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INCORPORATION OF THE OCEANIC DIMENSION TO BARBADOS' STRATEGY
FOR SUSTAINABLE AND EQUITABLE DEVELOPMENT */

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SUMMARY

The present document aims at the fulfillment of one of the high priority products included under Programme Element 7.3.1, Support for the formulation of national ocean policies, of ECLAC's Natural Resources and Energy Programme.

The product was originally thought as a national study referring to the development of ocean resources in an English-speaking Caribbean country.

When formulating its terms of reference, it was considered advisable to widen the scope of the product in order to also analyze the incorporation of the oceanic dimension to the country's strategy for sustainable and equitable development.

This course of action would allow the document to feed possible national needs concerning the challenges posed, among others, by the preparatory process of the United Nations Conference on Environment and Development, and to thoroughly analyze in its preparation the different ECLAC inputs concerning the regional arrangements for the said international forum.

The study basically aims at underscoring the importance of coastal and ocean resources in environmental strategies, and to analyze national study-cases in which this integration is specially relevant, considering the importance of those resources and their uses for the country's economy.

Barbados was one of the countries chosen for this research since it is a nation in which natural resources play a very important role, and where sound efforts are being undertaken to incorporate the environment into the development strategies, facing, at the same time, severe constraints which seriously endanger this valuable endeavour.

The document first studies the role of coastal and marine resources in the development strategy of Barbados, through the evaluation of the legal and institutional framework in force at the national, regional and international level.

Afterwards, a review is made of some international instruments to which the country is not a party but, the incorporation to which would significantly facilitate its efforts towards sound management of its natural resources.

In the third chapter, three key issues within the framework of ocean policy formulation and implementation in Barbados are studied. These are coastal zone management, sea-level rise and the condition of the country being a small island developing country.

The final chapter contains some initial thoughts, concerning possible recommended courses of action in the context of current international and regional co-operation mechanisms, specially in those in which ECLAC is a direct participant, such as in the Caribbean Environment Programme, and which potentially could give response to some of the suggestions contained in the rest of the report.

This chapter, however, is of a preliminary nature since its final approach will be possible only after consultations with counterparts in Barbados.

I. BACKGROUND

ECLAC's programme of work in the area of ocean resources for the period 1990-1991 included the preparation of two national studies concerning ocean resources development.

The original goal of those studies was to foster an analysis of the role played by ocean resources within the global national development strategy, as well as to examine the legal and institutional framework for ocean policy including those international instruments to which the country is a party.

From the moment that objective was devised, different developments have made advisable to broaden the study's scope so as to adapt it to meet information requirements faced at bilateral, regional or international levels concerning the natural resources and the environment.

One of these new challenges refers to the convening of the United Nations Conference on Environment and Development and its preparatory process, together with the negotiation of the two international instruments on climate change and protection of biological diversity.

In accomplishing this objective, special attention should be paid to sound efforts already undertaken by the World Bank, concerning the Environmental Issue Paper for Barbados (February 1990), as well as the activities carried out within the Caribbean Environment Programme.

As noted in the Barbados Environmental Issue Paper, the extent of environmental degradation in Barbados is alarming and pollution is destroying the interrelated marine ecosystem of reefs, nearshore fisheries, beaches and the coast.^{1/} As the report notes, the main economic activities in Barbados depend to an unusual extent on natural resource exploitation and the current level of degradation of natural resources reflect policies that have promoted revenue-earning activities without concern for their long-term sustainability.^{2/}

The product placed in ECLAC's programme of work is then a study on the development of ocean resources in Barbados. For a best efficiency of its results the work will be situated in the context of the process to incorporate the ocean policy into the overall strategy for sustainable development, keeping in mind global

efforts towards legal and institutional strengthening, the whole range of natural resources and the immediate opportunities for the country to attain the objectives of equitable and sustainable development.

Special attention will be given to the possibilities for the country to benefit from the joint activities to be carried out by ECLAC and the UNEP Regional Office for the Caribbean concerning legal and institutional strengthening in the field of natural resources and the environment, as well as from the planned technical assistance to be undertaken under the Regional Programme on Integrated Planning and Institutional Development for the Management of Marine and Coastal Resources (IPID).

II. COASTAL AND MARINE RESOURCES IN THE DEVELOPMENT STRATEGY OF BARBADOS

1. The national legal and institutional framework

The two basic instruments concerning ocean resources in Barbados are the Territorial Waters Act number 26, 1977 and the Marine Boundaries and Jurisdiction Act number 3, 1978 which respond to the movement along the lines of the then draft text of the United Nations Convention on the Law of the Sea. Barbados signed the United Nations Convention on the Law of the Sea on 10 December 1982.

The Territorial Waters Act 26 of 30 June 1977, which fixes Barbados' territorial waters at a distance of 12 nautical miles or such other distance from the nearest point of those baselines as the Minister by order prescribes.

The Act establishes that the Minister responsible for external affairs may make regulations:

- a) for the safety of navigation and the regulation of marine traffic;
- b) for the conservation of the living resources of the sea;
- c) the preservation of the marine environment of Barbados;
- d) the regulation of fishing and generally for regulation of the use of internal and territorial waters.

The Marine Boundaries and Jurisdiction Act of 1978 establishes --contiguous to the territorial waters-- a marine zone known as the Exclusive Economic Zone (EEZ) having as its inner limit the boundary line of the seaward limit of the territorial waters and as its outer limit a boundary line which at every point is a distance of 200 miles from the nearest point of the baselines of the territorial waters or such other distance from the nearest point of those baselines as the Minister responsible for External Affairs, by order, prescribes.

The Act establishes that there is vested in the Government of Barbados:

a) all rights in, and jurisdiction over, the Zone in respect of:

- i) the exploration, exploitation, conservation, protection or management of the natural living and non-living resources of the sea-bed, subsoil and superjacent waters;
- ii) the construction, maintenance or use of structures or devices relating to the exploration or exploitation of the resources of the Zone, the regulation and safety of shipping, or any other economic purpose;
- iii) the authorization, regulation or control of scientific research;
- iv) the preservation and protection of the marine environment and the prevention and control of marine pollution;
- v) all other activities relating to the economic exploration and exploitation of the Zone; and

b) all other rights in, and jurisdiction over, the Zone recognized by international law.

The Governor-General may, by order, with such exception and modifications as may be specified in the order, extend the application of any enactment to the Zone or any part thereof, and an enactment so extended shall have effect in relation to the Zone as if it had been enacted by the Act.

Concerning fishing in the Zone, the Act establishes that no person shall engage in fishing within the Zone or the territorial waters unless:

- i) he is a citizen of Barbados;
- ii) he is the holder of a valid permit granted under the Act;
- iii) there is in existence in relation to him an agreement with the Government of Barbados.

According to the Act, the Cabinet may:

- a) grant to a person who is not a citizen of Barbados; or
- b) grant in respect of a foreign fishing vessel,

a permit to engage in fishing within the Zone, the territorial waters or any designated part thereof.

The Act designates as marine conservation officers the following persons:

- a) fisheries officer of the Ministry responsible for fisheries (Ministry of Agriculture, Food and Fisheries);

- b) members of the Defence Force of Barbados;
- c) members of the police force;
- d) custom officers;
- e) coast guard officers; and
- f) any other person approved by the Cabinet.

Another relevant pieces of legislation are:

- Fisheries Regulation Act (1904).
- Beach protection Act (1890).
- Marine Areas (Preservation and Enhancement) Act (1972).
- National Conservation Commission Act (1982).
- Barbados' Port Authority Act (1975).

2. Main institutional features

The environmental competence in the Ministry of Employment, Labour Relations and Community Development, implies three separate environmental entities: the Environmental Unit, the Coastal Conservation Project and the National Conservation Commission.

The Environmental Unit is formed by the Environmental Education and Research Divisions respectively.

In 1983 the Government of Barbados facing serious coastal erosion problems, set up the Coastal Conservation Project Unit (CCPU) currently reporting to the Ministry of Employment, Labour Relations and Community Development (ELRCD).

The CCPU must provide a better understanding of the causes of beach and coastline erosion in Barbados through the following responsibilities:

- i) coastal erosion: beach profiles, wave data, currents and tidal data to assess the extent of coastal changes and, where necessary, to design policies and structures to reduce the erosion;
- ii) sea defences: monitoring of existing sea defences, specially those recently modified, design or advise on the design of defences for threatened coastal areas;
- iii) monitoring of water quality and coral reef degradation;
- iv) development control for new buildings in the coastal zone;
- v) advice to all other government agencies on coastal matters, and public education;
- vi) conceptualizing and developing pilot projects to understand coastal processes and to develop low-cost solutions for solving coastal erosion problems;
- vii) research covering beach change, beach access, coastal legislation, "seascape" performance, water quality and coral reefs.

As stated by the World Bank Barbados Environmental Issues Paper, considering Barbados' dependence on its coastal resources for tourism and fisheries, the consolidation of the CCPU is a strong priority for the country.

The Sanitation Service Authority has the main responsibility for the collection and disposal of solid wastes in Barbados.

The huge volume of degradable and non-degradable waste, partly toxic and hazardous, produced by tourism and industry is one of the major environmental management problems in the country.

Another entity to consider in the analysis of coastal management is The Greater Bridgetown, West and South Coast Sewerage Project Unit, which approaches the great menace of coliforms count in some of the main tourist destinations along the coast of Barbados.

The Inter Institutional Working Group on the Environment which was set up in 1987:

- i) to co-ordinate activities related to the management of the environment;
- ii) to assess the environmental impacts of development activities and identify strategies to minimize them; and
- iii) to highlight priority environmental problems;

is a convenient mechanism of co-ordination that should need further formalization to operate efficiently.

3. The regional legal and institutional framework

The regional context is basically that referring to the Action Plan for the Caribbean Environment Programme, notably the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, 1983, the Protocol on co-operation in combating oil spills in the Wider Caribbean Region, 1983, and the Protocol concerning specially protected areas and wildlife to the Convention of the Protection and Development of the marine environment of the Wider Caribbean Region of 1990, and its Annexes adopted in June 1991.

Both the Convention and the Protocol concerning oil-spills are in force and have been ratified by Barbados. The Protocol concerning specially protected areas has neither entered into force nor been signed by Barbados.

The Convention for the Protection and Development of the Marine Environment of the Wider Caribbean region covers interesting

areas which build an efficient framework for facing environmental deterioration and could convey a firm basis for national legislation supporting ocean policies.

The Convention deals with pollution from ships stating that Contracting Parties "shall take all appropriate measures to prevent, reduce and control pollution of the Convention area caused by discharges from ships and, for this purpose, to ensure the effective implementation of the applicable international rules and standards established by the competent international organizations".

Similarly, concerning pollution caused by dumping, the Convention calls upon states to adopt pertinent measures to face pollution caused "by dumping of wastes and other matter at sea from ships, aircraft or man-made structures at sea, and to ensure the effective implementation of the applicable international rules and standards".

Barbados is not a party to the London Dumping Convention.

Another interesting point deals with pollution from land-based sources, which represents the higher percentage of marine pollution accounting for between 70% and 80%. This is considerably relevant since the tourism activities greatly contribute to this type of pollution.

The Convention asks states to take measures to "prevent, reduce and control pollution of the Convention area caused by coastal disposal or by discharges emanating from rivers, estuaries, coastal establishments, outfall structures, etc."

In this connection, it is important to note that a text for a future protocol on land-based sources of marine pollution is being considered by the member countries of the Action Plan for the Caribbean Environment Programme.^{3/}

Further, the Convention refers to Specially Protected Areas, recommending the adoption of measures to "protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species, in the Convention Area" adding that to that end the Contracting Parties shall establish protected areas.

As mentioned in the chapter of national legislation Barbados enacted in 1972 an Act on Preservation and Enhancement of Marine Areas. Barbados has established a park-like marine reserve "Barbados Marine Reserve".

After the study carried out by the Organization of American States and the US Department of the Interior ^{4/} four new protected areas were proposed for Barbados: "North-East Coast

Marine Park" (proposed by an appropriate national management authority); "Graeme Hall Swamp"; "Chancery Lane Swamp"; "Long Pond".

Another important subject in the Convention refers to environmental impact assessment.

As noted by the World Bank 5/ "industrial promotion has focussed on export-led industries without so far requiring environmental impact assessments".

Consequently, the provisions of the Convention seem specially relevant. The Convention calls upon contracting parties to develop guidelines to support the planning of their major development projects so as to avoid or minimize harmful impacts.

It states that countries shall assess or ensure the assessment of "the potential effects of such projects on the marine environment, particularly in coastal areas, so that appropriate measures may be taken to prevent any substantial pollution of, or significant and harmful changes to, the Convention area".

The Protocol concerning co-operation in combating oil spills in the Wider Caribbean Region as expressed in its Preamble seeks to "avert through the adoption of measures to prevent and combat pollution resulting from oil spills, damage to the marine environment, including coastal areas, of the Wider Caribbean region".

The Protocol applies to oil spill incidents which have resulted in, or which pose a significant threat of pollution to the marine and costal environment.

It calls upon the Contracting Parties to: "establish and maintain, or ensure the establishment and maintenance of, the means of responding to oil spill incidents and shall endeavour to reduce the risk thereof. Such means shall include the enactment, as necessary, of relevant legislation, the preparation of contingency plans, the identification and development of the capability to respond to an oil spill incident and the designation of an authority responsible for the implementation of this Protocol".

The Protocol concerning specially protected areas and wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, not signed by Barbados, recognizes the importance of the establishment and management of protected areas and the protection of threatened and endangered species will make a sound contribution to foster the cultural heritage and values of the region, incresing their economic and ecological benefits.

The Protocol establishes that States shall establish when necessary protected areas in areas over which it exercises sovereignty or sovereign rights or jurisdiction, to support the natural resources of the region and foster rational use of the areas according to the characteristics of each of them.

Those areas should tend to enhance:

a) representative types of coastal and marine ecosystems, covering an area suitable to ensure their long-term viability and to keep biological and genetic diversity;

b) habitats and related ecosystems fundamental to the survival and recovery of endangered, threatened or endemic species of flora or fauna;

c) the productivity of ecosystems and natural resources providing economic or social benefits;

d) areas of special biological, ecological, educational, scientific, historic, cultural, recreational, archaeological, aesthetic or economic value, among others.

Article 10 of the Protocol refers to National Measures for the Protection of Wild Flora and Fauna, urging each Party "to identify endangered or threatened species of flora and fauna within areas over which it exercises sovereignty or sovereign rights or jurisdiction and accord protected status to such species".

According to the Protocol, each Party, shall regulate, and where appropriate, forbid:

a) the taking, possession or killing (including incidentally) or commercial trade in those species, their parts or products; and

b) to the extent possible, the effect on wild fauna particularly in relevant stages of its vital cycle.

The Protocol urges states to formulate and adopt policies and plans "for the management of captive breeding of protected fauna and propagation of protected flora".

It is interesting that the article provides for Parties to endeavour to consult with range States not Parties to the Protocol, so as to co-ordinate their efforts to manage and protect endangered or threatened migratory species.

In addition, Parties are called upon to make provisions for the repatriation of protected species exported illegally.

The Protocol also provides for the need to evaluate the possible direct and indirect impacts including cumulative ones, of

the projects and activities foreseen in the planning process leading to decisions about industrial and other projects and activities that would have a negative environmental consequence.

Concerning the relationship to other Conventions dealing with the Special Protection of Wildlife the Protocol expresses that nothing contained in it should be interpreted in a way that may affect the rights and obligations of Parties under the Convention on International Trade in endangered Species of Wild Fauna or Flora (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

Between 10 and 11 June 1991 a Conference of Plenipotentiaries was convened for the adoption of the Annexes to the Protocol concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region.

In the adoption of the first Annexes to the Protocol, the Conference adopted, among others, the following criteria for the selection of flora and fauna included there:

- i) the scientific evaluation of the "threatened or endangered" status of the proposed species should be based on the following aspects: size of the populations, evidence of decline, restrictions on range, and the importance of the species to the maintenance of fragile and vulnerable ecosystems;
- ii) whether the species is the subject of trade and whether international trade is regulated under CITES;
- iii) listing will not be limited to marine and coastal species;
- iv) in the case of species essential to the maintenance of fragile and vulnerable ecosystems (such as mangrove forests, seagrass beds and coral reefs) the inclusion of such species in the Annexes is considered as "appropriate measures to ensure the protection and recovery" of the ecosystem which they constitute, and therefore to meet the requirements of Article 11 (1) (c) of the Protocol.

The Barbados Marine Reserve contains high species diversity of coralline algae, sponges and corals, 400 species of fish, 3 species of threatened marine turtles, 2 dominant fringing reefs, 600 m offshore barrier reef, shoreline with sandy beaches.6/

Annex I refers to Marine and Coastal Flora; Annex II to Marine and Coastal Fauna; Annex III to Marine and Coastal Flora and Fauna that may be utilized on a national and sustainable basis.

There is an appendix to the Final Act of the Conference on Species recommended for priority consideration at the next available opportunity for inclusion in Annexes II and III.

It seems that a comparison between Barbados' heritage in flora and fauna and the contents of the said annexes would be a helpful analysis for producing recommendations on conservation of the country's biological diversity.

4. The international legal and institutional framework

The international instruments to which Barbados is a party, or which it has signed are the following:

1. International Plant Protection Convention, 6 December 1951. (6.12.76);
2. Convention concerning the protection of workers against ionizing radiations, 22.6.60 (8.5.68);
3. Treaty on principles governing the activities of states in the exploration and use of outer space including the moon and other celestial bodies, 27.1.67 (12.9.68);
4. Convention on the prohibition of the development, production and stockpiling of bacteriological (biologica) and toxic weapons, and on their destruction, 10.4.72 (26.3.75);
5. United Nations Convention on the Law of the Sea, 10.12.82 (10.12.82);

Barbados is also a party to the following instruments of the International Maritime Organization:

1. International Convention for the Safety of Life at Sea, 1974, as amended (Barbados accession 1.9.82);
2. Protocol of 1978 relating to the International Convention for the Safety of Life at Sea, 1974, as amended, 17.2.78 (Barbados accession 29.5.84);
3. Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended, 20.X.72 (Barbados accession 12.I.83);
4. Convention on Facilitation of International Maritime Traffic, 1965, as amended, 9.4.65 (Barbados accession 30.9.72);
5. International Convention on Load Lines, 5 April 1966 (Barbados accession 1.9.72);
6. International Convention on Tonnage Measurements of Ships, 23.6.69 (Barbados accession: 1.9.82);
7. International Convention for Safe Containers, 1.12.72 (Barbados accession: 16.2.79);

8. International Convention on Maritime Search and Rescue, 27.4.79 (Barbados 25.7.83);
9. International regulations for preventing collisions at sea, 1960.

Regarding the incorporation of the ocean policy into the national strategy for sustainable and equitable development the most pertinent instrument is the United Nations Convention on the Law of the Sea, signed by Barbados and not yet in force.

Barbados has already enacted two laws along the line of the Convention (Territorial Sea and Contiguous Zone and Marine Boundaries and Jurisdiction). This seems to be the beginning of a process of national application of the Convention which, no doubt will support Barbados' efforts towards sustainable development of its coastal and ocean resources and one of the strongest recommendations of this report will certainly be that of start legislating according to the provisions of the Convention.

It is helpful to compare the contents of Barbados' Territorial Waters Act, 1977 its Marine Boundaries and Jurisdiction Act, 1978. and the pertinent provisions of the United Nations Conference on the Law of the Sea.

Concerning "innocent passage" and according to the Territorial Waters Act foreign ships enjoy the right of innocent passage in territorial waters, but foreign ships of war are not allowed to navigate in territorial waters without the prior permission of the Barbadian Government and the lack of such a permission shall turn the passage prejudicial to the peace, good order and security of the country.

There is, in this subject an important difference with the Convention which speaks of innocent passage without making difference as to the kind of ship.7/

As regards the Marine Boundaries and Jurisdiction Act 1978, which establishes an Exclusive Economic Zone, and concerning rights, jurisdiction and duties of the coastal state, the Act reproduces in general contents of article 56 of the United Nations Convention on the Law of the Sea.

The Act contains an exhaustive regulation of fishing activities including the contents of permits for foreign vessels and the institution of the marine conservation officers.

There are however other aspects of Part V of the Convention on the Law of the Sea which would deserve further consideration for its application through national laws and that will undoubtedly contribute to the fluent incorporation of the coastal and marine areas in the general environmental strategy. They refer to

conservation and utilization of the living resources, different kinds of species, etc.

There are interesting provisions in part V of the Convention which greatly facilitate the incorporation of national ocean policy into a wide environmental strategy.

In article 61 for example which refers to conservation of the living resources, after establishing that the coastal state shall determine the allowable catch of the living resources in its exclusive economic zone ensuring that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation, expresses that such measures should also lead to handle populations of harvested species "at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing states".

Another interesting item is that referring to "geographically disadvantaged states" defined as "coastal states, including States bordering enclosed or semi-enclosed seas, whose geographical situation makes them dependent upon the exploitation of the living resources of the exclusive economic zones of other States in the subregion or region for adequate supplies of fish for the nutritional purposes of their populations or parts thereof".

The provision deserves a careful analysis, since it requires that the country is fully prepared to negotiate and operate these agreements which will undoubtedly contribute to its strategy for sustainable development.

There are another provisions of the Convention which also deserve consideration as regards the establishment of a sound strategy for sustainable development of coastal and marine areas.

They refer to article 63 (stocks occurring within the exclusive economic zones of two or more coastal states or both within the exclusive economic zone and in an area beyond and adjacent to it); Section 2. of Part VI Conservation and Management of the Living Resources of the High Seas and Part IX, Enclosed and Semi-enclosed seas.

The first situation referred to by article 63, is the most common among islands closely situated in the Caribbean and relates to "the same stock or stocks of associated species occurring within the exclusive economic zones of two or more coastal states in whose case those states shall collaborate to provide for the rational management of such stocks".

Similarly, in Part IX, enclosed or semi-enclosed seas states bordering an enclosed or semi-enclosed sea are called upon to:

a) "co-ordinate the management, conservation, exploration and exploitation of the living resources of the sea";

b) "co-ordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment";

c) "to co-ordinate their scientific research policies and undertake where appropriate joint programmes of scientific research in the area".

Paragraph 2 of article 63 refers to the same stock or stocks of associated species occurring "both within the exclusive economic zone and in an area beyond and adjacent to it" calling upon the coastal state and the states fishing those stocks in the adjacent area to agree upon the necessary measures for their conservation in that adjacent area.

In turn, Section 2 of Part VII on conservation and management of the living resources of the high seas establishes that states shall co-operate in the conservation and management of living resources in the areas of the high seas. It urges states whose national exploit identical living resources, or different living resources in the same area, to enter into negotiations to adopt the necessary measures for their conservation.

This also relates to the international concern on large-scale pelagic drifnet fishing.

General Assembly resolution 44/225 of 22 December 1989, defines large-scale pelagic drifnet fishing as a "method of fishing with a net or a combination of nets intended to be held in a more or less vertical position by floats and weights, the purpose of which is to enmesh fish by drifting on the surface of or in the water" adding that it can be highly indiscriminate and wasteful and pose a serious threat on the effective conservation of living marine resources, such as highly migratory and anadromous species of fish, birds and marine mammals.

The resolution calls upon those involved in large-scale pelagic drifnet fishing "to co-operate fully with the international community, and especially with the coastal states in the enhanced collection and sharing of statistically sound scientific data in order to continue to assess the impact of such fishing methods and to secure conservation of the world's living marine resources".

The resolution rules on a moratoria on all large-scale pelagic drifnet fishing by 30 June 1992.

The Organization of Eastern Caribbean States (OECS) met in Castries, Saint Lucia, from 20 to 24 November 1989 and adopted the Castries Declaration by which they decide to adopt measures in

order to establish a regional regimen for the regulation and administration of pelagic resources in the Lesser Antilles through which a ban would be established on commercial fishing vessels to employ drifnets and other fishing methods with disturbing effects.

The meeting also urged member states to adopt all possible measures to prohibit the uses of these fishing methods in their EEZ.

The above analyzed legal context is another helpful tool for the drafting of a sound environmental policy concerning marine resources.

5. International environmental instruments; the participation in which could enhance Barbados' endeavours towards sustainable development

Considering Barbados' natural resources heritage and the need to provide for its conservation and rational administration, there are helpful international instruments that could be a way of facilitating the strengthening of strategies aimed at their sound management.

In this connection, one of the recommendations of this report is the consideration of entering into their framework:8/

- i) Convention on Wetlands of international importance especially as waterfowl habitat.
Signed on 2.2.71 and come into force on 21.12.75.

The objectives of the Convention are to stem the progressive encroachment on and loss of wetlands and their economic, cultural, scientific and recreational value.

The provisions include the need for Parties to: designate at least one wetland for inclusion in a list of wetlands of international importance; consider their international responsibilities for conservation, management and wise use of migratory stocks of wildfowl; to consider their international responsibilities for conservation, management and wise use of migratory stocks of wildfowl; establish wetland nature reserves, co-operate in the exchange of information and train personnel for wetland management.

The Convention is open for signature indefinitely and for accession to all Member States of the United Nations or members of the specialized agencies or IAEA; signature may be with or without reservation as to ratification. Ratification or accession to be effected by deposit of an instrument with the Director-General of the UNESCO.

- ii) Convention on the Conservation of Migratory Species of wild animals.

Adopted on the 23.6.1979 and come into force on 1.11.83.

It aims at protecting those species of wild animals that migrate across or outside national boundaries.

Endangered migratory species are listed in Annex I. Among them are species which may be of importance for Barbados such as turtles (Cheloniidae), taxon: *Lepidochelys kempii*. It may be interesting to analyze the kind of species existing in Barbados to see if they appertain to the former since in the Barbados Marine Reserve there exist three species of threatened marine turtles 9/

Annex II contains those migratory species presenting an unfavourable state of conservation and which require the celebration of international agreements for its conservation and management. It also refers to those species whose state of conservation would significantly benefit from international co-operation.

It is worth to note that under REPTILIA all types of Cheloniidae are considered in this Annex II.

The Convention establishes a Secretariat and a scientific council to support the implementation of the provisions of the Convention and to assist member countries in various aspects.

- iii) Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that deplete the Ozone Layer.

Despite the fact that Barbados as a developing country and small island state is not involved in the responsibility for ozone layer depletion, the mechanisms offered by the above mentioned document, specially as relates to funding for industrial reconversion and also to the negotiation capacity aimed at strengthening the position of developing countries in their endeavours to minimize the impact of ozone depletion in their populations deserve consideration.

It must be kept in mind that CFCs also contribute greatly to the greenhouse effect (they are responsible for about 20%) and in this connection special attention should be paid to the Association of Small Island States which will be severely damaged by global warming.

Special consideration should be given to the Male's Declaration on Global Warming and Sea Level Rise adopted at the Small States Conference on Sea Level Rise held in Male, Republic of Maldives from 14 to 18 November 1989 in which Barbados took part.10/

The Declaration recognizes the huge adverse impact of global warming on low-lying, small coastal and island states in which sea level rise could cause to the land and infrastructure of those countries with the possibility of increasing the frequency, intensity and impact of natural disasters.

It urges the international community to take prompt measures to control, limit or reduce the emission of greenhouse gases and to approach the protection of the small states, highly vulnerable to sea level rise.

It also includes recommendations to all States to: take immediate measures to establish the institutional mechanisms to protect and manage their coastal zones and to enact legislation to facilitate such decisions; to provide for the maintenance of their aquifers and protect vulnerable natural ecosystems like coral reefs and mangroves and to undertake intensive afforestation and/or revegetation programmes with emphasis on the selection of plants and trees suitable for various soil types and salt-tolerant varieties for the protection of coastal areas.

Finally the Declaration endorses the call by developing countries for the reinforcement of existing funding, technology transfer and information mechanisms also considering the possibility of additional mechanisms for the implementation of controls, limitations or reductions of green house effect and for the protection for the adverse effect of unavoidable climate change, global warming and sea level rise.

The contents of the Declaration will be dealt with again in the report, as regards recommendations for the formulation of the national ocean policy and in the consideration of the work at the preparatory process of the United Nations Conference on Environment and Development.

- iv) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), adopted in Washington on 3.3.1973 and amended in Bonn on 22.6.79 and Gaborone on 30.4.83.

It aims at protecting certain endangered species from over-exploitation by means of a system of import/export permits.

It includes animales and plants dead or alive and any recognizable parts or derivatives thereof.

Appendix I covers endangered species, trade in which is to be tightly controlled; appendix II covers species that may become endangered unless trade is regulated; appendix III covers species that any party wishes to regulate and requires international co-operation to control trade; appendix IV contains model permits. Permits are required for species listed in appendices I and II,

stating that export/import will not be detrimental to the survival of the species.

- v) Convention on Nature protection and Wildlife Preservation in the Western Hemisphere, adopted on 12.10.1940.

The objective of this Convention is to preserve all species and genera of native American fauna and flora from extinction, and to preserve areas of extraordinary beauty, striking geological formations or aesthetic, historic or scientific value.

Parties are called upon to establish national parks, national reserves, nature monuments and strict wilderness reserves. Governments should maintain co-operation in the field of research. Species to enjoy special protection are included in an Annex and controls on trade in protected fauna and flora are agreed.

- vi) Convention concerning the protection of the World Cultural and Natural Heritage, Paris, 1972.

The objectives of the Convention are to establish an effective system of collective protection of the cultural and natural heritage of outstanding universal value, organized on a permanent basis and in accordance with modern scientific methods.

Each State party recognizes that the duty of identification, protection, conservation and transmission to future generations of the cultural and natural heritage belongs primarily to that State.

Parties undertake to integrate the protection of their heritage into comprehensive planning programmes, to set up services for the protection of their heritage, to develop scientific and technical studies and to take necessary legal, scientific, administrative and financial steps to protect their heritage.

A World Heritage Committee is established for the submission by each Party of an inventory of its national heritage and which will publish a "World Heritage List" and a "List of World Heritage in Danger". The Parties established a World Heritage Fund to be financed by them and other bodies.

Any party may request assistance for property forming part of its listed heritage, and such assistance may be granted by the Fund in the form of studies, provision of experts, training of staff, supply or equipment, loans and subsidies.

III. SOME KEY ISSUES IN THE FRAMEWORK OF OCEAN POLICY FORMULATION AND IMPLEMENTATION IN BARBADOS

1. The role of coastal zone management

As mentioned in the said Draft Environmental Issues Paper,^{11/} Barbados' most significant natural resource is its coastal zone.

The Coastal Conservation Project Unit established in 1983 is one of the most efficient technical entities in the Caribbean but the lack of permanence in its status and the possibility of the Interamerican Development Bank cancelling its support risk the essential functions it performs. There is no specific legal status that deals with beach erosion and accretion, and the CCPU must operate through different Acts such as Beach Protection, Town and County Planning, Public Works, Barbados' Territorial Waters and Crown Lands.

Considering the importance of the coastal zone among natural resources in Barbados, efficient management of the former is essential for the building up of a national strategy towards equitable and sustainable development.

Coastal zone management is defined as a dynamic process in which a co-ordinated programme is developed and implemented whereby human and natural resources are balanced so as to achieve the conservation and sustainable multiple use of the coastal zone.^{12/}

Barbados' experience shows the effect of pollution on the coastal zone, the effects on offshore habitats (sea grass beds, mangroves and coral reefs) and the resultant decline in commercial fisheries.

In one case not only have fisheries declined, but also serious beach erosion has resulted, with the corresponding negative impact on the sound important tourist activities.

As noted by Cambers ^{13/}the major problem in the coastal zones in CARICOM are:

- pollution
- alteration/removal of natural coastal subsystems
- beach erosion and beach sand mining
- natural disasters

The above mentioned author puts forward two main solutions in order to approach the coastal problems in the CARICOM countries: to set up effective coastal zone management agencies and to encourage countries to combine economic planning and environmental planning.

More specific solutions to the coastal problems are:

- i) the control of pollution with emphasis on pesticides and fertilizers;
- ii) controlling and mitigating against beach erosion, particularly through alternatives to beach sand mining;
- iii) development of methodologies to place economic values on natural systems;
- iv) long term monitoring of coral reef systems to determine the likelihood of recovery after the pollution impacts are removed;
- v) specific studies of the impact of sea level rise;
- vi) regular networking within the region;
- vii) the use of environmental impact assessments (EIAS) as a planning tool and the incorporation of disaster planning within EIAS.

Analyzing Barbados' situation amidst this context, one of the principal conditions is given: the country counts with a coastal zone management agency (the Coastal Conservation Project Unit) and, in this connection, it would be helpful to analyze the functions suggested by Cambers for this entity in the light of the actual competences of the CCU.

The author proposes that such an agency should have the following functions:

1. Environmental planning and permit regulation;
2. Monitoring of coastal systems;
3. Environmental awareness and education programmes;
4. Legislation, surveillance and enforcement of legislation.

The major functions of the Coastal Conservation Unit are: coastal monitoring (beaches, waves, water quality, tides, coral reefs); coastal development control (together with town planning); design, construction and evaluation of sea defence works; environmental education and awareness, surveillance.

As noted by Cambers, Barbados is presently in a position that whenever coastal problems are approached, there is a precisely defined entity to face them.

Probably one of the essential requirements for the Coastal Conservation Project Unit to strengthen its competences is the possibility of a fluid integration in an environmental co-ordination mechanism and also of its operating through a real coastal zone management programme as such. These proposals will be further developed in the final chapter of this study.

In order to reaffirm the efficient potential of the Coastal Conservation Project Unit it is pertinent to analyze some national situations considering successful management case studies.^{14/}

The Hometown Lagoon (the Hole) is a small mangrove fringed island water body, situated on the west coast of Barbados, amidst one of the most important tourist areas. The lagoon is separated from the sea by the beach and is fed by the Lascelles Gully. There is a main hotel located to the north.

The Hometown Lagoon is a stormwater buffer as, during heavy rainfall runoff flows into the lagoon and is stored and partially purified. The lagoon acts as a sediment trap and water purifier and removes some of the pollutants before the runoff eventually filters through the beach into the sea.

For many years there was a growing concern relating to the pestilent smell generated by the lagoon, and to the fact that the lagoon may act as a breeding ground for mosquitoes, and finally to the situation produced during heavy rainfall, when the lagoon breaks through the beach barrier and flows into the sea, with the possibility of this being a health hazard for tourist and a serious threat to marine communities, especially coral reefs.

In 1986 the Coastal Conservation Project Unit (CCPU) decided to fully investigate the problem. The adjacent hotel had always maintained that a sugar factory upstream of the lagoon was the major source of pollutants. The Coastal Conservation Project Unit designed a project team to measure water quality at several sites, and the results showed that the principal environmental problems in the Hole were a result of the substances disposed directly into the lagoon, particularly the sewage and laundry effluent from the same hotel that periodically complained about the smell.

Once the study was completed the Barbados CCPU asked the hotel to clean up its effluent under existing legislation, the Disposal of Offensive Materials Act.

Barbados was in a privileged position to face this problem since it counted with the institutional capacity to manage the situation and therefore found the best solution at the minimum cost.

Another case, with successful and unsuccessful results refer to beach erosion.

Being a country heavily dependent on tourism, it has been experiencing hard beach erosion over the last 30 years mainly in the west and the south coasts.

The beach erosion problems in Barbados are causing great damage since buildings are being undermined and having to be sheltered with costly protections, and basically, the loss of the beaches themselves.

Among the causes of the beach erosion are: pollution leading to reef death, winter swells, hurricanes, sea level rise, badly placed sea defence structures. Since the reefs provide considerable support as natural breakwaters and the natural bioerosion of the reef produces beach sand, the depletion of the reefs causes beach erosion. The development of the coast along the past twenty years caused growing sewage pollution, filling in of the coastal swamps (which could otherwise act as sediment filters). At the same time increased use of pesticides and fertilizers in agricultural practices has caused strong impact on the reefs. In turn, sea level rise provokes waves reaching higher up the beach and may also cause erosion.

As studied by Cambers 15/ it is feasible that, in the case of Barbados natural causes could be originating some coastal erosion, but, definitely, pollution and development of the coastal zone have deepened the problem so much that solutions reach the multi million dollar figure.

As the author expresses there are usual ways of protecting the land from coastal erosion such as seawalls and revetments, but in the case of Barbados, where the beach zone is so fundamental, the former solutions imply a more difficult task considering the dynamic character of the beach whose rapidly changing geomorphology is extremely difficult to conserve or re-create.

In this context, a great part of the environmental damage is irreversible, since the beaches are eroding and retreating inland, and since there are so many different factors adding to this erosion it is unlikely that it could be inverted to an accretion trend.

Along this line, probably the most efficient approach would be that of lowering the rate of erosion. Similarly, with the heavily affected nearshore reef, notwithstanding the removal of the pollution stress, it is not possible to assess whether the reefs could be renewed, since that would depend on circumstances such as larval recruitment.

An interesting case study concerning beach erosion deals with the case of Holetown on the west coast of Barbados, studied before.

In the sixties a big hotel was built just behind the beach. At the beginning of the seventies the next fringing coral reef was dynamited to build a nearshore sandy bathing pool for the hotel guests, determining serious beach erosion owing to the loss of the natural coral reef protection.

The hotel eventually built some structures to protect its property which resulted in a wide beach forming in front and north of the hotel but causing extensive erosion south of the hotel.

Then, the Barbados' Coastal Conservation Project Unit advised removal of the structures and within six months the southern beaches recovered.

As noted by Cambers this case study shows many relevant aspects. It teaches first of all how important it is to consider a coastal zone in an areal dimension and not only in the cross section since actions at one site usually impact neighbours and may sometimes affect other sites quite far distant.

The analysis demonstrates as well the extent to which a coastal zone management agency could advise and manage the problem.

2. The effects of sea-level rise

The Caribbean low-lying coastal zones, one of the reasons for its tourism industry, at the same time turn the area specially vulnerable to sea-level rise.

The Small States Conference on Sea Level Rise held in Male, Maldives, between 14-18 November 1989 in which Barbados participated, adopted the Male 's Declaration on Global Warming and Sea Level Rise studied above.

During the Meeting of the Expert Group on Ocean Policy Aspects of the Tlatelolco Platform, convened by ECLAC and the United Nations Environment Programme (UNEP), among the concerns expressed for its submission to the third Session of the Preparatory Committee of the United Nations Conference on Environment and Development, an appeal was made for the need of a systematic study on the effects of global warming and sea-level rise on coral reefs, which may be equated with tropical rain forests in terms of their contribution to biodiversity.^{16/}

The meeting also noted, with respect to the subject of climate change which might alter coastal dynamics, that it is particularly important to give consideration to archipelagos, islands and low-lying coastal countries, owing to their special vulnerability. Along the same line, it underscored the need to take into account the extent to which the developed countries are responsible for the net concentrations and emissions of greenhouse gases in the

atmosphere and the effects deriving from transboundary pollution, and, in that connection, to take note of such circumstances in relation to the greater vulnerability of small island states and their lack of responsibility for inputs of harmful substances.

This is specially relevant considering the possible financial mechanisms to support the endeavours of developing countries towards sustainable development.

In this connection, it is essential according to the Group of Experts, to modify programme mandates within the Global Environmental Facility (GEF) of the World Bank, the United Nations Development Programme and the United Nations Environment Programme in order to ensure the extension of the benefits of these programmes to those developing countries like Barbados, which are seriously prejudiced by environmental damage, but which are not eligible for funding because of per capita income caps, the size of their population or other factors. As mentioned in the report of the meeting, such changes should be specially focussed in the case of small island States of the Caribbean which are highly vulnerable and which urgently need to obtain similar treatment to that given to the small island States of the Pacific. It is also essential to widen the mandate of the GEF, so as to cover all environmental priorities.

As pointed out by Bardach 17/ the most important problem in planning for a likely sea level rise is obviously the long time frame within which such plans have to be conceived, in addition to the uncertainties already inherent to the situation. The author suggests that besides research and fact finding which will certainly reduce partly these questions, it is also essential that local, regional and national governments appoint an entity to supply thorough updated information on a permanent basis, probably every 5 years of changes in prognosis for climatic change and sea level rise. Such an entity would then facilitate taking of actions by itself or through others, as the situation requires.

As precisely suggested by the author, the Regional Seas Programme of UNEP could provide a great help in playing an advisory role in the subject.

3. Barbados, a small island developing country

A small island developing country is defined as a territory surrounded by a large body of water with a population of less than a million.18/

Despite the great diversity small islands share some characteristics common to the fact that they face a special set of constraints for their development. Dolman 19/ quotes the following:

- Diseconomies of scale, with effects increasing exponentially as a function of insularity and isolation;

- Limitations in natural resource endowments, not only in terms of commercially exploitable minerals, but also, in the case of "low" islands, such basic resources as soil, water and vegetation;

- Dependence on a very narrow range of tropical agricultural products --typically sugar, bananas, copra, fruit and vegetables-- and little or no influence on their terms of trade;

- Distance from markets, high external (and sometimes internal) transport costs and the need for the transshipment of goods;

- Serious balance of payments problems, often the result of stagnating export performance and rapidly growing volumes of imports, especially of food and energy;

- Weak indigenous technological capacity;

- Migration, particularly of high level skills;

- Dependence on one or a few large companies, often foreign owned and operating on highly privileged terms;

- Limited access to capital markets and a heavy dependence on aid and external institutions;

- Proneness to certain types of natural disasters, especially cyclones, which can have long-lasting effects in small islands;

- Highly fragile natural ecology and very vulnerable physical environment. The genetic diversity, and hence genetic resource base, is smaller on islands, and species and sub-species of flora and fauna are more prone to extinction.

In turn, as expressed in the Report of the Secretary General to the General Assembly 20/ some characteristics shared by many island developing countries (IDC) convey opportunities for development which should be enhanced:

- a) Natural beauty, rare flora and fauna, and agreeable climate;

- b) Large exclusive economic zones in relation to the land area, which, in the case of the Caribbean owing to closeness among them call for interesting co-operation schemes.

The report suggests certain critical areas of action by islands developing countries in general, -in which notwithstanding

they require decisions at the national level, proper technical and financial support will be needed to secure their implementation. Among them are:

a) At the national level

- Development strategies based on the fact that trade will continue to play a significant role in their economies and consequently their development prospects may need to depend on outward-looking strategies, consistent with their development objectives.

- Institutional building, this implies a strengthening of decision-making capability based on adequate statistical data bases and institutional infrastructures.

- Human resource development: High priority should be given to the development of human resources and institutional infrastructure so as to provide professional, education and training programmes on an ongoing basis. An effort should be made to attract skilled returned migrants.

- Entrepreneurship and foreign investment: Island developing countries need to be ready to seize opportunities offered by the external trading context. For this, they need to promote indigenous entrepreneurship and efficient small enterprises and attract outside entrepreneurship, technology and investment to support internal capabilities. This will also call for the formulation of suitable policies to deal with transnational corporations.

- Technological development, acquisition and use. In order to diversify their production, adapt to changing market conditions and efficiently compete at the international level they need to apply modern or improved technology which does not necessarily mean sophisticated ones. There is a clear need for external technical and financial assistance as well as a supportive international policy framework in this regard. In the final chapter of the report, where a series of preliminary proposals will be forwarded, some background documentation pertinent to these efforts will be referred to.

- Food and agriculture. IDCs should, where possible, invest more resources in diversified agricultural development. In many IDCs, removal of unsuitable land tenure systems need to be addressed, while avoiding the disruption of traditional structures. They should try to develop agro-industry and improve nutritional standards.

- Fisheries. More investment to promote fisheries development is highly necessary and the development of artisanal fisheries and mariculture should be strongly addressed.

- Services. The opportunities provided by service-based development should be further explored.

- Infrastructural development. IDCs' development critically depends on the quality and cost of their infrastructures, specially transportation facilities, telecommunications, utilities. International financial institutions, regional development banks and international organizations, such as the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO), as well as UNCTAD, have specific functions to perform in these endeavours.

- Environment. The report of the Secretary General underscores the importance of environmental management, given the fragile ecosystems of these islands, stressing the urgent attention needed by coastal zones.

- Disaster preparedness. Considering their vulnerability to extensive damage from natural and man-made phenomena, including the effects of the expected rise in sea level, IDCs should seek to develop and improve arrangements with the assistance of the international community.

- Participation in international forums. International support to strengthen IDCs' negotiation capabilities should be implemented.

b) Regional level

Further regional co-operation among islands developing countries is clearly essential in many areas in which inter-island co-operation proves particularly helpful: surveillance and development of marine resources, data networks, sea and air transport arrangements, telecommunications, disaster preparedness and relief, higher education, maintenance of cultural identity, agricultural research, tourism, banking and insurance, external resource mobilization and management, overseas representation, investment and market promotion, export credit financing and pooling arrangements for the sharing of specialized skills and expertise.

c) International level

Among the recommended measures at the international level are: external financial and technical assistance, trade and migration.

The above analysis shows that, in the formulation of any proposal concerning the incorporation of the oceanic dimension in the global environmental strategy of Barbados, special consideration must be given to its characteristics as a developing small island state.

IV. INITIAL THOUGHTS ON POSSIBLE ACTIONS TO FOSTER INCORPORATION OF OCEAN POLICY INTO BARBADOS' STRATEGY FOR SUSTAINABLE AND EQUITABLE DEVELOPMENT

After the preliminary analysis undertaken in the preceding chapters the first conclusion is clear: despite the fact that there is no explicit environmental or ocean policy as such, practically all the elements for the configuration of them exist in the country and there is only lack of some communication and co-ordination mechanisms, as well as of some additional pieces of legislation as well as an effort of sistematization of the existing one.

It is obvious that these lacks which seem simple demand in fact a series of actions which could be clearly fostered by regional and international co-operations.

After a National Consultation on the Environment, held in August 1987, participants recommended that the Government of Barbados should implement a comprehensive national environmental management programme tending to:

- i) eliminate environmental deficiencies caused by the conditions of under-development and/or natural hazards;
- ii) prevent or control the pollution caused by solid, liquid or gaseous wastes on the land, into the waters of the country and into the air;
- iii) to promote the creation of healthy building environments and outdoor recreational areas;
- iv) to prevent the degradation and destruction of the natural environment by unapproved and uncontrolled land and marine operations; to foster reafforestation and to enhance the conservation of marine resources and wildlife;
- v) to prevent the inappropriate allocation of land and water resources in order to minimize conflicts in utilization.

The Declaration underscores the need for a strong environmental management agency, entrusted with the task of planning and implementing the national environmental programme and of connecting the environment, health and development sectors.

It also calls for the environmental protection to be part of the mandates of all national agencies and for prior and continual

environmental assessment of proposed activities with potential impact on the environment.

A permanent review of existing environment-related legislation and standards is recommended towards a mechanism of permanent updating and upgrading in order to support policies, strategies and action plans.

The Declaration also urges for a co-operation with regional and international organizations concerned with environmental matters.

It is precisely in the context of this final recommendation and considering the review carried out in the above chapters, that the following initial and informal suggestions prior to discussion with the Barbados officials can be formulated:

- The need for an environmental consultative and co-ordination mechanism is certainly one of the strongest conclusions. However, further analysis should be carried out as to the modes this mechanism could adopt. The creation of new entities such as a Ministry of the Environment could simply turn the environmental policies much more complicated and, in this connection, there are interesting experiences in the region in which the mere installation of a coordination committee or board, with participation of a broad spectrum of governmental agencies, has proved more efficient and has facilitated the fluid implementation of decisions, since they have been adopted with the participation of the same executing agency. This could be an interesting field for interchange with the country, through the facilitation of comparative experiences and evaluation of the respective results.

- A process of revision, updating, upgrading and repealing of legislation in order to adapt it to the requirements of an efficient environmental policy should be undertaken. These endeavours are tightly connected to the need for formulating a national environmental policy, containing the basic guidelines to lead the efforts from different national sectors towards sustainable and equitable development. The current trend in countries seeking for adapting their legal orders to the challenges of sustainable development strategies, is that of enacting an environmental law of a global nature, containing the general principles to be embodied in the various sectoral laws and regulations and allowing for their co-ordination and sistematization. Special mention should be made in this regard to the possibilities offered by the Programme of the UNEP Regional Office for Latin America and the Caribbean on environmental legislation and institutional framework development in Latin America and the Caribbean, which plays a fundamental role concerning the assistance to countries as to the building up of their legal and institutional capacity for sound environmental management.

- Incorporation of environmental impact assessment as a management tool with legal rank. In this connection, under the Action Plan for the Caribbean Environment Programme, through the Regional Programme on Integrated Planning and Institutional Development for the Management of Marine and Coastal Resources (IPID), there is a planned activity on environmental impact assessment, whose responsibility is vested in the Regional Co-ordinating Unit, the Ocean and Coastal Areas Programme Activity Centre of UNEP and ECLAC. This could be a favourable context for technical assistance to support Barbados' efforts towards this goal.

- Development of methodologies whereby economic and social values can be placed on natural resources such as coral reefs, mangroves, aesthetich aspects, beaches and also environmental damage. This point, closely related to the former, is connected to the possibility of governments to count on reliable information to adopt decisions concerning management of natural resources and possible conflicts in their respective uses. Through a collaborative project between ECLAC and the International Center for Living Aquatic Resources Management (ICLARM) a methodology for socio-economic valuation of costal resources has been developed --including a compoment for mangrove valuation-- and probably the possibility of testing it in a Caribbean country would highly contribute to the broadening of its possibilities of application throughout the region.

- The possibility of Barbados orienting its tourism industry towards ecological values could give an opportunity to go on profiting from the use of its natural resources but with due regard to their sustainability. A good prospect for this is the activity related to the evaluation of the competitiveness of eco-tourism, inserted under the said (PID component of the Action Plan for the Caribbean Environment Programme.

- Development of an overall strategy to approach land-based sources of marine pollution. Land-based sources account for about 77% of the pollution of the oceans an constitute an important threat to marine ecosystems, to people using contaminated marine food or bathing in contaminated waters, as well as to economic activities depending on clean and healthy marine environment. Barbados is highly affected by this sort of pollution which seriously risks, among others, its important tourism industry. Therefore an effort towards a national plan to face this problem, including strategies for the different sources, would be a strong recommendation to keep in mind. It is clear that such a plan will demand important investments to secure proper base studies requiring suitable scientific and technological capacity. In this connection, the possibility of technical and financial assistance provided through the Action Plans of the Regional Seas Programme is significantly helpful. The support received from member countries of the Action Plan for the Protection of the Marine Environment and Coastal Areas of the South-East Pacific, both for the pertinent

scientific research to assess the real impact of these different sources and also to adopt the necessary remedial actions to control, reduce and eliminate these kinds of loads, is worth to note. Therefore, the incorporation of a projected governmental meeting on land-based sources of marine pollution under the Work-Plan of the Action Plan for the Caribbean Environment Programme (CEP) for 1992 seems of sound relevance. Similarly, the studies carried out under the CEP Regional Programme for the Assessment and Control of Marine Pollution (CEPPOL) concerning control of domestic, industrial and agricultural land-based sources of pollution and on pesticides and contamination and formulation of control measures represent a highly valuable input for the adoption of decisions at the national level.

- A review of regional and international instruments to which Barbados is a party or of those relevant instruments which it has not ratified or acceded to yet. There are many agreements whose effective application would constitute an efficient tool towards sound management of natural resources at the national level. It would be helpful to know the reasons for the lack of application of the ratified instruments, and of the non participation in the others respectively. Often countries stay apart from regional or international agreements because of the heavy financial implications or the impossibility of access to the technologies needed to fulfil the requirements brought by the instrument. A thorough study of the situation in Barbados could help the national authorities to assess the real constraints and solutions which may include regional or international negotiations to obtain the modifications of those agreements in terms of incorporation of provisions to facilitate development of and access to technology on favourable terms, institutional mechanisms to strengthen the integration of the coastal and oceanic dimension into environmental strategies, and specific modalities for concessional financing, defrayed by express commitments by financial institutions or donor countries, together with provisions concerning the socio-economic implications for states participating in such agreements.

Notes

1/ World Bank, Barbados, Draft Environmental Issues Paper, February 1990.

2/ Ibid.

3/ UNEP, Background document for the development of a protocol concerning land-based sources of marine pollution to the Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region. Ninth Meeting of the Monitoring Committee on the Action Plan for the Caribbean Environment Programme and Special Meeting of the Bureau of

Contracting Parties to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, Kingston, 13-15 June 1991 (UNEP (OCA) CAR.IG.8/INF.5), 15 April 1991.

4/ Organization of American States/U.S. Department of the Interior Inventory of Caribbean Marine and Coastal Protected Areas, Washington D.C., 1988.

5/ World Bank, Barbados Draft Environmental Issues Paper, February 1990.

6/ Organization of American States/U.S. Department of the Interior, op. cit.

7/ United Nations Convention on the Law of the Sea, Part II., Section 3, article 17, 1982.

8/ UNEP, Register of international treaties and other agreements in the field of the environment (UNEP/G.C.15/Inf. 2), May 1989.

9/ Organization of American States/U.S. Department of the Interior, op. cit.

10/ Intergovernmental Oceanographic Commission, Male's Declaration on Global Warming and Sea Level Rise, Fourth Session of the IOC Committee on Ocean Processes and Climate, Paris, 27 February-1 March 1991, (IOC/OPC-IV/Inf.2), 19 February 1991.

11/ World Bank, Barbados Draft Environmental Issues Paper, February 1990.

12/ Gillian Cambers, Overview of coastal zone management in the Caricom countries, Paper prepared for the World Bank, March 1990.

13/ Ibid.

14/ Ibid.

15/ Ibid.

16/ ECLAC, "Advance extracts from the report of the meeting of the expert group on ocean policy aspects of the Tlatelolco Platform", Santiago, Chile, 28-31 July 1991.

17/ John E. Bardach, Coastal zone activities and sea-level rise, Working Paper No. 11, East-West Center, Honolulu, Hawaii, August 1988.

18/ United Nations, General Assembly, Development and International Economic Co-operation: Trade and Development. Specific problems and special needs for island developing countries. Report of the Secretary General, (A/43/513), 25 August 1988.

19/ Anthony J. Dolman, The performance and prospects of small island developing countries, Institute of Social Studies Advisory Service, August 1984.

20/ United Nations, op.cit.