A commitment to a precautionary approach by the States and Territories of the region within the framework of the CEP could imply both a commitment to the use of that approach within the regional instruments, as well as within national policies. In any event the nature of many of the obligations undertaken by governments participating in CEP necessarily requires a national dimension in that they require implementation by national policies and legislation. This section of the document looks initially at existing mechanisms within the CEP and continues to examine possible new mechanisms.

APPLICATION OF PRECAUTION BY THE USE OF EXISTING PROGRAMMES AND INSTRUMENTS

The Action Plan of the Caribbean Environment Programme as well as the Cartagena Convention and its Protocols already contain commitments to issues which would form part of a general precautionary approach and mechanisms which may be used to implement a commitment to a precautionary approach. These

include commitments to a number of the constituent elements of such an approach, namely:

- **Sustainable development in the region;**
- **Environmental Impact Assessment;**
- **Sound Environmental Management and Planning;**
- **Co-operation on Scientific and Technical Research; and**
- **Research and monitoring programmes.**

The adoption of such an approach could therefore explicitly affect the interpretation of these existing obligations, insofar as they are procedural requirements. A commitment to a precautionary policy (to the extent that it not already adopted de facto) would simply provide a philosophy within which existing procedures would operate.

The Cartagena Convention (CC) and the SPAW Protocol both provide procedures for country reports (CC, Art. 22; SPAW, Art.19), Countries participating in CEP could commit themselves to reporting on a regular basis on the way that the approach was being adopted within their own national system.

The Monitoring Committee too would have a role, as envisaged by the Convention itself, but yet to be exercised (CC: Art. 16(2)(b)), in discussing and commenting on such reports for the benefit of the Meetings of the Parties.

In addition to the legal texts themselves the existing regional programmes of the Action Plan of CEP also provide important opportunities for implementation of a precautionary approach. Many

of the techniques and mechanisms discussed elsewhere in this document can be as, if not more, easily incorporated in programme decisions, recommendations and activities as within formal legal instruments. It is important that implementing actions reflect regional and local conditions, Programme activities operate within the important regional perspective and are also often directed towards national activities and implementation, an important dimension for the effective implementation of any policy approach.

All programme activities would be relevant, but those most significant would appear to be:

Assessment and Control of Marine Pollution (CEPPOL)

Assessment and control of marine pollution is at the heart of the debate about the precautionary approach. Chapter 17 of Agenda 21 from the UNCED Meeting in June stressed the needs for a precautionary approach to marine pollution at an operational level. Existing programme activities in this area could be relatively easily adapted to reflect a precautionary approach and CEPPOL itself could indeed be used to develop and implement precautionary techniques for use by participating States and Territories in the crucial area of marine pollution.

Specially Protected Areas and Wildlife (SPAW)

The SPAW Protocol can already be said to reflect a precautionary approach to issues such as sustainable resource management, environmental impact assessment, scientific co-operation and monitoring. Indeed the concept of protecting areas and wildlife species can itself be precautionary. Please note for example the

obligation to prevent species *becoming* endangered in Article 3(3) of the Protocol. The explicit incorporation of a precautionary approach into SPAW Programme activities would strengthen the underlying philosophy of the existing programme.

Integrated Planning and Institutional Development for the Management of Marine and Coastal Resources (IPID)

The concept of integrated planning is central to a precautionary approach, but planning itself is simply a tool to forecast potential problems and to implement policy. The adoption of a precautionary policy in relation to the marine and coastal resources of the region would therefore require incorporation into planning procedures and policy decisions on the whole range of regulations for land and water use.

Information Systems for the Management of Marine and Coastal Resources and Education, Training and Public Awareness for the Management of Marine and Coastal Resources

A precautionary approach does not (as some critics have suggested (GESAMP 1991)) disregard scientific knowledge and techniques. It is however the limitations of existing knowledge as well as traditional approaches which have prompted the emergence of this new approach. The need to improve scientific knowledge about environmental systems in the region, the need to develop management techniques reflecting the precautionary approach and the need to implement it, as well as programmes of education, training and awareness for governments and peoples throughout the region, underpin a precautionary policy approach as it does any

other approach. Hence the two Programme Areas addressing these issues would also be affected by and involved in the implementation of such an approach.

APPLICATION THROUGH THE DEVELOPMENT OF NEW INSTRUMENTS

The proposed Land Based Sources of Pollution Protocol is to provide regulations to reduce land based pollution. Central to the development of this protocol will be the precautionary philosophy. It would be important therefore that the new Protocol reflect that philosophy in its drafting. In particular this could entail:

- **A commitment to clean technology rather than "end of pipeline" controls (see the Bamako Convention);**
- **A list of substances, the discharge of which is prohibited within the region - or a "reverse listing" procedure whereby only named substances may be released into the environment under very strict guidelines. Such a list should be precautionary in that it should reflect a "suspected threat" rather than "proven harm" approach. To prevent scientific uncertainty from acting as an obstruction to the addition of new substances to a banned list or their deletion from a "reverse list", a majority voting procedure, as envisaged for amendments to annexes under the Cartagena Convention (Article 19) would be central to such a philosophy. This is particularly important in semi-enclosed seas such as the Wider Caribbean.**

It is also important that the philosophy of precaution be reflected in the proposed Transboundary Movement of Hazardous Waste Protocol when a draft is produced. Additionally, the Contracting Parties to the Cartagena Convention have also agreed to take "all appropriate measures." These measures would normally be in the form of a Protocol or other regional legal agreements - in relation to a number of other areas. To conclude the agreements themselves would be precautionary but in addition a precautionary approach would be incorporated into them.

The new areas which have been designated in the Cartagena Convention itself are:

- **Pollution from Sea-Bed Activities (Article 8);**
- **Pollution from Land Based Sources (Article 8);**
- **Airborne Pollution (Article 9);**
- **Environmental Impact Assessment (Article 12);**
- **Scientific and Technical Co-operation (Article 13);and**
- **Liability and Compensation for damage resulting from pollution (Article 14).**

In the Cartagena Convention regional co-operation in ensuring effective implementation of existing applicable international rules and standards is also envisaged in relation to:

- **Pollution from Ships (Article 5); and**
- **Pollution caused by Dumping (Article 6).**

DEVELOPMENT OF NEW PRECAUTIONARY PROCEDURES

AND TECHNIQUES

The two sections above have dealt with the instrumentalities for the possible implementation of a precautionary approach but both programme areas and treaty regimes would need to consider the development and introduction of new procedures and techniques reflecting a precautionary approach. Examples can be found in environmental management regimes elsewhere, the underpinning concept of which is that lack of scientific certainty should not be used as a reason for deferring measures to prevent harm to the environment. Many of the mechanisms set out below have been developed within the context of existing regulatory regimes, but further new mechanisms and approaches may need to be developed appropriate for those areas in the Wider Caribbean region which have not yet established efficient environmental regulatory frameworks.

AT THE REGIONAL LEVEL

Legal regimes regulating land based sources of pollution could for example incorporate:

- Prior justification procedures: such procedures reverse the traditional burden of proof in environmental pollution cases, so that the burden of proof is put upon the individual proposing a possibly harmful activity to show that no harm will be caused. Scientific uncertainty therefore works for, rather than against, the environment;**
- Requirement of an ecological restoration plan including a**

financing proposal, prior to approval of developments, particularly those with potential negative impacts;

- **Assessment procedures for waste disposal which incorporate devices such as:**

i) "Reverse listing" prohibition lists, i.e. wastes may only be discharged into the environment if they are listed - all other discharges are banned;

ii) Waste prevention audits: all applications for waste disposal permits would be refused and existing permits reviewed unless waste reduction has been explicitly addressed by the applicant; and

iii) Requirements for use of Best Available Technology [BAT] or Best Environmental Practices [BEP] in all new industrial development activities in order to establish the use of clean technologies in the region. It would be important that adding an economic qualifier to these requirements, e.g., Best Available Technology Not Entailing Excessive Costs (so called BATNEEC) should not be used to undermine these requirements in developing countries. Regional organizations could provide an information clearing house for clean technologies.

At a Procedural Level, international environmental lawyers have often argued that technical decisions should be taken by majority vote rather than by consensus. This would avoid what has been called the "Slowest Boat" rule (Sand, 1990; Hey, 1991). In fact the Annex Amendment system of the Cartagena Convention already incorporates this as reflected in Article 19.

AT THE NATIONAL LEVEL

Similar techniques to those outlined above can be used at a national level, other techniques for national implementation might include:

- **Prior Justification requirements for Environmental Impact Assessment for new developments- this applies the same technique to planning decisions as to pollution. Developments are presumed to cross the threshold of unacceptable harm to the environment until proof can be adduced to the contrary. Bonds for possible clean up or environmental restitution can then be required as part of the permit system;**
- **Moratorium on new or renewed permits for activities or discharges found to be causing unacceptable environmental harm;**
- **"Environmental Audits" on all industries to identify all wastes generated and pathways by which they enter the environment. These would also identify failures to use BAT, BEP etc. and provide opportunities to introduce clean technologies; and**
- **Revise economic accounting methods for economic and resource planning. These should reflect:**
 - **The real and ongoing costs of losses due to depletion of both mineral and biological resources;**
 - **Costs and problems of resource substitution (e.g. water purification systems for polluted watercourses, building**

concrete bulwarks against erosion where mangrove forests have been grubbed up);

- **Ongoing costs of environmental degradation (health costs, loss of tourism revenue);**
- **Costs of waste treatment (met by public authorities rather than producers); and**
- **"Non-use" values of natural systems (cultural, option and existence values).**

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- **1985 Convention for the Protection of the Ozone Layer, Vienna, March, 1985;**
- **1987 Montreal Protocol (to the Vienna Convention) on substances that deplete the Ozone Layer (adjusted and amended, London, 1990)**
- **1987 Ministerial Declaration of the Second International Conference on the Protection of the North Sea, London, 25 November, 1987.**
- **1989 Parcom Recommendation (22 June 1989) of the Parties to the Paris Conventions for the prevention of marine pollution from land based sources on the Principle of Precautionary action;**
- **1989 Oscom Decision 89/1 (14 June 1989) on the reduction and cessation of dumping industrial wastes at sea (Prior Justification Procedure) .**
- **1989 UNEP Governing Council Fifteenth Session (25 May 1989): Decision 15/27 on the precautionary approach to marine pollution,**

including waste-dumping at sea, May 1989.

- **1989, Decision on Dumping of Sixth Meeting of Parties to Barcelona Convention for the Protection of the Mediterranean Sea against Pollution, Athens, October 1989.**
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