

**TRAINING IN LAND AND COASTAL USE
PLANNING:
Case Study Venezuela**



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For bibliographic purposes the printed version of this document may be cited as:

UNEP: Training in Land and Coastal Use Planning - Case Study Venezuela. CEP Technical Report No. 13. UNEP Caribbean Environment Programme, Kingston, Jamaica, 1992.

ABSTRACT

The project described in this publication, "Training in Land and Coastal Use Planning – Case Study Venezuela", formed an integral part of an umbrella project entitled "Training, Education and Public Awareness for Environmental Management of Marine and Coastal Resources in the Wider Caribbean ". The project was implemented by the Venezuelan Ministry of the Environment and Renewable Natural Resources (MARNR) between October 1989 and February 1991.

The goal of the project was to strengthen the capabilities of governments of the region to undertake environmentally sound development and to manage the marine and coastal resources by providing training in land and coastal use planning to managers and mid- and top-level government officials. The participating countries were: Aruba, Barbados, Dominica, French Guiana (France), Grenada, Guadeloupe (France), Guyana, Martinique (France), Netherlands Antilles, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago and Venezuela.

The project focused on the Venezuelan experience in planning and management of critical marine and coastal areas. Margarita Island was utilized, in particular, as a case-study area because of its geographical features and great similarity to the majority of the other countries participating in the project. Special emphasis was given to utilizing existing protected areas as a starting point for integrated planning and management. Additionally, environmental impact assessment (EIA) techniques, regional and local management plans, as well as a set of national and local environmental standards were reviewed. Outputs included:

- (a) Case study on the Venezuelan experience in land use planning for coastal areas, providing the working methodology and with special emphasis on the utilization of existing protected areas;
- (b) Diagnostic questionnaires, with the following additional tools: (1) model for the evaluation of critical areas; (2) analysis of information necessary for critical area planning and for *ad hoc* implementation of programmes; (3) model for the establishment of working teams; (4) table of data for planning and management;
- (c) Database for management of critical coastal areas, which includes data for the participating countries on experts and institutions; general and socio-economic information; cartographic and geographic information; bibliographic references;
- (d) Regional workshop, held in Porlamar, Margarita Island, from 28 January – 1 February 1991, in which 25 experts participated (22 of them being government officials), 21 observers and 5 project personnel.

Based on the experience gained in integrated planning, a follow-up project has been formulated as part of the CEP Regional Programme on Integrated Planning and Institutional Development (IPID) for the 1992-1993 biennium. This project is entitled "Development of Pilot Integrated Management Plans in Small Islands and Coastal Areas".

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I. INTRODUCTION

As one of its activities, the Caribbean Environment Programme (CEP) aims to support and provide technical assistance for the development of integrated plans in small islands and coastal areas. The experiences gained contribute to the development of a regional methodological framework for such planning and improve the regional capacities for relevant technical assistance and training. The development of such a framework consists of the following steps: goals and objectives; inventories and diagnosis; planning considerations, assessment and evaluation; and the proposal for an integrated plan. By definition, a great variety of experiences and a significant number of institutions need to be included in the planning process.

The project "Training in Land and Coastal Use Planning - Case Study Venezuela" was designed *to strengthen the capabilities of governments of the region to undertake environmentally sound development and to manage the marine and coastal resources by providing training in land and coastal use planning to managers and mid- and top-level government officials*. As shown in Box 1, this project objective was incorporated into an umbrella project entitled "Training, Education and Public Awareness for Environmental Management of Marine and Coastal Resources in the Wider Caribbean" (UNEP project code CR/5102-89-01). The project was implemented by the Ministry of the Environment and Renewable Natural Resources (MARNR) of Venezuela between October 1989 and February 1991.

The project examined the specific experience of Venezuela in land and coastal use planning. A case study was prepared and used for workshop training of government officials responsible for the management of land and coastal areas in the Caribbean region. The Governments that participated in the project were requested to prepare national reports assessing their current status and priority needs for adequate management. These reports were analyzed during the workshop and possible solutions were explored through utilizing the methodology used in Venezuela. All information collected was incorporated in a database.

The States and Territories which participated in the project were: Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent and the Grenadines, Grenada, Trinidad and Tobago, Barbados, French Guiana, Suriname, Guyana, Netherlands Antilles, Aruba and Venezuela.

1 PROJECT OBJECTIVES OF UMBRELLA PROJECT CR/5102-89-01

Long-term objective:

To further the goals of the Action Plan and the Cartagena Convention of the Caribbean Environment Programme by providing a co-ordinated programme for environmental training, education and public awareness for the advancement of appropriate management of marine and coastal resources in the Wider Caribbean.

Short-term objectives:

- To co-ordinate the implementation of environmental training, education and public awareness activities especially related to marine and coastal resources management to ensure that relevant activities being carried out in the region are co-ordinated and compatible with the objectives of the Caribbean Action Plan;
- To improve the university programmes for management of natural resources of Caribbean States and Territories through better integration of environmental issues into scientific, technical and degree training programmes;
- To strengthen the capabilities of governments of the region to undertake environmentally sound development and to manage the marine and coastal resources by providing training on land and coastal use planning to managers and mid- and top-level government officials;
- To promote public awareness on coastal and marine environmental issues and strengthen regional networking of Caribbean media and NGOs on raising public awareness concerning sustainable development issues.

During the various meetings of the Caribbean Environment Programme (CEP) held in Kingston in January 1990, the Technical Co-ordinator and the Case Study Consultant were able to contact 9 of the 13 participating countries and to explain thoroughly the objectives of the project, the questionnaire and the proposed methodology. Moreover, at this occasion, appropriate experts and institutions were identified to participate in the regional workshop.

II. BACKGROUND ON THE EXPERIENCE OF VENEZUELA IN LAND AND COASTAL USE PLANNING

A. Environmental Systems of Venezuela and Land Use Planning.

The project "Environmental Systems of Venezuela" was initiated in 1979 in order to produce an inventory of natural resources, their potential and their limitations for sustainable development. The goal of the project was to provide data for developing policies concerning land use planning and the management and protection of natural resources. Although in the first phase the project

concentrated on research, objectives relating to planning and institutional development were also included. These were: to develop new methodologies, which can be applied not only in Venezuela, but in other countries as well; and to develop practical tools for land use planning and environmental management. Guidelines for the establishment of environmental education programmes were also to be formulated.

In the course of the project, the amount of functions relating to planning and institutional development were gradually increasing. The results of the project were included in a database, which has been well utilized for the verification of data in a number of studies. Altogether, more than 150 reports were produced, covering a wide variety of methodologies, concepts, ecological and geographic subjects, current land use and socio-economic factors which explain land use and their dynamics.

An important event was the adoption of the Land Use Planning Act in 1983. Follow-up activities of the project included the development of national and regional land use plans, as well as such plans for specific sectors, states and sub-regions. Emphasis was laid on the reversal of negative tendencies, such as urbanization and concentration of activities and services in the capital city. Political and economic decentralization was encouraged based on the effective and sustainable use of natural resources.

The National Land Use Plan covers the following spatial and sectorial elements, which are addressed in an inter-institutional context:

- Planning and control of urbanization in the Caracas area;
- Consolidation of major centres;
- Encouragement of sub-regional centres;
- Encouragement of development in the area Orinoco-Apure;
- Frontier development;
- Consolidation of an effective multi-modal transport and communication system;
- Evaluation of activities in marine and coastal areas;
- Marine and coastal area planning;
- Protection and development of renewable natural resources;
- Protection of agricultural lands (high, medium and low);
- Industrial siting policies;
- Development of standards for petroleum activities;
- Assessment and control of forest resources;
- Implementation of the National Forestry Plan;
- Tourism planning and control, in particular for areas with high pressure and conflicting use;
- Establishment of areas for hydroelectric development;

- Definition of the status of the federal lands;
- Protection of the ecological balance in critical areas;
- Control of maritime transport; and
- Utilization of commercial aquaculture.

Achievements of the National Land Use Plan at the sub-regional level include:

- Planning standards for the Paraguaná peninsula;
- Planning standards for the East coast of the State of Falcón;
- Planning standards for the State of Nueva Esparta;
- Planning standards for the Gulf of Cariaco (in development); and
- Methodologies for the designation of areas with potential for shrimp and salt-winning in the States of Zulia and Falcón (in development).

B. National Programme for Areas under Special Planning Regimes.

There is a group of areas subject to special management regulations, the "Areas Bajo Régimen de Administración Especial (ABRAE)" system. These protected areas cover 41 million hectares or approximately 46% of the Venezuelan territory. The areas, 182 in total, vary widely in physical, biotic, ecological and socio-economic aspects, and are classified in a number of different management and legal categories.

In some occasions, the management regimes have been based on sectorial guidelines. Also, current laws do not cater for a protected area system based on a common vision and integrated national and international objectives. Overall, the ABRAE group of areas is poorly defined and co-ordinated as a system.

With the proclamation of the Land Use Planning Act of 1983, significant advances became possible in the administration of ABRAE. However, in practice, standards were still not implemented since the majority of areas lacked planning and management regimes and were covered by specific regulations on use and restrictions. In order to solve this problem, the Ministry of the Environment and Renewable Natural Resources (MARNR), through its Directorate for Land Use Planning, commenced in 1988 with the development of a National Protected Areas System Plan. The Plan was to be developed in four phases: (1) Development of the reference framework (guiding principles for environmental policies based on international guidelines); (2) Development of the conceptual framework (national objectives, management objectives, generic and management categories or legal regimes); (3) Development of the legal basis (Natural Protected Areas Act); and (4) Implementation of the National Protected Areas System.

The result, the National Protected Areas System was defined by MARNR as a system of management categories and legal regimes, taking into account the possible specialized functions of areas. In order to regularize the management and administration of protected areas, the following activities were undertaken regarding each area:

- Development of a general diagnostic overview of current issues;
- Classification within the national system;
- Determination of the present state of planning and availability of basic information;
- Formulation of a land use plan and a management regime, based on common methodologies; and
- Training of personnel.

This process has delivered significant results. The ABRAE group of areas can now be handled within a nation-wide classification system, which is based on carefully developed methodologies. Planning has been improved tremendously, at the local level as well as the regional and national levels, and further follow-up and research is being carried out. Also, a number of relevant courses and workshops have been organized, in collaboration with the Interamerican Centre for Water and Soil Research (CIDIAT). Finally, also non-governmental organizations became effectively involved in the effort, and various agreements were adopted.

C. National Parks System of Venezuela.

The National Parks System at present consists of 35 national parks and 15 nature monuments, which cover 8,573,888 ha or 9.35% of the national territory.

The protection of marine and coastal areas in Venezuela started as a result of the First World Parks Congress (Seattle, U.S.A., 1962). This Congress specifically recommended that governments extend existing coastal national parks to include adequate marine areas, as well as establish additional national marine and coastal parks and protected areas. In Venezuela, in the first phase, 237,000 ha were incorporated. At present 18% or 670 km of the continental coastline is protected in the National Parks System.

Three important marine and coastal national parks are: Archipiélago Los Roques (located in the Caribbean Sea); Morrocoy (at the East coast of the State of Falcón); and Mochima (Eastern Venezuela).

The Archipiélago Los Roques National Park was established in 1972 as the first marine national park of Venezuela. The area, which has been utilized intensively for artisanal fishing for many years, also receives great numbers of visitors all over the lagunes, islands and keys of the archipelago. The designation as national park was therefore seriously questioned by the various interest groups involved: small and large scale fishermen; the promoters of small and large scale tourism projects; and traditional vacationers who had installed various constructions for private

use. However, reservations of these users disappeared when it was clarified that their concerns were adequately included in the management plan for the archipel.

A good example of rescuing a natural area is the establishment of the Morrocoy National Park. The principal problem of the area, before the national park was established, was the clearing of mangroves for the construction of vacation (weekend) houses. In 1974, more than 320 ha of mangroves had been cleared, and 711 weekend houses had been constructed on the water surface, and 562 on the various keys and islands. All this had major impact on the marine and coastal ecosystems. The Government therefore eradicated all the houses. More than 200,000 cubic meters of construction materials were removed.

A similar campaign took place in 1989 in the National Park Mochima, where contrary to existing regulations, private people had constructed vacation houses. After a tough court case, 585 houses were removed, and the park was successfully developed for use by all visitors.

After producing environmental impact assessments and proper evaluations of the ecological fragilities of every national park, the Government developed priority actions to counter the most significant negative effects. Simultaneously, management plans and rules were adopted, as reflected in this case study.

D. Standards for Land Use Planning in Margarita Island.

Margarita Island has experienced enormous economic, social and spatial changes in the last 40 years. There are now three times more people than 40 years ago and population growth is continuing. The traditional way of life of the inhabitants of the island has changed considerably. The increase in wealth, however, is not matched by the increase in services and the capacity to better plan tourism development.

A first step in developing a planning methodology for Margarita Island was the assessment of the history of land use, through compiling the approved permits. It was revealed that a complete chaos existed in the processing of permits and authorizations, as it did not respond to logical planning criteria.

It was decided by the Government that a land use plan be developed in six months time. Due to this short time frame, the strategy employed did not include a diagnostic description, but focused on the following components: the analysis phase, the conclusions and the methodologies for enhancing the process when resources and time are limited.

Concerning the analytic phase, the following main components were defined:

- Analysis of the population and its distribution;
- Study of the economy of the State of Nueva Esparta;
- Analysis of the urban system; and
- Analysis of the general services.

Supporting studies were done in the following fields: tourism; fish resources; historical and architectural analysis; history of settlements; city system; infrastructure; coastal management. Additionally a number of factors caused by the rapid changes in the island were incorporated, such as conflicts about land tenure, dependence of the economy, ecological vulnerability, great increase in visitors.

In order to solve or minimize the planning problems, specific standards were developed promoting the designation of land use according to potential and restrictions; e.g. with regard to tourism development in areas where the Government had not planned the installation of infrastructure and services, a project developer needs to guarantee its intention to install them.

E. Methodology for the Identification of Critical Areas for Land Use Planning.

The identification of critical areas is a key issue in the development of appropriate planning regimes. A case study was implemented in the coastal zone of Carenero-Punta Castillito (State of Miranda), which applied four steps: (a) Description and delimitation of the sub-units in the area; (b) Simulation of relevant inter-relationships within the area and between the sub-units; (c) Assessment of the sensitivities of the sub-units; (d) Guidelines for their management.

The case study highlighted the need to plan at a detailed level (scale 1:5,000 or 1:10,000). The case study utilized a scale of 1:50,000.

The case study identified legislation and planning standards to be applied to the sub-units. The critical parameters were determined to assist in establishing the overall planning regime for an area, and detailed plans for the sub-units, within the socio-economic context.

F. Tourism Planning in Coastal Areas.

A methodology has been developed, utilizing the El Pico area in the Paraguana peninsula, where there was a lot of unplanned development (e.g. weekend houses).

Six public meetings were held, which formed the base for a division of the area into four zones: a zone for camping, a hotel/guesthouse zone, a zone for the construction of weekend houses and a green zone. A programme was established to compensate for the demolition of inappropriate construction in the various zones.

III. TRAINING IN LAND AND COASTAL USE PLANNING

A. Preparation of the Case Study.

In keeping with the training objectives of the project, the case study focused on the methodologies used in Venezuela and described Venezuela's general experience in land and coastal use planning, laying special emphasis on critical coastal area planning. The various components of the case study have been described in Chapter II. The case study incorporates

practical results of earlier Venezuelan projects, including those entitled: "Environmental Systems of Venezuela", "National Plan for Land Use Planning", "Planning in States" and "Sub-regional Planning". These project experiences had already proven useful for the development of a National System of Protected Areas.

In October 1989, the following critical coastal areas were selected for use in the case study:

- Isla Margarita (Nueva Esparta) and the east coast of the state of Falcon;
- National parks: "Archipiélago de Los Roques", "Laguna de Tacarigua", "Morrocoy", and "Mochima";
- Wildlife reserves: "Isla de Aves", "Cuare", and "Ciénaga de Los Olivitos".

In particular Margarita Island was a focus of the case study, since it has most features in common with the majority of the countries participating in the project. Semi-detailed maps were prepared for Margarita Island, at scales of 1:50,000 and 1:25,000. These maps were presented during the workshop and illustrated the discussions on the planning methodologies. It was found that although the scales utilized might be adequate for planning purposes, these are not appropriate for land administration, e.g. for the processing of permissions for changes in land use.

The case study utilized existing protected areas as a starting point for integrated planning and management, and reviewed environmental impact assessment (EIA) techniques, legislation, regional and local land management plans, inter-institutional arrangements, as well as a set of national and local environmental standards. Existing planning methodologies for the various management categories of Venezuelan protected areas were slightly modified in the case study, in order to allow for the preparation of specific critical area management plans.

2 OUTPUTS ENVISAGED AND GENERATED	
ENVISAGED	GENERATED
A regional programme for training and technical co-operation on land-use planning for coastal areas, approved by the governments of the region for the year 1991.	The experience gained by the project was actively applied in the further development of CEP's action plan, through a proposal for the continuation of the integrated planning component of the project, as part of the IPID Regional Programme for 1992-1993: "Development of Pilot Integrated Management Plans for Small Islands and Coastal Areas" in which the methodology of the case study will be utilized. This was approved for implementation by the 9th Meeting of the Monitoring Committee, Kingston, June 1991.
A case study on the Venezuelan experience in land use planning for coastal areas.	The case study was fully developed, with special emphasis on the utilization of existing protected areas.

Trained personnel on the management of critical marine and coastal areas.	The diagnostic questionnaire can be used as a training tool. It provides guidelines for the preparation of national reports.
Training of 20 government officials through the Regional Workshop on the Venezuelan experience.	25 experts participated in the Regional Workshop, 22 of them being government officials. Additionally there were 21 observers and 5 project personnel. The Workshop established an initial network of experts on integrated marine and coastal area planning.
A database for management of critical coastal areas at the land use planning division of MARNR.	The database for the case study was developed and includes the information obtained.

B. Diagnostic Questionnaire and Related Tools.

From October-December 1989, through a detailed process of drafting and consultation, a survey questionnaire was developed. The goal of the questionnaire was to compile from the 13 participating countries, as well as from Venezuela, comparable principal data on marine and coastal resources and their planning and management. This would assist in the development of a common regional methodology for coastal use planning.

A number of national and international experts on training and coastal zone management were consulted and, within Venezuela, all the selected areas were visited. In early 1990, the diagnostic questionnaire, attached as Annex I to this report, was distributed in English, French and Spanish to the participating countries. Within Venezuela, the questionnaire was sent to more than 60 governmental and non-governmental organizations in the participating countries, which are involved or interested in the management of marine and coastal resources. This assisted in the preparation of a national report that truly reflected the great variety of experiences and opinions in the country.

The questionnaire elicited from the participating countries detailed information on: (a) the current status of the marine and coastal resources; (b) current status of the management of these resources; and (c) national reports and priority needs regarding land-use planning and management of coastal areas. In preparing this questionnaire, the project team started with the development of a number of tools. These tools served both to give a framework for the compilation of information, as well as to provide instruments for the training of planners and managers in an integrated approach. The tools were:

- A model for the evaluation of critical areas (see Annex II to this report);
- An analysis of information necessary for Critical Area Planning and for ad hoc implementation of programmes (Annex III);
- A model for the possible establishment of working teams on marine and coastal area management (Annex IV);
- A table of data for planning and management of coastal areas (Annex V).

Altogether seven national reports were obtained in response to the questionnaire and during the Regional Workshop. All the information obtained was incorporated in a (sub-)regional database for land and coastal use planning. This database is the topic of the next section.

C. Database Development.

A database was initiated to compile and manage the information gathered through the questionnaire and the workshop. The database was designed in consultation with the CEP Regional Programme for Information Systems (CEPNET), in order to facilitate its integration into CEPNET and effectively provide a basis for the development of a regional database on coastal planning. It is therefore expected that the database will form an important tool in the follow-up projects under CEP.

The database for the management of critical coastal areas includes, for the participating countries, information on:

- Experts and institutions;
- General and socio-economic information (numerical and text data on local or national level);
- Environmental information:
 - Renewable and non-renewable natural resources;
 - Environmental problems;
 - Natural disasters.
- Cartographic and geographic information, aerial photos and satellite information; and
- Bibliographic references.

D. Regional Workshop.

The Regional Training Workshop in Coastal Zone Planning and Management was held in Porlamar, Margarita Island, from 28 January - 1 February 1991. The workshop was bilingual (English and Spanish). There was a participation of 25 experts (22 of them being government officials), 21 observers and 5 project personnel. The workshop comprised of national presentations by Aruba, Barbados, Guadeloupe, Netherlands Antilles, St. Vincent and the Grenadines, Trinidad and Tobago and Venezuela. An overview of these presentations is presented in Box 3 and Box 4. Additionally, round-table discussions were convened on the following topics:

- (1) Methodological aspects for the management of marine and coastal areas;
- (2) Legal considerations and institutional development in coastal areas; and
- (3) Alternative strategies for the management of marine and coastal areas.

The experience on land and coastal use planning in Venezuela was utilized to explore solutions for regional, sub-regional, national and local planning problems. The regional workshop highlighted the importance of strengthening regional information exchange and networking and co-operation in training and institutional development on the subject. The conclusions and recommendations of the various round-tables are listed in the sections below.

Round-table No. 1: Methodological aspects for the management of marine and coastal areas.

The following conclusions were obtained:

- In all participating countries methodologies for coastal areas management are lacking;
- Similarly, the countries lack the institutional definition regarding the formulation of programmes on the management of coastal areas;
- Further, institutional co-ordination for coastal zone management needs to be strengthened;
- There is a need to define "the coastal zone" for planning purposes; and
- Non-compatible concepts and strategies are being applied for marine and coastal areas.

The round-table adopted the following recommendations for the regional level:

- Initiation of negotiations among the countries of the Wider Caribbean region to formulate a methodology on the management of marine and coastal areas, which may be utilized as a guide for solving common problems throughout the region;
- Definition, by each country of the region, of its coastal zones based on own priorities and characteristics;
- Strengthening of communication among the countries, in order to ensure environmental assessments in cases where large-scale projects may infringe on common resources; and
- Establishment of a database and regional information network on marine and coastal resources management, which includes general issues, environmental impacts and conservation methodologies.

3, 4 REPORTS FROM PARTICIPATING COUNTRIES		
COUNTRY	PRINCIPAL COASTAL ENVIRONMENTAL PROBLEMS	ACTIONS TAKEN
Aruba	Sewage from urban industrial and touristic activities; solid waste.	Design of environmental policy related to existing legislation on liquid effluents; construction of sewage plants, discharge systems and incinerators; development of landfill areas.
Barbados	Destruction of marine fauna; sand mining; deforestation; loss of beaches and coastal erosion; vacuums in environmental law; lack of co-ordination among institutions related to environmental management; lack of public awareness on existing coastal management legislation.	Increase in coastal studies, including their dynamics; increase in inter-institutional and sectoral co-ordination; development of strategies for coastal management, reforestation and public awareness.
Guadeloupe (France)	Mangrove destruction; unchecked tourism development; sewage.	Taxation on construction, to be used for studies on flora and fauna and protected area management.
Netherlands Antilles	Unchecked tourism development; sewage; lack of planning; creation of artificial beaches causing heavy damage to coral reefs and other ecosystems.	Development of environmental law; gathering data on coastal development and resources; water quality monitoring and pollution control.
Trinidad and Tobago	Oil industry pollution; unplanned land use; coastal erosion; lack of water quality standards; industrial pollution; weak environmental law; sewage; lack of inter-institutional co-ordination; river basin deterioration.	Development of national policy on land use; improve co-operation among government agencies as well as with private companies; EIAs; development of conservation strategy.
St. Vincent and the Grenadines	Unchecked tourism development; unselective spearfishing; coral reef destruction due to boat anchoring; coral bleaching; beach sand mining.	Creation of national marine parks; development of integrated planning and coastal zone management programmes.
Venezuela	Pollution by oil industry; deforestation; urban development; lack of land use planning; unplanned tourism development; overfishing.	Creation of MARNR which initiated a number of measures.

Recommendations to be applied at the national level, as adopted by round-table No. 1 are to:

- Implement an inventory of natural resources within the defined coastal zone;
- Formulate appropriate land use strategies in coastal areas, taking into account local potential and limitations;
- Legislate, through management policies, the use of coastal areas; and
- Initiate necessary institutional arrangements in order to formulate a programme on coastal management.

Finally, recommendations for the local level are:

- Full participation of State, district and local authorities in the development of the management planning process; and
- Full participation of decentralized entities, community organizations and Mayor's offices in the decision making process, in order to enhance the viability of coastal management programmes.

Round-table No. 2: Legal considerations and institutional development in coastal areas.

Legal and institutional issues are central in the planning and management process of marine and coastal areas. The integration of diverse economic and social sectors and other interests in coastal zone planning was analyzed, and the following conclusions were derived:

- Although marine and coastal areas have been regarded as a priority, this has not been reflected in the activities of international organizations and Governments;
- Countries work in an isolated manner regarding marine and coastal management;
- Because there are so many institutions and organizations dealing with marine and coastal planning and management issues, joint action is very difficult to achieve;
- Because there are numerous laws and legislations relating to the management of marine and coastal areas, there are many options for interpretation and ultimately their application;
- As yet, local governments are not prepared for the responsibility regarding proper land use planning; and
- Experience of research institutes and universities is under-utilized, due to lack of co-ordination between these institutions and those organizations charged with management of marine and coastal areas.

Recommendations of round-table No. 2 for the regional level include:

- Establishment of co-ordination mechanisms among the countries of the region based on a regional strategy for planning and management of marine and coastal areas;
- Establishment of an information network for exchange of experiences on legal and institutional aspects; and
- Enforcement of compliance with international agreements on toxic, hazardous and other wastes.

Regarding the national level, the following recommendations were adopted by round-table No. 2:

- Promote legislation for administration and planning of protected areas under uniform criteria;
- Achieve legislation for appropriate management, including use of natural resources, such as mangroves, springs and wetlands;
- Promote penalties for abuse and establish sanctions proportionate to damage caused;
- Recognize in juridical terms those traditional uses of the environment that do not endanger the resources; and
- Classify and co-ordinate the ranges of activities of the various local or sectoral public entities involved in the management of marine and coastal resources.

Round-table No. 3: Alternative strategies for the management of marine and coastal areas.

This round-table concluded that marine and coastal resource management issues are quite similar in the various countries of the region. The most frequently mentioned problems are: (a) Anarchic settlement with a heavy tendency of population concentration in the coastal zone and city margins; (b) Inadequate use of marine and coastal resources, including over- and under-exploitation; (c) Inadequate infrastructure in coastal zones for urban areas, harbours, fishing, industries and tourism development; (d) Overuse of basic services; (e) Destruction of the equilibrium in marine and coastal ecosystems; (f) Gaps in environmental legislation; (g) Frequent non-coordination among the organizations responsible for the formulation and/or implementation of policies at national, regional and local level; (h) Insufficient human, material and financial resources; (i) Insufficient participation of the private sector, the public and scientific community in the decision making on development and management plans; (j) Continuous intervention of economic, political, social and other pressure groups impeding the formulation and application of policies and activities; (k) Insufficient education and awareness on environmental issues at all levels; and (l) Inadequate scientific and technical co-operation.

Round-table No. 3 adopted the following recommendations focused on international organizations:

- Establish and strengthen permanent mechanisms for co-ordination and co-operation, in order to avoid duplication of efforts;
- Create new regional co-operative programmes and strengthen existing ones relating to planning and management of marine and coastal areas; and
- Disseminate and distribute information on the legal and planning instruments available in the region.

Regarding the Governments of the countries of the region, the round-table recommended the following:

- Promote and support specialized human resource development, for the implementation of initiated activities;
- Prepare and implement necessary marine and coastal planning and management programmes, as well as establishing ad hoc technical/administrative offices for these programmes, where not existing;
- Create at the highest level in each country, a specialized organization for environmental management, and strengthen existing ones by providing necessary financial resources;
- Guide demographic expansion toward well-equipped urban centres;
- Provide basic services (water, electricity, education and roads) to coastal areas;
- Design and implement formal and non-formal environmental education at all levels;
- Establish and implement monitoring mechanisms to secure the fragile ecological equilibria of marine and coastal areas;
- Develop marine and coastal environmental legislation, which will have to include adequate penalties;
- Create protected areas, and support these with necessary resources;
- Establish and strengthen bilateral and multilateral agreements relating to environment and natural resources;
- Enhance and support co-operation among academic and research institutions in the region, including training of specialized human resources;

- Divide, in a clear, objective and co-ordinated manner, responsibilities and functions of the different organizations responsible for the implementation of national policies in the coastal zone relating to socio-economic development, security, defense and conservation;
- Organize scientific/technical events with participation of governmental and non-governmental organizations, with objectives to search viable solutions to problems of marine and coastal areas;
- Establish agreements between the academic and private sectors for searching solutions to problems of marine and coastal areas;
- Establish relevant agreements with the media for information and training purposes;
- Establish programmes for the development of alternative sources of energy; and
- Publicize information on existing legal and planning instruments, in order that organizations involved in planning, administration and management of coastal areas incorporate these into their decision making processes.

The round-table made the following recommendations to local authorities:

- Seek solutions for sustainable use of marine and coastal resources;
- Urge central Government to allocate the necessary financial resources for marine and coastal resource management;
- Actively participate in marine and coastal resource management, in compliance with existing legislation; and
- Promote the utilization by local governments of the recommendations for the national level.

Specific recommendations to coastal communities are the following:

- Urge responsible authorities to provide basic services, training, protection of sustainable resource use, and relevant land use planning;
- Urge authorities to improve the artisanal fisheries techniques;
- Urge authorities to develop and strengthen appropriate large-scale fisheries;
- Urge participation of coastal communities in implementation of policies on marine and coastal resource management; and
- Take an active role in the development and implementation of legislation on marine and coastal resource management.

Recommendations to the private sector include:

- Actively participate in the establishment and implementation of marine and coastal planning and management;
- Provide technical and financial support to relevant research activities; and
- Collaborate in the accomplishment of the management plans by ensuring the applicability to investments and projects.

The round-table also made recommendations to the academic sector:

- Urge participation in consultations on research, planning and management activities in coastal areas; and
- Establish and implement training programmes, in particular with regard to marine and coastal resource management.

Recommendations to non-governmental organizations include:

- Actively participate in all stages of research and planning programmes in coastal areas; and
- Provide financial and technical support to marine and coastal research and management programmes.

IV. RECOMMENDATIONS FOR FOLLOW-UP OF THE PROJECT

Integrated planning for the management of marine and coastal areas means that for each area a great number of factors will be examined and incorporated in order to achieve sound socio-economic development and environmental management. Although the approach is similar, the specific planning process will be distinct for each area. In many cases, substantial changes in development planning and traditional decision making will be necessary. In other areas, a more simple and direct approach could mean the solution for a variety of problems encountered.

One important lesson from the project is that for promoting effective integrated planning of marine and coastal areas in the region, projects and activities need to be integrated with the other resource management and economic development programmes which are being implemented. It is therefore necessary to allow for modifications and adjustments in the decision making process, taking into account specific dynamics in institutional and legal frameworks, and in the scale of the planning area and of possible umbrella and sub-projects.

To ensure successful projects, efficient information networking needs to be achieved since there are always a large number of institutions involved in training and planning activities. Relevant

institutions cover a wide spectrum including the local, national, regional and international levels, and have widely differing mandates and objectives.

An area of vital interest to planning is community development and community-based natural resource management. This is still a relatively unexplored area in the Caribbean Environment Programme. Emphasis needs to be put on providing guidelines and information to governments and planners for effectively involving communities. A follow-up project has therefore been proposed by MARNR, with as its goal that the planning guidelines and criteria now available, be adjusted and improved, and contacts with, among others, local authorities, private enterprise, and the public in general in the area, be better integrated in the planning process. This allows also that public participation, awareness and environmental education become key elements in the planning process. Through a second regional workshop, the feasibility of applying the improved methodology in other Caribbean countries will be assessed.

Based on the special experience gained with the project in the field of integrated planning, the proposed follow-up project has been formulated as part of the CEP Regional Programme on Integrated Planning and Institutional Development (IPID) for the 1992-1993 biennium. In this project, entitled "Development of Pilot Integrated Management Plans in Small Islands and Coastal Areas", maps will be developed at a scale of 1:5,000 and a case study will focus on a small area on the coast of Margarita Island.

ANNEX I

Diagnostic Questionnaire

PART A: QUESTIONNAIRE COUNTRY REPORT

1. GENERAL INFORMATION ABOUT THE COUNTRY, THE ORGANIZATIONS AND THE INDIVIDUALS RESPONSIBLE FOR THE COUNTRY REPORT
 - 1.1. Country
 - 1.2. Institution
 - 1.3. Complete address (and postal code)
 - 1.4. Institution telephone
 - 1.5. Telex/telefax
 - 1.6. Cable
 - 1.7. Electronic mail
 - 1.8. Institutional nature (A, B, C)
 - A. Government level (national, district, local, other)
 - B. Nature (land use planning, coastal resource management, other)
 - C. Activities (research, programme design, policy design, policy implementation, other)
 - 1.9. Individuals (name and position)
 - 1.10. Designated institutional and individual technical focal points

2. INSTITUTIONAL ARRANGEMENTS FOR LAND USE PLANNING AND OTHER RELATED ACTIVITIES
 - 2.1. Land use planning (list institution name, complete address, institution telephone/ telefax/ cable/ telex/ electronic mail, institutional nature, individual technical focal points)
 - 2.2. City planning (see listing under 2.1.)
 - 2.3. Designation of industrial areas (see listing under 2.1.)
 - 2.4. Designation of tourism areas (see listing under 2.1.)

3. ORGANIZATIONS AND INSTITUTIONS RESPONSIBLE FOR COASTAL AREA AND RESOURCES MANAGEMENT
 - 3.1. Marine areas and resources
 - 3.1.1. Fisheries
 - 3.1.2. Other biotic resources (sea mammals, sea turtles, seagrass beds)
 - 3.1.3. Oil production
 - 3.1.4. Metallic mineral resources

- 3.2. Coastal areas and resources
 - 3.2.1. Tourism
 - 3.2.2. Recreation
 - 3.2.3. Fisheries
 - 3.2.4. Agriculture and aquaculture
 - 3.2.5. Urban planning (city and site planning)
 - 3.2.6. Mining
 - 3.2.7. Oil industry
 - 3.2.8. Industrial development
 - 3.2.9. Communications and transport (port, road authorities)
 - 3.2.10. Public services (basic infrastructure)
 - 3.2.11. Scientific research
 - 3.2.12. Environmental protection

4. INDICATORS OF COASTAL ORIENTATION

- 4.1. Geographic
 - 4.1.1. Total land area (Km²)
 - 4.1.2. Critical areas or special coastal sites (Km²)
 - 4.1.3. Length of coast (Km)
 - 4.1.4. Ratio length of coast - land area
- 4.2. Demographic
 - 4.2.1. Total population
 - 4.2.2. Density per Km²
 - 4.2.3. Total population of the capital city
 - 4.2.4. Ratio or % of population of capital city to total population
 - 4.2.5. Population on coast (number of people living permanently on the coast)
 - 4.2.6. Ratio or % of population on coast to total population
 - 4.2.7. % of urban centres in coastal areas to total urban centres
 - 4.2.8. Largest urban centres on coast (list name and population size)
 - 4.2.9. Is the capital city on the coast?
- 4.3. Economic
 - 4.3.1. Per capita income (comparative years)
 - 4.3.2. Coastal tourism (number of tourists per year and earnings in US\$ per year)
 - 4.3.3. Fish catch (metric tons per year and US\$ per year)
 - 4.3.4. Aquaculture production (metric tons per year and US\$ per year)
 - 4.3.5. Coastal agriculture production (metric tons per year and US\$ per year)
 - 4.3.6. Coastal resource mining (metric tons per year and US\$ per year)
 - 4.3.7. Oil production (BBLs and US\$ per year)
 - 4.3.8. Other
 - 4.3.9. Port activities (ports and airports: metric tons per year and US\$ per year)
 - 4.3.10. Gross national product (comparative years)

5. LEGISLATIVE ADMINISTRATION OF THE COASTAL ENVIRONMENT

- 5.1. National level
- 5.2. International level (includes regional regulations)

6. ACADEMIC INSTITUTIONS AND PROGRAMMES

- 6.1. General identification
 - 6.1.1. Country
 - 6.1.2. Institution
 - 6.1.3. Complete address (and postal code)
 - 6.1.4. Institution telephone
 - 6.1.5. Telex, telefax and electronic mail
 - 6.1.6. Institutional nature
 - 6.1.7. Activities (list only research, programme design and academic specializations)
 - 6.1.8. Focal points
- 6.2. Summary of general and marine science courses offered by academic institutions
(List for the country, the type of courses and their level. Type of courses: geography, ecology, general oceanography, physical oceanography, chemical oceanography, marine biology, fisheries, aquaculture, marine geology, economics, sociology, planning, urban planning, architecture, landscaping, coastal engineering, petroleum engineering, tourism, environmental law, law of the sea, other. Level of courses: A.A.S., B.Sc., M.Sc., Ph.D.)
- 6.3. Courses offered per institution
(List for the institution, the types of courses and their level as in 6.2.)

7. SECTORAL PROBLEMS

(Indicate for each of the sectors listed hereunder if there is a problem (yes/no) and give a brief description)

- 7.1. Fisheries
- 7.2. Water resources
- 7.3. Agriculture
 - 7.3.1. Crops
 - 7.3.2. Animal (farming/grazing systems and aquaculture)
- 7.4. Recreational development
- 7.5. Tourism development
- 7.6. Port development
- 7.7. Energy resources
- 7.8. Contingency plans
 - 7.8.1. Oil spills
 - 7.8.2. Hazardous wastes or substances
- 7.9. Industrial development
- 7.10. Pollution

- 7.11. Protected areas system
- 7.12. Environmental education and awareness
- 7.13. Other

PART B: ASSESSMENT OF STATUS OF COASTAL AND MARINE RESOURCES AND MANAGEMENT NEEDS

- 1. PHYSICAL - NATURAL CHARACTERISTICS
 - 1.1. Marine environment
 - 1.1.1. Marine and sub-marine areas
 - 1.1.1.1. Continental shelf
 - 1.1.1.2. Deep marine basins
 - 1.1.2. Islands
 - 1.1.3. Coastal areas
 - 1.2. Climate
 - 1.2.1. Annual average temperature
 - 1.2.2. Annual average precipitation
 - 1.2.3. Annual average evaporation
 - 1.2.4. Winds
 - 1.2.5. Climatic regions and classification system employed (Thornwhite, Koppen, Holdridge, other)
 - 1.3. Hydrogeology
 - 1.3.1. Watersheds and hydrography
 - 1.3.2. Water resources
 - 1.3.2.1. Surface water
 - 1.3.2.2. Groundwater
 - 1.3.3. Water resources demand
 - 1.3.3.1. Urban - industrial
 - 1.3.3.2. Agricultural
 - 1.3.3.3. Tourism
 - 1.3.3.4. Other
 - 1.3.4. Desalination plants (number of plants and capacities)
 - 1.4. Oceanography
 - 1.4.1. Bathymetry
 - 1.4.2. Waves
 - 1.4.3. Currents (longshore, tidal, flood, turbidity, other marine currents)
 - 1.4.4. Tides (frequency, period, amplitude, maximum, minimum)
 - 1.4.5. Other relevant characteristics
 - 1.5. Geology and marine and littoral geomorphology
 - 1.5.1. Coast classification
 - 1.5.1.1. High energy
 - 1.5.1.2. Low energy
 - 1.5.1.3. Other classification systems
 - 1.5.2. Lithology and sedimentary processes
 - 1.5.3. Coastal processes (erosion, sedimentation)

- 1.5.4. Seismic characteristics
 - 1.5.5. Natural or human induced risks (abatement strategies)
 - 1.6. Soils
 - 1.6.1. Soil classes
 - 1.6.2. Agricultural lands (according to the soil classification system)
 - 1.6.2.1. Agricultural land (availability, demand)
 - 1.6.2.2. Criteria employed to assess priorities for use
 - 1.6.2.3. Forest land (availability, demand)
 - 1.6.2.4. Range land (availability, demand)
 - 1.6.3. Soil degradation
 - 1.7. Vegetation
 - 1.7.1. Ecosystems (mangroves, deciduous forests, tropical rainforests, other)
 - 1.7.2. Forest products (availability, demand)
 - 1.7.3. Wood charcoal (availability, demand)
 - 1.8. Fauna (see 3.)
2. COASTAL AND MARINE ECOSYSTEMS
- 2.1. Marine ecosystems
 - 2.1.1. Coral reefs
 - 2.1.2. Seagrass beds
 - 2.2. Coastal ecosystems
 - 2.2.1. Rocky coasts
 - 2.2.2. Sandy or muddy beaches
 - 2.2.3. Wetlands
 - 2.2.4. Estuaries
 - 2.2.5. Mangrove systems
3. COASTAL AND MARINE RESOURCES
- 3.1. Living resources
 - 3.1.1. Fisheries
 - 3.1.1.1. Artisanal fishing
 - 3.1.1.2. Industrial or semi-industrial fishing
 - 3.1.1.3. Commercial species (fish)
 - 3.1.1.4. Molluscs and crustaceans
 - 3.1.1.5. Survey of fishermen
 - 3.1.1.6. Survey of fishing boats
 - 3.1.1.7. National fish production (metric tons and US\$ per year)
 - 3.1.1.8. Fish exports and imports
 - 3.1.2. Wildlife (fauna)
 - 3.1.2.1. Avifauna
 - 3.1.2.2. Sea mammals
 - 3.1.2.3. Sea turtles
 - 3.1.2.4. Reptiles
 - 3.2. Non-living resources
 - 3.2.1. Conventional energy resources (oil, gas, coal, other)
 - 3.2.2. Non-conventional energy resources

- 3.2.3. Metallic minerals
- 3.2.4. Non-metallic minerals
- 3.3. Tourism and scenic resources
 - 3.3.1. Inventory of tourism and scenic resources (marine, sub-marine, coastal resources)
 - 3.3.2. Actual status of tourism and scenic resources (use intensity)
 - 3.3.3. Legal status of tourism and scenic resources and areas
- 4. NATURAL AND TECHNOLOGICAL HAZARDS
 - 4.1. Water resources
 - 4.1.1. Surface waters
 - 4.1.1.1. Changes in the run-off patterns (water cycle disruption)
 - 4.1.1.2. Floods
 - 4.1.1.3. Pollution
 - 4.1.1.3.1. Municipal sources
 - 4.1.1.3.2. Industrial sources
 - 4.1.1.3.3. Agro-industrial sources
 - 4.1.2. Ground waters
 - 4.1.2.1. Over-use
 - 4.1.2.2. Pollution (source, pathway, type)
 - 4.2. Soils
 - 4.2.1. Erosion problems (human use, other)
 - 4.2.2. Hills and watershed devegetation
 - 4.2.3. Urban processes on fertile soils
 - 4.2.4. Soil pollution (solid and liquid wastes, other)
 - 4.3. Vegetation
 - 4.3.1. Devegetation
 - 4.3.2. Forest fires (natural, induced, other)
 - 4.3.3. Flooding (construction of water reservoirs, other)
 - 4.3.4. Acid rain or biocides related problems
 - 4.4. Fauna
 - 4.4.1. Hunting of threatened or endangered species
 - 4.4.2. Habitat loss (devegetation, construction of water reservoirs, other)
 - 4.4.3. Species loss due to biocides use or other related causes
 - 4.5. Air
 - 4.5.1. Air pollution (urban, industrial processes, other)
 - 4.5.2. Air pollution (forest fires, other natural events)
- 5. MANAGEMENT STRATEGIES
 - 5.1. National organizations and institutions responsible for environmental quality, land use planning and coastal area and resources management
 - 5.1.1. Institution
 - 5.1.1.1. Name
 - 5.1.1.2. Address
 - 5.1.1.3. Telephone, telefax and electronic mail

- 5.1.2. Institutional nature (governmental, non-governmental, land use planning, urban and city planning, industrial or tourism development agencies, other)
 - 5.1.3. Programme implementation
 - 5.1.3.1. Short term
 - 5.1.3.2. Long term
 - 5.1.4. Individual focal points
 - 5.2. National economic planning
 - 5.2.1. Model
 - 5.2.2. Population patterns
 - 5.2.3. Technology and environment
 - 5.2.4. Economics and environment
 - 5.2.5. Society and environment
 - 5.3. Nation-wide or sub-national land use planning and regulation
 - 5.3.1. National level planning
 - 5.3.2. Regional planning
 - 5.3.3. Site planning
 - 5.3.4. Sectoral planning
 - 5.4. Special management strategies
 - 5.4.1. Environmental impact assessment
 - 5.4.2. Shoreline exclusion or restriction
 - 5.4.3. Coastal atlas or databank
6. NATURAL PROTECTED AREAS SYSTEM
- 6.1. Management categories
 - 6.2. List of natural protected areas (list characteristics)
 - 6.3. Proposed natural protected areas
7. ENVIRONMENTAL LAW
- 7.1. Existing environmental law
 - 7.2. Needs for legislative administration of the coastal environment
8. INSTITUTIONAL ARRANGEMENTS
- 8.1. National level
 - 8.2. International level
9. SCIENTIFIC AND ACADEMIC INSTITUTIONS
- 9.1. Governmental institutions (formal and non-formal education programmes)
 - 9.2. Non-governmental institutions and organizations (formal and non-formal education programmes)

10. INSTITUTIONS AND PROGRAMME IMPLEMENTATION

10.1. Governmental

10.1.1. Institutions

10.1.2. Programmes in land use planning and coastal areas and resource management

10.2. Non-governmental

10.2.1. Institutions and organizations

10.2.2. Programmes in coastal resources management

10.3. Public awareness and environmental education programmes

ANNEX II

Model for the Evaluation of Critical Areas

Criteria	Relevance			Observations
	High	Medium	Low	
<p>I. <i>Value represented by the natural resources:</i></p> <p>A. Regional context/ representativity (Wider Caribbean)</p> <p>B. National context/ representativity (States and Territories)</p> <p>C. Sub-national context/ representativity</p> <p>D. Representativity at the community level</p> <p>E. Biological productivity</p> <p>F. Biological characteristics, representativity of the species</p> <p>G. Protection of the species</p> <p>H. Characteristics of the ecosystems</p> <p>II. <i>Value for man:</i></p> <p>A. Recreational</p> <p>B. Commercial (fishing and others)</p> <p>C. Scenic value</p> <p>D. Scientific investigation</p> <p>E. Education (e.g. natural processes)</p> <p>F. Historic/ Archeological /Palaeontological</p> <p>III. <i>Activities which (potentially) take place, having environmental impacts:</i></p> <p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p> <p>5.</p> <p>6.</p>				

Criteria	Relevance			Observations
	High	Medium	Low	
<p>IV. <i>Administrative matters:</i></p> <ul style="list-style-type: none"> A. Inter-institutional relations B. Environmental protection organizations C. Accessibility D. Monitoring and control E. Economic considerations F. Others <p>V. <i>Other matters:</i></p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>				

ANNEX III

Analysis of Fundamental Information Necessary for Critical Area Planning and for Ad Hoc Implementation of Programmes

PHASE 1:

- A. Legal regime;
- B. Identification of planning teams;
- C. Determination of the objectives of the programme selected;
- D. Determination of the selection criteria for the area to be managed.

Result: *A planning team that guides and assists the programme in its development, based on an agreed policy, agreed objectives and on existing legal instruments.*

PHASE 2:

- A. Collection of cartographic information, air photos and bibliographies concerning the ecosystems of the area under consideration;
- B. Classification of the ecosystems and habitats in relation to species of interest;
- C. Precision of locations;
- D. Determination of the conservation category;
- E. Selection of the locations and categories to be managed.

Result: *The selection of an area to be incorporated in the national system of protected areas.*

PHASE 3:

- A. Detailed study of the area;
- B. Identification of those sectors best suitable to the type of use permitted;
- C. Zoning (utilizing the agreed criteria and the results of phase 1);
- D. Determination of necessary equipment and infrastructural, financial and personnel requirements;
- E. Preparation of management plan;
- F. Initiation of the process for official protected area designation.

Result: *A programme to be implemented in the selected area.*

PHASE 4:

- A. Establishment of facilities, provision with equipment and contracting of personnel at a scale in line with the tasks assigned;
- B. Implementation of management programmes;
- C. Initiation of education and awareness programmes;
- D. Initiation of monitoring and supervision/enforcement programmes;
- E. Strengthening of training and research.

PHASE 5:

Evaluation and revision: every ____ years.

Note: the consultation process with the communities should commence from the first phase on and be continued through all the phases.

ANNEX IV

Model for the Establishment of Working Teams

1. PRELIMINARY PLANNING:

- Government representatives;
- Expert in marine and coastal protected areas;
- Expert in terrestrial protected areas;
- Sociologist;
- Planner;
- Economist;
- Lawyer.

2. PLANNING AND ORGANIZATION OF THE IMPLEMENTATION OF THE MANAGEMENT PROGRAMME:

- Expert in marine and coastal protected areas;
- Marine ecologist or marine biologist;
- Sylviculturist or agronomist (for watershed management and/or the terrestrial sectors which influence the selected area);
- Expert in coastal tourism;
- Sociologist;
- Planner;
- Economist;
- Educator;
- Administrative team for the entity created: manager; professional and technical staff; security and maintenance;

Also sub-programmes with:

- Community organizations;
- Public relations institutions.

3. MANAGEMENT:

- Managers, professionals and technicians (at least an ecologist and a educator);
- Assistants and secretarial staff;
- Security and maintenance;
- Boatmen (optional).

ANNEX V

Table of Data for Planning and Management of Coastal Areas

1. Type of habitat/ecosystem (e.g. coral reefs, coastal lagoons, wetlands).
2. Distribution (the general environment and the specific localization of the habitats/ecosystems).
3. Approximate surface area, inventory of resources.
4. Legal regime.
5. Sources of influence (e.g. topology around lagoon, water courses, energy flows).
6. Economic value (e.g. fisheries, tourism, recreation, research, conservation).
7. Threats:
 - A. Natural (e.g. overloading, natural degradation);
 - B. Induced by man;
 - C. Potential (projects, activities, others).
8. Particular need for the protection and management of the habitat/ecosystem (research, protection, management, legal issues, public awareness, education).
9. Socio-economic problems associated with the protection of the habitat/ecosystem (resource use conflicts, suitability of land, traditional and proposed land use).
10. List of institutions and individuals which can be contacted and type of information provided.
11. References (bibliography, consulted literature, source material).