

OFFICE MEMORANDUM

DATE: June 30, 2000

TO: Mr. Ken King, Assistant CEO, GEF Secretariat
Att: GEF PROGRAM COORDINATION

FROM: Lars Vidaeus, GEF Executive Coordinator



EXTENSION: 3-4188

SUBJECT: **Regional (Belize, Guatemala, Honduras, Mexico): Conservation and Sustainable Use of the Mesoamerican Barrier Reef System (MBRS) Submission for Work Program Inclusion**

Please find enclosed the electronic attachment of the above mentioned project brief for work program inclusion. We would appreciate receiving any comments by July 14, 2000.

The proposal is consistent with the *Criteria for Review of GEF Projects* as presented in the following sections of the project brief:

- Country Drivenness: please see Section B2 (*Governments' Strategy*) and Section D4 (*Indications of recipient commitment*) for a discussion of country ownership of the MBRS program; these sections start on pages 6 and 19, respectively.
- Endorsement: endorsement letters for the project were received from each of the participating country focal points at the time of PDF Block B approval; as indicated in the letters of endorsement, the focal points have agreed on single project endorsements for the entire project cycle.
- Program Designation & Conformity: please see Section B1(b) (*GEF operational strategy/program objective addressed by the Project*), page 3.
- Project Design: please see section C (*Project Description Summary*) starting on page 8, Annex 1 (*Project Design Summary*), and Annex 2 (*Detailed Project Description*).
- Sustainability: please see Section F1 (*Sustainability*) starting on page 24.
- Replicability: please see Section D (Project Rationale) on pages 14-15, Section F (Sustainability) on page 25, and the STAP Reviewer's comments in Annex 4.
- Stakeholder Involvement: for a discussion of project stakeholders, please see Section C3 (*Benefits and target population*) on page 12; for a discussion of the involvement of stakeholders in preparation and implementation, please see Sections E5 (*Social*) and E7 (*Participatory Approach*) on pages 22-24.
- Monitoring & Evaluation: Monitoring is a particular focus of the proposed project; detailed information on proposed M&E activities is presented in Annex 2 (page 9); the institutional framework for implementation of the M&E program may be found at Annex 2 (starting at page 13). M&E indicators are presented in Annex 1.
- Financing Plan: please see the summary project cost table in Section C1 (page 11), and the broader incremental cost assessment in Annex 3.

- Cost-effectiveness: a quantitative assessment of cost-effectiveness has not been attempted; rather a discussion of alternatives considered and rejected is presented in Section D1 (starting on page 14).
- Core Commitments and Linkages: please see the discussion of the project's linkage to the WB Country Assistance Strategies in the four participating countries in Section B1(a) starting on page 3.
- Consultation, Coordination and Collaboration between IAs: please see Section D2 (*Major related Projects financed by the Bank and/or other development agencies*) for a discussion of other donor programs with links to the proposed project as well as coordination with GEF-supported initiatives (pages 17-18); Annex 5, Matrix 3: Current and Planned Regional Projects/Programs with Relevance to the Conservation and Sustainable Use of the MBRS (Annex 5, page 13).
- Response to GEFSEC Review at the time of pipeline entry: At the time of PDF Block B approval, the Secretariat team recommended that the Bank preparation team address the following prior to WP entry:

a) ***the need for a strong consultative effort***: An iterative process of consultation and consensus building has been used throughout project preparation. The project preparation team has engaged in a highly participatory process of consultation at the regional, national and local levels in the identification and design of project components with a transboundary emphasis, in the allocation of budgets across project components and in the negotiation of institutional arrangements for project implementation. Consultations with various stakeholder groups have taken place throughout Project preparation in a series of regional workshops and local level meetings, and their concerns have been reflected in the current Project design. Technical working groups will be set up during Project implementation to ensure participation of specialized sectors in the design of annual work programs, and transparency in the process of implementation.

b) ***selectivity in Project components and activities***: PDF Block B and other project preparation funds were used to narrow the focus of regional activities to transboundary, system-wide issues, requiring coordinated action and close collaboration of the four riparians involved. Agreement on a transboundary focus for project level interventions during this phase was influenced by the results of the Transboundary Diagnostic Analysis and the Threat and Root Cause Analysis carried out during project preparation. These revealed hot spots in transboundary areas of the MBRS and inadequate incentives and mechanisms to address these threats. The components of the Phase 1 project and the design of supporting activities and budget levels were refined through a series of regional and national workshops, informed by technical studies and expert consultations, and adopted by consensus at the final regional preparation workshop in Tulum, Mexico, in April 2000.

c) ***preparation of a Threat and Root Cause Analysis to guide project design***: A comprehensive Threat and Root Cause Analysis was undertaken, which explored immediate impacts and threats to the resources of the MBRS in different parts of its range and the underlying causes of these impacts and sources of stress. The results of the analysis revealed that uncontrolled coastal development, primarily related to tourism and

recreation, was a growing threat to the health of the MBRS. While gaps in the regulatory framework and availability of information, including best practice were identified in some countries, failure to apply existing regulations and policies consistently were flagged as root causes in others. The transboundary areas of the Bay of Chetumal, along the frontier between northern Belize and Mexico, and the Gulf of Honduras to the south, along the tri-national frontier of Belize, Guatemala and Honduras, were identified as hot spots. Deteriorating water quality from run-off related to inland agriculture along the watersheds and coastal pollution from point sources related to tourism, port development and municipal growth was flagged as threat to be monitored and ultimately controlled through improved data collection and regulatory standards. The findings of the Threat and Root Cause Analysis are presented in Annex 6 (Matrices 1 and 2) and have been used to target project interventions both geographically and programmatically.

d) *integration of the associated economic sectors in the ecosystem management program*: To address the need for sectoral integration in the design of an ecosystem management program for the MBRS, national coral reef committees were formed in each country. These are multi-stakeholder groups representing a range of economic sectors, government, NGO, research and private sector interests in the future of the MBRS. These committees have served a review function and information clearinghouse role during project design, ensuring ownership by a range of stakeholders and links to local and regional technical expertise. The national committees and the MBRS national coordinators selected from their ranks to serve as principal focal point for the project, will continue to play an oversight role during project implementation. They will provide both technical and policy advice to the Project Coordination Unit during project implementation and a source of recruitment to the technical working groups, drawn from members of each country, who will oversee implementation of individual project components.

e) *strong policy focus at regional level*: Harmonization of policies across the four countries and strengthening of regulatory frameworks related to use of MBRS resources--e.g., in the fisheries, tourism, water and environment sectors--is a long-term objective of the MBRS program. A legal and policy analysis identifying gaps and inconsistencies in legislation across the four countries, inadequacies in regulations, and inconsistencies in the application of existing laws and policies was carried out. A phased approach to legislative reform, initially targeting soft policies that need to be made more robust and operational, leading up to legislative reform in instances where laws are inadequate or outdated, will be adopted. Policy objectives have been identified in the design of each component and a regional policy working group will provide technical assistance and oversight to thematic groups to help ensure progress in achieving these objectives during project implementation.

Equally important, the policy working group will liaise closely with CCAD (the environmental directorate of the regional body for Central American Integration (SICA)), to bring key policy issues to the attention of the council of environment ministers of Central America and Mexico for debate and resolution at their regular meetings. The secretariat of CCAD, which is the designated implementing agency for both the MBRS project and the MBC regional UNDP/GEF project, will promote integration of the marine corridor into the MBC by promoting land use and environmental policies that take into account the downstream linkages between watersheds and the coastal zone, supporting joint monitoring

and mapping efforts and interpretation of information to policy makers and the public about the importance of the corridor and the functional interdependence of terrestrial, aquatic and marine habitats within the MBC. Annual evaluation of indicators related to project policy objectives will help maintain momentum for their achievement.

f) *the need for a stronger financing plan and sustainability of Project activities*: The Program for the Conservation and Sustainable Use of the Mesoamerican Barrier Reef System is envisioned as a long-term, multi partner/multi-donor effort. A matrix of activities in the region prepared as part of the TRC Analysis to assess baseline activities and gaps in resource allocation revealed a number of national and sub-regional efforts which are now underway or in the pipeline and which form part of the MBRS initiative. Putting these effort into a more coherent programmatic framework will be one of the tasks of the project's Technical Advisory Group--a committee representing the key donors in the region whose task will be to identify potential linkages and synergies between the MBRS GEF project and their own efforts, and opportunities for consolidating these through co-financing and joint implementation. Creating these linkages will enhance the sustainability of individual efforts, raise the visibility of the MBRS within the donor community and governments and strengthen the constituency for its conservation and management.

The current financing plan for the Bank/GEF project includes a 28% counterpart contribution by participating governments and local NGOs, totalling some \$4.3 million in cash and in kind. World Wildlife Fund has been working hand in hand with the Bank/GEF project preparation team to develop an ecoregional approach for the conservation and sustainable use of the MBRS. They have recently formalized their commitment to some \$3 million over the next five years for marine conservation and capacity building activities, and will be collaborating on much of the research and monitoring of the MBRS to be carried out under components 1 and 2 of the Bank/GEF Phase 1 project.

Parallel co-financing for the tourism and policy components of the project is being provided through a \$5million IDA credit to the Government of Honduras to promote a national strategy for Sustainable Coastal Tourism along the north coast and the Bay Islands of Honduras, the southeastern most extension of the MBRS. A parallel project of the Interamerican Development Bank to support Natural Resources Management in the Bay Islands (\$25 million) is entering its second year of implementation, and is being coordinated closely with the Bank LIL and the GEF MBRS project. In addition to these programs, there is broad scope for additional support by the Dutch for project implementation through the Bank/Netherlands Partnership Program. This is currently being pursued in the context of strengthening CCAD's capacity and that of its regional coordination units for supervision and monitoring of the wider MBC program .

Lastly, a new IADB/GEF initiative is being prepared to address marine pollution issues in the Gulf of Honduras, partially in response to the Threat Root Cause Analysis undertaken during preparation of the Bank/GEF phase 1 project. Coordination between activities under this initiative and the MBRS Phase 1 regional project will be facilitated through mutual membership of the two institutions on regional steering committees for the MBRS Program and through joint participation in project planning and implementation workshops, such as those organized to date.

The World Bank recognizes that it is very important for such a complex, multi-country project to clearly define measurable outcomes that respond to the main threats. Finalization of project design prior to CEO endorsement will concentrate on sharpening the activities with an eye to achieving results on the ground that become building blocks towards the long-term objective.

Please let me know if you require any additional information to complete your review prior to inclusion in the work program. Many thanks.

Distribution:

Messrs.: R. Asenjo, UNDP
A. Djoghlaif, UNEP (Nairobi)
M. Gadgil, STAP
M. Griffith, STAP (Nairobi)
Y. Xiang, CBD Secretariat

cc: Messrs./Mmes. Lafourcade, Brizzi (LCC1C); Dowsett-Coirolo, Cackler, Bowyer (LCC2C); Kalantzopoulos, Clark (LCC3C); Serra, Lovejoy, Rodriguez, Kimes (LCSES); Hatzios, Castro, Khanna, Aryal (ENV).

ENVGC ISC, IRIS4

PROJECT BRIEF

1. IDENTIFIERS:

PROJECT NUMBER:

GE-P053349

PROJECT NAME:

**REGIONAL (BELIZE, HONDURAS, GUATEMALA, MEXICO):
CONSERVATION AND SUSTAINABLE USE OF THE
MESOAMERICAN BARRIER REEF SYSTEM**

DURATION:

Phase 1, 5 years

IMPLEMENTING AGENCY:

World Bank

EXECUTING AGENCY:

Central American Commission on Environment and
Development (CCAD)

**REQUESTING COUNTRY OR
COUNTRIES:**

Belize, Honduras, Guatemala, Mexico

ELIGIBILITY:

Belize ratified CBD 12/30/93

Honduras ratified CBD 7/31/95

Guatemala ratified CBD 1/10/95

Mexico ratified CBD 3/11/93

GEF FOCAL AREA:

Biological Diversity and International Waters

GEF PROGRAMMING FRAMEWORK:

GEF Operational Program for Biodiversity for Freshwater,
Coastal and Marine Ecosystems (OP2), and International
Waters Operational Program for Integrated Land and
Walter Multiple Focal Area (OP 9).

2. SUMMARY:

The global objective of the Mesoamerican Barrier Reef Project is to enhance protection of the ecologically unique and vulnerable marine ecosystems comprising the MBRS, by assisting the littoral states to strengthen and coordinate national policies, regulations and institutional arrangements for the conservation and sustainable use of this global public good. The GEF Project will, therefore, assist Mexico, Belize, Guatemala and Honduras to: (i) strengthen existing MPAs and establish new protected areas in transboundary locations; (ii) develop and implement a standardized regional monitoring and environmental information system for the MBRS; (iii) promote measures to reduce non-sustainable patterns of resource use in the MBRS, focusing initially on the fisheries and tourism sectors; (iv) increase local and national capacity for environmental management through education, information sharing and training; and (v) strengthen and coordinate national policies, regulations, and institutional arrangements for marine ecosystem conservation and sustainable use.

3. COSTS AND FINANCING (MILLION US\$):

GEF:	-Project	10.10
	- PDF	0.52
	Subtotal GEF	10.62
CO-FINANCING:	-IA	n/a
	-Other International	n/a
	-Government of	
	Belize	1.70
	Guatemala	0.60
	Honduras	0.60
	Mexico	0.76
	Private: NGO Counterparts	0.50
	Private: WWF	3.00
	Subtotal Co-Financing	7.16
TOTAL PROJECT COST		17.78

4. ASSOCIATED FINANCING (MILLION US\$)

HONDURAS IDA CREDIT	5.00
IDB	24.00

5. OPERATIONAL FOCAL POINT ENDORSEMENT:

Name: Ms. Zenaida Moya **Title:** GEF Focal Point (Belize)

Organization: MINISTRY OF BUDGET
PLANNING & MANAGEMENT, ECONOMIC
DEVELOPMENT AND TRADE **Date:** November 13, 1998

Name: Enrique Arias Guillen **Title:** GEF Focal Point (Honduras), Sub-Secretary for
the Environment

Organization: MINISTRY OF NATIONAL
RESOURCES AND ENVIRONMENT **Date:** September 22, 1998

Name: Ricardo Ochoa **Title:** GEF Focal Point (Mexico), Director for
International Financial Organizations

Organization: MINISTRY OF FINANCE
AND PUBLIC CREDIT **Date:** November 16, 1998

Name: Adrian Juaraz P. **Title:** GEF Focal Point (Guatemala), National
Coordinator

Organization: NATIONAL COMMISSION
OF ENVIRONMENT **Date:** November 10, 1998

6. IA CONTACT:

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CURRENCY EQUIVALENTS

Currency Unit = US\$

FISCAL YEAR

ABBREVIATIONS AND ACRONYMS

CARICOMP	Caribbean Coastal Marine Productivity Program
CAS	Country Assistance Strategy
CBD	Convention on Biological Diversity
CCAD	Central American Commission on Environment and Development (<i>Comisión Centroamericana de Ambiente y Desarrollo</i>)
CEP	Caribbean Environment Program
CITES	Convention on International Trade in Endangered Species
CPACC	Caribbean Planning for Adaptation to Climate Change
DANIDA	Danish International Development Agency
EIS	Environmental Information System
FAO	UN Food and Agriculture Organization
GCRMN	Global Coral Reef Monitoring Network
GEF	Global Environment Facility
GTZ	German Agency for Technical Cooperation (Gesellschaft für Technische Zusammenarbeit)
IDB	Inter-American Development Bank
IUCN	World Conservation Union
LBSP	Land-Based Sources of Pollution
LME	Large Marine Ecosystem
MARPOL	International Convention for the Prevention of Marine Pollution
MBC	Mesoamerican Biological Corridor
MBRS	Mesoamerican Barrier Reef System
MPA	Marine Protected Area
NGO	Nongovernmental Organization
PA	Protected Area
PCU	Project Coordination Unit
PY	Project Year
RSC	Regional Steering Committee
SAS	Spawning Aggregation Sites
SICA	System for Central American Integration (Sistema para la Integración Centroamericana)
SPAW	Protocol Concerning Specially Protected Areas and Wildlife (Cartagena Convention)
TAC	Technical Advisory Committee
TNC	The Nature Conservancy
TRCA	Threat and Root Cause Analysis
TWG	Regional Technical Working Groups
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
URI/CRC	University of Rhode Island/Coastal Resources Center
USAID	United States Agency for International Development
WWF	World Wide Fund for Nature

Vice President: David De Ferranti
Country Manager/Director: Donna Dowsett-Coirolo
Sector Manager/Director: John Redwood
Task Team Leader/Task Manager: Marea E. Hatziolos

Belize, Guatemala, Honduras, Mexico

Conservation and Sustainable Use of the Mesoamerican Barrier Reef System (MBRS)

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Map 1. Location of Threats to the Ecological Health of the MBRS (separate file)

Map 2. Location of Priority Protected Areas (separate file)

**Conservation and Sustainable Use of the Mesoamerican Barrier Reef System (MBRS)
Belize, Guatemala, Honduras, Mexico**

Project Appraisal Document

Latin America and the Caribbean Regional Office, LCC2C

<p>Date: June 29, 2000 Country Manager/Director: Donna Dowsett-Coirolo Project ID: GE-P053349 Sector: Environment</p>	<p>Task Team Leader/Task Manager: Marea E. Hatzios Sector Manager/Director: John Redwood Program Objective Category: Environmentally Sustainable Development Focal Area: Coastal, Marine, and Freshwater Ecosystems (Operational Program: No. 2) and Integrated Land and Water Multiple Focal Area Operational Program (Operational Program: No. 9) Program of Targeted Intervention: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
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Project Financing Data	<input type="checkbox"/> Loan	<input type="checkbox"/> Credit	<input type="checkbox"/> Guarantee	<input checked="" type="checkbox"/> Grant	<input type="checkbox"/> Other [Specify]	
For Loans/Credits/Others:						
Amount (US\$m/SDRm): US\$17.3 million						
Financing plan (US\$m):						
Source		Local		Foreign	Total	
Government of Belize		0.8		0.9	1.7	
Government of Guatemala		0.3		0.3	0.6	
Government of Honduras		0.3		0.3	0.6	
Government of Mexico		0.4		0.4	0.8	
Cofinanciers (WWF)		2.0		1.0	3.0	
GEF		4.0		6.1	10.1	
Beneficiaries		0.2		0.3	0.5	
	Total	8.0		9.3	17.3	
Recipient: Central American Commission on Environment and Development (CCAD)						
Responsible agency: Central American Commission on Environment and Development (CCAD)						
Estimated disbursements (Bank FY/US\$m):	PY1	PY2	PY3	PY4	PY5	Total
Annual	1.4	2.9	2.5	2.1	1.2	10.1
Cumulative	1.4	4.3	6.8	8.9	10.1	
Project implementation period: 5 yrs; Expected effectiveness date: February 20001; Expected closing date: June 2006						

A: Project Development Objective

1. Project development objective and key performance indicators (see Annex 1):

The Project development objective is to assist the countries of Belize, Guatemala, Honduras and Mexico to manage the Mesoamerican Barrier Reef System (MBRS) as a shared, regional ecosystem, safeguard its biodiversity values and functional integrity, and create a framework for its sustainable use.

2. Project global objectives and key performance indicators (see Annex 1):

The global objective of the Mesoamerican Barrier Reef Project is to enhance protection of the ecologically unique and vulnerable marine ecosystems comprising the MBRS, by assisting the littoral states to strengthen and coordinate national policies, regulations and institutional arrangements for the conservation and sustainable use of this global public good.

The Mesoamerican Barrier Reef System, extending from the southern half of the Yucatan Peninsula to the Bay Islands of Honduras, includes the second longest barrier reef in the world. The MBRS is unique in the Western hemisphere on account of its size, its array of reef types, and the luxuriance of corals it contains. The MBRS stabilizes and protects coastal landscapes; maintains coastal water quality; sustains species of commercial importance; serves as breeding and feeding grounds for marine mammals, reptiles, fish and invertebrates; and offers employment alternatives and incomes to approximately one million people living in coastal zones adjacent to the reefs. Associated with the coral reefs of the MBRS are extensive areas of relatively pristine coastal wetlands, lagoons, seagrass beds and mangrove forests; these sustain exceptionally high biodiversity and provide critical habitat for threatened species. The outstanding ecological and cultural significance of the MBRS has resulted in its designation as a World Heritage site.

The Project would seek to conserve this globally important resource by providing support for the strengthening of existing and creation of a variety of new mechanisms to safeguard its integrity and continued productivity. These include facilitating the: harmonization of relevant policies and regulations related to sustainable management of shared/transboundary resources, including fisheries and critical habitats for spawning and recruitment; consolidation of a network of Marine Protected Areas (MPAs) within the MBRS to maintain vital ecological processes and increase representativeness in the existing system; reaching of agreement on the establishment of environmental standards for monitoring coastal water quality and other indicators of coral reef ecosystem health; introduction of best practice and regional environmental certification programs for sustainable tourism development; and building of capacity through training, environmental education and improved information systems to enhance public and private participation in the conservation of the MBRS and the benefits from its sustainable use.

Key performance indicators include:

- Regional frameworks in place for management of diverse resources of the MBRS
- Biological representation and ecological interconnectivity maintained in coastal and marine ecosystems throughout MBRS
- Ecoregional approach to MBRS management incorporated into conservation planning at local, national and regional levels
- Steps towards harmonization of relevant policies and legislation regarding MPA management in transboundary areas, sustainable fisheries management; sustainable tourism development; and protection of coastal water quality agreed and initiated in all four countries
- Fora for regional cooperation at technical and policy levels operational.

B: Strategic Context

1 (a). Sector-related Country Assistance Strategy (CAS) goal supported by the Project (see Annex 1):

(i) Mexico	CAS document number:	Date of latest CAS discussion: May 13, 1999
(ii) Belize	CAS document number: N/A	Date of latest CAS discussion: 1993
(iii) Guatemala	CAS document number: 18036	Date of latest CAS discussion: June 19, 1998
(iv) Honduras	CAS document number: 19893	Date of latest CAS discussion: November 19, 1999

Common Sector Goals among MBRS Countries: Reduce poverty; increase environmental security, accelerate economic growth in rural areas, and increase effectiveness of the public sector and its policies.

The Country Assistance Strategy (CAS) for Mexico identifies three core themes for World Bank Group assistance to Mexico: social sustainability, removing obstacles to sustainable growth, and effective public governance. Within this broad framework, the CAS identifies a few priority areas for Bank involvement in the Environment Sector, including institutional development and decentralization of environmental management, better management of natural resources (e.g. forests, water and biodiversity), and assistance in the design of sector policies.

Guatemala, Honduras and Belize share similar CAS goals of reducing rural poverty through improved environmental security and better management of natural resources. Building social capital through information networking, training and broader participation of local stakeholders in the management of resources is identified as a complementary goal among the three countries. The Project would support these goals by first promoting a regional vision of ecosystem sustainability and productivity. It would support public awareness about the importance of the MBRS as a world-class resource, its importance to the cultural and economic future of the region, as well as its role as a vital component of the biosphere. The Project would further seek to reduce fragmentation at the national and regional levels in the governance of the MBRS by improving regional information systems for decision-making and harmonizing policy frameworks across the four countries in line with principles of environmental and social sustainability.

Such policy cohesion would lay the groundwork for regional cooperation in the adoption of agreed protocols for conservation and sustainable use—particularly in productive sectors such as tourism and fisheries. In line with this, the Project would promote region-wide adoption of best practice in sustainable marine tourism through disseminating codes of conduct, providing training and resources for their application and establishing regional environmental certification systems. This, coupled with opportunities for coastal communities to engage in small and medium enterprise and alternative livelihood schemes linked to eco-tourism, should lead to higher incomes, sustainable economic growth and reduction in rural poverty—CAS goals in all four countries.

1 (b). GEF operational strategy/program objective addressed by the Project:

The proposed Project supports the objectives of the GEF Operational Strategy and the Operational Program for Biodiversity for Coastal, Marine, and Freshwater Ecosystems (O.P. No. 2). It also supports a number of Articles of the Convention on Biological Diversity and its provision for conservation of marine biodiversity under the Jakarta Mandate. These include Article 8 (*in-situ conservation*), and Article 10 (*sustainable use of components of biodiversity*). The Project does this by promoting an ecosystem approach to the conservation and management of a transboundary aquatic ecosystem of global importance. It aims to facilitate regional cooperation and coordination in the design and implementation of measures to ensure the ecological integrity and continued productivity of a Large Marine Ecosystem (LME), which includes both World Heritage and Ramsar sites within its boundaries.

In addition, the Project encourages cooperation between governmental authorities and the private sector in developing methods for sustainable uses of biological resources. It would build partnerships at the local, national and transnational levels through support for NGOs, professional associations and cooperatives (e.g., in the tourism and fisheries sectors) and governmental institutions (e.g., sectoral ministries, coastal authorities and intergovernmental bodies such as the Central American Commission on Environment and Development). At the local level, the Project would strengthen the involvement of civil society in conservation efforts through environmental education and measures to enhance benefit sharing by local communities. These efforts include support for training in new livelihood skills, increased capture of resource rents, (e.g., user fees, tourist and green taxes) and co-management arrangements for protected areas.

This Project also responds to objectives of the Integrated Land and Water Multiple Focal Area Operational Program for International Waters (O P 9). It does so by addressing resource management issues at the interface of land/water systems through an integrated approach that includes a broad range of interventions. These include establishing a uniform protocol for monitoring water quality along the coast, with special emphasis on pollution hot spots in transboundary areas; improving regional data collection to assess productivity of commercially important stocks and status of threatened species; and harmonizing regulations related to the harvesting and protection of these species and regulations to minimize the loss of critical breeding and nursery habitats.

2. Main sector issues and Government strategy:

A Threat and Root Cause Analysis (TRCA) was completed during Project preparation, which revealed the following major threats to the sustainability of the Mesoamerican Barrier Reef System (See Annex 6):

- Coastal/island development and rapidly expanding tourism
- Inappropriate upstream land and resource use, and industrial development
- Overfishing and unregulated aquaculture development
- Uncontrolled port, shipping and navigation practices
- Climato-meteorological phenomena associated with changes in ocean currents, sea surface temperatures, storm intensity, precipitation, and vulnerability to disease, in all probability linked to climate change.

The cumulative impact of these combined threats—both anthropogenic and “natural”—is a growing cause for alarm. That these threats are common to the four countries bordering the MBRS emphasizes the transboundary nature of factors that influence habitats and resources, and the dynamic nature of the processes (e.g., recruitment, predation, nutrient transport and disease) that determine the system’s resilience and sustainability.

Associated with these threats are underlying conditions that may be regarded as root causes or constraints that prevent governments from adequately addressing the immediate threats to the health of the MBRS. These include the following:

- Lack of information on the status of the MBRS and on economic, environmental and social tradeoffs associated with various use regimes
- At the regional level, absence of system wide mechanisms or legal frameworks to manage the ecosystem as a whole; at the sub-national and local levels, sectoral fragmentation in the management of habitats and resources of the MBRS
- Lack of public awareness of the value of the MBRS

- Lack of coherent policies; inconsistency in environmental standards and in the application of existing standards related to EIA, land use planning/zoning, water quality, polluter pays principle
- Inadequate protection of critical elements and ecological processes essential to the integrity and continued productivity of the MBRS
- Lack of trained personnel.

Issues and Gaps

Information Gaps: Undermining management efforts in all four countries is the basic lack of information on the status of the MBRS. Although monitoring efforts are underway in selected areas, reliable information is required to provide a synoptic view of the system as a whole, determine the origin and scope of common threats, and form a basis for regional cooperation in the management of a shared resource. A prime example of this information gap exists with regard to fisheries. Inadequate information on commercially important stocks has led to the issuing of quotas and user permits on a fragmented basis, without regard for total system yields or allowable harvest. Intense fishing pressure by individual nations is threatening the viability of economically important stocks like lobster and conch, once plentiful in the waters of the MBRS. Another serious constraint is the absence of water quality data for the principal coastal drainages of the MBRS. The production of citrus fruits and banana in the Rio Hondo watershed, between Mexico and Belize, is thought to be a major source of non-point pollution in the Bay of Chetumal. This, along with point sources from industry and expanding human settlements, have made Chetumal a major pollution hot spot in the transboundary area between Mexico and Belize. Quantification of this pollution will be essential to identifying its source and mitigating its effects.

Policy Gaps and Fragmentation: At the national level, fragmentation in coastal resource management is manifested in the lack of an integrated approach to economic development within coastal areas (e.g., tourism, fisheries, agriculture, infrastructure) and the failure to incorporate environmental and social costs into economic decision-making. This is particularly true in the tourism industry, manifested by rapid and chaotic growth along the corridor from Cancun to Chetumal in Quintana Roo, in the Bay Islands of Honduras, and on many of the cays along the Belize Barrier Reef (Map 1). Examples include conversion of coastal habitat for large tourist installations, dredging of channels and bays for the expanding cruise ship industry, and inadequate waste management facilities in tourist centers and ports. The latter increases the stress on already over-extended municipal services for wastewater and sanitation. Tourism has also contributed to the local demise of conch, lobster and finfish populations. Of special concern is the overexploitation of breeding aggregations of Nassau Grouper, an important predator on the reef. Once virtually unknown, these aggregation sites have become increasingly vulnerable to harvesting by artisanal fishers, leading to significant changes in biological community structure and ecology of reefs within the system. Lack of information on sources and sites of development impacts downstream contributes to the absence of uniform standards with regard to effluent and receiving water quality, lack of rigor and consistency in the application of environmental impact assessment to coastal development projects, and in the permitting and enforcement regime governing resource harvests. This had led to distortions in the distribution of MBRS benefits and costs, thereby eliminating disincentives for unsustainable use.

Lack of Public Awareness: Contributing to the fragmented approach to coastal resource management and to unsustainable use practices is the lack of public awareness of the intrinsic value of the MBRS and of the costs of inadequate protection in terms of loss of goods and services it provides. Creating this awareness will be essential to building and maintaining a constituency of support for national and regional level actions required to ensure the sustainability of the MBRS.

Inadequate Protection of Marine Biodiversity: Despite efforts by the four countries to expand the system of marine reserves within their national waters, protection of the key habitats and biological communities

that comprise the MBRS and of the processes that ensure its integrity and productivity -- and contribute to its resilience -- is still inadequate. Knowledge of system boundaries, of the locations and linkages between source reefs and sink reefs (often in different countries) and the factors that affect them, is limited. Coordination between countries in the management of adjacent or transboundary habitats is *ad-hoc* or non-existent. Finally, the availability of trained personnel in coral reef monitoring and in the essential tools of marine protected area management is uneven, hindering coordination across countries and severely limiting management effectiveness within several MBRS countries.

Governments' strategy

Recognizing, on the one hand, the importance of the MBRS to the economy of the region and to the natural and cultural heritage of its people, and the increasing threats to its overall health on the other, the leaders of the four countries bordering the MBRS convened in Tulum, Mexico in June 1997 to pledge their commitment to protecting this outstanding resource. The Tulum Declaration called on the four littoral states of the MBRS and its partners in the region to join in developing an Action Plan for its Conservation and Sustainable Use. The Central American Commission on Environment and Development (known hereafter by its Spanish initials, CCAD), comprised of the Ministers of Environment of the seven Central American countries and Mexico (as an observer), approached the GEF through the World Bank to request support for the design of the Plan and a strategy for its implementation. With PDF Block A and Block B funds from the GEF and technical support from the World Bank, IUCN, and WWF, CCAD convened a multi-stakeholder workshop and subsequent working groups of scientists, managers, governmental and non-governmental representatives from the four participating countries to draft an Action Plan for management of the MBRS.

The Action Plan, which provides the basis for a comprehensive, 15-year program of regional and national level activities aimed at safeguarding the integrity and productivity of the MBRS, was adopted in June 1999. Regional activities outlined in the Action Plan focus on four thematic areas: (1) Research and Monitoring, (2) Legislation, (3) Capacity Building, and (4) Regional Coordination. Specific regional activities include the establishment of a regional system of Marine Protected Areas which ensures the representativeness of the MBRS ecosystems and the overall functionality of the barrier reef system; the design and implementation of a regional program to monitor MBRS health; the mapping of coastal environments using GIS; monitoring of MBRS 'indicator species' such as the Nassau Grouper; the exploration of more sustainable alternatives to fishing; design and establishment of a regional database on MBRS resources and dissemination of information; development of a tourism Certification Program for the MBRS region; the establishment of bi-national and tri-national commissions to facilitate policy dialogue, harmonization of legislation and the management of natural resources in trans-border areas; training for personnel and infrastructural support to institutions along the MBRS; development of a communication strategy; and stimulation of community participation in issues related to the management of MBRS resources.

At the national level, activities are also dispersed across four thematic areas: (1) Monitoring and Research, (2) Sustainable Use, (3) Capacity Building of National Institutions, and (4) Inter-sectoral Coordination. National activities outlined in the Plan are not the same in all MBRS countries, depending on the need and capacities within each country in the context of a particular area. Specific national activities include the development of a bio-physical and socio-economic inventory of MBRS resources; assessment of the dependence of tourism and fisheries on MBRS resources; designation of new Marine Protected Areas to increase ecosystem representation; creation of legal instruments to facilitate the co-management of Marine Protected Areas; implementation of actions to protect key species such as manatees, turtles and crocodiles; creation of the legal and institutional framework to ensure the sustainable management of fisheries and tourism, including enforcement mechanisms for existing laws; identification, control and monitoring of sources of pollution of the MBRS, including liquid and solid

waste; implementation of international Conventions relating to biodiversity and sustainable use of natural resources; and the design and implementation of pilot projects in Integrated Coastal Zone Management. To promote these activities and facilitate coordination in the implementation of regional elements of the Action Plan, National Barrier Reef Committees were established in each country.

It is the regional aspects of this plan that form the basis of the current proposal to the GEF. The four countries' commitment to jointly develop an Action Plan for management of the MBRS and their willingness to collaborate in addressing regional threats and common problems, signal a shift in attitude toward a collective strategy to safeguard the sustainability of this shared public good.

3. Sector issues to be addressed by the Project and strategic choices:

In light of this commitment, and the existing gap in mechanisms and resources to promote such regional cooperation, the Project will focus on transboundary threats to the MBRS and the coordinated actions required to address these. A review of the key sector issues and underlying constraints suggested strategic investments in the following areas:

- Establishment and consolidation of a system of Marine Protected Areas that is representative of the biological diversity of the MBRS and which safeguards the processes and conditions required to maintain ecological linkages between components of the MBRS and their continued productivity.
- Training and capacity building in agreed protocols for marine ecosystem monitoring and management, and dissemination of information to inform decision-making
- Steps towards the harmonization of policies and legislation governing the use of shared coastal and marine resources

Supporting these actions requires parallel investments in environmental education and public awareness, and in the institutional arrangements to ensure regional coordination and sustainability in their implementation.

The GEF Project will, therefore, assist the four countries bordering the MBRS to: (i) strengthen existing MPAs and establish new protected areas in transboundary locations; (ii) develop and implement a standardized regional monitoring and environmental information system for the MBRS; (iii) promote measures to reduce non-sustainable patterns of resource use in the MBRS, focusing initially on the fisheries and tourism sectors; (iv) increase local and national capacity for environmental management through education, information sharing and training; and (v) strengthen and coordinate national policies, regulations, and institutional arrangements for marine ecosystem conservation and sustainable use.

In light of the long-term nature of the goals and objectives implied in the MBRS Action Plan and supported under this project, a second strategic choice was made to design the initiative within the context of a long-term regional program, involving a range of potential partners and stakeholders in a phased approach. This project, therefore, represents Phase 1 of a proposed 15-year Program, requiring a long-term commitment on the part of the countries, the donor community, and the many partner institutions currently involved in the region, to achieve the objective of the MBRS Action Plan.

C: Project Description Summary (See Annex 2)

The proposed GEF initiative responds to the countries' expressed need for a more holistic approach to managing a shared coastal ecosystem. The Project will create an enabling environment for harmonization of relevant policies and standards governing the use of shared resources. It will disseminate knowledge about the status and value of the MBRS and ensure adequate technical skills across the four countries to

support implementation of agreed conservation and management interventions. These regional measures would also be in line with national commitments of the four countries to international Conventions such as the Cartagena Convention and its protocols (SPAW and LBSP), MARPOL, the FAO Code of Conduct for Responsible Fisheries and the Convention on Biological Diversity.

1. Project components

Component 1. Marine Protected Areas (\$5.87 million)

Sub-component A. Planning, Management, and Monitoring of Marine Protected Areas (MPA)

Sub-component B. Institutional Strengthening

Many MPAs in the MBRS exist only on paper and have little or no on-site management. Moreover, a significant number of MPAs lack up-to-date Master and Operational plans and the associated basic infrastructure and equipment needed for their implementation. Even where management plans are in place, there are rarely the monitoring programs needed to detect changes in biodiversity status and other indicators of the effectiveness of protected area management. Also there is almost a universal absence of sound financial strategies and fundamental skills required of staff to carry out their core responsibilities. In some countries in the MBRS, given the lack of capacity and trained personnel, public authorities have delegated primary responsibility for MPA management to NGOs .

Support under this component will include investments geared toward immediate improvements in MPA protection and management while increasing the probability of achieving long-term sustainability of management efforts. Specific activities include:

- Establishment of MPA Data Baselines and Monitoring Programs
- Development of Management Plans for MPAs
- Basic Equipment and Infrastructure for MPA Plan Implementation
- Transboundary Cooperation in Policy, Protection, and Management of MPAs.

Support will be limited to a total of fifteen MPAs). Criteria for MPA selection were based on the significance of the protected area in contributing to MBRS ecosystem characteristics, diversity and processes (See Annex 2 for a discussion and a map of these sites). The majority of the MPAs (9) are located in the two transboundary areas of the MBRS, Bay of Honduras and Gulf of Honduras. In the transboundary areas themselves, there are several MPAs that are separated by national boundaries and managed as separate units. Two of these bi-national MPA complexes, (Xcalak/Bacalar Chico, and Sarstoon-Temash/Sarstun) situated in the Mexico-Belize and Belize-Guatemala transboundary areas respectively, will be assisted through the Project with the additional objective of promoting a bi-national approach to their management. These MPAs will serve as regional models for replication and expansion to other protected areas during the Program's future phases. WWF's ecoregional approach will be used to determine sub-system boundaries, conduct resource inventories and establish priorities for MPA management.

To address the substantial institution building needs in MPA management, regional training courses and workshops for protected area directors, technical staff, rangers, and key collaborators from local and national government agencies, collaborating NGOs, and local communities, will be supported under a second sub –component for institutional strengthening. This sub-component will also provide support for a basic standardized training library to all MPA headquarters and ranger stations throughout the MBRS region (approximately fifty offices). This would facilitate continual professional improvement for MPA field staff, who often lack even minimal access to training manuals, natural history publications, and other books on themes relevant to MPA management programs.

Component 2. Regional Environmental Information System (\$5.25 million)

Sub-component A. Establishment of a Synoptic MBRS Monitoring Program

Sub-component B. Creation and Implementation of a Distributed, Web-based EIS

A principal objective of the component is to develop a reliable base of data that can be used to support more informed management decisions. This will include the establishment of a regional and issue-specific monitoring program that will generate information on the region's oceanographic current regime and its influence on the status and processes of MBRS reefs and other critical ecosystems. Data will be collected on reproduction, larval dispersal, and recruitment of corals, fish, and other important reef components to further our understanding of ecological linkages between reefs and other marine environments, and processes which influence reef integrity. Support for expanding this research is currently being sought from the Government of Canada and the EU, and is expected to be forthcoming.

The establishment of a regional environmental information system (EIS) will provide an essential tool to organize and manage data in support of improved decision-making. In the Program's initial phase, the objective of the EIS component will be to provide the basic framework to guide the collection, processing, distribution and utilization of data. Specifically, the component will assist in the design and implementation of a bi-lingual EIS whose architecture will allow broad access to policy makers, technicians, and the public at large. Significant collaboration has been achieved with WWF, the ICZM Authority in Belize, Amigos de Sian Ka'an, Mexico and the University of Miami, Rosenstiel School of Marine and Atmospheric Studies, in consolidating data into a regional GIS for production of digitized maps and overall contribution to the proposed regional EIS. This collaboration will continue during Project implementation.

Component 3. Promoting Sustainable Use of the MBRS (\$1.88 million)

Sub-component A. Promotion of Sustainable Fisheries Management

Sub-component B. Facilitation of Sustainable Coastal and Marine Tourism

There is growing evidence that non-sustainable resource use practices in aggregate are beginning to affect the overall health of the MBRS. The objective of this component is to support the introduction of new policy frameworks and management tools to increase institutional capacity, disseminate key information and create the necessary incentives for stakeholders to shift toward patterns of sustainable use of MBRS resources. This component will initially focus on the two most significantly important and potentially harmful economic sectors dependent on the MBRS, fishing and tourism.

The fisheries sub-component will address some of the causes of over-fishing by supporting: (i) monitoring and management of spawning aggregation sites, (ii) improved institutional capacity in sustainable fisheries management, and (iii) promotion of alternative livelihood systems. The last includes training fishermen in kayaking, catch and release fly-fishing, SCUBA and recreational water sports and tour guide operations associated with Marine Protected Areas and other tourist destinations (see below).

The objective of the tourism sub-component is to formulate and facilitate the application of policy guidelines and best practice models for sustainable coastal and marine tourism in the four countries of the MBRS. Adoption of industry codes of conduct may then lead to regionally recognized certification schemes for tourist operations and eventually entire destinations within the MBRS. Activities under this sub-component include: Regional Policy Dialogue and Cooperative Action Forum; Catalogue of Exemplary Practices;¹ a Regional Environmental Certification Program; and a Marine Tourism Exemplary Practices Study Tour.

¹ "Exemplary" refers to those practices that have been shown to produce superior results; elected by a systematic process; and judged as exemplary, good, or successfully demonstrated. The practices then need to be adapted to fit a particular organization and are practiced by exemplary operators.

Component 4. Public Awareness and Environmental Education (\$2.24 million)

Sub-component A. Development of an Environmental Awareness Campaign

Sub-component B. Formal and Informal Education

A critical element in developing the political will and policies required to manage the MBRS sustainably will be building the necessary public support to catalyze change. The objective of this component is to create a constituency for conservation of the MBRS in the region. This will be done by increasing awareness of the value of the MBRS and fostering an understanding among the general public of the impacts of development on this world-class resource. Through information networking and discussion fora, it will seek to introduce environmental and social sustainability criteria into decision-making. Activities under this component include establishment of an MBRS database and information clearinghouse (linked to Components 2 and 3), production and dissemination of education materials, and regional workshops and conferences for professionals in the industrial and tourism sectors that directly affect MBRS resources. It will also provide training for community leaders who exert strong influence on MBRS stakeholders.

Regional Coordination and Project Management (\$2.06 million)

The MBRS Program will be coordinated under an organizational framework that balances regional and national representation across the four participating countries. At the policy level, the Program will be coordinated by the MBRS **Regional Steering Committee (RSC)**, made up of representatives from CCAD and the participating National Barrier Reef Committees. The RSC will provide overall policy guidance on objectives of the Program, and coordinate the participation of national, regional, and international government and NGO counterpart organizations in its implementation. The RSC will liaise with other potential partners within and outside the region to attract additional co-financing for the program over the long term. It will review and approve annual work plans and resolve coordination issues that may arise between countries. The RSC will be supported by a **Technical Advisory Committee (TAC)** composed of internationally recognized experts in the fields relevant to MBRS Program objectives. The TAC will be responsible for advising the RSC on technical matters which may arise during the implementation of the Program. Members will provide technical input for the design and review of annual work programs and serve as information gateways to state of the art management, good practice, and professional networks in the areas of MPA management, sustainable coastal tourism, regional fisheries management, coral reef ecosystem monitoring and EIS, and environmental education and outreach. The Technical Advisory Committee will also serve as an "honest-broker" to the RSC with respect to resolution of technical issues under the Project that may be particularly contentious. The TAC will meet bi-annually on a schedule designed to overlap with RSC meetings to provide timely input to their deliberations. A **Program Coordination Unit (PCU)** will be responsible for direct implementation of the Program, with technical support provided by **Regional Technical Working Groups (TWG)** made up of appropriately selected representatives from the National Barrier Reef Committees and supporting local institutions. These will be complemented by regional/international consultants on an "as-needed" basis.

<u>Project Component</u>	<u>Cost Incl. Contingencies (US\$M)</u>	<u>% of Total</u>	<u>GEF Financing (US\$M)</u>	<u>% of GEF- financing</u>	<u>WWF Parallel Co-finance.</u>
Marine Protected Areas	5.87	34	2.5	25	[1.0]
Regional Environmental Information System	5.25	30	3.0	30	[0.75]
Promoting Sustainable Use	1.88	11	1.5	15	[0.25]
Public Awareness & Environmental Education	2.24	13	1.3	13	[0.75]
Regional Coordination/Project Management	2.06	12	1.8	18	[0.25]
Total	17.30	100	10.1	100	[\$3.0]*

**Allocation of co-financing by component to be finalized prior to CEO endorsement*

2. Key policy and institutional reforms supported by the Project:

The key policy reforms promoted by the Project will be agreement on and initiation of steps toward regional harmonization of the policy and regulatory framework surrounding the use of shared resources of the MBRS and the protection of vital elements and processes essential to its health and productivity. These steps include institutional arrangements (such as creation of regional fora for technical and policy dialogue, dispute resolution, local governance initiatives), an informed public and political constituency, regional codes of conduct, and draft regulations in support of harmonized policies and legislation related to:

- Establishment, management and enforcement of Marine Protected Areas
- Sustainable harvesting of commercially valuable species of shellfish and finfish and protection of threatened and endangered species, (e.g., sea turtles, manatees, black coral)
- Consistency in scope and application of environmental impact assessment; land use planning and zoning in coastal areas, particularly as they relate to tourism
- Adoption of best practice and a regional environmental certification system for the tourist industry
- Standards and maintenance of coastal water quality and a region wide reporting system.

A policy working group will support reforms in these key areas by assisting the regional technical groups to formulate policy recommendations related to these issues and ensuring that these are raised through CCAD for consideration at the highest levels of decision-making.

Institutional reforms supported by the Project include creation of a mechanism for regional dialogue and coordination in the management and monitoring of the MBRS as a shared, transboundary public good; the establishment and maintenance of multi-stakeholder coral reef committees in each country to promote integrated sectoral planning and management of the barrier reef; and a formal process of consultation and ownership in the design and implementation of a long-term program to conserve the MBRS. These reforms will help build institutional capacity in the region and enhance the sustainability of efforts to protect and manage the marine elements of the Mesoamerican Biological Corridor.

3. Benefits and target population:

Project benefits mainly revolve around conservation outcomes and opportunities for sustainable use of the MBRS and its resources. These are the result of a system-wide approach to coastal and marine resource management that enhances regional cooperation, uniform and high performance standards and sustainability of outcomes. The Project's transboundary focus fills a gap created by historically national and sector specific management interventions. Beneficiaries of the Project include:

- The region and the global environment, through protection of important biodiversity and other vital environmental goods and services.
- The four countries bordering the MBRS (e.g., Mexico, Belize, Honduras, and Guatemala), which may use environmental diplomacy to advance regional economic integration objectives under the Central American System of Integration (Sistema de Integración Centroamericano (SICA), of which CCAD is a part.
- Local populations currently dependent on the resources of the MBRS, or those whose livelihoods could be improved through access to new opportunities for sustainable enterprises based on the MBRS. These include indigenous groups, such as Garifuna communities along the coasts of Belize, Honduras and Guatemala; Mayan communities in frontier areas between southern Belize and Guatemala; and Miskito communities along the southernmost margins of the MBRS; and Ladino populations who have moved in more recently to coastal areas and tourism destinations in search of

employment, who may be in conflict with more traditional MBRS resource users. While traditional use has focused primarily on fishing and coastal agriculture, many of the communities have expressed interest in becoming involved in tourism-either cultural or nature-based in association with Marine Protected Areas.

- Fishing cooperatives (such as the Belize Fishermen Cooperative Association, the National Fishermen Cooperative, the Placencia Cooperative, and Asociacion de Pescadores de Manabique), which would benefit from improved information on resource states and non-destructive fishing methods, and consistency in the timing and enforcement of closed seasons and no-take reserves in transboundary areas of the MBRS.
- Nongovernmental organizations (such as TIDES, Belize Audubon Society, Green Reef, BELPO, Fundacion Mario Dary, FUNDAECO, Honduras Coral Reef Fund, PROLANSTATE, BICA, Amigos de Sian Ka'an, ECOSUR as recipients of equipment, information and training, etc.); the scientific community, which will benefit from the information within the EIS; etc.
- Private sector, including the tourism industry (through study tours in best practice, a regional environmental certification program, discussion fora with industry counterparts in the region), fisheries and cruise ship industries, etc.
- Donor community, through strategic programming of resources and improved coordination in project/program implementation to achieve greater regional impacts.
- Regional institutions, like CCAD, which will be strengthened through increased synergy among projects implemented under the MBC umbrella, decentralized project coordination units, and improved information access and outreach.

Specific Project benefits include the following:

- Improvements in MPA networks, monitoring and management with emphasis on sustainability of efforts (includes basic equipment and infrastructure to implement management plans)
- Enhanced capacity in the region to monitor health of the MBRS and make information available to decision-makers/policy-makers and to stakeholders at the local level
- Improved livelihoods for local communities through better environmental management and sustainable income generation
- A regional constituency for conservation of the Mesoamerican Barrier Reef System as part of the MBC
- Mechanisms for sustained regional cooperation in managing the MBRS at the policy, information and technical levels
- Improvements in the overall health of the MBRS environment, as measured through proxies like water quality, biological community stability, biological productivity, local recovery from periodic disturbances, etc.).

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4. Institutional and implementation arrangements: (See Annex 2 for a more detailed discussion of these arrangements)

CCAD will be the implementing agency for the MBRS Program and will oversee execution by the Program Coordination Unit of the five year Project proposed during Phase 1 (see Figure 1). At the policy level, the Program will be coordinated by the MBRS Regional Steering Committee (RSC) made up of representatives of CCAD and each of the existing National Barrier Reef Committees in the four MBRS countries; ex-officio members will include those representing donor organizations and partner institutions working on related issues in the region. The RSC will be supported by a Technical Advisory Committee (TAC) composed of internationally recognized experts in the technical areas of project assistance. A

regional Program Coordination Unit (PCU) based in Belize will be responsible for direct implementation of the five year Project during the Program's first phase.

Given the perspective of the Action Plan's 15-year implementation period, the ultimate objective is to transform the PCU into a technical center of excellence for coastal and marine resources management in the region, under the mantle of CCAD. Institutional strengthening will be achieved over time, through the hiring of skilled technical specialists to coordinate the program in its various phases, and through networking with research institutions and other organizations working with state of the art methods for coral reef ecosystem management. During the project's first phase, technical support will be provided to the PCU by Regional Technical Work Groups (TWG) made up of appropriately selected representatives from the National Barrier Reef Committees complemented by regional/international consultants on an "as-needed" basis.² The TWGs will be supported by a policy working group (see below under Project Rationale). Program activities under each of the four proposed components: Marine Protected Areas; Regional Environmental Information System (EIS); Promotion of Sustainable Use of the MBRS; and Public Awareness and Environmental Education, will be executed by a mix of local and regional entities.

D: Project Rationale

1. Justification for Project design and alternatives considered and reasons for rejection:

The MBRS Program objectives are ambitious, and institutionally complex. In light of this and the longer-term time frames required to achieve goals related to environmental quality and policy reform, a gradualist approach was incorporated into Project design. The time frame was shifted from an initial 5 year Project to a proposed 15 year Program. The current Project represents the first phase of a 3-phase Program whose design will be ongoing and will depend in part on the results of the initial 5 year effort. This incremental approach provides the basis for a sustained effort with the opportunity to build and expand on successful activities initiated in the first phase, leading to a scaling up of Project scope and impact over the life of the Program.

Achieving institutional change is a long-term proposition, particularly when it entails strengthening and harmonizing national policies, regulations, and institutional arrangements over four countries. During the Program's initial phase, institutional and policy objectives will be identified by technical working groups in each thematic area with the help of a policy working group composed of experts in environmental law and natural resources management policy from the region. The role of the policy working group will be to assist the TWGs in the identification of priority policy objectives and actions required to harmonize national regulatory framework governing the use of the MBRS with agreed regional frameworks, e.g., for fisheries, water quality, coastal tourism development, EIA and establishment of protected areas. The policy working group will liaise closely with CCAD and its legal office to ensure that policy objectives under this phase of the Project are raised to the highest levels for consideration within the System for Central American Integration (SICA). Performance benchmarks to indicate progress toward policy harmonization are being prepared and will be incorporated into the Project Document prior to CEO endorsement. These, along with the results achieved, will pave the way toward more ambitious goals which may include amending or drafting new legislation, establishment of joint enforcement and monitoring mechanisms, and regional quotas for harvesting migrating stocks. These and other reforms are likely to be necessary to achieve regional harmonization in sectoral and economy-wide policies affecting the sustainability of the MBRS. These medium-to-long term policy objectives would form the basis for the design of subsequent phases of the Program.

A second consideration was geographic focus. An early proposal by other coral reef countries in the region to be included in the Project was rejected because of the difficulty in coordinating activities over

² Costs of consultants have been budgeted for under the respective components.

such a wide area. The decision to include only Mexico, Belize, Honduras and Guatemala in this initial phase was a result of the high level of political commitment manifested in the Tulum Declaration and subsequent agreements among the four countries, and their common stake in a shared resource. Furthermore, because it was not deemed possible to implement activities equally across an area as large as the MBRS, a phasing of Project focal areas was also adopted:

- In the first phase, many of the field-based interventions are concentrated in the MBRS's two transboundary areas: Chetumal Bay to the north (involving Mexico and Belize) and Gulf of Honduras to the South (where the frontier areas between Belize, Guatemala, and Honduras overlap). This is also consistent with the regional orientation of Phase 1, in which the incremental (or supra-national) aspects of marine ecosystem conservation and management are being supported.
- The geographic scope of the Program may be expanded in subsequent phases to include source reefs for recruiting larvae outside the MBRS—as far as Brazil, in the case of lobster and other highly dispersing species. Parallel initiatives recently underway or planned, e.g., in San Andres, Colombia under Coralina, and in Nicaragua and other part of Central America, may be linked to achieve critical mass and economies of scale in, for instance, MPA training and environmental education.

The environmental information system, sustainable use, and MPA components of the Project have been designed incrementally, with the intent of expanding these in subsequent phases of the Program. Support for pilot activities in MPA monitoring, tourism and alternative livelihoods has been designed to test the feasibility of specific enterprises and policies. This can be scaled up during later years of the Program to launch successful initiatives throughout the MBRS and other parts of the MBC.

Finally, although maritime pollution and habitat degradation related to shipping (including impacts from cruise ships) and inadequate port reception facilities was identified as a significant transboundary threat, the Project will not address these issues. These are currently being addressed by other donors, such as WWF and USAID, and will form the basis for a complementary regional project, currently under preparation in the Gulf of Honduras, to be executed by the IDB with GEF support.

2. Major related Projects financed by the Bank and/or other development agencies (completed, ongoing and planned):

Sector issue	Project	Project Cycle	Latest Supervision (Form 590) Ratings (Bank-financed Projects only)	
			Implementation Progress (IP)	Development Objective (DO)
Bank-Financed	Honduras Sustainable Coastal Tourism Project (World Bank/IDA; Honduras Institute of Tourism)	Preparation		
	Biodiversity in Priority Areas Project (World Bank/UNDP/GEF/Gov. of Honduras)	Supervision	S	S (GO)
	Social Investment Fund (Gov. of Honduras/World Bank)			
	Honduras Sustainable Coastal Tourism Project (LIL)	Supervision	S	S
	CCAD MBC Imp. Communications Strategy (IDF regional)			
	Costa Rica Biodiversity	Supervision	HS	HS
	Costa Rica Ecomarkets	Approved May, 2000		
	National Environmental Management Project	Preparation		
	Nicaragua Atlantic Biodiversity Corridor	Supervision	S	HS (GO)
	Panama Mesoamerican Biological Corridor	Supervision	S	S (GO)
Other development agencies	Regional Environmental Project for Central America (Coastal Resources Management component)			
	PROARCA-COSTAS (Co-financed between USAID and The Nature Conservancy -TNC, WWF, University of Rhode Island/Coastal Resources Center -URI/CRC)			
	Conservation of the Mesoamerican Caribbean Reef Ecoregion (WWF)			
	Caribbean Coastal Marine Productivity Program (CARICOMP)			
	Global Coral Reef Monitoring Network (GCRMN) (Intergovernmental Oceanographic Commission/Subcommission for the Caribbean)			
	Quintana Roo Integrated Coastal Zone Management Project (Amigos de Sian Ka'an, University of Quintana Roo; USAID)			
	Conservation of the Barrier Reef Complex of Belize (Coastal Zone Management Authority and Institute, UNDP/GEF)			
	Trinational Alliance for Conservation of the Gulf of Honduras (PROARCA/COSTAS)			
	Bay Islands Natural Resources Management Project (Honduran Institute of Tourism, IDB)			
	Secondary Cities Project (Gov. of Honduras/IADB)			
	Laughing Bird Caye National Park (GEF)			
	Slackchwe Habitat Enhancement Project (GEF)			

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

Of direct importance to the current MBRS program are several regional and national initiatives dealing with the MBRS and with natural resources management in the western Caribbean (a comprehensive list of regional projects is listed in Annex 5, Matrix 3). Activities totaling \$40 million related to coastal and marine resources management are currently ongoing in the region, and others are in preparation. Still others, such as the regional UNDP/GEF project for consolidation of the Mesoamerican Biological Corridor being implemented by CCAD, and the complementary suite of national MBC projects under implementation with GEF, Bank, UNDP and UNEP support, focus on terrestrial biodiversity conservation, but with potential downstream linkages to coastal and offshore processes. CCAD's role as implementing agency for both the terrestrial and marine regional programs to consolidate the Mesoamerican Biological Corridor will ensure in-house coordination between the two, realize efficiencies in project implementation and reporting/outreach, and maximize policy objectives under the two programs where they are mutually reinforcing.

At the regional level, the coastal resources management component of the regional environmental project for Central America, PROARCA-COSTAS, is co-financed by USAID with matching funds provided by international NGOs: The Nature Conservancy (TNC), World Wide Fund for Nature (WWF) and the University of Rhode Island/Coastal Resources Center (URI/CRC). The Project supports capacity building and empowerment of local communities in the development of strategies for the sustainable use of coastal resources focusing on pilot areas in Belize, Guatemala and Honduras. WWF's regional initiative, Conservation of the Mesoamerican Caribbean Reef Ecoregion, is being designed in coordination with the GEF MBRS Project, and is intimately linked to the Phase 1 Project. It focuses on biological assessment of the MBRS region, mapping and determining priority interventions to address root causes of resource degradation from a biodiversity conservation perspective.

There are numerous ongoing international and regional programs providing technical assistance in coastal resources assessment, monitoring and capacity building. These include the Caribbean Coastal Marine Productivity Program (CARICOMP) and the UNEP-coordinated Caribbean Environment Program (CEP). Also, the Global Coral Reef Monitoring Network (GCRMN), operating through its Caribbean sub-node, is supported by various international and regional organizations with local coral reef monitoring carried out with government and NGO staffs in all four MBRS countries. The Intergovernmental Oceanographic Commission/Subcommission for the Caribbean is coordinating support to countries in the wider Caribbean region to ratify and adopt actions under the protocols of the Cartagena Convention; it supports scientific research, training and monitoring of oceanographic, fisheries and biological diversity parameters. There are also various projects under preparation with financing from, *inter alia*, the GEF, IDB, UNDP, GTZ, USAID, DANIDA, and other bi- and multilaterals in support of conservation of coastal and marine resources. There is currently a GEF Block B proposal being prepared by the IDB, with the Bank as implementing agency, to address maritime pollution and other port related environmental issues in the Gulf of Honduras. Port and ship based pollution were identified as major threats to the MBRS in the Threat and Root Cause Analysis.

At the national level, several projects stand out due to their direct relevance to the MBRS. Among these, the **Conservation of the Barrier Reef Complex of Belize** (Coastal Zone Management Authority and Institute, UNDP/GEF) has provided a strong foundation for Integrated Coastal Zone Management in Belize, an essential component of any long-term strategy to conserve the Belize Barrier Reef, a major constituent of the MBRS. The WB/GEF Regional Project builds on the national project as a critical baseline for addressing transboundary issues related to the sustainability of the MBRS on Belize's northern and southern frontiers. These include the identification and monitoring of non-point source pollution from the Rio Hondo into the Bay of Chetumal and similar run-off and water quality issues in the

Gulf of Honduras in the trinational border between Belize, Guatemala and Honduras—issues that the national project cannot address in isolation.

The regional project also provides support for the establishment of bi and tri national protected areas in these transboundary areas, building on the existing national MPAs in Belize, to increase capacity for management of upstream/downstream impacts and ecological connectivity between adjacent elements of the same larger ecosystems. Bi and tri-national MPA Working groups will be established in these areas to ensure coordination in the development and implementation of strategic management plans that are consistent with principles of transboundary management and are harmonized in terms of regulations and enforcement. Strategic support for protected area management planning of MPAs located outside the transboundary areas in Belize will target those MPAs that do not have long-term strategic management plans or operational plans. MPA management training and TA in coral reef monitoring will be provided on a regional basis to countries in the MBRS according to assessed needs. Similarly, the regional Coral Reef Monitoring and EIS to be established under the MBRS Project will build on existing data bases, mapping and GIS capacity that currently exist within Belize, as determined through extensive analysis carried out during project preparation.

Coordination with UNDP and synergies between the national and regional initiatives will be ensured by close technical cooperation between the implementing agencies and joint representation on Project Advisory Committees. This is further reinforced by virtue of the Director of the Executing Agency (the ICZM Authority) for the UNDP/GEF Project also serving as Belize's National Coordinator of the MBRS GEF Regional Project. Although still under discussion, it is likely that the PCU for the WB/GEF MBRS project and PIU for the UNDP/GEF Project will be housed in the same building in Belize City.

Another important national initiative involves the southern Quintana Roo Integrated Coastal Zone Management Project (Amigos de Sian Ka'an, University of Quintana Roo, USAID). This Project has resulted recently in the successful designation of Xcalak Marine Park in the northern transboundary area between the state of Quintana Roo, Mexico and northern Belize. This is one of the 15 MPAs that will be strengthened under the GEF MBRS Project with the design of protected area management plans and training.

Other initiatives contributing to implementation of the MBRS Action Plan include the Trinational Alliance for Conservation of the Gulf of Honduras (currently developing new project initiatives) supported by PROARCA/COSTAS, and several small projects related to protected area (PA) management of both coastal and near-coastal PAs, supported by local and international NGOs, private entities, national and state governments, bilaterals and IFIs. Two projects in Honduras, the Bay Islands Natural Resources Management Project, a \$24 million project to protect the terrestrial and marine environment of the Bays Islands, being implemented by the Honduran Institute of Tourism (IHT) with financing from IDB, and the Honduras Sustainable Coastal Tourism Project (a World Bank/IDA financed LIL being prepared in parallel with the MBRS GEF project), are co-financing activities related to marine protected area management and tourism in this portion of the MBRS.

A major challenge for countries and partners in the region will be to organize these and future efforts into a comprehensive framework that supports implementation of the Action Plan for Conservation and Sustainable Use of the MBRS. The Threat and Root Cause Analysis prepared under this Project provides a useful reference point and tool for such an approach. As discussed under the implementation arrangements, ex-officio members from the international and NGO communities, and possibly the private sector will be elected to the MBRS Steering Committee to liaise with other donors and to secure and consolidate investments in the MBRS that address priority needs and resource gaps over the course of the 15 year Program.

3. Lessons learned and reflected in proposed Project design:

Experience with regional seas programs elsewhere has taught that creating a common stake in the future of a shared resource and a sense of ownership in the management process is essential to the sustainability of any collaborative effort. Gaining the commitment of stakeholders to regional cooperation to solve system-wide, transboundary issues requires consultation and consensus and a reaffirmation of the benefits of regionalism vs. a more fragmented, nationalist approach. This in turn requires public awareness and dialogue to create a strong constituency for the harmonization of policies and enforcement of legislation that will sustain such a regional approach. Aligned with this must be adequate resources to absorb the incremental costs of conservation and economic tradeoffs in the interests of the regional, public good. The current Project has been designed with significant consultation at the policy and technical levels. An ongoing social assessment will help ensure ownership at the local level for actions that will generate conservation and socio-economic benefits to local communities. Continuous policy dialogue will be an important element of the regional Project and program. Implementation of Phase 1 by CCAD will promote cross-country dialogue on MBRS issues of regional importance, and help elevate policy concerns to the highest political levels. CCAD's implementation of the complementary regional MBC project with assistance from the GEF and UNDP will promote integration between terrestrial and coastal/marine objectives to safeguard the MBC, and harmonization of sectoral policies (e.g., in agriculture, water, tourism and infrastructure) among the countries concerned to support these objectives.

Another important lesson learned from natural resource and environmental projects around the world is that these are necessarily long-term efforts, requiring sustained commitments of political will and resources. This is even truer of regional initiatives, whose scope and implementation are more complex and thus require more time to achieve stated goals. Bearing this in mind, the current Project has been designed as part of a 15 year Program. A phased approach will allow for steady progress toward realistic objectives in the near to medium term, building toward achievement of program goals in the longer term. A commitment in principle to the longer-term goals and the resources required to achieve them, based on interim performance and outcomes, should create the incentives for success at each stage. This in turn should attract more resources from partners and other potential donors, and a better integration of investments in the region, reinforcing the success of the long-term effort.

4. Indications of borrower commitment and ownership:

The program aims to build on the foundation established in June 1997, through the Tulum Declaration, in which the Presidents of Mexico, Guatemala, and Honduras and the Prime Minister of Belize publicly affirmed the global biological, economic and cultural importance of this shared resource to their nations' future. At the same time, they acknowledged serious threats to the sustainability of this unique system, and the urgent need to initiate actions to counteract them. The four leaders committed themselves to initiate a process of active collaboration in the preparation and implementation of an Action Plan for Conservation of the MBRS.

The Plan was endorsed by the four countries in June 1999, and GEF PDF support for the preparation of a program to implement regional elements of the Action Plan was successfully leveraged at a ratio of nearly 3:1. Reaffirmation of the Action Plan and commitment to the Tulum Declaration was witnessed at two recent ministerial level events that took place in March and April 2000. Both were held in Tulum, to commemorate the initial event: the Gift to the Earth ceremony sponsored by WWF, in which the four countries pledged their support to protect the MBRS, and the third MBRS regional consultation to review Project preparation under the current Bank/GEF initiative. Both resulted in the necessary political commitment and counterpart financing to undertake a regional Project of this complexity.

The four countries are also signatories to a number of key conventions at the regional and global level. These legal agreements will be used as the basis for harmonization of policies and legislation required to implement a region-wide plan for the conservation of a unique transboundary ecosystem, and for the equitable and sustainable use of its resources. Support for these legal agreements includes the following: Belize ratified the Convention on Biological Diversity (CBD) on December 30, 1993, and is a signatory to CITES, the Convention on the Law of the Sea, Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention 1972) and the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). Guatemala ratified the Convention on Biological Diversity on July 10, 1995, and is a signatory to the Ramsar Convention, CITES, Law of the Sea, and London Convention 1972. Honduras ratified the Convention on Biological Diversity on July 31, 1995, and is a signatory to Ramsar, CITES, Law of the Sea, and London 1972. Mexico ratified the Convention on Biological Diversity on March 11, 1993. In May 1996, the Government of Mexico published its program on Natural Protected Areas 1995-2000, outlining a strategy and action plan for effective protected area management. Endorsement letters from the GEF focal points in all four countries are attached to this proposal.

5. Value added of Bank and GEF support in this Project:

The GEF's role in this Project is essential. The majority of issues being addressed under this Project are transboundary in character, thus the incremental cost aspects can only be adequately addressed through grant support.

The World Bank brings to this Project its considerable capacity to address marine-related environmental issues and its ability to convene governments around issues of common concern. The Bank has extensive experience in the design and implementation of regional seas programs around the world, and has been a long-standing member and active supporter of the International Coral Reef Initiative, with a growing portfolio of coral reef related operations currently valued at nearly US\$100 million.

More specifically, the Bank, through an IDA credit to the Government of Honduras, will be investing in baseline costs related to the establishment of a framework for sustainable tourism along Honduras's northern Caribbean coast. This area includes the mainland coast from Puerto Cortez to Trujillo and the offshore Bay Islands—the southeastern-most extension of the MBRS. The \$5 million credit is being designed as a Learning and Innovation Loan (LIL), in parallel with the GEF regional MBRS Project. The objectives of the LIL are to create an enabling environment—through policy dialogue, capacity building at the municipal and local community level, and support for innovative public-private partnerships—for the sustainable development of tourism within the coastal zone of the MBRS. The Project will pilot the establishment of environment and tourism technical units within each participating municipality to oversee environmental assessment requirements in relation to tourism development proposals; specialized training in tourism related services to local stakeholder groups; dissemination of best practice in the coastal tourism industry and a regional environmental certification program to encourage its adoption; and an innovation marketplace to promote new ideas and opportunities for small- medium enterprise development in the coastal tourism sector. These activities are being designed to serve as demonstrations for sustainable tourism development in other parts of the MBRS. Through its work with indigenous groups in the coastal zone, the LIL will also inform the community based management activities under the MPA and sustainable use components of the MBRS regional Project.

In addition to the IDA credit, the Bank has partnered extensively with the GEF in investments to consolidate and conserve the terrestrial portion of the MBC. The Bank has been successful in leveraging additional financing for these investments from bilaterals, such as the Dutch and U.S., the EU, the IDB and from the countries involved. Together these investments form a critical mass of support for regional

cooperation in the conservation of globally important transboundary ecosystems, and in building the capacity—institutional, financial and human—to achieve these objectives.

E: Summary Project Analyses

1. Economic (supported by Annex 3, Incremental Cost):

Cost-Benefit Analysis : NPV=US\$ million; ERR= % Cost Effectiveness Analysis:

Incremental Cost Other (Specify)

The IC Annex compares the baseline scenario with the GEF Alternative, identifying an incremental cost of \$10 .1 million to achieve global benefits.

2. *Financial*): NPV=US\$ million; FRR= %

Fiscal impact:

The anticipated fiscal impact of the Project on the participating countries is expected to be modest. Counterpart contributions are largely in kind, in terms of staff, or one-time investments (in terms of construction of office space). The recurrent costs for fuel, equipment maintenance and some consumables are already absorbed into the existing budgets of the implementing agencies, and should therefore prove manageable in the future.

In the case of MPAs, cost recovery schemes for management and monitoring activities will be integrated into the management and operational plans that are to be developed under Component 1 of the Project (e.g., via user fees, permits, fines, trust funds). The allocation of staff for the four new MPA sites to be supported under the Project will be absorbed under annual operating budgets of the agencies involved and not pose a significant burden on central treasuries now or in the future.

3. Technical:

These include country level differences in capacity to manage resources and to assess the state of these resources; differences in data collection methodologies which make comparisons across countries difficult; and communication difficulties in sharing information, compounded by language differences. The Project would address data issues by developing and implementing agreed protocols for collection, processing and dissemination information.

To minimize language barriers, the regional Project coordinator would be completely bilingual in Spanish and English, and all Project documents would be prepared in both languages.

4. Institutional: (see Annex 2)

To enhance coordination between countries at the regional level and to promote multi-sectoral participation at the national level, each country has established a Barrier Coral Reef Committee. These committees are comprised of representatives of the concerned ministries, the NGO community, research institutions and the private sector. They serve as a clearinghouse for information on programs and policies affecting the MBRS in each country. A National Coordinator has been selected from each of the country

committees to serve as the principal liaison with the Project preparation team in the design and implementation of Phase 1 of the GEF regional program. Regional Technical Working Groups will be established under each Project component, drawn from the ranks of the Barrier Reef Committees in each country.

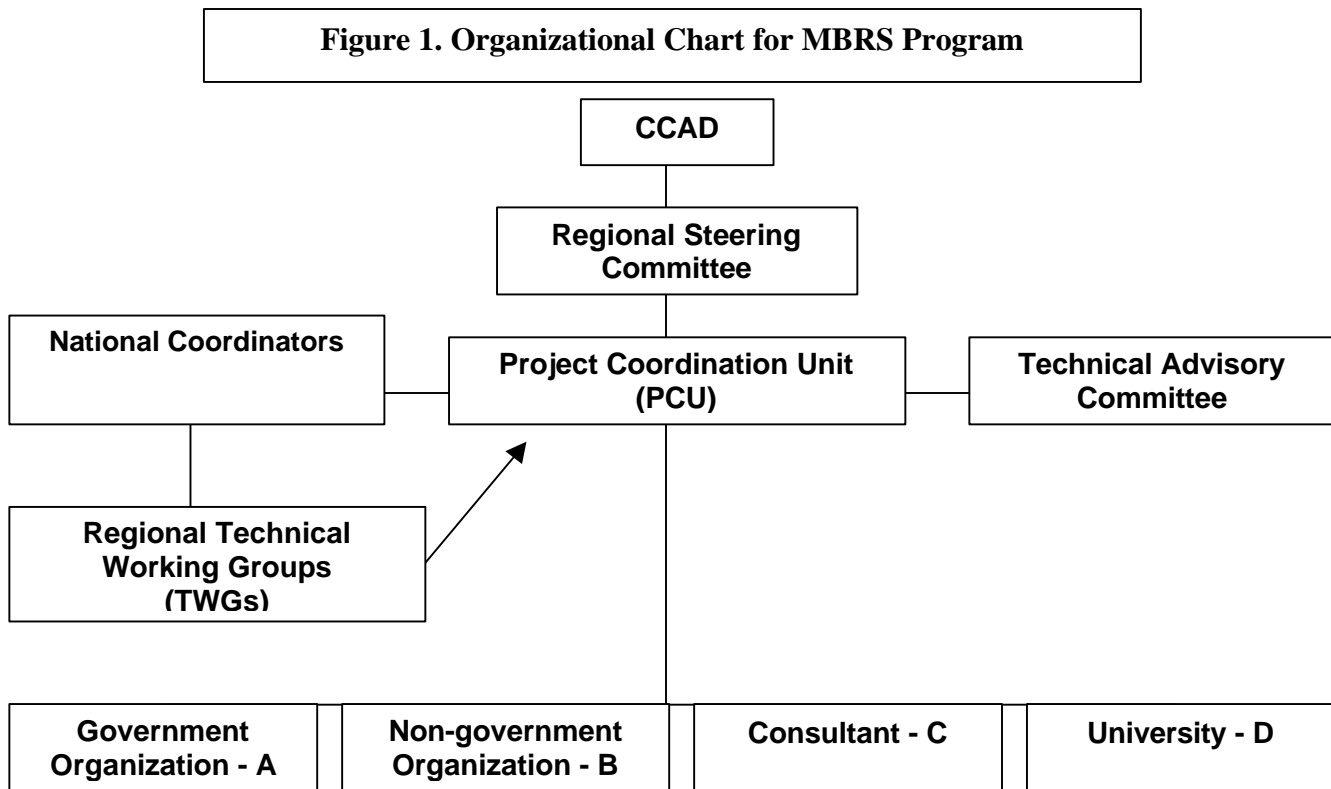
a. Executing agencies:

CCAD, which is comprised of the Council of Ministers of the Environment in Central America, with Mexico as an observer, will serve as implementing agency, operating through its secretariat, the Directorate General for Environment of the System for Central American Integration (SICA), based in San Salvador.

b. Project management: (see Figure 1 below)

The main institutional issues to be addressed are: (i) no established precedent for regional collaboration in addressing environmental issues, apart from the recent efforts of CCAD; and (ii) inconsistencies and gaps in national legislation related to coastal and marine resource use among the four countries, which are obstacles to implementation of regional management regimes to safeguard the health of MBRS. The Project would support measures to harmonize policies and regulations in line with best practice and agreed principles for conservation and sustainable use of the MBRS. Initially, harmonization would focus on establishment of MPAs, and on the fisheries and tourism sectors, setting and enforcing standards for coastal water quality and environmental impact assessment.

Figure 1. Organizational Chart for MBRS Program



5. Social:

The main Project stakeholders and beneficiaries are: (a) the governments of Mexico, Belize, Guatemala and Honduras, including national, departmental and municipal authorities; (b) local organizations and traditional leaders; (c) nongovernmental organizations; (d) international and regional organizations; (e) the scientific community; and (f) private entrepreneurs, (g) the donor community (bilaterals and multilaterals, IFIs).

Consultations with various stakeholder groups have taken place throughout Project preparation in a series of regional workshops and local level meetings, and their concerns have been reflected in the current Project design. Technical working groups will be set up during Project implementation to ensure participation of specialized sectors in the design of annual work programs, and transparency in the process of implementation. A Social Assessment is currently underway to focus on concerns and needs of indigenous groups, such as the Garifuna and the Maya, and of marginalized Ladino and other economically disadvantaged communities in the Project area (see C.2.). Substantive changes to Project design are not anticipated, but rather a clarification of how Project benefits (e.g., training in sustainable use, support for alternative livelihoods, co-management of protected areas, and information) can be more readily accessed by these groups. A Project participation plan is being developed to ensure meaningful participation of these communities in all aspects of the Project that are relevant to their felt needs and concerns. Objectives of the Social Assessment include:

- To evaluate Project activities related to marine conservation, coral reefs, living coastal resources and water management in a gendered way, as these are practiced by the different social groups and institutions in the Project area.
- To analyse the positive and potential negative social impacts of the proposed activities on these stakeholders (specifically as these may be related to coral reefs, other aquatic and landscape

conservation areas and archeological sites, traditional fishing grounds, etc, in the Project area; gender imbalances; and exclusion of vulnerable groups), and refine the design of activities to prevent or mitigate such impacts.

- To agree on the most adequate opportunities for strengthening institutional and technical capacity, including enhancing gender balances in grassroots organizations, among local producers/entrepreneurs and authorities, in order to achieve effective planning and Project implementation.
- To agree on the beneficiaries' preferred mechanisms for Project participation (including men and women of indigenous and non-indigenous groups, from local communities and other stakeholder groups, including conservation interests, both governmental and nongovernmental).
- To agree on indicators of positive Project impact related to alternative livelihoods and sustainable use.

The results of the assessment will be incorporated into the final design of activities under each sub-component and reflected in the annual work programs for their implementation.

6. *Environmental assessment:* Environmental Category A B C

The Project is designed to treat many of the fundamental threats to the ecological health of the MBRS, as identified in the Threat and Root Cause Analysis. Stakeholders consulted in the preparation of the EA were of the opinion that the MBRS Project would have important positive environmental and social impacts for the MBRS region. The environmental and social impact of the Project is expected to be overwhelmingly positive in light of objectives to conserve the integrity and continued productivity of the MBRS, and promotion of opportunities for its sustainable use. The Project will make important contributions to the body of knowledge concerning the status of the MBRS and its resources, and the real and potential negative impacts of anthropogenic activities as these are manifested on its habitats and resources. The Project seeks synergistic linkages with ongoing and future local, national and, regional initiatives dealing with conservation and sustainable use of the MBRS. It would achieve this by promoting a regional view of ecosystem boundaries and issues, a long-term program of investment and monitoring, and mechanisms for regional coordination in program design and implementation.

The Category B rating reflects the potential for some negative environmental impacts associated with minor civil works in the construction of MPA infrastructure. To mitigate these risks, environmental management guidelines for construction and operation of MPA infrastructure will be prepared and adhered to under the Project.

7. *Participatory approach [key stakeholders, how involved, and what they have influenced; if participatory approach not used, describe why not applicable]:*

a. Primary beneficiaries and other affected groups: The main Project stakeholders and beneficiaries are: (a) the governments of Mexico, Belize, Guatemalan and Honduras, including national, departmental and municipal authorities; (b) local organizations and traditional leaders; (c) nongovernmental organizations; (d) international and regional organizations, such as CCAD (e) the scientific community; and (f) small and medium entrepreneurs (involved in artisanal aspects of fishing and tourism); (g) large scale entrepreneurs involved in environmental certification of goods and services associated with the tourism industry; and (h) the donor community. (see C2 for more discussion of stakeholders).

During the design phase of the Project, stakeholders were consulted employing a variety of approaches. Three regional Project-planning workshops brought together members of the National Barrier Reef Committees of each country. These committees are comprised of representatives of government agencies responsible for themes related to the MBRS (including natural resources management, environmental protection, protected areas management and fisheries); NGOs active in coastal and marine areas; and

representatives from private industry (especially tourism). These same workshops included invitees from community-based organizations, including Garifuna fishing villages from Honduras, Guatemala and Belize. Workshops permitted interchange of ideas and interests concerning the values placed on MBRS resources and current economic and cultural uses. Wide participation of stakeholders in work groups and plenary sessions enriched the design process and helped focus regional priorities.

The TRCA (Threats and Root Cause Analysis) study, which is used as the principal basis for the environmental assessment, involved numerous consultations with members of the National Barrier Reef Committees in their own countries in order to assess national priorities and comprehend the outreach and activities of projects and programs being implemented within each country. Similarly, contact made with representatives of regional and international projects provided a basis for avoiding duplication and promotion of synergistic approaches for regional cooperation with existing projects. The results of the study were used in the preparation of the environmental assessment and the current Project design.

F: Sustainability and Risks

1. Sustainability:

Sustainability in the context of this Project must be defined in terms of both (i) ecological sustainability—that is maintaining the biological communities and ecological processes that comprise the MBRS and are responsible for the goods and services it produces; and (ii) program sustainability—establishing the institutional arrangements, financial commitments, and economic and social incentives to maintain a strategic set of well coordinated activities that will create the conditions for the first. The Project design recognizes the need to account for interconnectedness of ecological processes and environmental impacts within the MBRS, many of which are transboundary in nature (i.e., cross political frontiers) or are the result of development activities upstream (within national boundaries). To do this requires comprehension of the system's true boundaries, the forces that drive the system (e.g., recruitment, predation, competition, nutrient cycling, and physical factors including climate, temperature and pH), and how they operate to keep the system intact. This is the role of science—of research and monitoring, and of information dissemination.

Related to this is the interpretation of relevant information for the public and for decision-makers. Exchange of information and public debate is essential to creating a constituency for the political and financial support, and the economic and social tradeoffs in some cases, that will be required to initiate and sustain conservation efforts over time. This is a major focus of the current Project.

In the case of transboundary aquatic systems like the MBRS, sustaining measures to conserve its ecological values and economic productivity will depend on regional cooperation in adopting an ecosystem perspective that transcends both national interests and geographic frontiers. Traditionally, such international cooperation is rare, despite a shared stake in the future of the resources among riparians, and the economic and ecological implications of failure to do so in the long term. A similar pattern is usually evident among the array of donors in a region, whose interventions are targeted but generally fragmented in terms of coordination with one another and often not sustained over the long term.

The MBRS Program is designed to address the need for regionalism in the perspective of the countries involved, and for coordination of activities within a long-term, strategic framework. The first phase of the Program focuses on system-wide threats and interventions required to address these. It will seek to facilitate coordination at the technical and policy levels among the four countries through establishment of the Regional Technical Working Groups and support for their operation. Regional monitoring and information systems will help bind the countries together through shared knowledge and provide the basis for informed policies and decision-making at the regional level.

Sustainability of interventions over the long term will be enhanced through human resource development and institutional capacity building, and through the commitment of donors and stakeholders in the region to a program rather than a project approach. Financial sustainability will be enhanced through efforts to leverage GEF financing in Phase 1 toward new investments by co-financiers in Phases 2 and 3, by expanding the partnership, identifying synergies and demonstrating technical and financial efficiencies of scale. Areas of opportunity for collaboration with new partners can be found for each MBRS component, including aspects of policy and regulatory strengthening, training, environmental education and public outreach campaigns and media development, planning responses for contingencies, and in areas of inventory, monitoring and the development of the proposed environmental information system.

Cost recovery for training, MPA management, Environmental Information Systems, environmental certification and other fee-based services to be supported under the Project will be introduced at the end of Phase 1, to promote continuity beyond the life of Project. Criteria for replicability and scaling up of sustainable use activities in subsequent phases of the Program will include profitability, ease of adoption and dissemination and demonstration value. With respect to recurrent costs for fuel, equipment maintenance and some consumables, these in-kind contributions have already been absorbed into the existing budgets of the implementing agencies, and should therefore prove manageable in the future.

By institutionalizing policy reforms, increasing the collection and flow of information, strengthening institutions and collaborating with a broad array of stakeholders, the MBRS Program will build a strong base of support that is likely to transcend changes in administration and personnel, and help ensure continuity in the commitment of partners and the flow of resources, over the life of the Program.

2. Critical risks (reflecting assumptions in the fourth column of Annex 1):

<u>Risk</u>	<u>Risk Rating</u>	<u>Risk Minimization Measure</u>
<p><i>Annex 1, cell "from Outputs to Objective"</i></p> <p>Commitment to regional approach for MBRS management undermined by national interests.</p>	M	<p>All four countries have reiterated commitments to conserving the MBRS, and to the necessary regional cooperation, at the highest levels.</p> <p>--CCAD's implementation of both the MBRS and the MBC regional projects will promote a regional view in the policy context.</p> <p>--Environmental education and public awareness campaigns will build support for conservation of the ecosystem as a whole.</p>
<p>Coordination of activities at the regional level will be difficult to operationalize on the ground. Institutional arrangements for regional cooperation are weak.</p>	S	<p>Regional Technical Working Groups and workshops for each component and theme under the Project will foster communication and good working relations across countries; PCU and national Project coordinators will ensure coordination in implementation of annual work plans.</p> <p>--Program Technical Advisory Group will interface with other donors to coordinate activities, attract new partners and consolidate investments in MBRS consistent with the Action Plan and TRCA.</p>
<p>Human resources and capacity not uniform across countries—obstacle to collaboration and achievement of program objectives.</p>	S	<p>Project aims to build capacity to a minimum uniform standard for MPA management, ecosystem monitoring, fisheries data collection and management through training and joint research, fostering intra-regional and north-south partnerships between technical institutions.</p>
<p><i>Annex 1, cell "from Components to Outputs"</i></p> <p>Establishment of MPAs in transboundary areas difficult, particularly enforcement.</p>	M	<p>Development of 10 year Management plans and 2 year Operational plans, along with resources for basic equipment and infrastructure to implement plans will facilitate MPA establishment in T-BAs. Joint workshops and training for MPA staff in T-BAs will foster collaboration in management, surveillance and enforcement.</p>
<p>Regional ecosystem monitoring and information system difficult to sustain.</p>	S	<p>Requirement of Government counterpart contribution of staff to participate in monitoring and maintain data base according to agreed protocols; support for equipment, training and travel tied to data collection and sharing.</p>
<p>Information collected is not interpreted and made available to decision-makers, and general public.</p>	M	<p>Substantial TA will be provided to set up a robust monitoring system to detect trends in status of MBRS; applied research on physical and biological factors (including human disturbance) affecting overall health and productivity of MBRS will be supported through co-financing and cooperative arrangements with MBRS partners; data will be interpreted and made available to the public and to decision-makers.</p>
Overall Risk Rating	M-S	The risk is significant but manageable.

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N (Negligible or Low Risk)

3. Possible controversial aspects:

Harmonizing policies across sectors and across countries is an ambitious undertaking. Countries are normally conservative about giving up exclusive sovereignty over resources they control. This may prove

problematic in trying to reach regional accords on fisheries management issues. However, all countries have expressed their support for the FAO Code of Conduct on Straddling Stocks and Migratory Species and are signatories to the Cartagena Convention and its SPAW protocol on Species Conservation. The Project will help articulate key policy issues in different sectors and facilitate dialogue on how to resolve these issues, as well as promote concrete steps toward policy harmonization, through revising regulations, amending legislation, or drafting new laws where necessary to create consistency across the four countries.

The Social Assessment may reveal issues at the local level related to land tenure and traditional use rights among indigenous groups or coastal communities adjacent to protected areas. There may also be some controversy over disputed fishing grounds in transboundary areas along with issues related to poaching. While policy concerns can be taken up at higher levels (e.g., inter-ministerial and steering committee/policy advisory groups supported under the Project), it may be necessary to set up conflict management fora at the local level to deal with some of these issues. The Social Assessment should provide further guidance on how to address these.

G: Main Grant Conditions

1. Effectiveness conditions:

- All National Barrier Reef Committees operational and a mechanism for assigning technical working group members agreed
- Financial Management System in place or a plan for its implementation approved
- Others to be determined.

Central America Commission on Environment and Development
Conservation and Sustainable Use of the Mesoamerican Barrier Reef System
Annex 1

2. PROJECT DESIGN SUMMARY

Narrative Summary	Key Performance Indicators	Monitoring and Evaluation	Critical Assumptions
<p>a. Sector-related CAS Goal: Reduced rural poverty and improved environmental security through sustainable management of natural resources.</p> <p>b. GEF Operational Program: To enhance protection of ecologically unique and vulnerable marine ecosystems through introduction of an ecosystem approach to conservation and sustainable use.</p>	<p>More rational use of coastal and marine resources to balance economic development and conservation needs.</p> <p>Increased human and institutional capacity for environmental management.</p> <p>Maintenance of ecological integrity, resilience to natural disturbance and continued productivity of MBRS.</p>	<p>National surveys, sector work in environment and social policy</p> <p>Regional Monitoring and EIS reports, MBRS Atlas, and targeted research reports.</p>	<p><i>(Goal to Bank Mission)</i></p> <ul style="list-style-type: none"> • Other externalities do not undermine social and economic benefits from integrated management of the coastal zone. • Climate change related phenomena do not swamp natural resilience of coastal and marine ecosystems to moderate levels of stress and periodic disturbance nor generate unanticipated social response.
<p>Project Development Objective:</p>			<p><i>(Objective to Goal)</i></p>
<p>To assist the countries of Belize, Guatemala, Honduras and Mexico to manage the MBRS as a shared, regional ecosystem; safeguard its biodiversity values and functional integrity; and create a framework for its sustainable use.</p> <p>Global Objectives To enhance protection of the ecologically unique and vulnerable marine ecosystems comprising the MBRS by assisting riparian nations to strengthen and coordinate national policies, regulations, and institutional arrangements for the conservation and</p>	<ul style="list-style-type: none"> • Biological representation and ecological interconnectivity maintained in coastal and marine ecosystems throughout MBRS. • Ecoregional approach to MBRS management incorporated into conservation planning at local, national and regional levels. • Steps towards harmonization of relevant policies and legislation regarding MPA management in transboundary areas, sustainable fisheries management; sustainable tourism development; and protection of coastal water quality agreed and initiated in all four countries. • Fora for regional cooperation at 	<ul style="list-style-type: none"> (a) Annual reports of CCAD, SEMERNAP (MX), CZMA-I (BZ), CONAMA/ Secretariat on the Environment (GT), and SERNA (HN). (b) Changes in policies or operating guidelines in relevant sectors (or in standards and regulations, e.g., use of EIA and land use planning governing resource use). (c) Surveys of donors, multi-lateral projects, and academia. (d) Investment trends in tourism sector. (e) Regional coastal develop- 	<ul style="list-style-type: none"> • National interests do not undermine incentives for regional approaches to management of transboundary systems/resources. • CCAD is successful in raising awareness of MBRS policy issues and in prioritizing harmonization of policies and legislation on SICA agenda. • Lack of precedents for regional cooperation at the technical level do not act as a barrier to creation of new institutional arrangements for such collaboration on the ground. • Appropriate measures are being implemented at local and national levels to mitigate land-based sources of pollution.

Narrative Summary	Key Performance Indicators	Monitoring and Evaluation	Critical Assumptions
sustainable use of this global public good.	technical and policy levels operational.	ment plans (in Honduras, Belize, and Mexico).	
Outputs:			(Outputs to Objective)
Regional network of MPAs ensuring geographical and ecosystem representation established and/or strengthened throughout the MBRS.	<ul style="list-style-type: none"> • MPA data baseline established and monitoring programs implemented by PY4. • 3 new MPAs established in transboundary areas by PY4. • 10-year management plans developed for 4 MPAs by PY3. 2-year operational plans developed for 11 MPAs by PY4. • 160 persons trained in MPA management by PY5. • Basic equipment and infrastructure provided to two regional MPA complexes and an additional 11 MPAs by EOP. 	<ul style="list-style-type: none"> (a) Review of completed management plans. (b) Project bi-annual reviews and supervision reports. (c) Technical reports of monitoring activities. (d) Course evaluations completed by trainees. 	<ul style="list-style-type: none"> • There is sustained political and budgetary commitment to management of MPAs.
Increased knowledge and dissemination of information relating to coastal and marine ecosystem health in the MBRS.	<ul style="list-style-type: none"> • Synoptic monitoring program designed and under implementation by PY2. • Web-based, distributed regional EIS established and operational by PY3. • 15 baseline reports on MBRS ecosystem health produced and disseminated by PY5. • 32 persons trained in operation and management of EIS by PY5. • Basic equipment and infrastructure provided to four national nodes of EIS by PY2. • Basic field monitoring equipment provided to implementing organizations by PY2. 	<ul style="list-style-type: none"> (a) Monitoring reports and technical papers incorporated into EIS. (b) Project bi-annual reviews and supervision reports. (c) International access to knowledge generated regarding MBRS via Web-based EIS. 	<ul style="list-style-type: none"> • Sufficient supply of technical assistance specialized in sustainable management of coastal and marine resources is available. • MBRS stakeholders are willing to harmonize data access agreements for use of information in EIS. • Required counterpart funding is available on a timely basis to support participation of technical working groups and maintaining EIS nodes.

Narrative Summary	Key Performance Indicators	Monitoring and Evaluation	Critical Assumptions
<p>Increased opportunities for sustainable use of coastal and marine resources developed.</p>	<ul style="list-style-type: none"> • Formulation of draft regional strategy for management of spawning aggregation sites completed by PY5. • 168 persons trained in sustainable fisheries management and alternative income-generating activities by PY5. • Catalogue of exemplary practices for coastal and marine tourism industry developed by PY2. • Regional environmental certification program designed and implemented by PY5. • Marine tourism exemplary practices study tour designed and executed for “emerging” marine tour operators by PY2. • 236 persons trained in sustainable tourism-related activities by PY5. 	<ul style="list-style-type: none"> (a) Technical reports of fisheries monitoring activities. (b) Review of draft regional strategy. (c) Project bi-annual reviews and supervision reports. (d) Course evaluations completed by trainees. (e) Review of technical reports relating to sustainable tourism, including catalogue of exemplary practices and regional certification program. 	<ul style="list-style-type: none"> • Political will exists on the part of national-level authorities to adopt a regional strategy for sustainable fisheries management.
<p>Increased public awareness of the importance of and demand for the conservation of the MBRS at regional and international levels.</p>	<ul style="list-style-type: none"> • 160 schoolteachers, community leaders, and business leaders trained in MBRS concepts by PY5. • 10,000 copies of training materials distributed by community leaders throughout MBRS by PY5. 	<ul style="list-style-type: none"> (a) Project bi-annual reviews and supervision reports. (b) Course evaluations completed by trainees. (c) Stakeholder surveys. 	<ul style="list-style-type: none"> • Public sector and civil society are committed to incorporating project lessons into broader initiatives for coastal resources management. • Management staff of regional and national environmental authorities and non-governmental stakeholders within civil society adopt good practice and lessons learned through training.
<p>Increased regional coordination and sustained collaboration among MBRS countries in management of a shared transboundary ecosystem</p>	<ul style="list-style-type: none"> • 1 MBRS Regional Steering Committee, 1 Technical Advisory Committee and 5 Technical Working Groups established and operational by PY2. 	<ul style="list-style-type: none"> (a) Project bi-annual reviews and supervision reports. (b) Minutes of meetings of Steering Committee and technical committees. (c) Review of annual work program. 	<ul style="list-style-type: none"> • There is sustained political commitment to MBRS principles. • MBRS Regional Steering Committee reaches consensus on annual work program design and implementation. • Appropriate expertise and political authority is represented on MBRS Regional Steering Committee and Technical Working Groups • Other donors and partners agree to cooperate in design and implementation

Narrative Summary	Key Performance Indicators	Monitoring and Evaluation	Critical Assumptions
			of activities within long-term programmatic framework.
<i>Project Components/Sub-components: (see Annex 2 for project description)</i>	<i>Inputs: (budget for each component)</i>		<i>(Components to Outputs)</i>
1. Marine Protected Areas . 2. Regional Environmental Information System (EIS) 3. Promotion of Sustainable Use of the MBRS. 4. Public Awareness and Environmental Education 5. Regional Coordination and Project Management	US\$5.87 million US\$5.25 million US\$1.88 million US\$2.24 million US\$2.06 million	(a) Annual and quarterly reports (b) Procurement records (c) Evaluation reports (d) Copies of contracts (e) Bank supervision reports (f) Field management reports	<ul style="list-style-type: none"> • Required counterpart funding is available on a timely basis. • There is continued political support for regional cooperation and national-level implementation. • Civil society supports the principles behind and implementation of specific project activities. • Competent staff is appointed and maintained to coordinate project activities on a timely basis. • PCU has sufficient autonomy and authority to implement project activities.

**Central America Commission on Environment and Development
Conservation and Sustainable Use of the Mesoamerican Barrier Reef System**

**Annex 2
Detailed Project Description**

OVERVIEW

1. The Mesoamerican Barrier Reef System (MBRS), extending from the southern half of the Yucatan Peninsula to the Bay Islands of Honduras, includes the second longest barrier reef in the world. It is unique in the Western hemisphere due to its length, composition of reef types, and diverse assemblage of corals and related species. The MBRS contributes to the stabilization and protection of coastal landscapes, maintenance of coastal water quality, and serves as breeding and feeding grounds for marine mammals, reptiles, fish and invertebrates, many of which are of commercial importance. The MBRS is also of immense socio-economic significance providing employment and a source of income to an estimated one million people living in adjacent coastal areas.

2. Despite its significance in both ecological and socio-economic terms, the MBRS is increasingly at risk from a number of threats. The principal anthropogenic threats to the ecological integrity and continued productivity of the MBRS include: dredging and construction activities related to the expanding coastal tourism industry; growing and unplanned human settlements located along the coast and cays of the MBRS; and water-borne pollutants originating from untreated wastewater, industrial effluent and non-point sources of pollution, the latter principally in the form of agricultural runoff (see Map 1).

3. Natural disturbances, associated with changes in regional and global oceanic and atmospheric processes (which may be related to human induced climate change), also pose a growing threat due to their increased frequency and amplitude. An intense El Niño episode in the fall of 1998 led to extensive bleaching of coral reefs, followed by massive damage to corals on exposed portions of the MBRS as a result of Hurricane Mitch.

4. Existing institutional arrangements in the region do not appear adequate to address many of these threats. Institutional fragmentation at the national level is manifested in the sectoral approach to resource development (e.g., tourism, fisheries, agriculture, infrastructure). Such sector-specific approaches not only fail to take into account linkages between sectors but have been similarly ineffective in addressing upstream, downstream, and coastal resource use conflicts, often at significant environmental and social costs. The challenge to manage the MBRS is complicated by the transboundary nature of the System and the lack of an effective mechanism to facilitate the regional cooperation needed to achieve a comprehensive management approach. Any effort that purports to tackle the existing threats to the MBRS and to promote its future sustainable use, will have to address both the prevalent sector-based approach to managing natural resources in the MBRS region and the establishment of an effective institutional and policy framework which supports a regional approach to management of this globally-significant resource. The Program described below reflects the aforementioned needs and the realities of the region and has attempted to address them through incorporating a realistic, gradualist approach into its design, one which will lead to the conservation and sustainable use of the MBRS.

PROGRAM GOAL, OBJECTIVES, AND APPROACH

5. The goal of the Mesoamerican Barrier Reef System Project³ is to enhance protection of the unique and vulnerable marine ecosystems comprising the MBRS, and to assist the countries of Mexico, Belize, Guatemala and Honduras to strengthen and coordinate national policies, regulations, and institutional arrangements for the conservation and sustainable use of this global public good. The Project is part of a long-term Program to safeguard the integrity and continued productivity of the MBRS. The MBRS initiative is being actively promoted by a variety of donors and partners in the region and within the context of the Mesoamerican Biological Corridor Program.

6. The regional objectives of the GEF/Bank supported MBRS Program, agreed to by the four participating countries, are to: (a) strengthen existing and create new Marine Protected Areas (MPAs); (b) develop and implement a standardized data management system of ecosystem monitoring and facilitate the dissemination of its outputs throughout the region; (c) promote measures which will serve to reduce non-sustainable patterns of economic exploitation of MBRS, focusing initially on the fisheries and tourism sectors; (d) increase local and national capacity for environmental management through education, information sharing and training; and (e) facilitate the strengthening and coordinating of national policies, regulations, and institutional arrangements for marine ecosystem conservation and sustainable use.

7. The MBRS Program objectives are ambitious, and institutionally complex. In light of this, a gradualist approach was incorporated into Project design. The time frame was shifted from an initial 5 year Project to a 15 year Program, to be implemented in three phases. The three phased approach provides the opportunity to build and expand on successful activities initiated in the first phase, leading to a scaling up of Project scope and impact over the life of the Program.

8. A second consideration involves the geographical focus of the Program. Because it is not possible to support the implementation of all component activities across an area as large as the MBRS, a phasing of Project focal areas has also been adopted. In the initial phase, many of the field-based interventions are concentrated in the MBRS's two transboundary areas: Chetumal Bay (Mexico and Belize) and Gulf of Honduras (Belize, Guatemala, and Honduras). However, activities such as capacity building and policy harmonization are designed to include the entire MBRS. Ecosystem monitoring and research, sustainable use, and MPA management initiatives have been designed to expand as needed in subsequent phases of the Program.

9. Finally, achieving institutional change is a long-term proposition, particularly when it entails strengthening and coordinating national policies, regulations, and institutional arrangements in a four country region. As such, during the Program's initial phase, institutional and policy issues are addressed through activities that are integrated into the other components, and which are designed to provide the basis for a broader and more in-depth treatment in the Program's subsequent phases. See Table 1 below.

3 "The Project" refers to the Activities to be carried out during Phase 1 of a proposed 15 year Program for the Conservation and Sustainable Use of the Mesoamerican Barrier Reef.

Table 1. Proposed Activities for Policy Objectives under the Project

Selected Policy / Institutional Issues Addressed by MBRS Program	MBRS Program Action (s) Supported which Address the Issue	Eventual Desired Institutional Outcome
Absence of broad public and decision-maker support for the conservation and sustainable management of the MBRS	<ul style="list-style-type: none"> • MBRS public awareness campaign and information dissemination • Establishment of an information clearing house facilitating public access to MBRS-related information • Updating of educational materials in primary and secondary schools • Dissemination of MBRS material to target groups through workshops • Provision of a forum for policy makers and MBRS stakeholders to conduct a dialogue and develop consensus on a agreed set of actions to promote sustainable use of the MBRS (ecotourism). • Increasing public participation in MPA planning and management activities 	<ul style="list-style-type: none"> • Creation of an influential constituency among civil society and the private sector to promote the required institutional and policy changes to conserve and sustainably manage the MBRS
Absence of a coordinated, regional approach to MBRS data collection, management, and dissemination	<ul style="list-style-type: none"> • Establishment of a regional EIS supported by national data nodes and procedures to share information and facilitate increased public access to information on the significance and status of the MBRS • Developing a monitoring program which assesses the status and "health" of the MBRS • Establishing a monitoring program of a regional network of MPAs to assess status and the effectiveness of management measures 	<ul style="list-style-type: none"> • Establishment of a reliable region-wide MBRS data base to support informed decision-making and promote the development of public consensus on regional actions in support of the conservation and sustainable management of the MBRS
Policy and institutional failures contributing to non-sustainable resource use practices	<ul style="list-style-type: none"> • Develop the required technical basis to modify existing/formulate new policies • Formulate and promote the adoption of new policy (on use of fish aggregation sites) • Establish an environmental certification program; support exposure to examples of "best practices" in the MBRS region. 	<ul style="list-style-type: none"> • Repeat and expand the process to include other sector and multi-sector issues affecting the sustainable use of the MBRS
Absence of a regional approach to the conservation of coastal and marine biodiversity of global importance	<ul style="list-style-type: none"> • Provision of support for achieving the effective management of a minimal number of MPAs to ensure adequate representation of regional ecosystems and geographic coverage • Policy analysis in MPA plan preparation • Development of financial modules in management plan 	<ul style="list-style-type: none"> • Creation of bi-national MPA management commissions • Establishment of a Regional MPA System
Absence of a regional institutional framework to promote the formulation of policies, regulations, and an institutional approach to manage the MBRS as a comprehensive system.	<ul style="list-style-type: none"> • Promotion of regional TWG for MBRS components • Support for bi-national MPA consultative meetings 	<ul style="list-style-type: none"> • Formalize regional coordination arrangements on sectoral lines • Harmonization of sectoral-based policies affecting the MBRS • Improved policy formulation • Achieving financial sustainability including attracting outside sources of investment

PROGRAM COMPONENTS, PHASE 1

Component 1. Marine Protected Areas (\$5.87 million)

10. Many of the MBRS's more than sixty existing and proposed coastal and marine PAs exist only on paper and have little or no on-site management. Moreover, a significant number of MPAs lack up to date master and operational plans and the associated basic infrastructure and equipment needed for their

implementation. This includes ranger stations, patrol boats, interpretation infrastructure such as trails and signage, and computers and communications equipment. Of equal significance is the absence of sound financial strategies in most of these areas, a prerequisite to achieving greater self-sufficiency and attracting additional outside investment. Finally, even in those areas that have on the ground management presence and the required infrastructure and equipment, staff often lack the skills needed to carry out their core responsibilities.

11. Support under this component will be limited to a total of 15 MPAs (see Table 2 below), nine of which already have some legal protection, and six others which are in different stages of the process leading to their legal creation (Map 2). Criteria for MPA selection were based on the significance of the protected area with respect to contributing to MBRS ecosystem characteristics, diversity and processes. The majority of the MPAs (9) are located in the two transboundary areas of the MBRS, Chetumal Bay and the Gulf of Honduras, respectively. In the transboundary areas themselves, there are several MPAs which are separated by national boundaries and are managed as separate units. Two of these bi-national MPA complexes, (the Xcalak/Bacalar Chico, and Sarstoon/Temash-Sarstun) situated in the Mexico-Belize and Belize-Guatemala transboundary areas respectively, will be assisted through the Program with the additional objective of promoting a regional approach to their management. Selection of the remaining MPAs, in addition to the aforementioned criteria, was made with the intent to ensure a spatially dispersed pattern of protected areas loosely connecting the Program's two transboundary areas (Map 1). By the end of the Program's first phase, this strategy for MPA selection and support is expected to result in a minimally acceptable number and geographic coverage of well managed MPAs in the MBRS region. These MPAs will serve as regional models from which expansion and replication could occur to other protected areas in the Program's future phases.

Table 2. Marine and Coastal Protected Areas to be Support through the MBRS MPA Component

	Protected Area	Predominant Ecosystems	Legal Status	Status of Planning	Support to be Provided
1	Banco Chinchorro	Seagrass, reef, cayes	Existing	Management plan	OP, modest management
2	Santuario del Manatí	Mangroves and seagrass	Existing	Management plan	OP, modest management
3	Corozal Bay	Mangroves and seagrass	Existing	No plan	MP/OP, modest management
4	Xcalak-Bacalar Chico ¹	Seagrass, mangrove, reef	Proposed	Plan being prepared ³	Expand MP,OP, major management
5	Bacalar Chico ¹	Seagrass, mangrove, reef	Existing	Management plan	OP, major management
6	South Water Caye	Seagrass, mangrove, reef	Existing	Management plan	OP, modest management
7	Glover's Reef	Cayes, reef, seagrass	Existing	Management plan	OP, modest management
8	Port Honduras	Cayes, reef, seagrass	Existing	Plan being prepared	OP, modest management
9	Gladden Spit	Reef (spawning aggregations)	Proposed	No plan	MP/OP, modest management
10	Sapodilla Cayes	Reef, cayes, seagrass	Existing	Management plan	OP, modest management
11	Sarstoon-Temash ²	Mangroves and estuaries	Existing	No plan	MP/OP, major management
12	Sarstun ²	Mangroves and estuaries	Proposed	Plan being prepared	OP, major management
13	Punta de Manabique	Swamp forest, mangrove, est.	Proposed	Plan being prepared	OP, modest management
14	Omoa-Baracoa	Coastal wetlands, mangroves, swamp forests	Proposed	No plan	MP/OP, modest management
15	Utila/Turtle Harbour	Swamp forest, reefs, seagrass, lagoons	Existing	Plan nearly finished ⁴	Expand MP/OP, major management

1 Consists of one of the two MPAs forming the MPA complex in the *Bahia de Chutemal*.

2 Consists of one of the two MPAs forming the MPA complex in the *Golfo de Honduras*.

3 Plan does not include the Bacalar Chico portion of the MPA.

4 Plan only covers Turtle Harbour.

12. The component consists of the following two sub-components:

Sub-component A - Planning, Management, and Monitoring of Marine Protected Areas (MPA)

13. The emphasis of the sub-component will be to support investments that will result in immediate improvements in MPA protection and management while increasing the probability of achieving long-term sustainability of management efforts. Specific activities to be supported through this sub-component of the Program include:

- *Establishment of MPA Data Baselines and Monitoring Programs.* Rapid evaluations of basic ecological and socio-economic factors and conditions, including legal and policy analyses and land tenure issues, will be carried out for each MPA included in the Program's first phase. A methodological approach to establishing a baseline will be designed through support for a meeting of regional experts supported by an international consultant with expertise in the field. Together with local scientists, the team will carry out a rapid assessment of baseline conditions for each MPA. A second regional expert meeting will be held to review the initial results of these assessments and devise a monitoring methodology appropriate for park staff to periodically monitor the status of their respective MPA. The periodic monitoring of selected indicators of MPA ecosystems "health" will provide a means to gauge the effectiveness of Program-supported management efforts.
- *Development of Management Plans for MPAs.* For four MPAs (Corozal Bay, Gladden Spit, Sarstoon-Temash, and Omoa-Baracoa), new, long term (10-year) management plans will be prepared. In each management plan, financial strategies will be formulated specifying existing and potential revenue generation alternatives and including identification of local and international funding sources. In addition to the long-term plans, two-year operational plans, providing greater detail and specific budgets, will be prepared for each MPA and updated annually. Under this activity, funds will be provided for local and international consultants; participatory workshops; preparation, publication and dissemination of management and operational plans; and the publication of documents appropriate for broader public distribution such as executive summaries of management plans, MPA maps, and posters. For the eleven remaining existing and proposed MPAs, long-term management plans either exist or are currently in preparation. Short-term technical assistance will be provided to evaluate the success to date of plan implementation, review and harmonize planning methodologies, and periodically evaluate the efficacy of plan implementation. Two-year operational plans will be prepared for all 11 MPAs and updated annually.
- *Basic Equipment and Infrastructure for MPA Plan Implementation.* This activity will support the purchase of basic equipment and infrastructure needed in each MPA to facilitate the planning process, enhance administrative capacity, and allow MPA staff to rapidly implement the priority measures outlined in the aforementioned operational plans. Likely equipment and infrastructure for the two regional MPA complexes (the Xcalak/Bacalar Chico, and Sarstoon/Temash-Sarstun) and Utila Island (Honduras)⁴ will include: boats, motors, and motorcycles; dive equipment; mooring and marker buoys; ranger stations; and public use facilities (visitor centers, signage, trails, and composting toilets). For the remaining 10 MPAs, a basic package of computer hardware, software and peripherals

⁴ While Utila is not a transboundary area *per se*, it includes regionally important fish spawning aggregations, serves as a potential source of recruitment to adjacent MBRS systems, and is ecologically closely linked to nearby protected areas in neighboring countries due to dominant currents.

as well as communications equipment (base and mobile radios, batteries and chargers); GPS units; and basic office furniture will be provided.

- *Transboundary Cooperation in Policy, Protection, and Management of MPAs.* Most of the MPAs selected to receive support under the Program are located adjacent or in proximity to international borders. Current issues in need of effective bi- and tri-national management responses include management of migratory fish and wildlife stocks, addressing cross-border infractions of existing laws, and the conservation and management of trans-frontier parks. Under this activity, funds will be provided to facilitate regular meetings of the field and supervisory staff of MPA management agencies in Chetumal Bay and the Gulf of Honduras transboundary areas. It is expected that these meetings and the resulting dialogue and decisions will provide the eventual basis for formalizing the process leading to the joint (i.e., bilateral) management of these and other MPAs in the transboundary areas.

Sub-component B - Institutional Strengthening

14. To address the substantial institution building needs in MPA management, regional training courses and workshops for protected area directors, technical staff, rangers, and key collaborators from local and national government agencies, collaborating NGOs, and local communities, will be supported under this sub-component.

- *Marine Park and Tourism Resource Development Program.* Training events will be provided for senior and mid-level MPA managerial staff, para-professional staff of MPA agencies; senior government, university and NGO staff; rangers; supervisory staff at relevant government agencies and NGOs; tourism institution staff; community leaders, municipal representatives, local entrepreneurs and community association representatives. Events include the following: management planning for MPAs; principles of MPA management; development of MPA financial strategies; administration of MPAs; basic training for MPA rangers; community relations; MPA public use and tourism programs. Most training will take place in two to three week sessions.
- *Training Library Development.* In addition to supporting regional training events, the Program will also provide a basic standardized training library to all MPA headquarters and ranger stations throughout the MBRS region (approximately fifty offices). This would facilitate continual professional improvement for MPA field staff who often lack even minimal access to training manuals, natural history publications, and other books on themes relevant to MPA management programs.

Component 2. Regional Environmental Information System (\$5.25 million)

15. The establishment of a regional environmental information system (EIS) will provide an essential tool to organize and manage data to support improved decision-making. Moreover, a regional EIS can be used interactively with other Program components, serving both as a recipient of and source for data. In the Program's initial phase, the objective of the EIS component will be to provide the basic framework to guide the collection, processing, distribution and utilization of data to promote improved management of the MBRS. Specifically, the component will support the design and implementation of a bilingual EIS whose architecture will allow broad access to policy makers, technicians, and the public at large. While the establishment of an EIS will be a major product of the initial phase of the MBRS Program, it nevertheless should be viewed as a "living" system that will grow in complexity and value as new data are developed and made accessible.

16. A second objective of the component is to develop a *reliable* base of data which can be used to support more informed management decisions. Ecological linkages between reefs, other marine

environments, and coastal watersheds, are mediated, partially or entirely, by water flow. However, despite the importance of water currents in transporting nutrients, pollutants, and reproductive products across ecosystem and national boundaries, there is a dearth of data on the region's current regime and its influence on the status and processes of MBRS reefs and other critical ecosystems. The component will support collection of oceanographic information and data on reproduction, larval dispersal, and recruitment of corals, fish, and other important reef components, to further our understanding of links between reefs and other marine environments, and processes which influence reef integrity.

17. The component consists of the following two sub-components:

Sub-component A - Creation and Implementation of a Distributed, Web-based EIS

18. A web-based EIS will be established which will provide a tool to organize and disseminate basic environmental data for reefs and other ecosystems and adjacent waters in the MBRS region, outflows from selected watersheds, and secondary data obtained from other local and regional data sources including relevant broader-scale monitoring programs such as CARICOMP and CPACC. Specific activities to be supported through this sub-component are:

- *EIS Design and Implementation.* Through this activity, the sub-component will support the design, purchase of equipment, and provision of technical support required to implement a distributed, web-based, bilingual EIS. The EIS will consist of two tiers, a primary, technical tier accessible to all participating data nodes, and a secondary, publicly accessible tier providing information on the MBRS; the latter in support of the Program's public education and other components. Equipment purchased under this activity consists of high end work stations and computers for a regional office (see below) and national node offices established in the four participating countries.

A series of intensive, in-country training workshops to build node agency skills in GIS and data management will include (a) the design of monitoring programs that support improved decision-making, (b) interpretation of remotely sensed data, and (c) statistical analysis of monitoring data including "reference condition" and other advanced techniques. All participating agencies will have a role in the development of the training program to target their respective institution's needs.

- *Meta-database.* A critical component of the EIS, will be the establishment of a comprehensive meta-database, a regional bibliography, and a core of legacy databases which will be maintained by the aforementioned regional office. At minimum, baseline geo-referenced maps, and first-cut distributions of major watersheds, coastal water masses, and broad habitat types in shallow waters will be included in the EIS. Much of these data will have to be generated by appropriate node agencies and/or the regional office.
- *Information Dissemination.* Provision of information (electronically and in print) stemming from monitoring and other activities being undertaken to gauge and manage the environmental "health" of the MBRS will be supported through the Program's website. An MBRS atlas on both CD ROM and hard copy media will be prepared in PY 4, which can be updated periodically as new data become available.

Sub-component B - Establishment of a Synoptic MBRS Monitoring Program

19. Under this sub-component, a regional monitoring program for the collection of synoptic data on physical oceanography (surface currents) and ecological connections among and between reefs and adjacent ecosystems (including coastal watersheds) will be implemented. Monitoring activities will be planned and designed in association with the MBRS MPA monitoring activity described above, to ensure

technical coherence and operational efficiency between the two activities. Specific activities to be supported under this sub-component include:

- *Baseline Assessment and Monitoring Program.* This activity will support the preparation of an MBRS environmental baseline, based on available information on current regime, areas of high pollution risk, community structure and dynamics, and linkages between key ecosystems to assess vulnerability and connectivity. The results of the study will be presented at an initial planning workshop of the component's Technical Working Group (TWG) in PY 1. It will be the TWG's task to develop a detailed proposal for a regional monitoring program to include surface current patterns, sources of pollution and water quality, and reef community dynamics including coral and fish recruitment.

In the initial phase of the Program, the geographic emphasis of the monitoring activities will be in the two transboundary areas of the MBRS. Selection criteria will likely include: presence of biodiversity-rich ecosystems; importance of the areas as sources or sinks for recruitment of corals, fish, and other important community components; and presence and degree of threat associated with pollution stemming from onshore activities. An additional five or six sites at strategic locations between the northern and southern transboundary areas will be established to contribute to a more complete understanding of the ecological processes that characterize the MBRS.

➤ *Targeted Research.* The monitoring study will be supported by ancillary field studies. These will include:

- Characterization of presence, composition, and status of specific biotic communities in proximity to monitoring stations.
- A module which will monitor the flow and water quality at stations in proximity to Rio Hondo, New River, Motagua River, Chamelecon River and Ulua Rivers to include an assessment of their importance as outlets for agro-chemicals and other bioactive compounds that may affect the "health" of the reefs, This will include support for development of a set of bio-monitoring indicators that would allow more simple and cost effective monitoring of water quality, and which could be applied routinely to coral reef sites throughout the region, including MPAs.
- A risk analysis using satellite imagery of river flood plumes, and/or analysis of offshore sediments derived from terrigenous materials, to identify those reef communities that are most at risk to river-borne pollutants.
- Development of a hydrodynamic surface flow model for the region, a key output scheduled near the end of the Program's first phase.

The monitoring program and targeted research will be supported through the purchase of sampling equipment, logistical support for data collection, funding for laboratory analyses, and specialized technical assistance. This research will be complemented by proposed research on oceanographic and other factors affecting recruitment from source reefs to sink reefs within or adjacent to the MBRS, information vital to the strategic siting or expansion of MPAs in the region. The latter research on reef connectivity will be funded through co-financing provided by Canada and the EU.

Component 3. Promoting Sustainable Use of the MBRS (\$1.88 million)

20. There is growing evidence that non-sustainable resource use practices are in aggregate beginning to affect the overall "health" of the MBRS. The objective of this component is to support the introduction of new policy frameworks and management tools to increase institutional capacity, disseminate key information and create the necessary incentives for stakeholders to shift toward patterns of sustainable use of MBRS resources. This component will initially focus on the two most significantly important and potentially harmful economic sectors dependent on the MBRS, fishing and tourism.

Sub-component A - Promotion of Sustainable Fisheries Management

21. Several commercial species of finfish, crustacea and mollusks are either fully or over-exploited throughout the MBRS region. Not only do these species represent an important economic resource to coastal communities, many of them play key functional roles in the reef ecosystem. Despite the importance of the resource, sustainable management objectives for most of these species have rarely been achieved in the region; a situation attributed largely to a lack of awareness (among policy makers, resource managers and fishers, alike); poor education; conflicts among coastal-based resource user groups; and minimum research capacity in the MBRS region. This sub-component will address some of the causes of overfishing by supporting: (a) monitoring and management of spawning aggregation sites, (b) improved institutional capacity in sustainable fisheries management, and (c) promotion of alternative livelihood systems.

- *Monitoring and Management of Spawning Aggregation Sites.* A key stage in the reproductive cycle of many of the commercially important reef-based fish species in the MBRS is the periodic aggregation of spawning populations in geographically-specific areas. Knowledgeable fishers exploit these resources without restriction. To date there are few data to assess the consequences of these fishing practices on either the fish populations or the MBRS at large. Nor are there consistent national or regional policies to manage the practice. The objective of this activity is to support the collection and analysis of scientific and anecdotal information: (a) documenting the location of these sites, (b) ascertaining their ecological and socio-economic importance, and (c) estimating the degree of exploitation (by fishing and other activities), with priority given to commercially important species, and (d) assessing the impact on population demographics. A key output from this activity will be the formulation of a draft regional policy to control the exploitation of these sites.
- *Institutional Strengthening.* This activity will identify and test new approaches to the sustainable management of fisheries that could be expanded and replicated in possible future Program phases. These are:
 - Design and implementation of a regional fisheries data collection and management system. This activity will review existing fisheries data collection systems in the region, determine the feasibility of modifying them to suit MBRS needs, and produce a common fisheries data collection and management system for the MBRS, in the form of software and a users manual. This system will be compatible with the EIS. Copies of the software, users manual, computers and printers will be provided, together with training, to the four countries respective fisheries' agencies in an effort to promote immediate use of the new data collection system.
 - Provision of existing computer-based management models (ECOPATH and ECOSIM) to the four countries to support, on a pilot basis, the adoption of an ecosystem-based approach to fisheries management.
 - Regional and national training for fishers, government officials and members of NGOs in fisheries co-management techniques.
 - A study addressing the socio-economic interrelationships between fishing and other user groups (particularly tourism) within the coastal zone of the MBRS. This assessment will include a cost-benefit analysis of fisheries relative to other sectors; identify positive relationships and conflicts between fishers and other user groups and will recommend guidelines for enhancing positive relationships as well as conflict resolution measures between fishers and competing sectors in the coastal zone; and identify opportunities for multiple use.

- Support for professional peer exchange and hands-on training in specific skills for technicians working in fisheries issues in the MBRS region.
- *Promotion of Sustainable Livelihoods.* Training of fishers from the transboundary areas in alternative income generating activities will be conducted in PY2 and PY3. This activity will give fishers the capacity needed to diversify from fishing into more sustainable income-generating activities, based on other successful initiatives in the region. Training will include, but not be limited to, kayaking, sport-fishing, SCUBA, leading nature tours, etc. After training, the equipments used for training (kayaks, rods and reels, paddles, life-vests, fly kits, etc.) would be housed within the training institution and rented to trained fishers at a low cost.

Sub-component B - Facilitation of Sustainable Coastal and Marine Tourism

22. Tourism is the world's fastest growing industry. Tourist arrivals to the Central America sub-region represented the highest average annual percentage growth increase within the Americas region over the past 3 years. A large part of this growth is in nature-based tourism, relying on the amenities or attractions of the Caribbean Basin's unique marine environment. The MBRS still boasts some of the least spoiled coastal profiles and some of the most outstanding underwater experiences in the Caribbean. However, in the absence of adequate environmental management guidelines or regulatory regimes, proliferation of traditional sea and sun tourism in parts of the region has occurred, putting many of these amenities at risk. There is a critical need to stimulate an on-going policy dialogue and take specific steps to ensure that sustainable tourism principles and practices are implemented through regional cooperation in fast growing tourism destinations within the MBRS.

23. The objective of this sub-component is to formulate and apply policy guidelines and best practice models for sustainable coastal and marine tourism in the four countries of the MBRS. The desired outcome is to provide and disseminate examples that demonstrate how to minimize the adverse impacts of tourism and enhance its potential beneficial effects on coastal/marine habitats and resources and on human communities located near tourism destinations. The following activities are planned over the initial five-year phase of the Program:

- *Regional Policy Dialogue and Cooperative Action Forum.* To facilitate a tourism policy that is consistent with marine conservation objectives enshrined in the Tulum Declaration and other international conventions, senior government officials, MPA managers and their tourism industry counterparts need to be better informed about critical coastal and marine tourism issues and problems. Priority issues include support for rigorous environmental impact assessment, inspection and enforcement systems for coastal resource development; guidance on the design of innovative regional trip circuits which "package" and market marine parks and other tourist destinations; selection of at least one specific priority issue each year requiring regional cooperation and development of an agreed action agenda to address it.
- *Catalogue of Exemplary Practices.* Voluntary codes of conduct in critical segments of the coastal and marine tourism industry need to be considered and adopted by tourism-related businesses. This activity will support an extensive literature search and interviews with sustainable tourism experts, from which "good practices" will be identified and adapted for use in the MBRS region. A catalogue of "exemplary practices" for sustainable coastal tourism will be developed and disseminated widely in the region through print and the Program's website.⁵

⁵ "Exemplary" refers to those practices that have been shown to produce superior results; are elected by a systematic process; and judged as exemplary, good, or successfully demonstrated.

- *Regional Environmental Certification Program.* Under this activity, a region-wide, independent environmental certification program will be established for coastal and marine tourism operations in key sub-sectors (e.g., hotel/resort facilities, diving operations, yachting and live aboard, eco-lodges, cruise ship tours on land). This regional program will include: (a) agreement on a strategy and road map for certification, including performance based standards for environmental certification/eco-labeling; (b) formulation and adoption of an independent certification and marketing system that positions the MBRS region as one of the world's leading sustainable tourism destinations; (c) provision of resources for establishment of the program on a pilot basis in high priority transboundary tourism destinations linked to one or more MPAs; and (d) development and adoption of a plan for expanding and financing the certification system (e.g. fee for service, cooperative marketing to the green market). Efforts will be made to create cost effective linkages and cooperative activities with other on-going certification programs (such as those sponsored by Caribbean Action for Sustainable Tourism).
- *Marine Tourism Exemplary Practices Study Tour.* A two-week marine tourism exemplary practices study tour will be designed for "emerging" marine tour operators in the MBRS to network and share ideas with 5 or 6 established and leading adventure travel, marine travel and ecotourism operators in Central America. Throughout the Tour, experts will conduct seminars on a number of topics, including product development, marketing strategies, partnering with the travel trade, packaging, and market research. Materials will be prepared on environmental practices, community involvement, conservation financing and interpretation. A technical report will also be drafted and widely disseminated to the tourism industry, interested NGOs and government officials through print and the Program website in order to share lessons learned, case examples and pitfalls to avoid.
- *Marine Park and Tourism Resource Development Program.* A marine park and tourism resource development training program will be offered, based upon the model training program being undertaken in the Honduras Sustainable Coastal Tourism Project. The following content will be covered: (a) setting objectives necessary for the successful future of the MPAs, (b) techniques for creating and developing a market position for the MPAs (individually and as a group) and establishing this position in relevant marketplaces, such as with travel wholesalers and in tourism magazines, (c) concessions and outsourcing mechanisms for managing ancillary services offered in and around the MPAs, such as food, lodging, and guide services, as well as security, maintenance, parking, transportation and a host of other services, (d) fund raising, accounting, financial management and reporting, to provide better accountability to donors and improve ability to negotiate joint ventures and investment projects with tour operators, hoteliers and other tourism organizations; (e) environmental education in tourism and natural resources in order to meet the management objectives for protected areas, (f) park interpretation to improve environmental outreach to tourists and the general public; and (g) community participation, to encourage ownership of park objectives and facilitate access to conservation and tourism-related benefits by communities living in the buffer zones surrounding protected areas. Priority emphasis will be placed on identifying economic instruments in the marine tourism industry that could be used to enhance compliance with sustainable tourism policies and regulations, capitalize local trust funds for environmental management in the coastal zone, and create social funds for community development and income generation in areas impacted by tourism. A survey of tour operators, hotel owners and reef recreation-related businesses at selected MPAs and municipalities will be conducted to clarify their preferences relative to economic instruments and revenue generating mechanisms. The results will be used in the training program and disseminated widely in the region.

The practices then need to be adapted to fit a particular organization and practiced by exemplary operators.

Component 4. Public Awareness and Environmental Education (\$2.24 million)

24. A major underlying cause of threats identified in the Threat and Root Cause Analysis completed in support of MBRS Program preparation was the lack of public education on and awareness of the significance of the System and the issues that need to be addressed to ensure its sustainability. A critical element to developing the political will and policies required to manage the MBRS will be building the necessary public support to catalyze change. The objective of the component is to increase environmental awareness among a variety of stakeholders and develop the human capital necessary to plan and manage the diverse resources of the MBRS within a proven framework of conservation and sustainable use. The component consists of the following two sub-components: (a) development of an environmental awareness campaign, and (b) formal and informal education.

Sub-component A - Development of an Environmental Awareness Campaign

25. Under this sub-component, the general public's awareness of the importance of the MBRS as a "world class" resource and the need to promote its conservation and sustainable use will be increased. This will be carried out through support for the development of a broad-based public awareness campaign based on the use of printed and audio-visual materials. Specific activities supported under the campaign include:

- *Public Awareness Campaign Strategy.* This will be developed through a series of meetings and interviews with key stakeholders in the four MBRS countries. It will be implemented on a national basis and focus on the value and need for conservation of the shared resources of the MBRS. The strategy will include the following elements:
 - Establishment of a Database and Information Clearinghouse. MBRS-relevant materials and resources located within and beyond the region will be entered into a database which will be made accessible through the MBRS Program Website. A catalog of MBRS reference materials, to include all printed and audio-visual materials produced by Program components, will be compiled and made available to the public.
 - Development and Dissemination of Information Materials. In support of the campaign, printed and audio-visual materials (e.g., best practices guides and public education teaching materials), will also be reproduced and distributed to target audiences. All materials will be produced in English, Spanish and, in some cases, Garifuna.
 - Two, one-day seminars for National Barrier Reef Committees and mass media representatives will be held in each of the four countries to promote the Program and disseminate the printed and audio-visual materials.

Sub-component B - Formal and Informal Education

26. The objective of this sub-component will be to increase knowledge and promote changes in attitudes and behavior towards the conservation and sustainable use of the MBRS through the strengthening of formal and informal environmental education programs, with particular focus on the two MBRS transboundary areas. Specific activities which will be supported under this sub-component are:

- *Production and Dissemination of Education Materials.* Students at primary and secondary school levels will be educated about the significance of MBRS and the need to promote sustainable management practices. Assistance will be provided through creation and/or adaptation of curriculum materials for students, as well as teachers' guides and teacher training to ensure successful use.

Specifically, this activity will support the production of primary school level curriculum materials for students and associated teaching guides, and two regional, 6-day training workshops for teachers. Secondary school level curriculum materials for students and associated teaching guides will also be produced. Two regional, 6-day training workshops for teachers of primary and secondary schools will complement the development of educational materials. An annual coastal resources fair and contest will be established for secondary school level students to exhibit and award projects that most successfully incorporate MBRS conservation and sustainable use themes.

- *Regional Workshops and Conferences.* Non-formal education will be provided for professionals in the industrial and tourism sectors which directly affect MBRS resources and for community leaders who exert strong influence on MBRS stakeholders. These will be coordinated with workshops and training materials developed under the sustainable tourism sub-component to expose participants to best practices in tourism and other sectors with direct impacts on MBRS resources. Awards to publicly recognize those who demonstrate their commitments to conservation and sustainable use of MBRS resources will also be supported.

Program Management: Institutional Arrangements for Regional Coordination and National Level Implementation (\$2.06 million)

27. CCAD has been proposed as the implementing agency for the MBRS Program and will oversee execution by the Program Coordination Unit of the five year Project proposed during Phase 1 (see below). At the policy level, the Program will be coordinated by the MBRS Regional Steering Committee (RSC) made up of representatives of CCAD and each of the existing National Barrier Reef Committees in the four MBRS countries; ex-officio members will include those representing donor organizations and partner institutions working on related issues in the region. The RSC will be supported by a Technical Advisory Committee (TAC) composed of internationally recognized experts in the technical areas of project assistance. A regional Program Coordination Unit (PCU) based in Belize will be responsible for direct implementation of the five year Project during the Program's first phase. Technical support will be provided to the PCU by Regional Technical Work Groups (TWG) made up of appropriately selected representatives from the National Barrier Reef Committees complemented by regional/international consultants on an "as-needed" basis.⁶ The TWGs will be supported by a Policy Working Group that will help articulate and raise to appropriate levels for consideration, the priority policy objectives and actions required to harmonize frameworks governing the use of MBRS resources in the region. Program activities under each of the four proposed components—Marine Protected Areas; Regional Environmental Information System (EIS); Promotion of Sustainable Use of the MBRS; and Public Awareness and Environmental Education—will be executed by a mix of local and regional execution entities. A more detailed description of the organizational framework and responsibilities at each level is provided below:

- *MBRS Regional Steering Committee.* Membership of the RSC will be comprised of the Executive Director of the CCAD⁷ or his delegate, and the National Coordinators of each of the four National Barrier Reef Committees. The Director of the PCU will serve as a non-voting member and act as secretary for the Steering Committee. The committee will also include a panel of ex-officio members representing donor organizations and partner institutions working in the region on issues related to MBRS Program objectives. The RSC will provide overall policy guidance within the general and

⁶ Costs of consultants have been budgeted for under the respective components.

⁷ The Executive Director of the CCAD also acts as the Director General of the General Environmental Directorate (Dirección General de Medio Ambiente, DGMA) of the Secretariat of Central American Integration (Sistema de Integración Centroamericana, SICA), headquartered in El Salvador.

intermediate objectives of the Program, and will coordinate the participation of national, regional and international governmental and nongovernmental counterpart organizations' in the implementation of the Program. It will review and approve annual work plans and resolve coordination issues that may arise between countries. Through its multi-institutional representation, the RSC will liaise with other potential partners within and outside the region to attract additional co-financing for the Program over the long term. In this way, the RSC will facilitate coordination between the GEF Regional Project and other efforts which, collectively, constitute the larger, sustained Program of Actions in support of Conservation and Sustainable Use of the MBRS. The RSC will meet twice annually: (a) in early December to evaluate Program activities for the outgoing year presented in the form of an annual report, and to review and approve proposed activities for the subsequent year in the form of an aggregated annual work plan; and (b) in mid July to monitor progress in the implementation of activities proposed in annual work plans. Both of these meetings will also be used to analyze and resolve any regional policy and coordination issues that may be affecting Program implementation.

- *Technical Advisory Committee.* The Technical Advisory Committee (TAC) will be responsible for advising the RSC on technical matters which may arise during the implementation of the Program. It will be composed of internationally-recognized experts in the fields relevant to MBRS Program objectives. Members will provide technical input for the design and review of annual work programs and serve as information gateways to state of the art management, good practice, and professional networks in the areas of MPA management, sustainable coastal tourism, regional fisheries management, coral reef ecosystem monitoring and EIS, and environmental education and outreach. The Technical Advisory Committee will also serve as an “honest-broker” to the RSC with respect to resolution of technical issues under the Project that may be particularly contentious. The TAC will meet bi-annually on a schedule designed to overlap with RSC meetings to provide timely input to their deliberations.
- *Program Coordination Unit.* The PCU will coordinate day-to-day implementation of the Program among each and all components. It will be responsible for contracting and logistical support of respective component implementing entities and consultants, procurement of Program-related equipment and supplies and overall planning, monitoring and evaluation of Program activities and quality control of Program execution. In addition, the PCU will also be responsible for the establishment and maintenance of the MBRS Environmental Information System (EIS), including its meta-database and webpage. CCAD and the RSC will delegate administrative authority to the PCU to directly manage financial resources provided under the GEF grant. However, the PCU will be accountable to CCAD, which will have ultimate responsibility for Project implementation and which will be directly accountable to the four participating countries and to the Bank/GEF in complying with the Grant Agreement for the Conservation and Sustainable Use of the Mesoamerican Barrier Reef System Program.
- The PCU will be staffed with the following personnel:
 - Director
 - Financial Management Specialist/Disbursement Officer
 - Procurement Specialist/Administrative Assistant
 - Environmental Monitoring Specialist
 - Management Information Specialist/Webmaster
 - Natural Resources Management Specialist
 - Driver/Messenger.
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- *Regional Technical Working Groups.* Regional Technical Working Groups (TWG) will be established to support each of the Program's four components. Separate TWGs will be established for

sub-components dealing with fisheries and with tourism under the Sustainable Use Component, and with ecosystem monitoring and environmental information systems under Component 2. The TWGs will include two technical representatives from each National Barrier Reef Committee appropriately selected based on their affiliation with the technical subject area, preferably one representative from a government institution and one representative from a nongovernmental or resource user organization. TWG composition will be complemented by consultants on an “as needed” basis. Component specific tasks for each TWG would include:

- *TWG on Marine Protected Areas* will be responsible for: (a) participating in and coordinating development of a methodology for establishment of a baseline and monitoring program for MBRS-supported MPAs, (b) promoting the use of this methodology in other non-participating MPAs, (c) reviewing and commenting on MPA management and operational plans, (d) promoting needed policy change/formulation identified in MPA specific management plans through their respective governments to ensure future sustainability of the protected area system, and (e) reviewing training course content and lists of participants to ensure sub-component objectives are achieved.

➤ *TWG on Environmental Monitoring and Information System*

- The sub-group for the environmental information system sub-component will be responsible for: (a) developing data-sharing agreements and other procedures required to ensure the successful establishment and operation of the EIS, (b) coordinating and integrating national node agencies’ efforts, and (c) promoting development of additional nodes and the growth and broader use of the EIS.⁸

- The sub-group on the environmental monitoring sub-component will be responsible for coordinating and implementing the monitoring program. Specifically, it will be responsible for: (a) reviewing and commenting on the draft baseline assessment document, (b) advising on the selection of sites and design of the monitoring program, (c) advising on the ancillary studies in support of the monitoring program.

- *TWG on Sustainable Use of the MBRS*

- The sub-group on sustainable fisheries will be responsible for: (a) coordinating and participating in development of a methodology for establishment of a data baseline and monitoring program for fish aggregation sites; (b) participating in the drafting, promotion, and adoption of a regional policy to conserve and manage the fishery resources at these sites; (c) participating in the design and adoption of a standardized fisheries data collection system; (d) introducing measures to harmonize policies regulating the exploitation of shared stocks (e.g., through agreement on quotas, closed seasons, fishery no-take zones), and protection of threatened and endangered species; and (e) coordination of training and activities.

- The sub-group on sustainable coastal and marine tourism will be responsible for: (a) coordinating and participating in the regional cooperative action forum, (b) monitoring the implementation and follow-up of agreed actions stemming from forum meetings, and (c) coordinating and participating in the development and promotion of the regional environmental certification program.

⁸ In addition to representation from the National Coral Reef Committees, where representatives are not from the participating national node agency, the latter will also participate in the EIS sub group.

- *TWG on Public Awareness and Environmental Education* will be responsible for: (a) facilitating the identification and accessing of data and information in support of the component, (b) providing input to, reviewing and commenting on the public awareness strategy, (c) promoting the mass media campaign through available national channels, and (d) reviewing and commenting on educational materials in support of the formal and informal educational sub-component.

Supporting all of the technical working groups, will be a separate “policy working group” composed of experts in environmental law and natural resources management policy from the region. The role of the policy working group will be to assist the TWGs in the identification of priority policy objectives and actions required to harmonize national frameworks governing the use of MBRS resources in each country with agreed regional frameworks, e.g. for fisheries, water quality, coastal tourism development, EIA and establishment of protected areas. The policy working group will liaise closely with CCAD and its legal office to ensure that policy objectives under the MBRS are raised to the highest levels for consideration within the System for Central American Integration (SICA), and to establish performance benchmarks for policy harmonization during the near, medium and long term. These benchmarks will form the basis for the design of policy actions during Phases 2 and 3 of the Program.

Following the first year, TWGs will meet annually at the end of each calendar year, scheduled to coincide with the RSC’s meeting, in order to assess program progress related to each group’s technical interest area and provide input to the annual planning process for the ensuing year’s activities. These groups will also communicate on a continuous basis via Internet, telephone, fax and/or informally during training events and seminars throughout the year to coordinate their respective National Committee’s support for regional Program implementation.

- *Component Execution Entities.* The PCU, with RSC approval and consistent with Bank procurement policies and guidelines, will select a series of qualified national and international governmental and non-governmental organizations and consultants to carry out proposed Program activities. Selection of these entities will be based on their unique geographic position in proximity to Program outreach areas and/or technical areas of expertise to implement such activities under a competitive process. The PCU will sign and manage cooperative agreements and/or contracts with these entities and supervise their execution. Specific activities to be carried out by these entities are described under the respective Program components and terms of the MBRS Program Implementation Manual (PIM).

PROGRAM IMPLEMENTATION

28. Much of PY1 will be devoted to establishing the necessary institutional arrangements to ensure efficient Program implementation. Facilitated by the Project Implementation Manual (PIM), these arrangements include: (a) staffing and equipping the PCU; and (b) forming the Program’s RSC, TAC and TWGs. A major milestone for the PCU will be to prepare an interim work plan to be submitted to the RSC at the mid-point of PY1. Prior to that, the PCU Coordinator and staff will be working under previously prepared TORs submitted and approved by the RSC as part of the PIM. Much of the remainder of PY1 will be devoted to planning and design of specific components and their respective activities and completing contracting arrangements with the various executing entities.

29. Under the MPA component, following the establishment of the TWG, MPA baseline assessments will be phased in over the first three Program years beginning with an initial six assessments proposed for PY1. These will “drive” the schedule of the subsequent steps of plan development and implementation, which have been sequenced over PY2 - PY4. MPA monitoring activities will commence approximately one year after the completion of the baseline and continued to the end of the Program’s first phase. Training activities will begin in PY1 but will be mostly concentrated in PY2 and PY3.

30. Under the Regional EIS component, the design of the EIS, establishment of national data nodes, and purchase of equipment are projected for PY1. These activities will be followed by the establishment of the meta-database and production of the atlas in PY2 and PY4, respectively. Under the environmental monitoring sub-component, the completion of the initial assessment of baseline conditions and monitoring program design are scheduled for the end of PY1. Equipment purchase and deployment and the initiation of field monitoring will commence in PY 2.

31. Under the Sustainable Fisheries Management sub-component, the initial assessment of aggregations of fish populations is projected for the end of PY1, followed by a 3 year monitoring program beginning in PY 2 and continuing through PY4. The design and purchase of equipment related to the fishery data management system will also be completed in PY1 though training will not commence until PY2. Most of the remaining activities under this sub-component are scheduled to commence in PY2 and some will continue until the end of the Program's first phase.

32. Under the Tourism sub-component, the initiation of the action forum and the certification program activities will commence in PY1 and continue through the life of the first phase. The publication of the exemplary practices catalogue and support for the exemplary practices study tour is scheduled for PY2 and PY3, respectively.

33. Finally, under the Public Awareness and Environmental Education component, the establishment of the clearing house, design of the public awareness campaign, and publication of materials are projected for PY1. The implementation of the campaign, distribution of materials, and most the workshops and conferences are scheduled for PY2-PY5.

**Central America Commission on Environment and Development
Conservation and Sustainable Use of the Mesoamerican Barrier Reef System**

**Annex 3
Incremental Costs and Global Environmental Benefits**

Overview

1. The global objectives of the Mesoamerican Barrier Reef System Project are to enhance protection of ecologically unique and vulnerable marine ecosystems of the second longest barrier reef in the world and to assist the countries of Mexico, Belize, Guatemala and Honduras to strengthen and coordinate national policies, regulations, and institutional arrangements for marine ecosystem conservation and sustainable use of this global public good. The Project's specific objectives are to: (a) strengthen existing and create new marine protected areas; (b) develop and implement a standardized data management system of ecosystem monitoring and facilitate the dissemination of its outputs throughout the region; (c) promote measures that will serve to reduce non-sustainable patterns of economic exploitation of the MBRS, focusing initially on the fisheries and tourism sectors; (d) increase local and national capacity for environmental management through education, information sharing and training; and (e) facilitate the strengthening and coordinating of national policies, regulations, and institutional arrangements for marine ecosystem conservation and sustainable use.

2. The GEF Alternative intends to achieve these objectives at a total *incremental cost* of US\$10.1 million through the implementation of components entailing improved planning, management, and monitoring of marine protected areas; strengthening technical capacity of protected areas staff; creation and implementation of a distributed, Web-based environmental information system; establishment of a synoptic monitoring system; promotion of sustainable tourism and sustainable fisheries management in coastal communities; development of an environmental awareness campaign; support for formal and informal education; and Project management.

Context: Threats and Root Causes

3. Coral reefs support the most diverse forms of life on earth. The framework built by corals and algae supports a fantastic variety of flora and fauna, including invertebrates, such as hard and soft corals, mollusks, sponges, anemones, sea whips, tube worms, shrimps, crabs, lobsters, clams, starfish, sea urchins and tunicates. Megafauna inhabiting this underwater rain forest include over 4000 species of fish, marine reptiles, and an array of marine mammals that migrate through their waters. The MBRS, extending from Mexico to Honduras in the Western Caribbean, is the second longest barrier reef in the world, serving as a habitat for tremendous marine biodiversity. The MBRS is unique in the Western Hemisphere on account of its size, its array of reef types, and the luxuriance of corals that it contains. Unusual geophysical features include the complex maze of patch reefs and faroes in a relatively deep shelf lagoon; the great diversity of reef types in a small geographical area; and the large offshore mangrove cays that have a marine origin. In southern Belize, the mangrove cays of Port Honduras-Payne Creek and the Sarstoon-Temash system along the border with Guatemala constitute the largest stand of mangroves in all of Belize and the Caribbean coast of Guatemala. They provide nutrients and critical habitat in the juvenile stages for much of the invertebrate and vertebrate fauna that inhabit the southern portion of the MBRS in the Gulf of Honduras. The MBRS is also unique in featuring three oceanic atolls, of which Glovers Atoll is considered to be the best example of an atoll in the Caribbean basin.

4. Associated with the MBRS ecosystem are extensive areas of relatively pristine coastal wetlands, lagoons, seagrass beds and mangrove forests that provide critical habitat for a number of threatened species and many species of birds. The species diversity of plants within the Glovers Atoll alone has been

found to be higher, by a factor of two, than that of other Caribbean and Gulf of Mexico reef island groups. The MBRS stabilizes and protects coastal landscapes, maintains coastal water quality, sustains species of commercial importance, serving as breeding and feeding grounds for fish and invertebrates, and offers employment alternatives and incomes to approximately one million people living in coastal zones facing the reefs. In view of its exceptional character, a number of sites in the MBRS have been designated as World Heritage sites. Five of these lie within the Belize Barrier Reef.

5. Despite its renown as an important habitat for coastal and marine biodiversity, the MBRS is under severe threat. Particular threatened species include: N. American manatee; Loggerhead Turtle; Green Turtle; Hawksbill Turtle; Olive Ridley Turtle; black corals; queen conch; and spotted spiny lobster and Nassau Grouper in parts of their range. A Threat and Root Cause Analysis (TRCA) carried out during Project preparation indicated that the principal threats to the MBRS include:

- (a) *Coastal/Island Development and Unsustainable Tourism*, which includes urban, hotel and resort development and related infrastructure, together with all the direct and indirect impacts that these bring to bear on the MBRS (e.g., pollution/contamination, nutrification, sedimentation, physical reef damage, impacts to estuary and lagoons and mangrove destruction, beach erosion, habitat change, etc.).

**Box 1. Existing Threats and Root Causes:
Coastal/Island Development and Unsustainable Tourism**

The City of Chetumal discharges 200 cubic meters of untreated sewage into Chetumal Bay each day. Volumes of raw or poorly treated sewage of similar or greater magnitude are discharged from urban centers directly into coastal waters of the MBRS coast from Belize City, Puerto Cortes, Tela, La Ceiba and Trujillo. Excess nutrients can result in blue-green algal blooms that smother coral reefs. Repeated fish kills in the vicinity of Belize City are attributed to effluent from an industrial galvanizing plant. Similarly, ever-increasing cruise ship and live aboard tourism, which is predicted to add an additional 20 ships and 2,000,000 passengers to the Caribbean in the year 2000, can likewise produce serious impacts if not regulated. Pulses of high numbers of tourists can overtax public services, reduce local food stocks, and generate vast amounts of solid and liquid wastes that must be accommodated by municipalities in the MBRS. If these ships visit offshore island and coral reef sites, waste management problems may become acute, and inexperienced and/or unsupervised divers and snorklers may lead to coral breakage, predation and uncontrolled fishing.

The intermediate causes of threats from inappropriate coastal development and unsustainable tourism are linked primarily to the inability, or lack of will, to enforce compliance of existing laws and regulations regarding environmental impact assessment and land-use zoning. In some cases, regulations and land-use plans are non-existent. There is a notable lack of land-use/integrated coastal management plans and zoning related to basic environmental and engineering principles. Another intermediate cause is failure to control settlement and inappropriate land use in marginal areas not environmentally fit for habitation, especially national and municipal properties, including mangroves, beaches, wetlands and near lagoons. Behind these intermediate causes stands a series of structural root causes, including a lack of awareness of the impacts of development actions in the coastal environment at all levels, from local resource users up to national government policy makers. Likewise, weak land tenure policies favor large landowners and restrict access of the poor to land needed, in most cases, for subsistence agriculture. This is further complicated by poverty in rural areas due to lack of employment opportunities, the failing natural resource base, and lack of basic social services. As these conditions worsen, the rural poor set out in search of other opportunities, with an increasing number heading to coastal areas.

- (b) *Inappropriate Inland Resource/Land Use and Industrial Development*, encompassing a broad range of agricultural, urban and industrial development in inland watersheds that drain into coastal areas; contamination of wetlands, lagoons and estuaries, whether directly or indirectly impacting the MBRS (e.g., sedimentation, pollution/contamination, nutrification, habitat and species/abundance changes, mass kills of organisms, etc.).

**Box 2. Existing Threats and Root Causes:
Inappropriate Inland Resource/Land Use and Industrial Development**

Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) represent the two greatest pollutant loads entering the Wider Caribbean Region and MBRS, with TSS loads from rivers being one order of magnitude higher than loads from industrial and urban/domestic sources discharged directly into coastal waters. It is estimated that approximately 90 percent of all pesticides applied in the region do not reach their targeted species, much of this lost to runoff into streams and eventually manifested in marine biota in coastal waters. Likewise, approximately 2,500 gallons of liquid wastes are discharged from sugar refining and rum distilling operations on the New River in Belize, contributing large organic loads and spent lubricants to the Chetumal Bay. Of the 380 industries registered in the Sula Valley, the most industrialized area adjacent to the MBRS and drained primarily by the Río Chamelecón, 150 are reported to have environmentally problematic effluents.

The intermediate and root causes of the threats associated with inappropriate resources and land use and industrial development in areas inland from the coasts can be distributed into two principal groups: (a) lack of land-use and watershed management plans to guide environmentally-sound development, compounded by limited regulations and local capacity to assess environmental impacts of development projects, especially industrial enterprises and transport infrastructure, and subsidies favoring industrial development without investments in environmental protection; and (b) lack of secure access to land, basic human services and technical assistance to facilitate practice of appropriate land and resource-use techniques, leaving the rural poor to migrate to upland watersheds and other areas incapable of supporting agricultural uses.

- (c) *Overfishing and Aquaculture Development*, including industrial, artisanal, subsistence and recreational fishing, and aquaculture in coastal areas and the real and potential impacts of species and abundance change, local overfishing of selected species (e.g., grouper, jack, mackerel, snapper and snook); and poaching of selected species (e.g., manatee and sea turtles); habitat change/symbiosis imbalances; reduced subsistence and revenues from fisheries.

Box 3. Existing Threats and Root Causes: Overfishing and Aquaculture Development

Based on the results of FAO's 1994 Survey of the Wider Caribbean, 70 percent of the pelagic stocks and 60 percent of the demersal stocks were considered over-exploited. The over-dimensioned fishing fleets, especially in Honduras where the number of industrial ships was 360 in 1996, places great fishing pressure on the primary commercial species, especially as the ships now use more advanced navigation and fish-finding equipment and some pull as many as four trawling nets.⁹ Species under the greatest pressure are lobster, conch, shrimp and certain species of finfish (esp. grouper and large grazers), for which overall harvests have been reduced by 60-75 percent based on catch-per-unit-effort since 1979 in Honduras and Belize, with similar reductions noted in the rest of the MBRS. Utilization of illegal equipment and fishing methods, including use of SCUBA for lobster and conch fishing, has led to excessive local depredation and reduction in stocks of key commercial species.

Intermediate causes of the threats associated with overfishing can be found in large part in the lack of compliance with existing national fisheries regulations and standards upheld in international conventions and treaties. This can be attributed in part to lack of awareness of the impacts of overfishing and of the content of the law by many artisanal fishers, and the zeal to increase catch and revenue of over-dimensioned industrial fleets. The insufficient number and capability of government staff responsible for enforcement of fisheries regulations is another intermediate cause. Furthermore, lack of valid data concerning abundance, reproduction habits, and landings/harvest of species of fishes, molluscs and crustaceans, especially those under pressure, restricts development of management plans and complicates enforcement of regulations. Regarding

⁹ The Honduras fleet consists of 128 shrimp trawlers, 181 lobster boats, 14 conch fishing boats and 37 finfish boats.

inappropriate aquaculture, intermediate causes are primarily those resulting in poor siting, construction and operation of ponds, due to the lack of capacity of local professionals to execute EIAs and recommend appropriate mitigating measures. Likewise, there have been few regulations promulgated to ensure environmentally sound operation of aquaculture operations. For all threats associated with overfishing and inappropriate aquaculture, the most important root cause is the lack of integrated fisheries policies and management plans at the national level, and the MBRS region as a whole.

- (d) *Inappropriate Port, Shipping and Navigation Practices*, including intentional and accidental contamination of waters, reefs and beaches, physical reef damage, impacts to aquatic species and fisheries (including mass kills), degradation of the tourism value of reefs and related coastal environments, and related topics.

**Box 4. Existing Threats and Root Causes:
Inappropriate Port, Shipping and Navigation Practices**

More than 90 percent of commerce in the region is transported by oceangoing ships, making ports and navigation of high economic development value, but also a focal point for real and potential threats to the ecological health of the MBRS. Oil terminals in the area involve the transport of millions of gallons of petroleum and derivatives through the MBRS region each month. Port and jetty construction and dredging associated with channel and harbor maintenance results in increased sedimentation in seagrass beds and nearby coral reefs, stressing and potentially smothering them. Redeposition of sediments may result in erosion of beaches and accretion in navigation channels, estuaries and coastal lagoons, and may change flows in local currents and flushing of bays and estuaries. Changes in coastal morphology may reduce defenses against storms and actually instigate more damage from storm surge and flooding.

Inappropriate waste management practices on ships and in ports can result in nutrification and/or chemical contamination of estuaries, bays, wetlands, reefs and sea-grass beds. Most ports have limited facilities to receive solid and liquid wastes from ships, inducing many to dump their wastes directly into the sea. Wastes dumped in inadequate landfills may make their way back to the coastal waters and beaches. Such spills can cause fish kills as well as sublethal impacts. As solid and liquid wastes float ashore, they foul beaches, represent human health hazards and reduce aesthetics important to the tourism industry.

Intermediate causes of threats include lack of awareness of the impacts of ports, deficient regulations and limited local capacity to assess environmental impacts of port projects. This is compounded by the lack of baseline information on coastal resources and currents. The lack of overall integrated coastal and port-specific management plans, contingency plans for rapid responses to shipping emergencies and spills and equipment to handle them also poses threats to both shipping and the environment. The lack of waste management facilities in ports relegates ships to disposal at sea. Root causes include the lack of institutional capacity to properly manage port operations and shipping, as authority is distributed among various agencies and too little investment provided to maintain and/or upgrade port facilities and train port personnel.

- (e) *Natural Oceanographic and Climato-Meteorological Phenomena*, with regard to the influence of currents and winds, El Niño/La Niña events, increased frequency and amplitude of tropical storms, global warming, earthquakes and tsunamis, and their potential cumulative effect. The devastation attributed to Hurricane Mitch, following massive bleaching of coral reefs associated with an intense *El Niño* episode in the summer of 1998, is one such example. Bleaching affected all reefs in Belize, particularly in the lagoon area, where up to 90 percent mortality was detected.

Box 5. Existing Threats: Natural Oceanographic and Climato-Meteorological Phenomena

*Oceanographic and climato-meteorological features are permanent phenomena in nature, however their increased frequency and intensity, now thought to be associated with climate change, represent serious threats to both human and biological coastal communities. Settlements and development infrastructure are exposed to greater risk as a result of increased storm damage and flooding. More frequent and sustained increases in sea surface temperatures like those associated with recent *El Niño* events, also puts coral reefs—already near or at their critical thermal maxima—at much greater risk. The MBRS's increasing exposure to anthropogenic*

stress may lower the resilience of its communities to such “natural disturbance.” Bleaching, reduced calcification rates and increased vulnerability to diseases among corals are all potential outcomes of major shifts in the periodicity and amplitude of atmospheric and oceanographic phenomena. Continuous monitoring of these phenomena and of physical and biological indicators of coral reef health, will be essential to assessing the long-term vulnerability of the MBRS to system-wide changes in oceanographic and atmospheric conditions that exceed historic levels of variation in these states.

6. The TRCA indicated that two transboundary subregions, the Chetumal Bay – in the border region of Mexico and Belize – and the Gulf of Honduras – shared by Belize, Guatemala, and Honduras – are the principal foci of the majority of known and/or potential threats and their impacts to the ecological health of the MBRS, with most of the intermediate and root causes of the threats occurring therein. Unfortunately, not enough is known about the ecology of the reefs nor their recovery potential to adequately assess the long-term impact of these forms of stress on the viability of the ecosystem nor the costs to human populations of the potential losses associated with them.

7. The broad development goals of the four participating countries focus on economic growth, improving the effectiveness of the public sector, poverty alleviation and improved natural resource management. The Project supports these goals through promoting sustainable use of natural resources and generation of sustained benefit flows from coastal and marine resources to poor, rural communities, as well as training of government officials in improved methods for planning and management of resources.

Baseline Scenario

8. *Scope.* On June 5, 1997, the Presidents of Mexico, Guatemala, and Honduras and the Prime Minister of Belize signed the “Declaration of Tulum” in which they acknowledged the global biological, economic and cultural importance of the Mesoamerican Barrier Reef in relation to the region’s future, the seriousness of the threats facing this unique system, and the urgent need to initiate actions to counter these threats. The four nations’ leaders committed themselves to initiate a process of active collaboration between the four countries to prepare and implement an Action Plan for the conservation of the MBRS.

9. In June 1997, the Central American Commission on Environment and Development (CCAD), representing the three Central American countries bordering the MBRS, and which includes Mexico as an observer, approached the World Bank requesting support for the design of strategies and projects at the regional and national levels for conservation and sustainable use of the MBRS. With financial support from the Global Environment Facility and technical support from the World Bank, IUCN, and WWF, the four countries drafted an Action Plan for the management of the MBRS. The Action Plan includes the following major elements: (a) integrated land use planning; (b) research/monitoring, education and information dissemination; (c) establishment of marine protected areas; (d) promotion of sustainable tourism efforts; (e) maintenance of water quality and pollution prevention; (f) capacity building: institutional strengthening, participatory management and financial sustainability; (g) harmonization and implementation of robust legal frameworks; (h) fulfillment of international agreements; and (i) regional coordination in the implementation of the Action Plan. The Action Plan provides the basis for a comprehensive program of regional and national level activities aimed at safeguarding the integrity and productivity of the MBRS and ensuring the social and environmental sustainability of benefits derived from it now and in the future.

10. In line with the 1999 Action Plan, concerns over increasing threats to biodiversity in particular have prompted the four participating governments to carry out work on National Biodiversity and Actions Plans (BSAPs) with assistance from UNDP/GEF. These BSAPs have identified challenges to the conservation and wise use of biological resources, including the effectiveness of laws and institutions. Priority areas for work include identification of unsustainable natural resource use and the impacts of

such practices on national and regional ecosystems and species threatened with extinction. Solutions to address such problems include – among others – more effective enforcement of existing laws and regulations, strengthening of existing protected areas and creation of new protected areas where necessary and resources permit, improved land management and broader participation of responsible governmental and nongovernmental organizations in natural resource management.

11. Implying the above-mentioned development priorities and in particular those related to the Action Plan in the four participating countries will require upgraded capacity and quality of government institutions addressing coastal and marine resource management, policy harmonization, and programs targeted towards sustainable income generation, particularly for the rural poor. The following discussion of the Baseline Scenario activities is divided as follows: (a) activities financed strictly by government resources; (b) activities financed by multilateral institutions¹⁰; (c) activities financed by bilateral donors; and (d) activities financed by nongovernmental organizations.

12. **Nationally financed activities.** Activities at the national level in the four participating countries relating to policing of coastal and marine resources; enforcement of environmental laws; promulgation of policies regarding fisheries laws and water quality; physical sampling and monitoring of water quality related to nutrient loads and coastal and marine pollution; as well as participation in regional working groups relating to coral reef monitoring, fisheries management (e.g., CARICOM Fisheries Resource Assessment and Management Program), or other public sector activities directly related to coastal and marine resources management in the MBRS region total approximately US\$4.5 million over the next five years, including: Government of Mexico, US\$1.5 million; Government of Belize, US\$1.5 million; Government of Guatemala, US\$0.5 million; and Government of Honduras, US\$1.0 million.

13. **Internationally financed activities: Regional.** GEF-financed activities in the four participating countries are extensive. With assistance from the Global Environment Facility, the United Nations Development Programme and the United Nations Environment Programme, and bilateral donors, the Central American Commission on Environment and Development is executing the regional program to consolidate the Mesoamerican Biological Corridor (MBC). Additionally, the Inter-American Development Bank has begun discussions with the Governments of Belize, Guatemala, and Honduras with respect to a project to control transboundary pollution in the Gulf of Honduras.

14. **Internationally financed activities: Mexico.** The Government of Mexico is presently preparing a Mesoamerican Biological Corridor (MBC) Project to address terrestrial biodiversity concerns and to forge critical links between terrestrial and marine corridors through the protection of biological corridors linking natural habitats, increase environmental education and awareness, and improve land use in watersheds draining into the Caribbean Sea. One of the proposed corridors links Calakmul Biosphere Reserve in Chiapas with Sian Ka'an Biosphere Reserve, a priority protected area along the coast of Quintana Roo.

15. **Internationally financed activities: Honduras.** The Mexico MBC project is complemented by a national initiative in Honduras to conserve biodiversity in protected areas. The World Bank/UNDP/GEF/Government of Honduras: Biodiversity in Priority Areas Project is working to protect the integrity of natural systems in priority protected areas; along Honduras' north coast and southernmost

10. Activities financed by the Global Environmental Facility are mentioned in this analysis to indicate the full extent of activities underway in the region; nonetheless, they are not considered as part of financing of the Baseline Scenario. Furthermore, the four participating countries are in the final stages of Enabling Activities for Biodiversity with the support from the Global Environment Facility and the United Nations Development Programme. Under the Baseline Scenario, it is expected that the four countries will complete national Biodiversity Strategies and Action Plans, assessing the status of biological resources and identifying options for managing important biodiversity.

region of the MBRS, the project is supporting protected areas management in four protected areas: Punta Sal, Punta Izopo, Cuero y Salado, and Pico Bonito.

16. The Government of Honduras/Inter-American Development Bank Bay Islands Project aims to promote sustainable development in the Bay Islands of Honduras, a part of the MBRS, through strengthening the capacity of local institutions responsible for natural resources management, establishing a large Marine Protected Area surrounding the Bay Islands, improving environmental quality through waste management and water quality monitoring, and supporting environmental education and outreach. The estimated contribution to the Baseline Scenario for project activities totals US\$24 million.

17. Baseline activities within the Government of Honduras/World Bank Social Investment Fund and the Government of Honduras/Inter-American Development Bank Secondary Cities Project will promote improved resource management, improved access to social services (e.g., water and sanitation) and income generation for the poor in secondary cities along the Caribbean coast of Honduras (e.g., La Ceiba, Tela, Trujillo). As part of significantly larger projects, the estimated contribution to the Baseline Scenario for activities in the above-mentioned areas totals US\$7.5 million.

18. The proposed Government of Honduras/World Bank Sustainable Tourism Project is designed to help Honduras lay the foundation for sustainable growth in the tourism sector over the next three years by: (a) developing a national strategy for sustainable tourism along the North Coast, which includes zoning and land use planning for development of sub-regional tourism development plans; (b) strengthening capacity in coastal municipalities to discharge their responsibilities in the area of environmental assessment and planning and managing the development of their coastal and marine resources for tourism and other economic activities; (c) designing and delivering training programs in good practice and international codes of conduct in the tourism industry, tailored to the needs of nongovernmental organizations, small business enterprises and commercial tourism operators, as well as developing a voluntary environmental rating and certification program for private sector businesses, tourism destinations and private nature reserves; and (d) promoting and testing innovative public-private partnerships in line with principles of environmentally and socially sustainable tourism in coastal communities throughout the project area. The latter will encourage the participation of indigenous and other economically disadvantaged groups as key beneficiaries under the project. The estimated contribution to the Baseline Scenario for project activities totals US\$4 million.

19. ***Internationally financed activities: Belize.*** In Belize, the second phase of the Government of Belize/UNDP/GEF Conservation of the Belize Barrier Reef Complex Project is focusing on national priorities, including improving management of fisheries, marine environment and tourism sectors through zoning and land use planning; consolidation of designated Marine Protected Areas; development of environmental policies; establishment of environmental monitoring systems; promotion of sustainable tourism and introduction of cost recovery mechanisms for marine conservation and management. While there are synergies between the national effort and the proposed MBRS Regional Project, the latter will focus almost exclusively on transboundary issues. Three mid-sized projects are serving to support terrestrial biodiversity conservation in the northern, central, and southern portions of Belize. One of these, involving the protected area at Sarstoon-Temash, will provide the basis for linking improved natural resource management in agricultural productive activities with conservation efforts by indigenous communities. The MSP focus on these terrestrial habitats will provide the opportunity to improve management of the coastal interface in this highly sensitive transboundary area. Finally, several communities have received grants through the UNDP/GEF Small Grants program to protect coastal and marine resources (e.g., Laughing Bird Caye National Park Project; Slackchwe Habitat Enhancement Project).

20. The Government of Belize/Inter-American Development Bank Tourism Development Project aims to increase employment opportunities, foreign exchange earnings, and government revenues in a manner that is environmentally and culturally sustainable. The project will develop and conserve major Mayan archaeological sites; improve access to key tourist areas; protect the barrier reef by seeking solutions to growing problems with water supply and sewage treatment on Caye Caulker; increase the quantity and quality of basic tourism services; and improve the effectiveness of key institutions in the tourism sector through institutional strengthening. The estimated contribution to the Baseline Scenario for project activities totals US\$1.8 million.

21. Additional national-level activities in the region financed with support from international financial institutions or bilateral assistance include:

- (a) USAID-financed activities supporting community-based management of coastal and marine resources and capacity building of local NGOs include the Mexico Coastal Program in Quintana Roo (US\$2.0 million) and the Regional Environment Program for Central America: PROARCA/COSTAS, implemented with support from WWF, The Nature Conservancy, and the University of Rhode Island Center for Coastal Resources (US\$3.5 million). Within the MBRS region, the latter supports capacity building and empowerment of local communities in the development of strategies for the sustainable use of coastal resources focusing on pilot areas in Belize, Guatemala, and Honduras.
- (b) Smaller bilateral initiatives include: EU financing of a CZM plan in Belize, including establishment of a Coastal Advisory Committee (US\$0.7 million); sustainable fisheries development in the Caribbean Basin, supported by the CARICOM nations, through the Caribbean Fisheries Resource Assessment and Management Project (CFRAMP) (US\$5 million).

22. **NGO Financed Activities:** Activities financed by international nongovernmental organizations include the WWF Mesoamerican Reef System Ecoregion Project. As part of its Global 200 Ecoregions Campaign, WWF is in the process of launching a new effort for the Mesoamerican Caribbean Reef Eco-Region, which plans to focus on a biological assessment of the broader marine ecosystem and to determine priority interventions for treating root causes of resource degradation from a biodiversity conservation perspective. These activities are being developed in close collaboration and as co-financing for the proposed GEF Project. WWF co-financed activities include: mobilizing a constituency and tools for conservation at the regional ecosystem level; mapping key habitats, ecosystems and biogeographic features of the ecoregion to identify hotspots and priorities for conservation; protecting key sites and wildlife populations; shaping regional development to support ecosystem conservation; and establishing long-term conditions and strengthening human resource capacity needed to sustain conservation. The estimated contribution to baseline scenario for WWF project activities totals \$3 million.

23. There are numerous ongoing international and regional programs providing technical assistance in coastal resources assessment, monitoring and capacity building. These include the Caribbean Coastal Marine Productivity Programme (CARICOMP) and the UNEP-coordinated Caribbean Environment Programme (CEP). The Global Coral Reef Monitoring Network, a program of the International Coral Reef Initiative, is operating in the Caribbean through several sub-nodes. Nascent monitoring efforts along the coast of Central America have been initiated by government, academic and NGO institutions. These could be significantly enhanced, however, by the GEF supported Project under the monitoring and EIS component as a GCRMN sub-node for the Western Caribbean. The Intergovernmental Oceanographic Commission/ Sub-commission for the Caribbean is coordinating support to countries in the Wider Caribbean Region to ratify and adopt actions under the protocols of the Cartagena Convention and supports scientific research, training and monitoring of oceanographic, fisheries and biological diversity parameters.

24. Finally, the Nature Conservancy, FOCADES (the Environment Fund of Central America), RODA (Red de Organizaciones de Derecho Ambiental, Guatemala), and IUCN's Wetlands program are sponsoring an Ecoregional Study of Marine Biodiversity in an effort to set priorities for marine conservation. The Wildlife Conservation Society is financing marine environmental education, awareness, and dissemination as well as maintaining a research facility on Glovers Reef atoll in Belize. The Canadian College Partnership Program is working with the University College of Belize to develop capacity for watershed and water quality monitoring. The Mellon Foundation together with The Nature Conservancy is financing oceanographic and hydrological research to determine water circulation and material dispersion in the Gulf of Honduras.

25. Smaller, complementary initiatives which promote conservation, policy reform, public awareness and community participation in the management of coastal and marine resources in the four MBRS countries include activities carried out by: Amigos de Sian Ka'an (Southern Quintana Roo Integrated Coastal Zone Management Project; Mexico); Amigos de Isla Contoy A.C. (Mexico); Asociados Náuticos y Subacuáticos de Isla Mujeres A.C. (Mexico); communities surrounding Bacalar Chico National Park/Marine Reserve; Belize Audubon Society with The Summit Foundation (Belize); Friends of Laughing Bird Caye (Belize); FUNDAECO (Belize); Toledo Institute for Environment and Development (Belize); La Alianza Trinacional del Golfo de Honduras (Guatemala); the Bay Islands Conservation Association (Honduras); Fundación Calentura Guaymoreto (Honduras); Fundación Cuero Salado (Honduras); Fundación Parque Nacional Pico Bonito (Honduras); Fundación Parque Lanatia, Punta Sal y Texigua (Honduras), and Coral Reef Fund for Cayos Cochinos (Honduras). The total cost of activities financed by national and international nongovernmental organizations identified above is approximately US\$10 million over the next five years.

26. **Costs.** The cost of Baseline Scenario investments in the four participating countries totals US\$63 million. Of these resources, approximately US\$32.3 million is directed towards environmental protection in coastal and marine areas; US\$5.6 million for the establishment and/or strengthening of marine protected areas; US\$3.5 million for environmental information management; US\$16.4 million for sustainable use activities; US\$5.0 million for environmental education and public awareness of coastal- and marine-related issues; and \$0.2 million for periodic regional consultations and limited coordination within the framework of the Declaration of Tulum.

27. **Benefits.** Implementation of the Baseline Scenario will result in increased environmental protection in select areas, improved wastewater treatment and concomitant improvement in water quality, introduction of safeguards in select municipalities to protect important resources from over-development, increased capacity of public sector entities and nongovernmental organizations to manage coastal and marine resources, increased access by local communities for sustainable generation of incomes, and increased awareness of threats to coastal and marine ecosystems in the four participating countries. The Baseline Scenario does not include any program or financial support to promote management of the MBRS as a system to address transboundary issues.

GEF Alternative

28. **Scope.** There are many potential synergies between various national efforts identified in the Baseline Scenario and this proposed regional effort. The GEF Alternative will build on the Baseline Scenario specifically by: strengthening existing and creating new marine reserves in transboundary areas which contain representative examples of coastal and/or marine ecosystems; developing and implementing a regional MBRS monitoring and environmental information system involving standardized protocols for collecting, analyzing and accessing data among the four participating countries; identifying and disseminating international best practice in sustainable tourism and shared fisheries management and promoting its adoption among the four countries to reduce non-sustainable

patterns of economic exploitation of environmental resources within the MBRS; increasing local and national capacity for environmental management through education, information sharing and training; and enhancing regional cooperation in the management of a regional public good by creating an enabling environment for the harmonization of national policies and regulations related to the management of coastal and marine resources and the institutional arrangements to ensure coordination across the four countries in implementation of agreed measures for conservation and sustainable use of this transboundary marine ecosystem.

29. With respect to the Marine Protected Areas component, site selection criteria for incremental financing was based on the significance of the protected area with respect to contributing to MBRS ecosystem characteristics, diversity and processes. The majority of the MPAs are located in the two transboundary areas of the MBRS. In the transboundary areas themselves, there are several MPAs that are separated by national boundaries and managed as separate units. Two of these bi-national MPA complexes, situated in the Mexico-Belize and Belize-Guatemala transboundary areas respectively, will be assisted through the Project with the additional objective of promoting a regional approach to their management. Selection of the remaining MPAs, in addition to the aforementioned criteria, was made with the intent to ensure a spatially dispersed pattern of protected areas loosely connecting the Project's two transboundary areas.

30. Through the Regional Environmental Information System (REIS) component, the GEF Alternative will provide the basic framework to guide the collection, processing, distribution and utilization of data which will promote improved management of the MBRS, and supply incremental resources to individuals and organizations carrying out data collection. The REIS will support a reliable database that can help to inform management decisions. For instance, ecological linkages between reefs, other marine environments and coastal watersheds are mediated, partially or entirely, by water flow. However, despite the importance of water currents in transporting nutrients, pollutants, and reproductive products across ecosystem and national boundaries, there is a dearth of data on the region's current regime and its influence on the status and processes of MBRS reefs and other critical ecosystems. Nor is there sufficient information related to the complex patterns of reproduction, larval dispersal, and recruitment of corals, fish, and other important reef components; patterns which depend on the complex interaction of water flow and larval behavior. These critical data needs will be supported through the MBRS Project.

31. Furthermore, the GEF Alternative will support pilot activities, increase institutional capacity through regional training activities, and interpret and disseminate information on status and trends in the health of the MBRS to guide policymaking. Through greater awareness of downstream impacts of development activities on the health of the MBRS, tools and mechanisms to support good practice, and alternatives livelihood options based on sound use, the Project will help create incentives for stakeholders to shift toward more sustainable use of MBRS resources. The Threat and Root Cause Analysis conducted during Project preparation indicated a lack of public awareness of the significance of the MBRS and the issues that need to be addressed to ensure its sustainability. A critical element to developing the political will and policies required to manage the MBRS will be building the necessary public support to catalyze change. The GEF Alternative will increase environmental awareness among a variety of stakeholders and promote the development of human capacity to change practices that are detrimental to the MBRS. Finally, the GEF Alternative will support regional coordination through a Project management structure that includes a Regional Steering Committee made up of representatives of CCAD, the multi-stakeholder National Barrier Reef Committees in each country and ex-officio members of donor institutions; a Technical Advisory Group to support them; and Regional Technical Working Groups that will design and oversee implementation of agreed interventions on the ground to protect the ecological integrity of the MBRS.

32. **Costs.** The total cost of the GEF Alternative is estimated at US\$77.3 million, detailed as follows: (a) increased environmental management and protection - US\$32.3million (*GEF financing: US\$0.0 million*); (b) consolidation of a representative system of Marine Protected Areas through support for planning, management and biodiversity monitoring – US\$10.5 (*GEF financing: US\$2.5 million*); (c) development of a Regional Environmental Information System – US\$8.0 million (*GEF financing: US\$3.0 million*); (d) promotion of sustainable uses of the MBRS – US\$18.0 million (*GEF financing: US\$1.5 million*); (e) expansion of environmental education programs and increased public awareness – US\$6.5 million (*GEF financing - US\$1.3 million*); and (e) regional coordination and management – US\$2.0 million (*GEF financing - US\$1.8 million*).

33. **Benefits.** Implementation of the GEF Alternative would enhance protection of vulnerable and unique marine ecosystems of the second longest barrier reef in the world and assist the four participating countries to strengthen and coordinate national policies, regulations, and institutional arrangements for marine ecosystem conservation and sustainable use. Benefits generated from this comprehensive approach would include those classified as “national”—increased sustainability of natural resource use, greater stability in long term revenues from enhanced natural capital, and increased public awareness of environment and natural resource issues—as well as those considered “global” in nature. Global benefits include the conservation of coastal and marine biodiversity; protection of the ecological integrity of critical marine ecosystems; a regional system of marine/coastal protected areas which guarantees representation of all ecosystems present in the region, as well as functionality and stability of the MBRS; and outreach to and involvement of local communities and local governments in managing natural resources.

Incremental Costs

34. The difference between the cost of the Baseline Scenario (US\$63.0 million) and the cost of the GEF Alternative (US\$77.3 million) is estimated at US\$14.3 million. This represents the incremental cost for achieving global environmental benefits through developing integrated management plans for the sustainable use of coastal and marine ecosystems and the diverse resources, goods and services they provide; strengthening local and national capacity for environmental management through education, information sharing and training; standardizing ecosystem monitoring and facilitating its execution and dissemination of results throughout the region; strengthening institutions and programs for maintenance of water quality and prevention of contamination, particularly in transboundary situations; and establishing transnational coordination and cooperation mechanisms for harmonization of policies related to the conservation and sustainable use of the MBRS. A GEF grant of US\$10.1 million is proposed at this time; an additional US\$4.2 million has been committed by participating governments, non-governmental organizations and local communities in support for the Project.

35. **Process of Agreement:** Cost sharing among participating countries, the GEF, and other stakeholders has been a topic of analysis and discussion throughout the preparation process. The current financing plan and proposed incremental cost support from GEF was reviewed and agreed at the most recent inter-governmental workshop for MBRS project preparation in Tulum (April 2000).

Incremental Cost Matrix

Component Sector	Cost Category	US\$ Million	Domestic Benefit	Global Benefit
A. Environmental Management and Protection	Baseline	32.3	Increased environmental protection in select areas. Improved water quality and wastewater treatment/sanitation in coastal communities. Reduced water pollution in coastal areas, allowing for increased uses of coastal and marine resources. Increased public sector capacity to manage natural resource base.	
	With GEF Alternative	32.3	Same as above.	
	Incremental	0		
B. Planning, Management, and Monitoring of Representative MPAs	Baseline	5.6	On-going management of coastal and marine protected areas. Limited support for co-management of MPAs.	Some MPAs exist but they are not sufficient to conserve coastal and marine biodiversity, particularly in transboundary areas.
	With GEF Alternative	10.5		Representative system of Marine Protected Areas (MPAs) supported with management plans and basic infrastructure. Increased management capacity for MPAs. Increased support for co-management of MPAs, allowing meaningful contribution from civil society. Increased transboundary cooperation in policy, protection, and management of MPAs.
	Incremental	4.9	<i>Note: Participating countries and stakeholders will provide an additional US\$2.4 million to this component.</i>	
C. Regional Monitoring Program and Environmental Information System	Baseline	3.5	Biophysical monitoring within select marine and coastal areas of participating countries.	
	With GEF Alternative	8		Establishment of coordinated information system to organize and manage data in support of improved decision-making. Increased collection and analysis of information vital for conserving coastal and marine biodiversity, including monitoring of coral reef ecosystem health and factors affecting it. Increased pollution monitoring, including transboundary aspects of point and non-point source pollution.
	Incremental	4.5	<i>Note: Participating countries and stakeholders will provide an additional US\$1.5 million to this component.</i>	
D. Promotion of Sustainable Uses of the MBRS	Baseline	16.4	Support for activities targeted at promoting sustainable coastal and marine tourism in select areas. Increased opportunity for income generation for coastal communities. Increased planning and management capacity at local level for sustainable coastal and marine resource management. Increased generation of resources derived from sustainable management within tourism sector.	

Component Sector	Cost Category	US\$ Million	Domestic Benefit	Global Benefit
	With GEF Alternative	18.0		Increased opportunities for income generation and equitable benefit sharing based upon sustainable uses of coastal and marine resources. Best practice guidelines for marine ecotourism identified and promoted. Establishment of a joint commission on regional fisheries management. Increased local involvement in transnational management of fisheries resources.
	Incremental	1.6	<i>Note: Participating countries will provide an additional US\$0.1 million to this component.</i>	
E. Environmental Education and Increased Public Awareness	Baseline	5.0	Increased awareness of environmental issues. Increased capacity and empowerment of local communities regarding management of local resources.	
	With GEF Alternative	6.5		Increased public awareness of issues related to coastal and marine ecosystem conservation and management. Meaningful participation of local stakeholders and participatory schemes for sustainable natural resource management.
	Incremental	1.5	<i>Note: Participating countries and stakeholders will provide an additional US\$0.2 million to this component.</i>	
F. Program Management	Baseline	0.2	Periodic regional consultations and coordination within the framework of the Tulum Declaration.	
	With GEF Alternative	2.0		Mechanism and institutional framework established for regional coordination. Increased coordination of public and private sector activities aimed at managing marine and coastal areas and globally significant biodiversity, particularly in transboundary areas. Effective management of investments aimed at long-term conservation and sustainable use of globally significant biodiversity.
	Incremental	1.8		
Totals	Baseline	63.0		
	With GEF Alternative	77.3		
	Total Increment	14.3	<i>Participating countries and stakeholders will provide US\$4.2 million in additional financing.</i>	
	GEF Increment	10.1		

**Central America Commission on Environment and Development
Conservation and Sustainable Use of the Mesoamerican Barrier Reef System**

Annex 4

A. STAP Reviewer's Comments

Review of the Draft GEF Project Appraisal Document for the Conservation and Sustainable Use of the Mesoamerican Barrier Reef System

The project is important, ambitious, very necessary and subject to external risks arising outside the immediate scope and control of the project design or operations.

Revisions to the project design in the past year have clarified the context in respect of other activities in the area. They have also addressed issues of communication and coordination particularly in the context of the workshop convened in June 1999 at the request of CCAD to draft an Action Plan for the MBRS.

I consider that there is evidence of high level commitment to coordination within and beyond the immediate components of the project and that this commitment should reduce the external risk to an acceptable level.

A project of this nature is essential to attempts to secure the future maintenance and wellbeing of the reefs and associated ecosystems of the Mesoamerican Barrier Reef Region. The work done to develop the project to this stage has involved substantial development of trust and recognition of transboundary issues which have to be addressed collaboratively.

I consider that it is important that the project proceed because it is important to maintain momentum to build on the basis of shared recognition of problems and acceptance of the need to find solutions.

Comments on project specifics are provided separately below.

RA Kenchington
7 June 2000

Review – Project Specifics
Conservation and Sustainable Use of the Mesoamerican Barrier Reef System (MBRS)

(a) Key issues

(i) Scientific and technical soundness of the project

The project is scientifically and technically sound.

(ii) Identification of the global environmental benefits and/or drawbacks of the project

The project has immense global environments. The MBRS is an important but endangered ecosystem which is likely to deteriorate seriously over coming decades if measures such as those contained in the proposal are not put in place.

How the project fits within the context of the goals of GEF, as well as its operational strategies, programme priorities, GEF Council guidance and the provisions of the relevant conventions

The project fits clearly within the biodiversity and oceans goals of the GEF. It is a priority area and has strong links with CBD, CITES and LOS.

(iii) Regional context

This is a regional project with highest level support of the participating countries Belize, Honduras, Guatemala and Mexico. The MBRS is a system of global importance and is a significant part of the heritage, biodiversity and natural resource base of coastal communities of Mesoamerica.

(iv) Replicability of the project (added value for the global environment beyond the project itself)

The project is an example of the approach being fostered by the International Coral Reef Initiative of addressing the conservation and sustainable use of coral reefs and related ecosystems at the regional scale. Success in this project will provide important working examples for the global community.

(v) Sustainability of the project

The aim of the project is to build a sustainable basis for conservation and resource use. There is highest level commitment of the governments. The project has elements of risk in that it will involve the development and implementation of sustainable multisectoral management at the local, national and regional level. The design recognises and seeks to address that risk through a number of community, consultative and educational measures.

In the case of targeted research projects, it will be necessary to address the issue of the extent to which the project will contribute to the improved definition and implementation of GEF's strategies and policies, thus paving the way for more effective international, technical cooperation, assistance and investment projects.

The project as a whole addresses fundamental issues in definition and implementation of GEF strategies and the achievement of international goals for conservation and sustainable resource use at the ecosystem and political regional scale. The risk has been mentioned above. The long term viability of the strategies will depend on achieving success stories which can demonstrate the benefits and so reduce the risk of failure or disinclination to address sustainability.

(b) Secondary issues

- (i) Linkages to other focal areas
- (ii) Linkages to other programmes and action plans at regional or sub-regional levels

The project has a large number of linkages to national, aid funded and NGO programs in all four countries. These are detailed in Annex 6 (Threat and Root Cause Analysis) Matrix 3.

(iii) Other beneficial or damaging environmental effects

The project if successful will lead to an understanding and acceptance in the local and national financial communities of the high social and economic costs of environmental failure and of attempts to restore damaged environments. If this is the case there should be increased resistance to attempts to pursue developments which promise short term bounty but do not address and fully integrate the short, medium and long term social and environmental costs.

(iv) Degree of involvement of stakeholders in the project

The development of the project design has involved extensive work with stakeholders in the community, professional agencies and governments of the four countries. The design includes a number of mechanisms intended to maintain and further develop this approach.

(v) Capacity-building aspects

This is directly addressed in the project design with a sound range of training targets for staff involved as well as training trainers, community educators and teachers to provide the basis for ongoing capacity building.

Innovativeness of the project

The project is ambitious and innovative in that it is dealing at the ecosystem scale with a shared natural heritage and resource base in a situation with four regional governments of nations at differing stages of economic development.

(c) Specific Comments on MBRS PAD

B. Strategic Context – key performance indicators

I suggest that something be added to promote public recognition also of the importance of the fundamental but vulnerable natural economic resource for the people of the region

(i) Component 2. Regional EIS

A related point but if the EIS is to address the processes which influence reef integrity it should clearly be seen to comprehend information on levels of use, opportunities and social and economic benefits from uses. If the EIS doesn't itself have such information it will need guaranteed access links to get it. The concern is to ensure that the MBRS is seen as a core part of social and economic life and not as a quasi cultural or aesthetic property which is the concern of science and foreign environmentalists.

(ii) Other comments

P 14. Benefits and target population third dot point. It is important to address the local populations currently dependent etc but as things develop it will also be important to look at the larger scales of national and regional costs and benefits. –The locals are unlikely to get into high-volume low-impact tourism, indeed they may be disadvantaged or displaced by it but the overall benefits at the national level and in terms of foreign earnings and at the national and international level in terms of conservation outcomes. The trick is to ensure that the interests or stake of the locals are taken into account in the overall cost benefit of any changed usage pattern.

P 15. reference to other projects - Be sure to coordinate with UNEP and other partners in the identification of demonstration sites to be supported under the Caribbean regional program of the International Coral Reef Network (ICRAN)'s Strategic Framework. There are clear opportunities for synergy between the two projects here in terms of MPA management training, monitoring and information exchange.

P 17 Indications of borrower commitment, para 3. The signatory status of the countries with respect to IMO conventions would be clearer in a table where all could see. This may generate some valuable peer pressure on those project participant countries which have not yet ratified the treaties.

P 21 Sustainability. Para 1 Could usefully reflect the usefulness of transboundary economic analysis and regional solidarity where the countries trade with the same buyers (eg cruise ship operators) and may be tempted or induced into trading environmental compliance standards for short term economic returns.

Annex 5, Matrix 3 (Current and Planned Regional Projects/Programs Relevant to the MBRS)

I found this very helpful. It certainly indicates the complexity and the scope of coordination.

Annex 5, Matrix 2 (Main Transboundary Threats and Actions Proposed)

Cruise shipping may also be worth mentioning as a transboundary threat. The experience of the last 2 years has shown us that the companies have yet to demonstrate that they can set and maintain acceptable environmental standards. Indeed it seems to be "smart business" to pressure to achieve exemptions from environmental standards and charges! That may not play well in Miami but given court cases in New York we should pressure them to meet standards or ship out!

(iii) Information Deficiencies and Gaps Affecting the Threat and Root Cause Analysis

Ecological. In addition to the Reef check etc there is a case for monitoring recruitments of fish and corals which are highly variable from year to year and are probably an important factor in resilience.

Tourism. Also useful to monitor levels of visitor expectation, visitor satisfaction and the direct impacts of tourism.

RA Kenchington
7 June 2000

B. Response to the STAP Reviewer's Comments

The project team has reviewed the STAP reviewer's comments and found them to be very supportive of the project overall. Suggested revisions to the design of specific activities and project performance indicators will be incorporated during the final stages of project preparation into the final project document. This will be part of a larger effort to sharpen the expected project outcomes in terms of performance benchmarks and indicators of progress toward achieving objectives on the ground. Based on these results, not only will project success be measured, but the replicability of specific outcomes determined for scaling up within and outside the region.

Response to Specific Comments:

1. ***Regional EIS (Component 2) and Stakeholder Benefits.*** The final design of the EIS will be developed by the regional technical working groups in a series of workshops, facilitated by technical specialists in Coral Reef EIS. There is now a large body of literature on the types of monitoring and information indicators that need to be included in EIS, to assess socio-economic aspects relating to the sustainability of Coral Reef Ecosystems. These are directly related to the earlier point of ensuring that the public is aware of the economic importance and benefits derived from the MBRS, as well as the impacts that use activities may have on the viability of the system. These types of indicators will be discussed in the regional workshops to develop the data sets that will be included in the MBRS Regional Monitoring and Information System. The overall intent is to develop a user-friendly information system that is of use not only to scientists, but to inform decision making and create a solid constituency in support of measure to conserve an outstanding marine resource.
- 2.. ***Coordination with ICRAN.*** There is an ongoing exchange of information between the MBRS Project Team and the partners (e.g., UNEP, WCMC, UNF) developing the International Coral Reef Action Framework (ICRAN). A review of the draft ICRAN Strategic Framework by the TTL indicated where synergies may exist between the MBRS project and the proposed Caribbean Regional Program of ICRAN. These include the selection of demonstration sites in the Western Caribbean, MPA management training, monitoring and information dissemination. This dialogue will continue through the Bank's active partnership in ICRI (International Coral Reef Initiative) and ongoing exchanges at the technical level on activities under its sponsorship.
3. ***References to Cruise Shipping and the need to adopt uniform standards*** in the region related to Port State Control, waste management, waste reception are other commitments under MARPOL may be taken up on an issue by issue basis through the Policy Working Group, as well as the Sustainable Tourism Working Group, through dissemination of codes of conduct and design of a regional environmental certification scheme for sustainable tourism enterprises. However, it is likely that many of these issues will be more readily addressed under a complementary regional initiative to control Maritime and Marine Pollution in the Gulf of Honduras, by the IDB with assistance from the GEF.

4. ***Monitoring Tourism Impacts*** could be integrated into activities under the Sustainable Use Component related to carrying capacity assessments for tourism and criteria for the design of environmental certification programs in this sector.

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ANNEX 5
THREAT AND ROOT CAUSE ANALYSIS

Matrix 1: Main Threats to the Ecological Health of the MBRS and their Root Causes and Actions Proposed to Address Them

Threat	Proposed Actions	
	National Initiatives	Regional Initiatives
<i>A. Coastal/Island Development and Unsustainable Tourism</i>		
1. Urbanization at Inappropriate Sites in Coastal Areas without Adequate Environmental Engineering and Management Practices	a. Participatory development and implementation of land-use plans and zoning based on economic, social, cultural and environmental parameters, preferably at the subregional level; including the establishment and active co-management of reserves.	i. Technical assistance and training in the preparation and enforcement of land-use and zoning plans; promote the use of habitat mapping among parameters used to determine zoning, land use and biodiversity conservation through establishment of system of coastal and marine protected areas (MPAs).
	b. Development of sector-specific guidelines for preparation of EIAs and standards and codes for land development and structures in coastal areas.	ii. Publication and dissemination of practical guides for the preparation of sector-specific EIAs and building/construction codes for coastal areas.
	c. Development of local (municipal, developer, NGO) capacity to prepare EIAs and enforce and monitor mitigation compliance.	iii. Technical assistance and training of GOs and NGOs in the preparation of sector-specific EIAs, practical mitigation and enforcement strategies.
	d. Development of inventories of coastal resources and use/user conflicts (including land use, water resources, geomorphology, ecosystem composition/condition, and point sources of contamination, sedimentation and impact), and monitoring of selected indicators of condition and intactness (esp. water quality).	iv. Co-implementation with local GOs and NGOs of a regional initiative for development of coastal resources inventories, using uniform parameters of analysis and presentation, and taking advantage of regional economies of scale for purchase and analysis of data (imagery, research). Publication of a “Status of the MBRS” with national annexes.
	e. Assistance to national and local GOs in reforming their governance model to streamline and decentralize planning and normative procedures, promote integrated coastal management models, and actively enforce zoning and protected areas regulations.	v. Utilize regional and international political lobby and assistance (SICA-CCAD, WB, IDB, UNDP, UNEP, etc.) to facilitate GO and private sector officials’ incorporation of the environmental costs of land and resources development into national and local government accounts, including permanent environmental monitoring programs.
	f. Lift subsidies favoring coastal and urban development, and charge the real costs for water, energy, sanitation and transport, including their environmental and social costs.	vi. Support continuing initiatives to consolidate and expand the Meso-American Biological Corridor and its marine-coastal extensions in each country.

Threat	Proposed Actions	
	National Initiatives	Regional Initiatives
2. Uncontrolled, Poorly-Planned Tourism Development in Coastal Areas and Offshore Islands	a. [See A.1.a, b, c, d, e & f above]	i. [See A.1.i, ii, iii, iv, v & vi above]
	b. Develop participatory community-based strategies for tourism development, avoiding dependence on the “Club Med Model”.	ii. Assistance to facilitate environmental awareness and use of clean technology and total-quality manufacturing processes as promoted under ISO 9000 and 14000 initiatives, Green Globe and others; dissemination of practical guides and seminars for the tourism sector; disseminate guidelines for sustainable tourism development, using the Sian Ka’an/USAID and CEP/CEN project materials as a basis.
	c. Implement vocational rehabilitation training programs to transform farmers, fishers and laborers into tourism/sportfishing/ecotourism guides and related fields to generate the local economy.	iii. Facilitate regional training-of-trainers courses to local NGOs, universities and educators, in vocational rehabilitation to support the tourism industry.
	d. Determine carrying capacities at specific tourist/dive/fishing sites, and for islands, protected areas and reef areas as a whole; form a committee of resource users, tourist operators, conservationists and responsible GO authority and, based on best judgement and--considering environmental, social and economic factors--propose the numbers and types (professional divers, cruise-ship tourists, backpackers, day-trippers, over-nighters, etc.) that should occupy a site/area for how long, in what season and how accompanied.	iv. Facilitate local workshops with GO, NGO, tour operators, community members using uniform methodologies for the region for determining carrying capacities for different types tourism activities in different settings. Disseminate guides and technical materials as listed in USAID/URI’s “Selected Guidelines, Handbooks and Tools for Coral Reef Management”.
	e. Promulgate diving and pleasure boating regulations, placing responsibility of awareness training on tour/dive operators and divemasters.	v. Provide uniform guidelines for the preparation of diver/pleasure-boater guides so that local regulations and rules can be developed for all destinations in the MBRS.
	f. Institute the use of a portion of tourist/airport taxes, divers’ tags, concessions, admission fees fro MPAs and similar mechanisms, returning all revenue to the locations where they were collected to foster self-financing conservation programs and protected areas management.	vi. Disseminate uniform guidelines for the development of self-financing mechanisms for community-managed reserves (lagoons, natural areas, reefs and islands). vii. Promote the Galapagos Tourism Model, which combines a research facility and museum with tourism (also practiced at Anthony’s Key Resort/Marine Sciences Center in Sandy Bay, Roatan).
3. Uncontrolled Operation of Cruise Ships and Live-Aboards	a. Develop a cruise-ship/live-aboard tourism policy and regulations, that promote the use of local services and personnel, and provide awareness and skills training as required.	i. Facilitate assistance and demonstrations/models for the development of cruise-ship/live-aboard tourism, including policies, regulations and proposals for support infrastructure. Use the experience of the Belize Tourism Board as a starting point.
	b. Develop options for reception of cruise-ship wastes at local ports, including a tipping/disposal fee to finance environmentally-sound disposal facilities.	ii. Utilize regional and international political lobby and assistance (SICA-CCAD, WB, IDB, IOCARIBE, UNEP/CEP, UNDP, UNEP, etc.) to facilitate adoption and/or ratification and enforcement by the four countries, of international conventions related to the management of wastes from ships.
	c. [See A.2.d above]	

Threat	Proposed Actions	
	National Initiatives	Regional Initiatives
4. Industrialization in Coastal Areas without Adequate Environmental Engineering and Management Practices	a. [See A.1.a, b, c, d, e & f above]	i. [See A.1.i, ii, iii, iv, v & vi above]
	b. Ratify and enforce regional and international conventions relating to disposal of wastes into the sea and coastal areas.	ii. Utilize regional and international political lobby and assistance (SICA-CCAD, WB, IDB, IOCARIBE, UNEP/CEP, UNDP, UNEP, etc.) to facilitate adoption and/or ratification and enforcement by the four countries, of international conventions related to control of discharges of wastes into the sea and coastal areas.
	c. Develop an inventory of industries in areas where contamination is known or suspected, recording aspects of the nature, volume, form, locations and frequency of waste disposal; facilitate improvement of current licensing/permitting systems for operation of industrial processes based in part on this inventory, environmental auditing and monitoring of selected parameters (esp. water quality). "Hot spots" should be indicated for more research, frequent monitoring and control.	iii. Assistance to facilitate environmental awareness and use of clean technology and total-quality manufacturing processes as promoted under ISO 9000 and 14000 initiatives; dissemination of practical guides and seminars by industrial sector.
5. Unplanned, Uncontrolled Small Scale and Industrial Agricultural Development in Coastal Areas	a. [See A.1.a, b, c, d, e & f above]	i. [See A.1.i, ii, iii, iv, v & vi above]
	b. Intensify programs for settlement/resettlement of landless and poor, and promote equitable sale, transfer and titling of lands, and provide technical assistance for appropriate land and natural resource use, including sustainable agriculture to support the tourism industry.	ii. Provide financing and assistance for settlement of the landless and poor in areas based on strict integrated land-use planning, good environmental management and social equity and economic opportunity; and assistance for improved land and resource use systems.
	c. Develop an inventory of point and non-point sources known or suspected of contamination, recording aspects of the nature, volume, form, locations and frequency of waste disposal; facilitate improvement of current control and/or licensing/permitting systems for discharges (or runoff) of agricultural operations based in part on this inventory and monitoring of selected parameters (esp. water quality). "Hot spots" should be indicated for more research, frequent monitoring and control	iii. [See A.4.iii above]
6. Petroleum Exploration and Development in Fragile Areas and/or without Adequate Environmental Engineering and Management Practices	a. [See A.1.a, b, c, d & f above]	i. [See A.1.i, ii, iii, iv, v & vi and A.4.iii above]
	b. Develop an inventory of all oil exploration/exploitation sites/areas; develop contingency plans and response capability for the containment and control of oil spills and related accidents. Ratify and/or enforce regional and international conventions relating to cleanup of oil spills in the sea and obtain necessary equipment for same.	ii. Utilize regional and international political lobby and assistance (SICA-CCAD, WB, IDB, IOCARIBE, UNEP/CEP, UNDP, UNEP, etc.) to facilitate adoption and/or ratification and enforcement by the four countries, of international conventions related to control of oil spills in the Wider Caribbean (MARPOL, Cartagena Convention).

Threat	Proposed Actions	
	National Initiatives	Regional Initiatives
<i>B. Inappropriate Inland Resource and Land Use and Industrial Development</i>		
1. Conversion of Fragile Lands to Agricultural Uses in Upland Watersheds and Riparian Areas	a. Participatory development and implementation of watershed management plans and zoning based on economic, social, cultural and environmental parameters, preferably at the subregional level; including the establishment and active co-management of reserves.	i. Technical assistance and training in the preparation and enforcement of watershed management and zoning plans; promote the use of habitat mapping among parameters used to determine zoning for land use and biodiversity conservation through establishment of system of protected areas.
	b. [See A.5.b above]	ii. [See A.5.ii above]
	c. Develop updated inventories of natural resources, current land uses and socioeconomic parameters (including land/resource tenure) in watersheds as a basis for preparation of watershed management plans and programs.	iii. [See A.1.v & vi above]
	d. Provide assistance to national and local GOs in reforming their governance model to streamline and decentralize planning and normative procedures, and integrated enforcement of zoning and protected areas regulations.	e. Convene seminars with GO officials from countries in the region to present and discuss integrated land-use/natural resources planning, with emphasis on decentralization and local empowerment.
	e. Lift subsidies favoring lowland extensive cattle ranching and logging in upland watersheds, and charge the real costs for water and energy services derived from watersheds, including their environmental and social costs.	
2. Inland Industrial Development without Adequate Environmental Engineering and Management Practices	a. Participatory development and implementation of land-use plans and industrial zoning based on economic, social, cultural and environmental parameters, preferably at the subregional level.	i. Technical assistance and training in the preparation and enforcement of land-use and zoning plans.
	b. Development of sector-specific guidelines for preparation of EIAs and standards and codes for land development and industrial processes.	ii. Publication and dissemination of practical guides for the preparation of sector-specific EIAs and building/construction codes for relevant sectors.
	c. Development of local (municipal, developer, NGO) capacity to prepare EIAs and enforce and monitor mitigation compliance; promote voluntary compliance with environmental regulations (ISO 14000).	iii. Technical assistance and training of GOs and NGOs in the preparation of sector-specific EIAs, practical mitigation and enforcement strategies.
	d. Development of inventories of water resources, ecosystem composition/condition, and point sources of contamination and impact, as a basis for improvement of current systems of permits for industrial processes, and to facilitate monitoring of selected environmental indicators (esp. water quality).	iv. [See A.4.iii above]
		v. Utilize regional and international political lobby and assistance (SICA-CCAD, WB, IDB, UNDP, UNEP, bilaterals, etc.) to facilitate GO and private sector officials' incorporation of the environmental costs of industrial development into national and local government accounts, including permanent environmental monitoring programs.

Threat	Proposed Actions	
	National Initiatives	Regional Initiatives
3. Building of Transport Infrastructure (Roads, Airports) without Adequate Environmental Engineering and Contingencies for Socioeconomic Growth and Environmental	a. [See B.1.d and B.2.a and c]	i. [See B.2.i, ii and iii above]
	b. Development of sector-specific guidelines for preparation of EIAs and standards and codes for construction.	ii. Utilize regional and international political lobby and assistance (SICA-CCAD, WB, IDB, UNDP, UNEP, etc.) to facilitate GO and private sector officials' incorporation of the environmental costs of transport development into national and local government accounts, including permanent environmental monitoring programs.
	c. Development of inventories of land and water resources, ecosystem composition/condition and socioeconomic parameters as a basis for land-use plans and routing of transport corridors, and to facilitate monitoring of selected environmental indicators (esp. WQ)	
<i>C. Overfishing and Inappropriate Aquaculture Development</i>		
1. Unsustainable Industrial, Artisanal and Sport Fisheries Practices	a. Modernize fisheries laws and regulations considering new realities of equipment (fishfinders, GPS, etc.), declining stocks, saturation of fishing fleet, and alternative resource utilization (sportfishing, tourism).	i. Facilitate uniform fisheries policies and regulations (closed season, size/catch limits, no-take T&E species, equipment restrictions, etc.) throughout the region, based on regional conditions and fisheries in the MBRS. Propose a system of incentives to industrial fishers to reduce their fleets and fishing activities, and propose economic alternatives to current fisheries practices; propose a uniform system for recording fisheries harvests/landings and develop a database for assessing trends for sustainable fisheries and conservation purposes.
	b. Provision of needed equipment, trained personnel and judicial process to enforce fisheries regulations, especially closed seasons and areas, size limits, quotas on volume, and equipment restrictions; develop an accurate and permanent program for monitoring industrial and artisanal fisheries harvest/landings that include fishing locations.	ii. Develop and/or expand use of modern monitoring equipment (imagery, telemetered buoys for meteorological and oceanographic data) for locating spawning aggregations, nutrient upwellings, and other parameters useful in assessing productivity and needs for conservation.
	c. Reduce the number of industrial fishing boat permits (esp. Honduras and Mexico) through attrition and the use of incentives; strengthen restrictions on trawling in known seagrass and reef areas, and sites of seasonal spawning aggregations of species at risk.	iii. Provide regional seminars and practical on-site training of GO and NGO staffs in aspects of vigilance and enforcement, research and monitoring, both to promote sustainable yields and conservation.
	d. Promote technical and awareness training to industrial and artisanal fishers to improve sustained yields; facilitate vocational rehabilitation of artisanal fishers to sportfishing, diving and coastal/aquatic-ecology guides; protect the rights of artisanal fishers (esp. indigenous groups) to the resources that they have traditionally exploited.	iv. Promote the formation on binational (Belize/Mexico) and trinational (Belize/Guatemala/Honduras) fishers' associations as fora for resolution of conflicts among artisanal and industrial fishers in transboundary waters and training in best practices; distribute educational & public awareness & best practices media to fisheries cooperatives & industrial interests; support establishment and management of a binational MPAs between Belize and Mexico (Xcalak-Bacalar Chico) and trinational system of coastal and MPAs in the Gulf of Honduras.
	e. Promote aquaculture for replenishment of lagoons and estuaries with species at risk or of economic importance.	v. Promote the MBRS Section of the Meso-American Biological Corridor in order to ensure linkages of reef, lagoon and estuary

Threat	Proposed Actions	
	National Initiatives	Regional Initiatives
	f. Consolidate systems of MPAs as a strategy to increase stocks of T&E and other species under stress (Hol Chan Marine Reserve experience); include sites of spawning aggregations within the system of marine protected areas.	ecosystems along the entire coast, especially for recruitment of larvae and fry for reef organisms, as well as to conserve the tourism resource. Support the establishment and management of MPAs with linkages to regional and international organizations promoting the SPAW Protocol. Promote signature of the SPAW Protocol by MBRS countries.
2. Inappropriate Development and Operation of Aquaculture for Shrimp, Tilapia and other Species	a. Restrict aquaculture operations to sites designated for same under adequately prepared land-use plans for integrated coastal zone management [See A.1.a, b, c & d above].	i. Facilitate training-of-trainers for sustainable aquaculture in MBRS countries, especially in aspects of siting, construction and contingency planning.
	b. Develop clear guidelines and regulations for operation of aquaculture operations, including preparation of contingency plans in case of hurricanes, flooding and accidents; monitoring compliance with these regulations.	ii. Promote aquaculture operations as a regional strategy for replenishment of stocks in local lagoons and estuaries--nurseries for reef and open water fishes.
	c. Restrict or prohibit collection of larvae and fry from coastal areas (lagoons, estuaries, beaches) for use in aquaculture operations.	
3. Uncontrolled Bio-prospecting	a. Development of regulations and permits, with specified collection areas and monitoring of concessions.	i. Assistance to develop a uniform bio-prospecting policy and standard regulations, both to facilitate bio-prospecting and to ensure maintenance of composition of reefs, protection of species species of interest from depredation, and patent rights.
<i>D. Inappropriate Port Management, Shipping and Navigation Practices</i>		
1. Construction of Ports, Jetties, Piers, Oil Terminals and Dredging of Channels without Adequate Environmental Engineering and Construction Practices	a. [See A.1.a, b, c, d, e & f]	i. [See A.1.i, ii, iii, iv, v & vi]
2. Port and Shipping Operations without Adequate Navigational and Environmental Management Practices	b. Develop an inventory of all types of cargo and ships that normally come into ports or sail through area and determine the levels of risk associated with these in terms of environmental damage, likely impacts and probable areas affected; develop contingency plans and response capability for the containment and control of oil spills, founderings, groundings, collisions and related accidents; and obtain equipment and training for applying the plan.	i. Utilize regional and international political lobby and assistance (SICA-CCAD, WB, IDB, IOCARIBE, UNEP/CEP, UNDP, UNEP, etc.) to facilitate adoption and/or ratification and enforcement by the four countries, of international conventions related to safe navigation, ports operations, control of wastes from ships, control of oil spills, etc. in the Wider Caribbean (MARPOL, Cartagena Convention, etc.).
	c. Ratify and/or enforce regional and international conventions relating to control of wastes from ships, safe stowage, transboundary movement of hazardous materials, cleanup of oil spills in the sea, etc.; update relevant legislation and regulations to reflect these; and obtain necessary equipment for same.	ii. Provide financing, technical assistance and training to facilitate compliance with international conventions and treaties among nations of the MBRS to pool resources for mutual enforcement of shipping and pollution control regulations and conventions (national and international), and response to contingencies (accidents, collisions,

Threat	Proposed Actions	
	National Initiatives	Regional Initiatives
	d. Modernize all navigational aides, communication equipment, bathymetric and navigation charts, etc. to facilitate improved and safer shipping; prepare a port management plan comprising all aspects of navigation, transfer of cargo, waste disposal policies and contingency plans.	spills, etc.).
	e. Develop options to receive ship wastes at local ports; tipping/ disposal fees to finance environmentally-sound disposal facilities.	

Threat	Proposed Actions	
	National Initiatives	Regional Initiatives
E. Natural Oceanographic and Climato-Meteorological Phenomena [The following recommendations are to facilitate better understanding of these naturally-occurring phenomena which can exacerbate negative environmental impacts of anthropogenic uses within the MBRS]		
1. Predominating and Seasonal Currents and Winds	a. Improve and fund monitoring of currents and winds in MBRS countries' respective territorial waters, as part of an overall integrated coastal zone monitoring program; other parameters to include in this program are: water quality (temperature, salinity, pH, transparency, TSS, DO, nutrients, hydrocarbons, E. coli, and testing for other parameters, such as pesticides or heavy metals, linked to natural and anthropogenic phenomena present in the region), ecological indicators (bio-accumulators, predators, keystone/indicator species of diversity, coral disease dynamics)	i. Facilitate development of a regional coastal zone monitoring system with uniform parameters, data collection & analytical methods, networked throughout the MBRS, with links to international organizations already active in these activities (CARICOMP, NOAA, IOC/IOCARIBE, WMO, FAO, CPACC, ITSU, U.S. Hurricane Forecast Center, etc.)--including standardization of parameters and methods for coral reef (composition, condition/growth characteristics, bleaching, diseases), & water quality monitoring for the MBRS region. Provide financial and technical assistance to achieve regional efficiencies of scale for permanent monitoring programs, including provision of equipment, training and technical assistance.
2. Tropical Storms and Hurricanes	a. Enact necessary land-use planning/zoning legislation for coastal areas and islands, and strictly enforce regulations on land clearing and removal of vegetation on shorelines, estuaries, mangroves and lagoons. Enforce compliance with siting and building standards for structures along the coast, and prohibit occupation of low-lying areas prone to flooding. Publish and distribute regulations and guidelines to all citizens via mass media, in order to raise their awareness of the need for such regulations and their obligations.	i. Facilitate preparation of regional guidelines for land-use planning and disaster preparedness, sector-specific contingency plans (industry, tourism, aquaculture, ports, etc.), and provide technical assistance for their preparation at the national and subregional (transboundary) levels.
	b. Recuperate/rehabilitate shorelines and critical coastal environments (mangroves, beaches, headlands, dunes) as storm defenses.	
	c. Prepare/update emergency evacuation and contingency plans for tropical storms and hurricanes (disaster preparedness), including proper storage/protection and/or relocation of hazardous and toxic substances.	
3. El Niño/La Niña Events	a. Monitor the impacts of these events to reef ecosystems (especially bleaching), correlating the distribution and levels of bleaching with parameters of water quality, currents and winds [See also E.1.a].	i. [See E.1.i]
	b. [See E.2.a, b & c]	ii. [See E.2.i]
4. Diseases in Coral and other Organisms in Coastal and Reef Ecosystems	a. Monitor the incidence and distribution of coral diseases and diseases in other organisms and their correlation to dynamics of water quality, currents and winds [See also E.1.a and E.3.a]	i. [See E.1.i]
5. Climate Change/Global Warming	a. [See E.1.a and E.2.a, b & c and E.3.a]	i. [See E.1.i and E.2.i]
6. Earthquakes and Tsunamis	a. [See E.1.a and E.2.a, b & c and E.3.a]	i. [See E.1.i and E.2.i]

Matrix 2: Principal Transboundary Issues

Nature of Threat and Location of Impacts	Origin of the Threats
<p>1. Organic-nutrient contamination from coastal and inland drainages, especially affecting estuarine and coastal lagoon ecosystems from Bahia de Chetumal to Belize City; and fringing, patch and selected barrier reef ecosystems from Xcalak-Bacalar Chico to Hick’s Cayes in Belize.</p>	<p>a. Agricultural runoff from large-scale sugarcane farms in the Rio Hondo and New River watersheds (Belize and Mexico) b. Organic waste disposal from two sugar refineries (one each in Mexico and Belize) in the Rio Hondo and New River watersheds c. Untreated sanitary waste disposal from Chetumal, Quintana Roo and Corozal, Belize, and seepage from septic systems on Ambergris Caye</p>
<p>2. Sedimentation, organic and chemical contamination of the Gulf of Honduras, especially affecting ecosystems of coastal estuaries, lagoon, seagrass bed and selected patch reefs.</p>	<p>a. Agricultural runoff from coastal drainages & watersheds of Stann Creek, Placencia, Monkey River, Rio Grande, Rio Moho & Rio Sarstoon of Belize. b. Agricultural runoff from coastal drainages & watersheds of Rio Sarstun, Lago Izabal/Rio Dulce & agricultural and industrial drainages from Rio Motagua watershed of Guatemala c. Agricultural runoff from coastal drainages & tributaries to Rio Motagua & agricultural & industrial drainages from Rio Chamelecon & Rio Ulua watersheds of Honduras d. Contamination from port operations and urban centers in Puerto Barrios/Puerto Castilla (Guatemala) & Puerto Cortes (Honduras)</p>
<p>3. Uncontrolled utilization/depredation of reef and fisheries resources in the MBRS</p>	<p>a. Cross-border tourism by boat (live-aboards, divers, sport fishers) in Belize←Mexico, and Belize←Guatemala←Honduras</p>
<p>4. Uncontrolled fishing/depredation of fisheries resources in the MBRS, especially for lobster, conch, selected finfishes, turtles and manatee; and damage to physical damage to reefs and seagrass beds</p>	<p>a. Cross-border industrial and artisanal fishing in Belize by Guatemalans, Hondurans and Mexicans; Guatemala←Honduras; and by some Belizeans in Mexico.</p>
<p>5. Contamination of territorial and international waters, beaches, reefs, seagrass beds, estuaries and tidal wetlands with organic, chemical and/or solid wastes.</p>	<p>a. Illegal dumping of liquid, solid & hazardous wastes from ships, & shipping accidents in the MBRS, including: (i) dumping of sanitary and food wastes, oily bilge water and solid wastes from ships; (ii) dumping of municipal or industrial wastes for disposal purposes; and (iii) collisions, groundings and foundering of ships with rupture of fuel tanks and loss of lubricants, and/or spill of hazardous cargo (petroleum and derivatives, fertilizer, pesticides/other chemicals, sugar, palm oil; and lack of contingency plans/response capability in region</p>
<p>6. MBRS contamination from many origins as result of tropical storms & hurricanes</p>	<p>7. Lack of regional & national disaster preparedness & contingency plans/capability for emergencies and response</p>

Matrix 3: Current and Planned Regional Projects/Programs with Relevance to the Conservation and Sustainable Use of the MBRS

Project/Program Title & Executing Agency	Outreach/Project Area	National Focal Points/ Counterparts	Funding Level (US\$)	Project Start/ End Dates	Objectives, Components, Activities
Regional Environmental Program for Central America/PROARCA(USAID/CCAD)	All Central American Nations	National and Local GOs, NGOs & Community Groups(WWF, TNC, Univ. Rhode Island, International Resources Group)	25 million(COS TAS share is 5.9 million from USAID & 2.2 million from TNC, WWF & URI)	1996-2000(2nd Faseprobable)	Three principal programs: (i) <i>Central American Protected Areas System</i> , which supports consolidation of CAPAS, especially the Meso-American Biological Corridor, through assistance in: improved management of PAs and bufferzone management, public conservation awareness, improved national and cross-country legal frameworks, green products for export, alternative financing mechanisms, technical capacity building and information dissemination for national orgs. and the CCAD; (ii) Coastal Zone Management/COSTAS, which promotes integrated and sustainable management of coastal resources (fisheries, tourism, conservation of protected areas), focusing especially on empowerment of local entities for stewardship of resources, in four transboundary priority sites of the Gulf of Honduras (Belize/Guatemala/Honduras), Miskito Coast (Honduras/Nicaragua), Gulf of Fonseca (El Salvador/Honduras/Nicaragua) and Gandoca/Bocas del Toro (Costa Rica/Panama),with the use of mini-grants to NGOs, conflict resolution, and training in aspects of strengthening governance and policies in coastal management and in protected areas (Punta Manabique and Port of Honduras) with emphasis on the Meso-American Barrier Reef Initiative; and (iii) Environmental Protection and Legislation/LEPPI, which supports developing environmental awareness and strengthening of national and regional policy frameworks (EIA, land-use planning) and local and national institutions to address pollution problems.
Conservation of the Meso-American Caribbean Reef Ecoregion (WWF)	Meso-American Barrier Reef System(Mexico to Honduras)	GOs, NGOs, resource-user groups		1998 (ongoing)	The MACR Ecoregion forms part of WWF's Global 200 Program, oriented to the conservation of 200 terrestrial, freshwater and marine ecoregions where WWF believes that conservation efforts should be focused. WWF, in collaboration with GOs, NGOs and resources-user groups (stakeholders in fisheries, tourism) is carrying out a biological assessment to develop a knowledge base for conservation planning, including analysis of threats and opportunities to facilitate a conservation strategy and collaborative actions aimed at sustainable use and conservation efforts. To date WWF has sponsored a workshop to identify threats to the ecoregion and their root causes and has begun assembling data on physical and biological parameters. A second workshop will be convened to assess the results of the assessments to set conservation priorities and propose action plans.

Project/Program Title & Executing Agency	Outreach/Project Area	National Focal Points/ Counterparts	Funding Level (US\$)	Project Start/ End Dates	Objectives, Components, Activities
Tri-national Alliance for the Conservation of the Gulf of Honduras/TRIGOHBelize (TIDE, BELPO, BTIA), Guatemala (Defensores de la Naturaleza, FUNDARY, FUNDAECO, IDEADS), Honduras (Fundacion Fasquelle, PROLANSTATE)	Coastal, open water, island and reef areas of the Gulf of Honduras (Belize, Guatemala & Honduras)	NGOs, Community Groups, GOs, resource-use cooperatives & associations	Currently funded with a small grant (PROARCA) ; proposed a 2 million project to IDB	1996 (ongoing)	TRIGOH seeks to develop integrated conservation and sustainable development projects with stakeholders in the region, including a tri-national system of coastal and marine reserves, tri-national activities in fisheries, manatee protection, ecotourism and other economic alternatives for local resource users and residents, port contingency planning, research and monitoring. Has proposed a two-year project <i>Integrated Coastal Management for the Gulf of Honduras</i> , with emphasis on cooperative management of fisheries, control of water quality, and protection of marine diversity.
Project for the Fisheries Development in Central America/PRADEPESCA(European Union)	Central America, Atlantic and Pacific	Belize (Fisheries Dept), Guatemala (DITEPESCA), Honduras (DIGEPESCA)	13.4 million	Phase I finalized in 1995(Phase II?)	Promotes fisheries and aquaculture development under four sub-projects: marine research and monitoring, aquaculture management, shrimp fisheries management, and artisanal fisheries management.
Plan for Integrated Development of the Gulf of Honduras (OAS/IICA)	Gulf of Honduras, (Binational between Guatemala & Honduras)	GOs, NGOs, Community Groups of Guatemala and Honduras		Proposal (since 1997)	Contains a series of smaller integrated conservation and development projects for the lower watershed of the principal rivers draining into the Gulf of Honduras in activities of: resource conservation in watersheds, protected areas management, sustainable agroforestry, ecotourism, energy conservation, and integration of transport and port infrastructure with social development.
Regulation of the Reserve in the Border Region between Belize, Guatemala and Mexico (OAS/IICA)	Border region among Belize, Guatemala and Mexico	GOs of Belize, Guatemala and Mexico		Proposal (since 1996)	Proposes activities in the following areas: natural resources/biodiversity management, scientific investigation, environmental education, recovery of cultural values, ecotourism and institutional strengthening.
Program for Management of Wetlands and Coastal Zones(IUCN)	Central America, Caribbean and Pacific Coasts	GOs, NGOs, Community Groups		1997-2001	Objectives include: (i) identification of priority areas for management; (ii) organizational strengthening; (iii) organizational networks development and information exchange; (iv) strategic planning; and (v) support for implementing international conventions.
Conservation of Marine Biodiversity: Integration of the Tourism Sector with Coastal Protected Areas (IUCN/BMZ)	Central America, Caribbean and Pacific Coasts	GOs, private-sector tourism operators & NGOs in participating countries		1997-2001	Objectives include: (i) evaluation of the relation between tourism activities, including impacts, and coastal-marine ecosystems; (ii) evaluation and valorization of local communities' participation in coastal tourism and conservation of protected areas; (iii) design and implement strategies and guidelines for the conservation of biological diversity using demonstration projects that link tourism with the protected areas management and participation of local communities. The project seeks to develop networks for conservation-based tourism, and is also being implemented in East Africa to facilitate South-South cooperation.
Caribbean Coastal Marine Productivity Program/CARICOMP(UNESCO and various British Institutions)	Caribbean Sea and coastal areas of 18 participating nations	Belize (Fisheries Dept.)	Now primarily funded by participating institutions	1970s (ongoing)	Network of 20 marine labs, parks and reserves in 18 countries in a program to monitor coastal marine productivity in the Caribbean in mangroves, seagrass beds, benthic communities on coral reefs, fisheries and in aspects of meteorological physical water quality. Has rich database, but much data has not been recently analyzed.

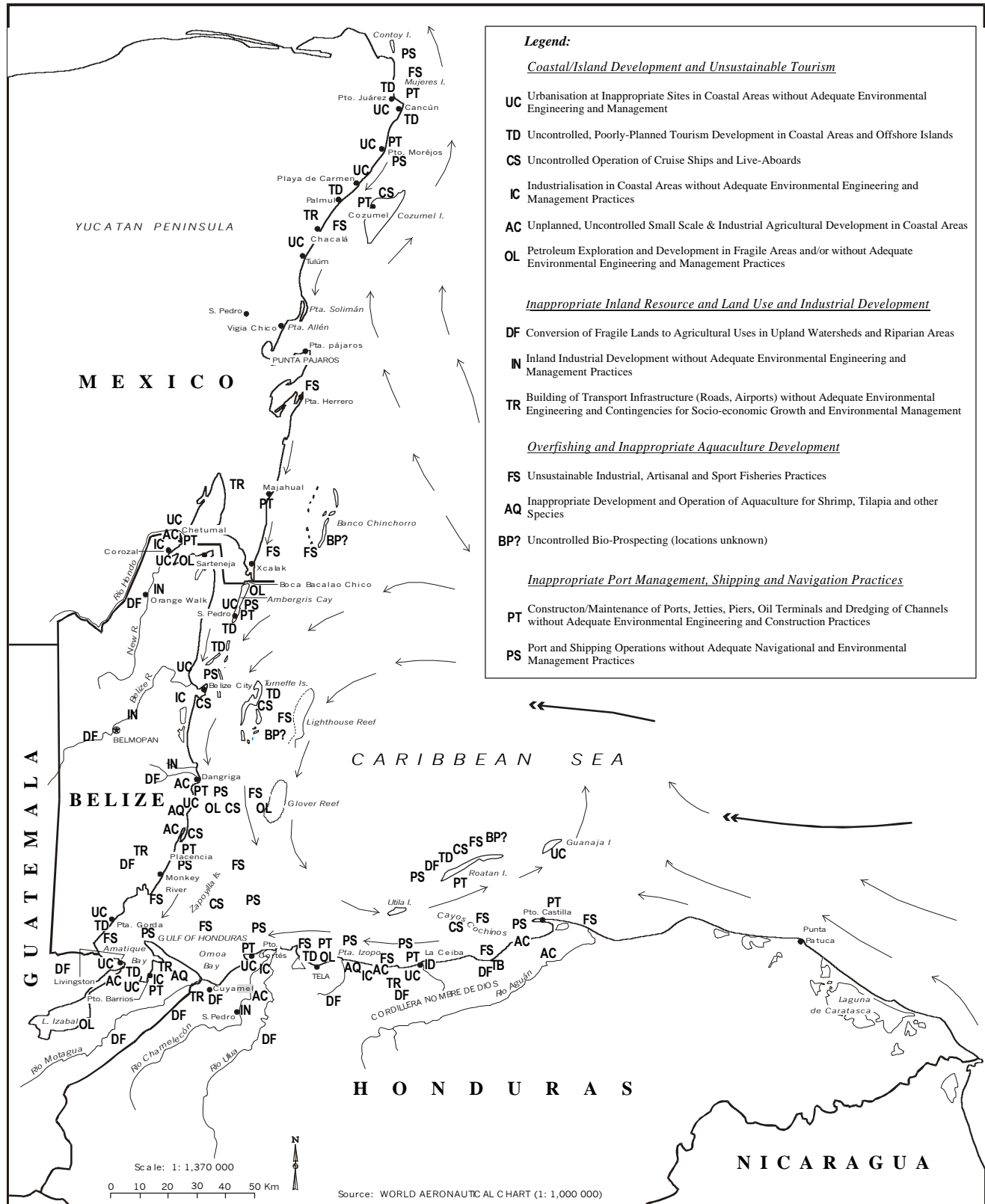
Project/Program Title & Executing Agency	Outreach/Project Area	National Focal Points/ Counterparts	Funding Level (US\$)	Project Start/ End Dates	Objectives, Components, Activities
Caribbean Fisheries Resource Assessment-CFRAMP (CIDA)	Caribbean Region	GO Authorities in countries responsible for fisheries management	3 million (Phase II); & local GO contributions	1999-2007	Conservation & sustainable use of regional fish stocks. Includes institutional strengthening, training, research on commercial species, regional information systems, policy reform & technical assistance.
Strengthening of Fisheries and Biodiversity Management in African, Caribbean and Pacific Countries (European Union)	Selected Caribbean countries	GOs responsible for fisheries management	5 million (distributed among 45 countries in World)	1998-2000	Provides technical & material assistance to researchers& resource managers for improved management of aquatic living organisms, and increase awareness of the importance to conserve biological diversity
Global Coral Reef Monitoring Network/GCRMN(AIMS, ICLARM, IOC, UNEP, WMO, IUCN, WCMC, URI)	Caribbean Region	Caribbean Sub-node(CARICOMP, participating NGOs and resort operators in MBRS Region, Univ. of Miami/ RSMAS, Univ. of Rhode Island/CRC, Univ. of Texas, Univ. of Windsor)		1996 (ongoing)	Links organizations and people to monitor biophysical, social, cultural and economic aspects of coral reefs within regional networks); improvement of capacity of organizations to monitor reefs in a continuous program to discern trends and discriminate between natural, anthropogenic and climatic changes; supports dissemination of results at local, regional and global scales to coastal/reef management agencies via reports, website, databases. Acts as data-manager for updates on coral bleaching, disease, damage caused by tropical storms, etc. around the World. Organizational and programmatic linkages with ReefBase database networks and Atlantic Gulf Reef Assessment/AGRRA and Rapid Assessment of Management Parameters (RAMP) monitoring initiative.
Caribbean Planning for Climate Change/CPAAC (GEF/OAS)	Caribbean (11 countries)	GOs in participating countries responsible for coastal resources management & monitoring	6.3 million (670,000 to each executing agency)	1997--2001	Provide technical guidance to countries to prepare contingencies for adverse effects of global climate change and sea level rise. Includes pilot projects, training and technology transfer. Has coastal resources inventory and coral reef monitoring components.
Establishment of the Meso-American Regional System of Protected Areas, Buffer Zones and Biological Corridors (GEF/UNDP/CCAD/GTZ/DANIDA)	Meso-American Caribbean	Mexico (SEMARNAP/INE, State GO, NGOs), Belize (DoE, NGOs), Guatemala (CONAP, OCREN, NGOs), Honduras (AFE/COHDEFOR, NGOs)	22.6 million	1999-2004	Supporting actions necessary to consolidate and further develop the Meso-American Biological Corridor. Includes aspects of: land-use planning/zoning; conservation and sustainable use of biological resources; Management of protected areas, buffer zones and corridor connections.
Regional Promotion of the Environment in Central America (IDBFOMIN/GEF/CCAD)	Central America	OGs, NGOs in participating countries	15 million (under negotiation additional 25 million)	1997 (ongoing)	Promotes intra-regional sustainable development in Central America in aspects of conservation of biodiversity, depletion of the ozone layer, protection of international waters and climate change.

Project/Program Title & Executing Agency	Outreach/Project Area	National Focal Points/ Counterparts	Funding Level (US\$)	Project Start/ End Dates	Objectives, Components, Activities
Caribbean Environment Programme(UNEP/RCU)(i) Programme for Assessment and Management of Environmental Pollution/AMEP; (ii) Programme for Information Systems for the Management of Marine and Coastal Resources/ CEPNET (IDB/Wider Caribbean Region Marine and Coastal Environmental Information Network);(iii) Regional Programme on Specially Protected Areas and Wildlife;(iv) Caribbean Environmental Network/CEN (USAID)		Mexico (SEMARNAP/INE, EPOMEX), Belize (CZMA&I), Guatemala (CONAMA, INGUAT)		1992 (ongoing)	Established to support implementation of the accords set out in the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean (Cartagena Convention) and its protocols(CEPPOL, SPAW, LBSMP). Programs provide support in areas of: diagnostic analysis/research of resource conditions in coastal-marine environments (including pollution detection and monitoring of coral reefs), strategic planning and project preparation, assistance in developing environmentally-sound technologies for sewage control, environmentally-sound tourism, workshops and training. Has broad range of information services, including an excellent website, publications and best-practices guides. CEN Program just concluded. <i>Services seem to be underutilized by MBRS countries.</i>
Gulf of Honduras Maritime Transport Pollution Control Project (GEF/IDB; also potentially WB, UNDP or UNEP)	Gulf of Honduras (Belize, Guatemala, Honduras)	Belize (CZMA&I), Guatemala (CONAMA), Honduras (SERNA),NGOs (TRIGOH), port and maritime transport industry, DGA-SICA/CCAD, COCATRAM	5 million+ (proposed)	Under preparation (GEF Block B)	Proposes a transboundary diagnostic analysis of environmental problems in project area to fill information gaps on key physical and resource use issues (including navigation, port facilities, waste management, contingencies, etc.); improvement/reform of legal, policy and regulatory/enforcement framework for control of maritime pollution (including compliance with international conventions); institutional strengthening at local, national and regional levels; training and equipment for improving national and transboundary collection of environmental information (bathymetry, currents, sediment transport, WQ monitoring, and vulnerability mapping); public participation and environmental awareness; economic mechanisms to encourage control of land- and sea-based pollution; demonstration pilot projects for the major ports; and a regional action plan for navigational safety and contingencies.
Assessment of Damage to North Coast, Bay Islands Coral Reefs and other Intertidal and Subtidal Systems (USGS)	North Coast of Honduras, Bay Islands, Gulf of Honduras	Fundacion VIDA, PROARCA/Costas(others to be determined?)	1.13 million	1999-2001	Diagnostic assessment of damages, sediment quantity, and sediment mobilization of coral reefs, and impacts of sediment and wind/wave damage to mangrove, seagrass and estuary communities in the Gulf of Honduras and Bay Islands. Assessment of accretion and erosion in mouths of rivers draining into Gulf of Honduras and on Bay Islands. Assessment of structural damage to shallow reefs due to wave action of Hurricane Mitch, extent of coral bleaching, black band disease, etc. (objectives to be reassessed in Sept. 1999).
World Meteorological Monitoring Program; World Climate Program; and Ibero-American Regional Climate Program (WMO)	Entire Region	GOs responsible for meteorological monitoring in participating countries		Ongoing	Acts as clearinghouse for collection, analysis and reporting of meteorological data taken in all participating countries, including monitoring of tropical cyclones and monsoons. Also provides technical assistance, training and some support on instrumentation.

Project/Program Title & Executing Agency	Outreach/Project Area	National Focal Points/ Counterparts	Funding Level (US\$)	Project Start/ End Dates	Objectives, Components, Activities
North American Aquatic and Atmospheric Administration (NOAA)	Entire Region	GOs responsible for administration of water resources, rivers, oceans and meteorological monitoring		Ongoing (several projects)	Provides assistance and carries out research and monitoring, mapping and imaging of natural processes and phenomena including: weather/climate; oceanography, currents, tides, water quality (physiological/biological) and temperature; monitoring and tracking of storms (hurricanes, tropical storms, El Niño, La Niña, monsoons, drought). Maintains extensive maps, images and databases.
Intergovernmental Oceanographic Commission--Subcommission for the Caribbean/IOCARIBE(UNESCO)	Entire Region	GOs responsible for marine-coastal resources research and management done in collaboration with NOAA, CARICOMP, OAS, CPACC, FAO, UNEP, GEF, IWC, ITSU, U.S. Hurricane Forecast Center		1982(ongoing)	Responsible for the promotion, development and coordination of the IOC's marine scientific research programs, ocean services and related activities, including training, education and mutual assistance. Programs/projects include, among others: (i) Regional Component of Ocean Processes and Climate Change; (ii) Fishery Oceanography of Highly Migratory and Straddling Species; (iii) Tropical Demersal Recruitment Program; (iv) Coral Reef Monitoring and Research, Cooperation with AGRRA and CARICOMP; (v) Large Marine Ecosystems-Caribbean; (vi) Ecotourism Research; (vii) Coast Beach Dynamics; (viii) Bathymetric Chart of the Caribbean Sea; (ix) Caribbean Environmental Pollution Project-CEPPOL; (x) Cooperation with Contingency Plans for Oil Spills; (xi) Hurricane Effects & Mitigation on Coastal Zones in the IOCARIBE Region; (xii) Regional Component for the Global Ocean Observing System-GOOS; (xiii) Regional Component for the Global Sea Level Observing System-GLOSS; and (xiv) Caribbean Tsunami Warning System.
Post-Mitch Reconstruction (Various Bi- and Multi-lateral agencies)	Honduras, Guatemala	National and local GOs and NGOs	500 million	1999-2020(most projects still in planning stages)	Based on the Consultative Group Meeting in Stockholm in May of 1999, numerous projects in integrated coastal resources management, watershed management, disaster preparedness, land-use planning and zoning, protected areas management and environmental damage assessment and monitoring have been proposed and will be funded by IDB, World Bank, UNDP, UNEP, USAID, CIDA, European Union, Spanish, Dutch, Swedish, Japanese and other Governments, including a Regional Environmental and Disaster Mitigation Project (IDB).

Conservation and Sustainable Use of the Meso-American Barrier Reef System:
Threat and Root Cause Analysis

Map 1. Locations of Threats to the Ecological Health of the MBRS



Map 2. Location of Priority Protected Areas

Conservation and Sustainable Use of the Meso-American Barrier Reef System:
Threat and Root Cause Analysis

Priority Protected Areas

