GLOBAL ENVIRONMENT FACILITY

Dominican Republic

Conservation and Management in the Coastal Zone of the Dominican Republic

Project Document

This Project Document has been edited to facilitate public dissemination.
The original is on file in the GEF Office at UNDP Headquarters in New York.

ABBREVIATIONS

CEBSE	Center for Conservation and Ecodevelopment of Samana Bay and its Environs, Inc.
CIBIMA	Center for Investigation of Marine Biology
CITES	Convention on International Trade in Endangered Species
CMC	Center for Marine Conservation
DIRENA	Department of Natural Resource Inventories
FORESTA	General Directorate of Forestry
GIS	Geographic Information System
IAD	Instituto Agrario Dominicano
ICDM	Integrated Conservation and Development Model
IICC	Inter-institutional Coordinating Committee
INDRHI	Instituto Nacional de Recursos Hidraulicos
INTEC	Instituto Tecnológico de Santo Domingo
IUCN	World Conservation Union
MAB	Man and the Biosphere
nm	nautical miles
ONAPLAN	National Office of Planning
PPER	Project Performance Evaluation Report
RAMSAR	International Convention for the Protection of Wetlands
SPAW	Protocol on Specially Protected Areas and Wildlife
STP	Technical Secretary of the Presidency
SURENA	Subsecretariat of Natural Resources
UASD	Universidad Autonoma de Santo Domingo
UNCED	United Nations Conference on Environment and Development
WWF	World Wildlife Fund

CONTENTS

UNITED NATIONS DEVELOPMENT PROGRAMME

GLOBAL ENVIRONMENT FACILITY

Project of the Government of the Dominican Republic

Title:	Conservation and Management of Biodiversity in the Coastal Zone of the Dominican Republic
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Brief Description:

The objective of this project is to preserve Dominican coastal ecosystems and their biodiversity by developing an innovative, multisectoral model of coastal zone management with the participation of all stakeholders. The model will facilitate non-destructive economic use of resources and require extensive multilevel capacity building. The model will be developed for three pilot areas—Jaragua, Samana, and Los Haitises—with the intention to adapt it to the rest of the Dominican coastal zone pending evaluation of the results. Sustainable coastal zone management will require broad participatory programmes of planning, marketing, research, resource assessment, career development, public education, and development of new products.

A. CONTEXT

1. Description of sector

Environmental reformers commonly attribute habitat destruction and related losses in biodiversity to the ignorance, greed, or irrational behaviour of farmers, fishermen, and other resource users. Though such factors take their toll, averting habitat destruction on a sustained basis must look to systemic factors, many of which are neither local nor well understood. Following a description of the unusual habitat and biodiversity of the Dominican Republic, we present an overview of these systemic factors as a preface to our problem statement, project strategy, and overall objectives.

Special Dominican habitat and biodiversity features

In the Dominican Republic, social and economic well-being depend to an unusual degree on the health of the coastal zone. Historically, the coastal lowlands have been the primary focus of agricultural and urban development, and they remain the most heavily populated and economically productive zones. Seventy percent of Dominican cities with 10,000 or more inhabitants and 75 percent of heavy industry lie within the coastal zone. Because the ratio of coastline to interior territory is very high in the Republic, nearly all economic activity directly impacts coastal and marine ecosystems. In recent years, tourism has focused almost exclusively on the coastal zone. Since it is the country's most important economic activity, tourism has only further emphasized the need for sound coastal zone management.

The Dominican Republic sits at the center of the Antillean Island Arc, so its maritime policies are often critical to Pan-Caribbean management or planning. The Republic claims a maritime jurisdictional area of 78,400 square nautical miles (nm), comprising territorial seas up to 6 nm from shore and an exclusive economic zone of up to 200 nm. This zone encompasses off-shore banks critical to both regional fisheries and the management of globally threatened species. For example, two of the three most important winter destinations of the endangered Western Atlantic humpback whale are located within Dominican jurisdiction. Moreover, West Indian waters have the highest levels of marine biodiversity in the Atlantic Ocean Basin.

The productivity of Dominican marine fisheries depends largely on the vulnerable habitats of the littoral margins of the island platform of Hispaniola. Most of the commercial species of fish and shellfish harvested by Dominican fishermen depend on near-shore habitats such as mangroves, sea grass beds, and coral reefs during key stages in their life cycles. These ecosystems, however, are subject to ongoing modification that has reduced the take of fishery organisms to levels lower than the maximum sustainable yield possible under comprehensive management.

Land use practices in inland regions—forest removal, agriculture, pollution, and drainage of coastal wetlands—are more deleterious to fishery populations than direct harvest, and marine populations usually depend on recruitment from pelagic sources outside the country's jurisdiction. For these reasons, a mechanism for sharing biological information internationally will be essential to a successful regional management plan.

The Dominican coastal zone provides critical winter habitat for hundreds of migratory species and harbours several of the threatened species listed under every major international convention and treaty for species protection (such as CITES, RAMSAR, and SPAW). These species include whales, sea turtles, crocodiles, manatees, black coral, and numerous birds, reptiles, invertebrates, and vascular plants. Some of the most important surviving populations of globally threatened species—including whales and crocodiles—occur within the Dominican Exclusive Economic Zone.

As in other West Indian countries, most of the biota have never been assessed for their economic value or conservation status, and often the data on plant and animal diversity are only preliminary. Ecological surveys and preliminary inventories indicate that the levels of endemism in the Republic are among the highest in the West Indies, making it a prime location to screen for economically useful compounds derived from biodiversity resources. Pharmaceutical screening of terrestrial plants has begun to a limited degree, but most other organisms remain largely unassessed, and there is not yet a comprehensive management programme for data on biodiversity resources. Thus, the scope for increasing general awareness of the value of biodiversity conservation is tremendous.

The most significant sections of the Dominican coastal zone, and the primary foci of this project, are Samana Bay and its watershed, Los Haitises National Park, and Jaragua National Park. Located in the northeastern Dominican Republic, Samana Bay is the largest bay and estuarine ecosystem in the Caribbean islands, measuring roughly 50 by 17 kilometres and covering an area of 858 square kilometres. Its watershed has an area more than ten times greater than the Bay. The Bay has the largest remaining mangrove and seagrass habitats in the Caribbean, which are critical for sustaining commercial fisheries and nature-based tourism. The land surrounding the Bay is home to approximately 250,000 Dominicans who depend on the Bay and its watershed as their principal sources of food and livelihood. The Bay region has an unusual variety of landforms and natural features in proximity, so its tourism potential is very high.

Jaragua National Park covers 137,400 hectares and is the biggest insular park in the Caribbean. The 90,500 marine hectares include Beata and Alto Velo, two important off-shore islands. The coastal zone harbours big hypersaline lagoons and wetlands, as well as mangroves, coral reefs, extensive turtle grass flats, and unique coastal marine ecosystems. The Beata area is considered the highest primary productivity zone in the insular Caribbean, supporting the most important fisheries in Hispaniola. It also provides the only spiny lobster fishing ground in the country. Jaragua's coastal area has been recommended as a RAMSAR site for the Dominican Republic. Many aquatic, migratory, endemic, and endangered birds live there, as well as manatees and sea turtles, although breeding occurs under extremely difficult conditions. Solenodon, recently considered as the second most important endangered mammal in the world by IUCN, is still relatively common in Jaragua as are many other endangered species of high economic importance. The area has an extraordinary potential for ecotourism and sustainable development, despite it currently being an area of economic deprivation.

Macro forces threaten Dominican biodiversity

In addition to the intense competition for coastal zone resources, dramatically altered rural land use, demographic pressures, poorly planned tourism development, and a crucial lack of communication between science research and the conservation needs of the country's coastal zone are forces that impact the loss of habitat, biodiversity, and ecosystem services in the Dominican Republic. These forces cumulatively create *biohomogeneity* rather than biodiversity. The practical solutions advanced later in this proposal address these macro forces in varying degrees, along with proximate causes of declining biodiversity.

Changing rural land use

Today, 11 percent of the Dominican population is employed in agriculture, whereas 42 percent live and work in rural areas. This means that roughly one in three Dominicans belongs to the rural non-farm population and, as such, is gradually disregarding his or her use of resource management techniques in primary pursuits such as fishing and forestry. Indigenous knowledge of species, ecosystems, and locally sustainable management systems increasingly erodes as more rural Dominicans are forced to turn from their traditional livelihood activities and take manufacturing and service sector jobs, or face unemployment.

Fundamental changes in agriculture and marine extraction, both of which are narrowing the biological resource base of the island, are related to sectoral employment shifts. Under the continuing pressure of foreign debt and demands for hard currency, the Dominican Government has targeted specific crop and livestock sectors for credit and technical assistance. In 1990, rice received 60 percent of total combined assistance and livestock 10 percent (roughly half of total land is privately owned pasture). Livestock are a principle threat to the parks targeted in this proposal, and they diminish diversity in the coastal zone and elsewhere. Rice dominates the Rio Yuna watershed, the single largest surface source of fresh water in the watershed of Samana Bay. Thus, a region that was once dominated by wetland ecosystems that filtered surface runoff is shifting to monocultural production that requires high chemical maintenance with unknown affects on downstream (marine) biodiversity that once sustained a viable artisanal fishery.

The causes behind declining marine fisheries have not been absolutely determined, but pesticide use, contamination by mercury and other pollutants, and clearing of mangrove forests and other land-based problems all contribute. In response to the reduced harvest, artisanal fishermen have been induced to use smaller mesh sizes in traps and nets and to target spawning aggregations of reef fishes for harvest. Both practices are unsustainable and have sped the decline or collapse of particular fisheries, and viable alternative practices have not been developed.

Demographic pressure

As clearly stated in the environmental principles elaborated at Villa de Leyva in Colombia in 1985, population growth alone is not a necessary and sufficient cause of declining biodiversity. Population pressure becomes insidious when consumptive patterns overwhelm resource bases and when the distribution of benefits from the resource base is highly skewed. As already noted, industry and urbanization are the main forms of population pressure in the Dominican coastal zone.

What is less frequently noted is that the living standards of the Dominican Republic are increasingly affected by demonstration effects from North America (one in eight Dominicans lives in the United States and returns to the island frequently). Unless ways are found to strengthen biodiversity conservation values in the Dominican Republic, high fertility (2.3 percent) and rising consumption will preclude the establishment of sustainable development polices for the country's heavily impacted coastal zone.

Underplanned tourism development

Though tourism is emerging as the country's leading industry, its coordinated development lags behind most other Caribbean countries, with lagging tourist-to-resident ratios. Greater emphasis on tourism can be a bittersweet experience from an economic standpoint, however, due to problems of seasonality, new dependencies on foreign capital, and enclave development devoid of real income or employment benefits for extractive communities. Much tourism investment concentrates on urban areas, leaving large expanses of the coastline and rural interior underplanned and thereby susceptible to ad hoc tourism development. Under some circumstances, tourism development conflicts with local people's livelihoods and undermines their continued existence. From a biodiversity standpoint, even so-called eco-tourism may select high-demand habitats over others (such as beach construction at the expense of mangroves) and jeopardize natural systems lacking charismatic flora and fauna by promoting superficial forms of conservation. Finally, by attracting tourists to critical habitats, poorly planned and coordinated tourism can accelerate the destruction of the very natural assets on which the sector depends for viability.

In the context of Caribbean tourism, the Dominican Republic is in an advantageous position to resolve its problems due to its exceptional scenic and topographic diversity, both of which will draw tourists to more than the beaches. The country embraces the lowest land point in the Caribbean (40 metres below sea level in a land-locked interior basin) and the highest peak (the summit of Pico Duarte which is the only Caribbean mountain that bears evidence of former glaciation). Between the two elevations, one encounters every habitat type and landscape feature known in the Caribbean islands, including three life zones that occur on no other island in the New World. Many of the most outstanding landscape features are included in the country's system of National Parks and protected areas. The amount of biological diversity and variety of landscape features in proximity cannot be matched by any other Caribbean country.

Nonetheless, since tourism development and related scientific research of this outstanding park system has been realized to only a minor degree, the Republic's natural variety and its national parks are relatively unknown outside the country. Reaching its full tourism potential will require comprehensive profiling of species and infrastructure for nature-based tourism (orientation centres, lodging, bilingual signs, site maps) and provisions for local people to participate in the planning and management of protected areas.

Disjuncture between science and coastal zone management needs

The potential of much science done in the name of conservation is underutilized because scientific research has traditionally been reluctant to address conservation policy issues directly. The *perceived conflict* between conservation and development weakens the link between the biophysical

and social sciences needed to address biodiversity protection. Moreover, science outputs often are stored and maintained overseas rather than in the country where field research was done. Even when the results are housed locally, they are often inaccessible to federal and local governments, interested NGOs, and local, resource-dependent communities. Perhaps most important of all, much scientific research either lacks a resource management orientation or the necessary "translation" to make it relevant to resource managers in their specific contexts.

Traditions that benefit university scholarship in urban centres are, despite potential relevance, not necessarily benefitting biodiversity protection and restoration in the Dominican Republic. Thus, a variety of complex background factors contribute to the destruction of habitat and the decline of biodiversity, or to the inability of well-intentioned science to arrest such a decline. The present proposal, while not presuming to fundamentally alter these background conditions, will address them as real forces which must be incorporated in solutions sought by the project.

2. Host country strategy

The Government of the Dominican Republic recently completed a 1992-1996 Country Programme that aims for macroeconomic stabilization while pursuing human development through sustainable means. The Dominican Government has also worked to protect areas of high ecological importance. In 1974 the National Directorate of Parks was created with a framework intended to prevent the degradation of critical ecosystems. A system of protected areas was then established that now includes seven national parks, two scientific reserves, and two major sanctuaries, covering 11.8 percent of the national territory. Twenty-two percent of the coastline has been reserved for study and protection (by decree or legislation). It now only awaits comprehensive assessment and the development of a management policy.

In addition, the Government has recently renewed its national Man and the Biosphere Committee (MAB), a body that recommends ways Biosphere Reserves can be used by local communities for regional management of coastal and related resources. The Dominican Government is seriously committed to protecting its parks and reserves from unregulated human use, while also displaying interest in buffer zone strategies that promote cooperation with local residents seeking economic livelihood around conservation areas. Based on experience in Jaragua National Park, the Government is promoting protected area management models that incorporate human uses, according to internal zones and subject to appropriate regulation by government or local community organisations. For brevity, this strategy will be referred to hereafter as the integrated conservation and development model (ICDM).

3. Prior or ongoing assistance

UNDP has previously assisted the subsector through the Forestry Action Plan and it currently supports the country's efforts to follow-up the agreements of the United Nations Conference on Environment and Development (UNCED). A new project under development strives to achieve the elaboration and subsequent implementation of "National Agenda 21" as a coherent and dynamic environmental strategy. Other donors—Germany, Spain, the United States, Holland, Taiwan, the European Economic Community, and the International Development Bank—are active in the

development of fisheries, the establishment of protected areas, the development of management plans, and other activities.

4. Institutional framework for subsector

The National Office of Planning (ONAPLAN) is the central point of contact between Dominican Government agencies and UN institutions. It monitors and coordinates all external assistance to development projects. On 18 November 1992, the President of the Republic, Dr. Joaquin Balaguer, created the National Commission to Follow-up the Rio Agreements. The Commission includes most public and private institutions involved in sustainable development.

Primary responsibility for natural resources policy rests with the Secretary of Agriculture and its Undersecretary for Natural Resources. Practical aspects of policy are derived from and implemented by specialized government agencies, which include, for this project in particular, the General Directorate of Forestry (FORESTA), Department of Wildlife, Department of Fisheries Resources, National Directorate of Parks, the Instituto Nacional de Recursos Hidraulicos (INDRHI), the Department of Natural Resource Inventories (DIRENA), the Cartographic Institute of the Armed Forces, and the Instituto Agrario Dominicano (IAD). Tourism development is administered by the Secretary of State for Tourism. At least three Dominican universities—la Universidad Nacional Pedro Henríquez Ureña (UNPHU), la Universidad Autonoma de Santo Domingo (UASD), and la Universidad del Este—bring science to the region's institutional capacity, along with other pre-university schools that teach conservation and participate in reforestation of parks and coastal zones.

From a conservation standpoint, the primary organisational presence in the proposed Samana Bay project area is Center for Conservation and Ecodevelopment of Samana Bay and its Environs, Inc. (CEBSE), a non-governmental organisation. Headquartered in Samana, the major city in the primary project area, CEBSE is the liaison between local institutions and the central government agencies with which it maintains formal agreements for collaboration. Among the interested local institutions in the region are various church groups, community-based environmental groups, mothers' clubs, fishermen's associations, and farmer organisations, all of which have shown interest in regional development with a strong commitment to conservation.

Grupo Jaragua, Inc. was the first NGO to sign an agreement with the National Directorate of Parks to co-manage a protected area in the country. It was also the first to sign an agreement with the Ministry of Agriculture, Natural Resources Section, to cooperate formally in wildlife conservation. At present, Grupo Jaragua is part of a national NGO council whose objective is the management of the country's southwest fisheries. It is also part of another council that works for the conservation and management of the American crocodile, as well as being part of the newly restructured MAB committee.

Grupo Jaragua has a permanent office in Oviedo. It is the community closest to Jaragua National Park, and it is also one of the Republic's most economically deprived. Of the seven members of the Board of Directors, three are native to the Jaragua area and two have lived in their communities all their lives. A high percentage of women work with the group. Another office is established in Pedernales, an important fishing community at the border with Haiti.

B. PROJECT JUSTIFICATION

1. Problem to be addressed and the present situation

The Dominican Republic has reserved 11.8 percent of its national territory for special management in a system of national parks, scientific reserves, and sanctuaries. Some additional territories receive varying degrees of protection or special management. Such a habitat-based system to preserve marine and wildland resources can create short-term burdens, like direct socio-economic displacements or deferral of contributions to the gross national product. In order to maintain such a system in a developing tropical country, it must be justified compared with alternative land uses. The system must also provide a compensating value to the economy. In the Dominican Republic, displacements and deferrals should be minimized, and universities should initiate training of resource managers skilled in human relations, dispute settlement, and co-management of natural resources.

When displacement is unavoidable, compensatory strategies are necessary. Recommended are the following:

- Alternative lands should be dedicated to intense production and sustainable development (such as the IAD model settlements) with adequate relocation assistance
- The management of tourism and biodiversity in protected areas should broadly distribute among local people the ownership, control, and benefits of service-oriented replacement economies
- Education programmes should be initiated to promote public awareness of the economic products and services of conservation among new and current generations (watershed protection, coastal stabilization, soil conservation, pharmacological opportunities, landscape aesthetics, species diversity and yields).

In terms of economic development, biodiversity conservation produces many compensating values—three are prominent:

- Functioning ecosystems, achieved by watershed protection or coastal stabilization for example, are economically important because they sustain productivity on land or in waters dedicated to intense production, such as agro-ecosystems and mariculture.
- Reserved areas provide natural landscapes and diversity, attracting nature-based tourism.
- Marine reserves and wildlands perpetually provide biodiversity products of increasing value in the global economy that cannot be maintained or generated through any other land use scheme. The products of biodiversity are a major renewable resource that can powerfully fuel social and economic development.

Fundamental to the development problem faced by the proposed project is the fact that realizing these compensating values will require an accurate inventory of the resources to be managed and exploited. The required research programme must be fully Dominicanized in order to be sustainable (meaning that the information base and research processes must be located inside the country), and the results of research must be broadly available to Dominican society, including the local communities living closest to the reserves.

In order for a developing society to maintain its commitment to conservation, the society at large must recognize the way in which livelihoods depend on healthy ecosystems. To achieve this, general programmes of environmental awareness and education directed at all levels of society are needed. More importantly, non-destructive uses of biodiversity must be developed, so that marine and wildland resources are fully incorporated into the economy. In order to guarantee that biodiversity will be preserved, mechanisms must be in place to ensure that the economic and intellectual income generated by the natural resources is proportional to the area used to sustain it. Problems in achieving this latter goal are as follows:

- Although the system of protected areas is admirable in its layout and ecological inclusiveness, no management plans have been developed for the designated natural areas, nor are effective protection programmes in place where wild populations are harvested (such as fisheries). The development of practical management plans is urgently needed so that the unique components of biodiversity survive and increasingly contribute to society.

- Park and reserve boundaries are often vague, adding to local confusion over what is protected and what is open to multiple use and extraction. Boundaries of protected areas must be mapped, surveyed, and designated on the ground in an official way.

- The diversity and distribution of the Hispaniola biota are known only in preliminary form, especially in marine ecosystems. The lack of inventories retards both biodiversity conservation and the marketing of its products.

- There is no biodiversity information system in place for decision-making in management or development. Lacking such a system creates an artificial and unnecessary division between conservation activities and economic development ventures.

- Viable economic alternatives to unsustainable resource use that incorporate local knowledge get insufficient attention.

- Lack of locally relevant environmental education and training stagnates public knowledge about the extraordinary biophysical resources of the area and their ecological relationships.

- Only a minor fraction of the nation's biodiversity has been evaluated for its economically useful properties. There is no mechanism in place for economic

screening, marketing biodiversity products, or returning profits to the coastal zone to offset costs associated with biodiversity conservation.

- The Dominican Republic's institutions of higher learning lack an advanced degree programme to train present and future resource managers in a holistic, integrated fashion (such as merging sociology, economics, and biology).

- Without relevant technical information, sophisticated conservation (such as soil surveys, current aerial photography, hydrologic mapping, inventories of flora and fauna, deforestation rates, and analysis of coastal-terrestrial interactions with and without mangrove systems) is unlikely.

- In degraded parts of otherwise exceptional ecosystems, there is an urgent need for restoration ecology strategies, preferably those in which local people participate for both education and employment.

2. Expected end-of-project situation

The biodiversity information system created by the project will allow rapid assessment of priority areas for protection. For the first time, conservation organisations and government agencies will engage in environmental monitoring. The computerized database network will facilitate management of biodiversity and allow rapid response to environmental emergencies (such as oil accidents). The system will facilitate decision-making by reducing the scope of extended, pre-development impact studies, allowing ventures to proceed in the narrow window of opportunity often crucial for economic success. All information resulting from surveys will be available to the public and private sectors for commercial and development decisions. The same information will be provided to community committees and local NGOs in the primary project areas. NGOs will support the affected parks and reserves and will be responsible for making biodiversity information available to local resource users.

Participation in international database networks will enable repatriation of Dominican data on a regular basis. The network will advance the national inventory by years, providing the baseline for environmental changes since the project began. Local specialists will have on-line access to Dominican and Caribbean data maintained in major international research institutions. A geographic information system (GIS) will be developed to guide resource management decisions nationally and locally. Participating universities and NGOs will generate computerized information files listing research documents relevant to the project for public and private use.

Assessment of ecologically sensitive areas in the Dominican coastal zone will have been completed. Management plans will be in place for the major existing coastal protected areas. Community centres will have been established in two major reserves (anchoring the two extremities of the coastal zone).

An innovative regional buffering programme will have been established for the proposed Samana Bay Biosphere Reserve, including tourism and other economic development components.

A programme of participatory planning will provide a practical means of community involvement in managing the ICDM.

An initial programme in biodiversity screening seeking to target useful products for export or domestic consumption, recommendations for marketing, and proposals for maximum profit sharing and community control will be advanced. Similar analysis will be performed for already domesticated crops (such as yautia, minor forest products, and artisanal fishing), with the intention of reducing or eliminating the environmentally destructive aspects of such production systems.

NGOs will have increased capacity in management and operations, as well as expertise in fund-raising. A conservation fund-raising programme will have been established in the Dominican expatriate community in New York, which is now a major contributor to the national economy.

A programme of community education will be in place producing environmental materials in most media. Community conservation activities, such as the coastal clean-up campaign, will have begun. Community committees will have been established in appropriate segments of the coastal zone to ensure community participation in decisions relating to management, development, and conservation.

Natural features that serve as attractions for tourism will be under sustainable management. Facilities to promote new forms of ecotourism, such as orientation centres to natural areas and guide books, will be available in two community centres.

3. Target beneficiaries

The primary beneficiaries will be those within the natural resource management community committed to people-oriented conservation and those sections of the public which would have been displaced physically or in an employment sense by a more traditional (exclusionary) approach to protected area management. Local communities and their organisations (development, conservation, and education) will receive resources, training, and experience otherwise not available. The national government will enjoy cooperative assistance, new capabilities, and national and international recognition. Tourists and tourist-based services will be assisted directly by the project. Student recipients of environmental scholarships and environmental education will be immediate and primary beneficiaries as well.

Second-order beneficiaries include university and NGO researchers whose professional reputations and employment chances will improve by contributing to a successful master plan for protecting the coastal zone. Similar credibility benefits will accrue to participating government agencies through demonstrated technical competence and new contractual opportunities with private and non-profit sectors.

The general public is the third-level beneficiary, particularly the segment concerned with natural resource conservation in terms of protected areas, restored ecosystems, healthier coasts and fisheries, and the services (such as protected ground water, native flora and fauna survival, reduced soil erosion, biodiversity, and sustainable development) rendered by the project. The nation as a whole benefits from a new model of ecologically and socially sustainable development that minimizes

the burdens of economic disruption to tax payers and farmers. All these benefits extend to the next generation of Dominican citizens.

4. Project strategy

The long-term goal of the project is to protect Dominican coastal biodiversity, thus, the project strategy explores a model of coastal zone management which is participatory, inclusive, and based on sustainable economic alternatives to current unsustainable production practices. This ICDM model will require extensive multi-level capacity-building and will be developed for three pilot areas—Jaragua, Samana, Los Haitises—with the expectation of subsequent adaptation to the rest of the Dominican coastal zone, pending evaluation of project results.

The project will enhance the overall capacity of participants at all levels through an approach primarily relying on non-formal education. A key feature of this approach is its integrated character involving public and private sectors, NGOs, universities, and local communities. The coastal zone of the Dominican Republic is subject to intense development and settlement pressure, so capacity building will foster new skills, values, and sensitivities among lay communities and specialists, all of whose livelihoods influence the coastal environment. As immediate and intermediate steps, the project will improve the skill levels of NGOs, universities, and government agencies in resource management and planning, in fund-raising and networking, in map reading and overlaying, in resource inventory and automation, in monitoring and evaluation, in conservation leadership and outreach, and in documentation and instruction. These are the formal skills which will be learned in classrooms, seminars, in-service training, and through various environmental education media.

Community capacity to manage local environmental resources will expand as the goals of each sub-project are achieved. The project will enrich local knowledge of sustainable farming, fishing, reef maintenance, mangrove use, and forestry, using technical expertise from NGOs, universities, and government agencies. It will use "farmer-to-farmer" teaching techniques to spread soil conservation and intercropping strategies that diminish sediment run-off into ground and surface waters. Where additional expertise is needed, outside consultants will be hired, or farmer-to-farmer assistance might come from farmers in other countries. At other levels, topical networking and expert-to-expert models will be followed within the country (bringing technicians from Monte Cristi to Jaragua and Samana) and between countries (Cubans and Dominicans with shared marine toxicology interests, Mexicans and Dominicans with shared buffer zone concerns, and U.S., Caribbean, and Dominican experts with shared objectives in conservation and sustainable development).

The participation of both public and private tourist interests will be encouraged in several ways. Environmentally friendly tourism will be encouraged through facility and service upgrading in Jaragua and Samana via orientation/visitor centres; through management guidelines for selected resources, species, and ecosystems (such as whales in Samana, green turtles in Jaragua, bats and archaeological relics in Los Haitises, and manatees in Monte Cristi); and through concerted efforts in each of the above settings to engage local residents in active protection of wildlife and habitats.

Fulfillment of the proposed project requires simultaneous activities among project actors to be clearly outlined and coordinated according to project objectives. The strategy for fulfilling the objectives is divided into three phases roughly corresponding to the three years of GEF funding. Each project component will put together a specific timeline as part of the Work Plan. The Work Plan will also have the following series of strategic guidelines for the operation of each phase.

Project strategy guidelines

- The overarching goal of this project is the capacity-building of local and non-local institutions for the sustainable management of coastal zone biodiversity in light of economic development.

- Capacity-building yields management plans with enough flexibility to adapt to evolving conditions.

- Successful management planning requires multi-level empowerment through the participation of immediate resource users and other relevant stakeholders such as local communities, government agencies, NGOs, universities, and the private sector.

- Sustainable management planning requires development of research-driven alternatives to offset any short-term losses by affected resource users.

- Research builds on local knowledge systems and is interdisciplinary in practice, with the public and private sectors sharing in its process and results.

- Effective management of biodiversity in the national coastal zone follows from successful management in the coastal subregions coordinated through this project and the incorporation of these successes into national policy and institutional frameworks.

- Biological sustainability requires financial sustainability to the benefit of local resource-users. Such benefits contribute to national development goals.

Strategic planning—Phase I

Strategic planning dominates Phase I and is essential to long-term capacity building. Participating project members and local community group partners will conduct on a case-by-case basis an assessment of critical research needs, an inventory of existing baseline data and equipment, development of research designs, and clarification of how the research will contribute to the management planning of Phase II. The strategic plan resulting from this process will be reviewed at the end of years one and two, and it will be adapted to evolving circumstances accordingly. As the project advances, strategic planning attention will refocus on the long-term financial security of project objectives to ensure sustained effort and organisation beyond three years.

The process of strategic planning will be successful to the extent that it is participatory. Among NGOs, this means active involvement of membership and community partners in the design stage of strategic plans. Among parastatals and university groups, it means structured interaction

among researchers, with proper representation from resource users. At the community level, it means consulting with local conservation committees (initiating them first if necessary) on how research will be designed, implemented, and shared. Other stakeholders to be consulted regularly include representatives from churches, the business community, educational institutions, and government agencies with mandates in natural resource management. Participation should intensify throughout the life of the project, contribute to project objectives in ways that can be documented, and encourage new conservation interests developed during the project phases.

Examples of activities to be elaborated in the strategic plans of participating members:

- Establishing permanent base operations in the areas of Jaragua and Samana/Los Haitises
- Gathering data in diverse areas, including farming and fishing, numbers of tourists by subregion, species inventories, soil surveys, landscape analysis, rates of soil erosion, water chemistry analysis, aerial photography and interpretation, taxonomic and type locality descriptions, socioeconomic and demographic baselines, attitude surveys, organisational inventories by subregion, and ongoing environmental education and media kit opportunities
- Consolidating existing maps, and bio-physical, socio-cultural and other relevant data
- Planning internship programmes for environmental organisations focusing on coastal zone management
- Reviewing curricula related to the environment in Dominican universities
- Establishing an in-country scholarship fund
- Establishing a collaborative programme for fund-raising with the private sector of the expatriate community.
- Beginning the design/construction of subregional community resource centres
- Joining international database networks
- Establishing computerized systems for biological information storage and retrieval
- Establishing initial GIS for management planning and monitoring.

Many activities from Phase I will continue in Phases II and III despite their emphasis under strategic planning.

Adaptive management planning and development—Phase II

During the second year, the focus shifts to developing management planning processes flexible enough to adapt to monitoring results and other outputs from Phase I activities. Draft management plans will be developed in Phase II for the subregions of Los Haitises and Jaragua National Park, as well as the proposed Samana Bay Biosphere Reserve. The plans will be further refined and field tested during Phase III, with the long-term goal of influencing management planning throughout the coastal zone in cooperation with ONAPLAN.

The data assembled during Phase I strategic planning bears a direct relationship to the management planning of Phase II. It is expected that the unusual breadth of data, equipment, facilities, and institutional capacity occurring in Phase I will make possible management planning unprecedented in this and most other Caribbean countries. Moreover, each subregional management plan will benefit from the simultaneous development of parallel planning processes in other subregions which will be communicated through project member collaboration. Put differently, each management plan will learn from the other plans with respect to community participation, the effective use of scientific research, and local institution building among resource user organisations.

Successful management planning—both as a series of products and as a process—is the centrepiece of Phase II. Building on management sophistication already operating in the coastal zone, it will add new dimensions. It will incorporate scientific research, broadly defined, in the respective plans. It will give different stakeholders—tourists, private business, fishing and farming organisations, public planners and park managers, university researchers and environmentalists—a voice in how the coastal habitat should be protected as well as developed. Such inclusive input will increase the likelihood that key lessons learned from other coastal zone management efforts in the Antilles and Central America are included in the management plan.

Institutional capacity will benefit greatly from the selective use of geoinformation technology and methodology. It will permit the integrated use of biophysical, social, and demographic data in management. Because of its expense, however, GIS will be initially developed in one of the subregional focus areas (Los Haitises National Park). Based on its performance there, project members can evaluate its application and benefits for the other protected areas. Making the GIS platform accessible to a wide cross-section of stakeholders other than scientists is a process that will require training and capacity building of a new kind. The management planning process of Phase II will adapt to changing circumstances revealed by GIS exercises as well as by feedback from surveys of community attitudes and values.

Sustainable Development—Phase III

The adaptive management plans built on strategic planning must establish a sustainable base in terms of i) financial permanence, ii) programmatic acceptability, iii) community participation, and iv) policy dialogue and reform. These elements form the core agenda of Phase III.

Financial permanence

It is a basic assumption of this project that biological sustainability requires financial sustainability. Early in Phase III, the member organisations of the project will dedicate time to funding renewal based on project evaluation and future needs assessment. Funding will be sought from the private, public, and non-profit sectors in an effort to amplify the resource base for future planning and protection of critical habitat. An accounting will be made of the in-kind contributions of institutions and organisations sympathetic to the project objectives. Institutional cost-recovery mechanisms will also be explored for long-term support of coastal zone management and biodiversity protection.

Two principles guide this strategy. One is that Dominican NGOs devoted to conservation currently allocate major amounts of staff time to fund-raising to survive at current size and commitment. Programme delivery and growth is restricted by indeterminant funding. GEF funds offer significant environmental capital which will free NGOs to concentrate on research, services, and policy formulation. This freedom, in turn, increases the likelihood that GEF initiatives, subject to performance-based evaluations, will have continuity and permanence rather than interruptions dictated by financial short-falls.

The second principle is leveraging. The GEF should serve as a magnet for additional funding from the private, non-profit, and public sectors. This will continue as far as principle one above proves itself and diverse funding sources concerned with protecting coastal resources are secured. Such funds may take the form of "green investments" by commerce and industry sources, an environmental trust fund capitalised from tourist check-offs, entrance fees and donations or complementary funding for allied coastal projects from universities, and bilateral or multilateral funding sources.

Since the economy of the country strongly depends on tourism, and tourism has great environmental and economic impacts on the coastal zone, the establishment of a trust fund fed in part by the tourism sector is one way to develop sustainability. Several innovative ways to develop mechanisms for environmental activities are being developed by different international organisations, including IUCN, which in the near future could also become important in supporting the project.

Programmatic acceptability

Beyond financial security, the project's objectives must be institutionalized to ensure sustainability. Institutionalization will be both formal and informal. Formally, it will mean the creation of networks and organisations among stakeholders (such as the Grupo Ecologico de Bayaguana and the Committee Zonal de la Pastoral Social in the Los Haitises region), as well as strengthening of the public sector actors committed to conservation and sustainable development (such as the National Directorate of Parks and the Dominican National MAB Committee). Informally, it means building networks of environmental groups, private sector associations, and community groups eager to receive greater capacity, training, and empowerment for their parts in managing the coastal zone.

Particularly challenging will be local acceptance of the research programmes carried out by participating university and NGO personnel. This will be accomplished by attention to indigenous knowledge as a legitimate basis for decision-making and local resource management. Interdisciplinary science committed to participatory research and wide circulation of outputs will be encouraged. And it will be achieved by elevating the principle of "Dominicanized development"—the repatriation of research results pertinent to the project and stored abroad, as well as the honouring of domestic capacity building when it comes to skill development and management expertise. Ongoing monitoring of project results will supplement programme acceptability as well as community support.

Community participation

Sustainable planning and management will build on the participation of local resource users and other stakeholders in Phase III using two strategies. One reduces the risks of sustainable development, particularly when new management plans emerge with possible short-term costs to resource-dependent communities. The other appeals to beliefs and values, ensuring that resource users and other stakeholders understand and own the project.

In the first case, a research investment will be made to develop substitute economic activities to buffer any short-term losses suffered by resource users. Possible alternative strategies will include resource partitioning (culling, transect farming, and regulated extraction), paid conservation/restoration projects, and non-primary sector job replacement such as eco-tourism, artisanal work, or employment generated through "green investing."

In the second case, a variety of participatory measures ranging from farmer-to-farmer training, primary school curricula innovations featuring coastal zone conservation, curriculum integration across university natural resource courses, and targeted training of developers, FORESTA, park guards, and whale-watch concessionaires, among others. A final component of the community support effort will be the preparation of media packets and ECO-video productions generated by local user groups illustrating their activities in the projects and the processes leading to their empowerment.

Policy dialogue and reform

The shared objective of all project participants is to improve public policy directed at coastal zone management in the Dominican Republic. All participants share the concern that their respective field efforts contribute to this improvement process. Several means will be used to achieve this end. First, each project will document its fieldwork and results on standardized performance forms easily accessible to policy makers. Second, policy makers will have input into subprojects through periodic agency meetings, field visits, and monitoring and evaluation consultations. Third, project participant organisations will establish Memoranda of Agreement (Convenios) between NGOs, universities, and Government agencies to increase the opportunity for two-way communication and feedback. Finally, the Project Coordinator will regularly inform the Inter-institutional Coordinating Committee (IICC), ONAPLAN, and the National Commission for the Follow-up of the Rio Agreements of project accomplishments and discoveries which bear on environmental and development policies relevant to this project and its long-term goals. It is expected that, as a result of this project, two significant

interface organisations between the public and the Dominican Government (NGOs and Universities) will play a more dependable and respected role in natural resource policy formulation in protected areas, coastal zone management, biodiversity enhancement in ecotourism, unprotected zones, reforestation, and private development in environmentally sensitive areas.

5. Reasons for assistance from UNDP

When it established the existing system of protected areas, the Dominican Government limited immediate exploitation of a major portion of its biological resource base in order to promote non-destructive uses of biodiversity that would support commercial activity over a longer term. Although developing non-destructive use of marine and wildland biodiversity is expected to be highly beneficial economically, it forces deferral of short-term contributions to the GNP. Without GEF support, the Government could not undertake the systematic inventory and management of its marine and wildland resources, provide the necessary institutional strengthening and training, promote alternative strategies for the commercial use of biodiversity products, nor offer appropriate incentives for the communities surrounding protected areas to maintain ecosystem and species diversity. UNDP/GEF assistance makes it possible for the Dominican Republic to become a showcase for socially sound environmental protection in the Caribbean basin.

6. Special considerations

In terms of its topography, the island of Hispaniola is the most complex geologic structure in the Caribbean Basin. Unsurpassed relief gives it an extraordinary diversity of habitats and species, which makes it globally significant for biodiversity. The same geographic complexity poses severe management problems because vulnerable environmental areas occur in proximity to useful resources for human exploitation. Management of the resulting resource mosaic will employ a hierarchy of protected areas, management zones, and areas for direct exploitation, using an innovative regional buffering strategy. The establishment of system-wide buffering and *zones of cooperation* will have high demonstration and replication value in the coastal zones of many Caribbean countries.

Preliminary research carried out by two of the participating universities shows gender differences in attitude about and behaviour towards the environment. Thus, socio-economic analysis carried out under the project will explicitly address the role of women in its development and conservation strategy.

7. Coordination arrangements

The project will be implemented by a variety of organisations under the supervision and coordination of a Management Committee comprising representatives of Government, implementing NGOs, the Project Coordinator, a high-level project advisor hired by the project, and representatives of local resource-users from the three subregions and UNDP. A Project Coordination Unit (a Project Coordinator, a high-level project advisor, and administrative support staff) will manage the project on a daily basis.

The IICC will provide periodic oversight and coordination at the national and international levels. The IICC will consist of a representative from Government, UNDP, and an international NGO with expertise in coastal zone biodiversity management; additional representatives from the local communities will be included in the future as the project develops and a single representative organisation emerges in each of the areas. The IICC will be the direct link to the National Commission to Follow-up the Rio Agreements and will thus provide the Commission with information and policy recommendations. It will also foster short- and long-term cross-sectoral support for the project. The project is structured to ensure better collaboration and coordination between federal and local government units with coastal zone authority.

The formal government counterpart of the project is the Technical Secretary of the Presidency (STP) through ONAPLAN. Due to the complexity of the issues and the high number of government and non-government agencies that are directly and indirectly involved in the project, the IICC's link with the National Commission for the Follow-up of the Rio Agreements will ensure broad-based representation and will be the focal point for policy recommendations.

ONAPLAN and the Subsecretariat of Natural Resources (SURENA) will participate directly in the project on a daily basis, while the relevant government agencies will participate as appropriate in the execution of subcontracts. Efforts will be made to incorporate appropriate activities of the project into specific programmes being implemented locally by corresponding government agencies. The National Directorate of Parks falls into this latter category since the project includes significant work in and around some of the most important protected areas of the country. The Ministry of Education, with its strategy to improve education at the national level through the Ten Year Education Plan (supported by UNDP and financed by the World Bank), will be involved in the activities related to environmental education and marine coastal development.

This strategy for multiagency cooperation relies on the promotion of agreements and memoranda of understanding between the project's participant organisations and key counterparts in the public and private sectors (such as Army Cartographic Institute, the National Directorate of Parks, and the Dominican Chamber of Commerce of New York). For example, the Ministry of Tourism will participate both in terms of policy recommendations through the National Commission as well as in the implementation of various subcontracts.

The Samana Region is already an extremely important tourist area, but the Dominican Government is also strongly committed to developing the Barahona-Pedernales Region (where Jaragua National Park is located). Close cooperation between the private sector, the Ministry of Tourism, SURENA, and the project is essential. In the case of Jaragua and, in part, Samana, the project comes at precisely the right moment to make both proper management of coastal marine resources and sustainable development possible. A careful and integral planning of tourism development with the public and private sectors would prevent negative impact and result in more mutually beneficial sustainable development.

Participation of agency counterparts, community groups, and private associations will be encouraged through workshops, seminars, and in-service training, as well as through the involvement of public and private stakeholders in monitoring and evaluation.

The project's implementation strategy involves the participation of a considerable number of institutions, organisations, and NGOs, in particular. This strategy will ensure active participation by non-community stakeholders in all phases of project execution, but will also require careful monitoring to guarantee the fulfillment of objectives and the inclusion of community groups in the principal project areas. To facilitate monitoring, the objectives have been divided into various small subcontracts. Each of the subcontracts can also be divided into phases. Close monitoring will permit quantitative and qualitative evaluation of each phase and will be subcontracted so that subsequent phases or subcontracts depend on successful completion of the initial ones.

Substantive monitoring will be carried out by the field office through the Programme Officer, who, through periodic field visits, will ensure implementation. He or she will participate in the meetings of the Management Committee, in order to assist periodic planning of project components, and will ensure coordination of the project with the GEF Small Grants Programme and activities related to Capacity 21.

At the same time, Coastal Resources Center of Rhode Island, an internationally recognized organisation with extensive experience in participatory management of common coastal resources, has been chosen to provide periodic technical support directly to the principal NGOs and pilot areas.

Finally, the monitoring programme will entail quarterly or semiannual progress reporting and conferencing with the Project Coordinator throughout the life of the project. Regular tripartite meetings will be held where all team participants will discuss peer reviews, progress towards goals, any emerging adaptations, and subcontract renewal reviews. A review of each subproject together with local constituencies identified as project beneficiaries will be held at least once during the project to invite grassroots feedback and design modifications.

8. Counterpart support capacity

The Republic's 1992-1996 Country Programme puts top priorities on planning and development of the coastal zone in ways that achieve sustainable resource use.

Several of the agencies in the section describing the Institutional Framework for Subsector have departments for surveys and data analysis. They receive additional technical support from the Military Cartographic Institute, the University Geographic Institute of UASD, and the Department of Inventories.

Basic research on marine resources is conducted by the Center for Investigation of Marine Biology (CIBIMA), a government institute administered through UASD. It cooperates with the Department of Fisheries Resources and the National Aquarium. Botanical research and the national floristic inventory are centered in the National Herbarium in the National Botanical Garden of Santo Domingo, a government-supported institution. The National Zoological Park conducts research and conservation emphasizing terrestrial animals. The National Museum of Natural History has building space to maintain reference collections of the Dominican biota.

Non-governmental organisations have been formed in regions with significant protected areas to support local involvement in conservation, community development, and development of

management plans. The most important of such groups for coastal projects are the CEBSE in the northeast and Grupo Jaragua in the southeast part of the country. Each has a high level of technical expertise for research, park management, and socio-economic activity. Their membership includes personnel from the technical agencies above, representatives from local associations of tourism, and community groups, such as fishermen's associations.

C. DEVELOPMENT OBJECTIVE

The objective of this project is to preserve Dominican coastal biodiversity and ecosystems by facilitating their non-destructive economic uses. This will require the development of an innovative, multisectoral model of coastal zone management based on the participation of all stakeholders. This model will require extensive multilevel capacity building and will be developed for three pilot areas—Jaragua, Samana, Los Haitises—with the intention to adapt it to the rest of the Dominican coastal zone pending evaluation of the results. Sustainable coastal zone management will require broad participatory programmes of planning, resource assessment, career development, research, public education, development of new products, and marketing.

D. IMMEDIATE OBJECTIVES, OUTPUTS, AND ACTIVITIES

IMMEDIATE OBJECTIVE 1

To strengthen the capacity of governmental, non-governmental, university, and private sector organisations to manage the coastal zone by providing structure and improving human and technical capabilities for conserving biodiversity while pursuing economic development. This objective also involves improving coordination between environmental and development programmes.

Output 1.1

Improved operating procedures in environmental organisations with strategic plans in operation.

Activities for Output 1.1

1.1.1 Develop a programme of training and operational planning in participating organisations to improve their efficacy.

1.1.2 Establish an internship programme for members of NGOs and other environmental organisations to gain experience in fund-raising and NGO management.

1.1.3 Enhance the community grassroots capacity for natural resource management, including research, training, planning and evaluation and monitoring components, with particular attention to the role of women.

Output 1.2

Enhance technical capacity of participating institutions.

Activities for Output 1.2

1.2.1 Provide technical equipment that will upgrade existing programmes and initiate innovative project activities.

Output 1.3

Increased expertise of specialists in participating institutions and increased numbers of environmentally trained personnel.

Activities for Output 1.3

1.3.1 Organize a programme of short courses and workshops on field techniques, systematics of diverse groups of Dominican biota, database software, electronic networks for information sharing, environmental interpretation, and other special skills needed by project personnel and local representatives.

1.3.2 Review the existing environment-related graduate curricula (based on a multi-institutional seminar attended by NGOs, universities, and relevant government agencies) at the Instituto Tecnológico de Santo Domingo (INTEC), UASD, and UNPHU and recommend curriculum improvements, including credit exchange, that will ensure a comprehensive programme in environmental training.

1.3.3 Establish a cross-registration programme (the nucleus of an eventual Masters Degree programme) in resource management at INTEC, UASD, and UNPHU.

1.3.4 Establish a student placement programme that will match local environmental education needs to international scholarship programmes.

1.3.5 Establish a scholarship fund in the country to strengthen the local graduate environmental studies programmes, reserving 50 percent of scholarships for women and giving strong preference to local community residents showing commitment to conservation and sustainable development.

1.3.6 Establish a programme of small "grants-in-aid" (less than US $1000 per grant) for students and young professionals to foster innovative ideas for research and conservation useful to the project, while supporting professional development, reserving 50 percent of scholarships for women.

Output 1.4

Establishment of permanent bases of operation in the coastal zone for appropriate institutions.

Activities for Output 1.4

1.4.1 Construct community centres in the vicinities of the Samana Bay/Los Haitises National Park and Jaragua National Park to improve the knowledge of the community about marine coastal affairs, consulting with the local community on their structure and use.

Output 1.5

Creation of private sector partnership to promote independent financing of training, public education, and environmentally sensitive economic ventures.

Activities for Output 1.5

1.5.1 In cooperation with the private sector (Dominican-U.S. Chamber of Commerce and similar business and civic linking organisations), raise funds among expatriate Dominicans to support natural resource scholarships and a region-specific revolving loan fund for "green business and job development."

1.5.2 Provide training and information management skills to governmental and non-governmental institutions to enhance their independence and institutional sustainability.

1.5.3 Promote ecologically sound investment in the development of the coastal zone, emphasizing the joint participation of private sector, community, and government actors working together.

1.5.4 Establish a coordinating programme to seek out commercial users of biodiversity information (such as the pharmaceutical and medical industries) and develop contracting mechanisms to ensure a financial return to the GNP and to natural areas management.

IMMEDIATE OBJECTIVE 2

To establish a research programme in-country to support coastal zone management, sustainable resource development, biodiversity conservation, and continuous long-term environmental monitoring.

Output 2.1

Recovery of existing information on biodiversity and ecosystems in the Dominican coastal zone.

Activities for Output 2.1

2.1.1 Establish a bibliographic database on coastal zone resources accessible to government agencies, private developers, and conservation organisations.

2.1.2 Transfer catalogued systematic and distributional data on Dominican biota from foreign institutions to Dominican institutions through down-loading and collection-study trips at foreign institutions that hold extensive data of Dominican origin.

2.1.3 Participate in international database networks in order to establish an effective means of continuous data repatriation and community empowerment.

2.1.4 Consolidate and update existing maps and biophysical data in a geographic information system available to both conservation and economic planners.

Output 2.2

Databases on distribution, systematics, and the conservation status of plant and animal species in the coastal zone. Databases will be organized by taxonomic groups and ecosystems as appropriate to the organisation of technical specialists.

Activities for Output 2.2

2.2.1 Establish computerized systems for biological collection management and information storage and retrieval at participating institutions.

2.2.2 Conduct biodiversity inventories in the coastal zone including collection of specimens with associated geographic and ecological data through a collaborative effort involving scientists, NGOs, and community representatives.

2.2.3 Establish a coordinated programme of continuous environmental monitoring based on perpetual biological inventories and participation in database networks. Establish three long-term plots for monitoring—mangrove forest, natural forest, and agroecosystem plots.

2.2.4 Establish, through research and training of Dominican specialists (recruited, where possible, from coastal zone communities) in appropriate international research centres, taxonomic and type-locality databases as a basis for

critically evaluating and processing the information generated in 2.2.1 and 2.2.2.

2.2.5 Establish a GIS to be shared among universities, NGOs, government agencies, and local communities to serve as a basis for management and for mitigation of development and conservation planning decisions.

2.2.6 Survey vegetation associations, ecological communities, soils, water resources and landscape features in selected areas using remote sensing, aerial photography, and on-the-ground verification.

2.2.7 Develop a socioeconomic and demographic baseline of the area encompassing Samana Peninsula, the Bajo Yuna Watershed, and the Los Haitises National Park region to complement data described in 2.2.5 and 2.2.6.

2.2.8 Analyze the potential contribution that land resettlement decisions can make to conservation and sustainable development in the Los Haitises/Samana Bay region, after pursuing active input by the existing or potential residents of these resettlements.

2.2.9 Analyze local community values and attitudes on conservation and sustainable development to increase environmental and natural resource awareness in the Los Haitises/Samana Bay region, with interpretive assistance by those communities and follow-up seminars sharing the research findings with broad cross-sections of their residents.

Output 2.3

A comprehensive classification of Dominican coastal species and natural areas, according to (i) the conservation status of species (endangered, threatened), (ii) the ecological importance of areas, such as sensitive ecosystems and critical habitats, or (iii) other special values to biodiversity.

Activities for Output 2.3

2.3.1 Establish and implement a conservation specialist committee with task groups for coastal ecosystems and for major subgroups of Dominican flora and fauna, similar to the specialist committees of IUCN. Review by specialist task groups (including community representatives), every twelve months the accumulated information resulting from activities 2.2.2 to 2.2.3 on distribution, abundance, and change in status of species warranting special management consideration. Recommend corrective action, as necessary, to national and international organisations involved in species protection and in implementation of species recovery plans. Review by the ecosystem specialist committee, every twelve months, data generated by activities 2.2.2, 2.2.3,

and 2.2.6, leading to identification of areas of highest endemism and delineation of biologically sensitive ecosystems.

2.3.2 Seek designation of appropriate units for protection or management in the system of Biosphere Reserves, National Parks, Scientific Reserves, Protected Areas, and other special management units.

Output 2.4

A comprehensive information base for the support of sustainable development in the Dominican coastal zone.

Activities for Output 2.4

2.4.1 Initiate social and environmental assessment guidelines using an adaptive impact assessment strategy (interactive assessments at multiple points in the project life) to evaluate the potential effects of both traditional and non-traditional coastal zone developments.

2.4.2 Organize events including courses, seminars, and workshops on evaluation of coastal and marine environmental impact.

IMMEDIATE OBJECTIVE 3

To establish a coastal zone management policy for the Dominican Republic, initially establishing regional management plans in selected areas as model projects for extension of regional planning to the remainder of the coastal zone.

Output 3.1

Establishment of regional management plans with significant community input in the Jaragua Region and in the proposed Biosphere Reserve in the Samana Bay Region.

Activities for Output 3.1

3.1.1 Complete the basic inventories of the Samana Bay Region and in Jaragua National Park by end of second project year.

3.1.2 Complete the management plan for the proposed Samana Biosphere Reserve by end of third project year.

3.1.3 Enhance the existing management plan for Jaragua National Park by extending planning to the Park's marine zone.

Output 3.2

Establishment of a coastal zone management policy.

Activities for Output 3.2

3.2.1 Extend appropriate components of the recently completed Haitises Management Plan to adjacent marine, coastal, and estuarine zones in the northern Dominican Republic, shifting the proposed buffer zone to a more inclusive regional scale.

3.2.2 Apply appropriate marine components of the Samana and Jaragua management plans to the Dominican southern coast, emphasizing the southwestern fishing region.

3.2.3 In collaboration with ONAPLAN, target additional sections of the coastal zone in the second half of the project for extension of regional planning with continuing commitment to local participation.

IMMEDIATE OBJECTIVE 4

In collaboration with community organisations, establish appropriate mechanisms of improving public awareness of biodiversity, its relationship to human welfare, and its significance as a basis for sustained economic activity.

Output 4.1

Encourage community involvement, responsibility, and control through public education programmes that increase local, regional, and national awareness of biodiversity and conservation issues.

Activities for Output 4.1

4.1.1 Increase the numbers of radio programmes, museum exhibits, travelling exhibitions, and films and videos dealing with environmental issues.

4.1.2 Establish programmes for interpretative centres in Samana and Jaragua community centres created in activity 1.4.1.

4.1.3 Establish a broad programme of environmental education in communities that will be influenced directly by the establishment of biological reserves.

4.1.4 Develop media kits for continuing press coverage of project activities and progress (such as conservation scholarship awards, revolving loan fund progress, fund raising through "tourist check-offs" and private conservation remittance programmes).

4.1.5 Develop a series of popular field guides and booklets on Dominican flora and fauna directed at both tourists and the public (funding from foreign NGOs will be coordinated by CMC/WWF).

IMMEDIATE OBJECTIVE 5

Because authentic community participation in all facets of this GEF project is of overriding importance, develop and implement effective mechanisms for the participation of local communities in conservation, planning, and action.

Output 5.1

Elevate community participation, broadly defined, to a preeminent place throughout the life of the project, cross-cutting each of the prior four objectives. Ensure that local communities are empowered in the execution of each appropriate activity.

Output 5.2

Undertake, in addition, several additional activities intended to guarantee the beneficial place of local community groups and members in the on-going resource management planning of coastal resources in the Dominican Republic.

Activities for Output 5.2

5.2.1 Generate an experimental base for the process of participative planning (bottom up) in the design of biodiversity conservation as an integral part of planning activities in Immediate Objective 3.

5.2.2 Establish and integrate local support committees for the Samana Bay Biosphere Reserve.

5.2.3 Integrate local communities in the development of ecotourism in the Samana and Jaragua regions.

5.2.4 Develop a participatory long-term socioeconomic action plan.

5.2.5 Facilitate farmer-to-farmer training in sustainable agro-ecology, agroforestry, and conservation-based coastal resource harvesting, as well as farmer attendance in practical workshops on such topics by non-local technicians.

5.2.6 Commence the project with a pre-implementation workshop including representatives of all participating government agencies, NGOs, universities, UNDP, and coastal zone communities whose livelihoods will be affected by the knowledge and policy recommendations growing out of the project.

5.2.7 Provide on-the-job training for existing park and refuge personnel in dispute settlement, environmental education, and project evaluation.

E. INPUTS

UNDP will provide international consultants in strategic environmental planning (36 m/m) and terrestrial and marine protected area planning (16 m/m); national and technical project coordinators (72 m/m); local consultants in protected areas management and planning (36 m/m); subcontracts including demonstration projects, biodiversity inventories, data base creation, environmental education, ecosystem research, socio-economic research, promotion of community participation, and peasant-to-peasant agriculture; scientific, logistical, and general office equipment; and fellowships and in-service training.

F. RISKS

There are three principle risks associated with the project, each of which should be discussed candidly at annual project-monitoring workshops. These are:

- That local resource-dependent communities of the Dominican coastal zone will experience a net loss of livelihood in the short run due to recommendations made by project participants, which will affect their commitment to the project's objectives.

- That participation and empowerment of community members will not be successfully addressed by implementing agents given the need to simultaneously demonstrate successful implementation of activities and adjust the pace and rhythm of implementation to the priorities and developing capabilities of community members.

- That the development of truly participatory processes may require more time than originally planned, and therefore the project will not accomplish its goals within a three-year time frame. The development of this project has been a long process that allowed ideas, goals, and objectives to mature adequately. The project has been carefully scoped to permit accomplishment of its goals within three years from the time of actual initiation of implementation (field installation of equipment, contracting of key experts and personnel). Delays in implementation will be carefully analyzed and evaluated during implementation and during the annual workshops. Corrective measures will be identified and the appropriate actions taken to ensure maximum impact within the project scope. This may include rephasing of activities and resources to achieve a longer project implementation period (for example, from three to five years).

G. PRIOR OBLIGATIONS AND PREREQUISITES

1. Prior obligations

None.

2. Prerequisites

The Government will designate counterpart teams in the Government-related institutions charged with implementation of activities.

H. PROJECT REVIEW, REPORTING, AND EVALUATION

The project will be subject to tripartite review (joint review by representatives of the Government, UNDP, and the multi-agency commission) at least once every 12 months, the first such meeting to be held within the first 12 months of the start of full implementation. The senior project officer of the United Nations Executing Agency shall prepare and submit to each review meeting a Project Performance Evaluation Report (PPER). Additional PPERs may be requested, if necessary, during the project.

A project terminal report will be prepared for consideration at the terminal tripartite review meeting. It shall be prepared in draft sufficiently in advance to allow review and technical clearance by the Executing Agency at least four months prior to the terminal tripartite review.

I. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Agreement between the Government of the Dominican Republic and the United Nations Development Programme, signed by the parties on 11 of June 1974. The host country Implementing Agency shall, for the purpose of the Standard Basic Agreement, refer to the government co-operating agency described in that Agreement.

J. BUDGET

The budget for the project is attached.

Project Budget

COUNTRY :	DATE PRINTED: 02/08/94	PAGE 1
PROJECT NUMBER : DOM/92/G31/A/93/99	SHADOW BUDGET	LAST REV: 01/02/94
PROJECT TITLE : CONSERVACION Y MANEJO DE LA BIODIVERSIDAD EN LA ZONA COSTERA DE LA REPUBLICA DOMINICANA		

PROJECT BUDGET COVERING UNDP CONTRIBUTION (in U.S. dollars)

PROJECT COMPONENTS	TOTAL AMT M/M	1993 AMT M/M	1994 AMT M/M	1995 AMT M/M	1996 AMT M/M	1997 AMT M/M
*010 PROJECT PERSONNEL						
*11 Experts:						
011-001 COORDINADOR INTERNACIONAL	252,000		63,000	84,000	84,000	21,000
	36.0		9.0	12.0	12.0	3.0
011-051 CONSULTOR BIODIVERSIDAD	156,000		60,000	60,000	36,000	
	10.5		4.0	4.0	2.5	
011-052 CONSULTOR ASUNTOS MARINOS	84,000		30,000	30,000	24,000	
	8.0		3.0	3.0	2.0	
011-058 CONSULTORES POR DETERMINAR	109,020		51,340	31,340	26,340	
	9.5		6.0	2.0	1.5	
11-99 Subtotal (*)	601,020		204,340	205,340	170,340	21,000
	64.0		22.0	21.0	18.0	3.0
*13 Admin support personnel:						
013-001 ASISTENTE ADMINISTRATIVA	28,800		8,000	9,600	9,600	1,600
013-002 CONTABLE	28,800		8,000	9,600	9,600	1,600
13-99 Subtotal (*)	57,600		16,000	19,200	19,200	3,200
*14 UN Volunteers:						
014-000 VOLUNTARIO NU	60,000		22,500	30,000	7,500	
	24.0		9.0	12.0	3.0	
14-99 Subtotal (*)	60,000		22,500	30,000	7,500	
	24.0		9.0	12.0	3.0	
*15 Official travel:						
015-000 Viajes locales	10,400		4,000	4,000	2,400	
15-99 Subtotal (*)	10,400		4,000	4,000	2,400	
*16 Mission costs:						
016-000 MISIONES	40,000		20,000	10,000	10,000	
16-99 Subtotal (*)	40,000		20,000	10,000	10,000	

COUNTRY :	DATE PRINTED: 02/08/94	PAGE 2
PROJECT NUMBER : DOM/92/G31/A/93/99	SHADOW BUDGET	LAST REV: 01/02/94
PROJECT TITLE : CONSERVACION Y MANEJO DE LA BIODIVERSIDAD EN LA ZONA COSTERA DE LA REPUBLICA DOMINICANA		

PROJECT BUDGET COVERING UNDP CONTRIBUTION (in U.S. dollars)

PROJECT COMPONENTS	TOTAL AMT M/M	1993 AMT M/M	1994 AMT M/M	1995 AMT M/M	1996 AMT M/M	1997 AMT M/M
*17 National Professionals:						
017-001 COORDINADOR NACIONAL	72,000		20,000	24,000	24,000	4,000
	36.0		10.0	12.0	12.0	2.0
017-002 COORDINADOR TECNICO CEBSE	43,200		12,000	14,400	14,400	2,400
	36.0		10.0	12.0	12.0	2.0
017-003 ESP MANEJO AREAS Y PLANES	43,200		12,000	14,400	14,400	2,400
	36.0		10.0	12.0	12.0	2.0
017-058 ESPECIALISTAS CORTO PLAZO	49,000		15,000	19,000	10,000	5,000
	34.0		9.0	12.0	10.0	3.0
17-99 Subtotal (*)	207,400		59,000	71,800	62,800	13,800
	142.0		39.0	48.0	46.0	9.0
019 COMPONENT TOTAL (**)	976,420		325,840	340,340	272,240	38,000
	230.0		70.0	81.0	67.0	12.0
*020 SUBCONTRACTS						
021 001 SAMANA PRO.SOCIO PARTICIP.	75,000		25,000	25,000	25,000	
021 002 SAMANA - Programa Educ.	40,000		20,000	10,000	10,000	
021 003 SAMANA-PROY.DEMOSTRATIVOS	30,000		10,000	20,000		
021 004 SAMANA-PRO.MONITOREO	60,000		20,000	20,000	20,000	
021 005 SAMANA-EVALUACION IMPACTOS	30,000		20,000	10,000		
021 006 SAMANA-SOBRESUELO Y MAPAS	20,000		10,000	10,000		
021 007 SAMANA-CENTRO COMUNITARIO	90,000		30,000	30,000	30,000	
022 001 JARAGUA-CENTRO COMUNITARIO	60,000		30,000	30,000		
022 002 JARAGUA-INVENTARIO FAUNA	50,000		20,000	20,000	10,000	
022 003 JARAGUA-PROG.MONITOREO	40,000		20,000	20,000		
022 004 JARAGUA-SEM.BIODIVERSIDAD	9,000			9,000		
022 005 JARAGUA-Base de datos	46,000		30,000	16,000		
022 006 JARAGUA-Plan de Manejo	45,000		30,000	15,000		

COUNTRY :	DATE PRINTED: 02/08/94	PAGE 3
PROJECT NUMBER : DOM/92/G31/A/93/99	SHADOW BUDGET	LAST REV: 01/02/94
PROJECT TITLE : CONSERVACION Y MANEJO DE LA BIODIVERSIDAD EN LA ZONA COSTERA DE LA REPUBLICA DOMINICANA		

PROJECT BUDGET COVERING UNDP CONTRIBUTION (in U.S. dollars)

PROJECT COMPONENTS	TOTAL AMT M/M	1993 AMT M/M	1994 AMT M/M	1995 AMT M/M	1996 AMT M/M	1997 AMT M/M
022 007 JARAGUA-Int.Educ.Ambiental	29,400			15,000	14,400	
023 001 BIOL.MARINA-Analisis Costa	11,000		6,000	5,000		
023 002 B.M. Tecnicas marinas	29,000		14,500	14,500		
023 003 B.M.-Manglares	44,400		21,000	13,000	10,400	
023 004 B.M.- Inv.Peces Marinos	49,550		23,000	14,000	12,550	
023 005 B.M. Invertebrados Marinos	54,000		18,000	18,000	18,000	
024 001 Subcontrato Prog. Becas	50,000		20,000	20,000	10,000	
024 002 Apoyo programas innovativos	40,000		20,000	20,000		
025 001 Subcontrato Los Haitises	350,000		200,000	100,000	50,000	
026 001 Subcontrato Los Haitises II	100,000		50,000	25,000	25,000	
027 001 Subcontrato agricultura	70,000		30,000	20,000	20,000	
028 001 Otros subcontratos por definir	50,000		25,000	15,000	10,000	
029 COMPONENT TOTAL (**)	1,472,350		692,500	514,500	265,350	
*030 TRAINING						
031 000 Becas individuales	20,000		10,000	10,000		
033 000 Capacitacion en servicio	30,000		15,000	10,000	5,000	
039 COMPONENT TOTAL (**)	50,000		25,000	20,000	5,000	
*040 EQUIPMENT						
041 000 Equipo fungible	15,000		5,000	5,000	5,000	
042 001 Vehiculo	15,000		15,000			
042 002 Equipo trabajo	185,000		95,000	90,000		
043 000 Local	46,800		13,000	15,600	15,600	2,600
049 COMPONENT TOTAL (**)	261,800		128,000	110,600	20,600	2,600
*050 MISCELLANEOUS						
051 000 Operacion y mantenimiento	43,000		15,000	15,000	13,000	

COUNTRY :	DATE PRINTED: 02/08/94	PAGE 4
PROJECT NUMBER : DOM/92/G31/A/93/99	SHADOW BUDGET	LAST REV: 01/02/94
PROJECT TITLE : CONSERVACION Y MANEJO DE LA BIODIVERSIDAD EN LA ZONA COSTERA DE LA REPUBLICA DOMINICANA		

PROJECT BUDGET COVERING UNDP CONTRIBUTION (in U.S. dollars)

PROJECT COMPONENTS	TOTAL AMT M/M	1993 AMT M/M	1994 AMT M/M	1995 AMT M/M	1996 AMT M/M	1997 AMT M/M
053 000 Miscellaneos	60,882		21,000	20,000	15,000	4,882
054 000 Overhead Oficina	90,000		30,000	30,000	30,000	
059 COMPONENT TOTAL (**)	193,882		66,000	65,000	58,000	4,882
099 BUDGET TYPE TOTAL (***)	2,954,452		1,237,340	1,050,440	621,190	45,482
	230.0		70.0	81.0	67.0	12.0
999 UNDP TOTAL (***)	2,954,452		1,237,340	1,050,440	621,190	45,482
	230.0		70.0	81.0	67.0	12.0

Annex

TRAINING PROGRAMME

This project includes significant institution-building components that will require personnel in-country to undertake new lines of activity and to reorient career lines in many cases. Staff of institutions in both the public and private sectors need new skills in order to build up the nation's institutional capacity to sustain the project beyond GEF funding.

The training element of the project is made up of four kinds of activities: fellowships, study tours, workshops, and in-service training. The personnel inputs for training include technical experts in data acquisition and management, socioeconomics, protected areas management, natural resource management, and marketing of biodiversity products. They will be joined by "process" consultants in training methodology, public education, fund-raising, NGO management, participatory planning, and in research and information services who will develop and implement in-service training.

The training activities described in Immediate Objectives 1 and 4 are the essential foundation for achieving the Development Objective.