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**Report No. 11131-EGT**

**GLOBAL ENVIRONMENT FACILITY**

**MEMORANDUM AND RECOMMENDATION**

**OF THE DIRECTOR**

**MIDDLE EAST AND NORTH AFRICA COUNTRY DEPARTMENT II**

**OF THE**

**INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT**

**TO THE**

**REGIONAL VICE PRESIDENT**

**ON A PROPOSED GRANT**

**FROM THE GLOBAL ENVIRONMENT TRUST FUND**

**IN THE AMOUNT EQUIVALENT TO SDR 3.4 MILLION**

**TO**

**THE ARAB REPUBLIC OF EGYPT**

**FOR A**

**EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT**

**NOVEMBER 20, 1992**

**Infrastructure Operations Division**  
**Country Department II**  
**Middle East and North Africa Region**

### CURRENCY EQUIVALENTS

(As of July 1, 1992)

Currency Unit = Egyptian Pound (LE) = 100 Piasters = 1000 Milliemes

LE 1.0 = US\$0.3

US\$1.0 = LE 3.33

### WEIGHTS AND MEASURES

The metric system is used throughout this report.

### GLOSSARY OF ABBREVIATIONS

CZM	-	Coastal Zone Management
EEAA	-	Egyptian Environmental Affairs Agency
EAP	-	Environmental Action Plan
EEZ	-	Exclusive Economic Zone
EGPC	-	Egyptian General Petroleum Company
EIA	-	Environmental Impact Assessment
GEF	-	Global Environment Facility
GET	-	Global Environment Trust Fund
GIS	-	Geographical Information Systems
GOE	-	Government of Egypt
IOC(F)	-	Institute of Oceanography and Fisheries
IUCN	-	World Conservation Union
MAB	-	Man and Biosphere
MARPOL	-	International Convention for the Prevention of Pollution from Ships
MOT	-	Ministry of Tourism
NGO	-	Non-Government Organization
OM	-	Operations Manager
PC	-	Project Coordinator
PMG	-	Project Management Group
RMG	-	Regional Management Group
SAC	-	Scientific Advisory Committee
TDA	-	Tourism Development Authority
UNDP	-	United Nations Development Program
UNEP	-	United Nations Environment Program

### FISCAL YEAR

July 1 - June 30

ARAB REPUBLIC OF EGYPT

EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT

GRANT AND PROJECT SUMMARY

Recipient: Arab Republic of Egypt

Beneficiaries: Tourism Development Authority,  
Egyptian Environmental Affairs Agency,  
and the Red Sea Governorate

Amount: SDR3.4 million (US\$4.75 million equivalent)

Terms: Grant

Onlending Terms: Not applicable

Financing Plan: GET Grant - \$4.75 million (foreign exchange)  
Government - \$0.98 million (local currency)  
  
Total - \$5.73 million

Economic Rate  
of Return: Not applicable

Map: IBRD No. 24065R

## EGYPT

### READ SEA COASTAL & MARINE RESOURCE MANAGEMENT

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#### Background

1. The Red Sea is a body of water like no other, in that it is a semi-enclosed sea communicating only with the Mediterranean Sea through the man-made Suez canal and with the Indian Ocean through the Bab el Mandab strait, making it the most saline body of water in direct connection with the world's oceans. This unusual physiography has created a marine environment that supports flourishing coral reefs and endemic wetland communities in latitudes far north of their limits elsewhere. Ironically, the very same features that make the Red Sea so valuable ecologically and economically are leading to its demise from the demands of oil exploration, shipping and tourism. The resulting loss of biodiversity and marine pollution is not only affecting the quality of the Red Sea itself, but also the well-being of the seven nations that claim shores on the Red Sea.

2. Like the other Red Sea nations, Egypt is in a state of rapid economic development and population growth that is placing intense pressures on its limited natural resource base. This situation is coupled with a number of socio-economic, institutional and ecological realities that provide both constraints and opportunities for the short- and long-term exploitation of resources. There is increasing pressure to shift population centers from the fertile Nile Valley to the coastal areas due to anticipated opportunities for infrastructure development and income associated with leisure tourism and oil development. The Ministries of both Tourism and Petroleum recognize the need for sustainable development, as well as the interdependence of these two industries. For example, impacts from chronic and accidental oil spills can destroy the tourism industry.

3. All parties who depend on the productivity of the Red Sea realize that the fragile coral reef and marine environments of this globally unique coast cannot withstand continued unregulated, unmanaged development. Environmental units and regulations are being developed in various government agencies, and private sector developers increasingly realize the negative impact of unplanned development on coastal areas. However, there is still severely limited institutional capacity, at both national and regional levels, to handle the complexity of competing interests for this resource-rich sea. The global significance of the entire Red Sea region, from ecological, oceanographic, political, economic and cultural perspectives, requires that a combination of cooperative and complementary regional and site-specific approaches to biodiversity protection and marine pollution reduction in the Red Sea be urgently undertaken.

4. In recognizing the need for ecologically sustainable development of these resources by all of the Red Sea nations, the Government of Egypt (GOE) has requested funds from the Global Environment Facility (GEF) to develop a coastal zone management (CZM) program that would focus on the management of the competing tourism and oil interests in a way that would be productive for both the concerned agencies, the Egyptian people and the other littoral states. Concurrent with the request for the World Bank's GEF project, there are ongoing projects that will have reciprocally supportive impact for promoting the sustainable use of the Red Sea resources throughout the region. The Egypt GEF project is associated with the World Bank Private Sector Tourism Infrastructure and Environmental Management Project (loan of US\$130 million). Along with other donors, the World Bank is also assisting in the



heads of TDA and EEAA, and the Red Sea Governor (or their representatives). The PC and the OM would also be members of the PMG and the group could invite representatives of other concerned agencies. The PMG would meet at least once every three months. Project activities would be supported by a CZM Technical Advisory Committee consisting of 6-7 distinguished national scientists with knowledge of coastal and marine ecology, the use and protection of coastal resources, including environmental monitoring and control. This committee would meet once every three months, or more frequently if necessary. A core project team would be formed among the staff of TDA, EEAA, Red Sea Governorate and other concerned agencies to work either in the Cairo or the Hurghada office. This team would consist of the Chief Planner, Chief Scientist, Data-base Manager, Financial Manager, Public Relations and Education Manager, Training Officer, Chief Pollution Control Officer, Protected Areas Manager and Recreation Areas Manager. The core project team would be supported by technical and operational staff, drawn from TDA, EEAA and other agencies, to carry out project components. Each project component and subcomponent would be led by a member of the core project team. The team would also be supported by a number of international advisors who would be available on an intermittent basis throughout the life of the project.

9. Project Sustainability. The livelihood of all coastal people sharing the common resources of the Red Sea, and ultimately the long-term viability of the tourist industry itself, depends upon maintaining biological diversity and implementing an integrated conservation program. The protection of the Red Sea coral and marine habitats requires the creation of institutions with a clear mandate; personnel who have the appropriate skills; implementing agencies with equipment and space; and adequate financial resources for maintaining activities after they have been initiated. The proposed project has been designed to address these issues and, particularly, the rational allocation of coastal resources through a CZM plan; the establishment of an ongoing data base; and the establishment of protected areas and multiple-use policies with realistic and workable regulations and procedures for their enforcement. The project emphasizes the need to develop recurrent cost mechanisms through protected areas, pollution controls, nature-based tourism activities and staff training that will, together, ensure that the actions developed in the project can be sustained.

10. Rationale for GEF Funding. **Global Environment Benefit:** The marine biodiversity values of the Red Sea are high and include the coral reefs, endemic island wildlife and a diverse marine environment. The protection of the Egyptian Red Sea is not just a matter for Egypt alone. This project would make a significant contribution to the protection of biodiversity, which is at risk as a result of international resource exploitation. The sustainable development of the agricultural, tourist and industrial potentials of undeveloped areas in Egypt and other Red Sea nations presents a plausible mechanism for overcoming the economic difficulties facing the region. While tourism focusing on the promotion of natural assets, such as coral reefs, may well incorporate environmental considerations into the planning and development processes, it is rare that actual protected areas, in the form of parks and/or reserves are incorporated into tourism development schemes. Given the regional and global benefits of preserving biodiversity in the Red Sea, the intense development pressures, the single-sector nature of government agencies, the tensions between the public and private sectors and the resource constraints of GOE, the GEF is the only funding means for implementing an effective coastal and marine protected area and resource management plan.

11. **Form of Innovation:** The project is innovative in two important ways. First, it promotes interagency coordination and the joint management of a plan that involves both public and private sector parties. Second, it emphasizes coastal zone activities that support both biodiversity protection and the international waters pollution mitigation goals of the GEF.

12. **Demonstration Value and Replicability:** The CZM program would develop approaches that would be adaptable in other Red Sea countries. This project is the first in the region to attempt an environmental assessment of some scale, to set up an environmental monitoring program and to implement specific protection measures. It would be applicable to other countries and regions that are facing similar coastal development pressures. The project emphasizes communication with other Red Sea countries through the regional framework being developed by UNEP.

13. **Project Supervision.** The project is large and complex, requiring interagency cooperation and joint management through the Project Management Group. During the preparation of the CZM plan in the first year, Bank staff would need to keep in close touch with the development of detailed work plans and the appointment of staff, local consultants and international experts by TDA and EEAA. Supervision teams would visit every four months (three times a year) and would include specialists in biodiversity, environmental planning and tourism. In the second and third years when the CZM plan is being implemented, supervisory visits would be reduced to every six months. Annual work plans and quarterly progress reports would be prepared prior to supervision visits and reviewed during the missions.

14. **Agreed Actions.** Agreement was reached during negotiations on the following actions: (a) by April 30, 1993 TDA and EEAA would (i) set up a Project Management Group; (ii) appointed a Project Coordinator and Operations Manager; (iii) established the Cairo office; (iv) appointed an advisory committee of distinguished scientists; (b) by June 30, 1993 TDA and EEAA would (i) ensure that the Project Management Group prepared an inception report including a draft work plan for the first year of the project; (ii) appointed the three project advisers for the duration of the project; and (iii) appointed suitable staff to its Environmental Unit and Water and Coastal Zone Management Department, respectively; (c) TDA and EEAA would appoint a Protected Areas Manager and a Recreations Area Manager by September 30, 1993 and a Pollution Control Officer by December 31, 1993; (d) GOE would approve the CZM Plan and approve the boundaries and legal status of the Protected Areas by March 31, 1994; and (e) reporting requirements. There would be cross-effectiveness required between the grant and the associated Bank project.

15. **Environmental Aspects and Project Benefits.** The extensive Red Sea coral reefs are the most complex and valuable habitat in the Red Sea in terms of species richness, endemism, diversity and ecological functioning. They are not only invaluable on a site-specific, local scale, but are also critical to the overall functioning and health of the entire Red Sea, representing a truly unique global resource. Protecting the Egyptian reefs and other coastal habitats and mitigating pollution of the semi-enclosed Red Sea waters would not only benefit the people of Egypt, but also the littoral states, and would provide an example of the integrated management that is needed on coastal areas worldwide. The project would make a significant contribution to global achievements in protecting coral reefs, endemic island wildlife and diverse marine environments. The project aims to assist

interagency coordination and the joint management of a plan by public and private sector parties. This plan would allocate resources and promote policies that support sustainable economic development and income generation from tourism, oil, fishing and nature conservation. Organizational and practical skills in the management of marine and coastal resources, protected areas and visitor access and enjoyment would be learned in the implementation of programs. The project is the first of its scale in the region, and the CZM program would help develop approaches adaptable to other Red Sea countries through the Regional Framework being developed by UNDP and the parallel GEF project in Yemen.

16. Risks. The project faces a number of risks. Until recently, the Government showed limited understanding and support for the integrated decision-making that is required to plan and manage vulnerable coastal resources. Consequently, a limited number of TDA, EEAA governorate staff have been involved with environmental matters in the coastal areas. Funds have been scarce, and it has been difficult to recruit and retain experienced and qualified staff to work in these remote areas. The environmental regulations that do exist have not been enforced properly. These risks would be reduced under the project by the preparation of a CZM Plan, as well as a plan to protect the coastal resources of the Red Sea through the cooperation and joint action of concerned agencies. The project would contribute funds to assist in creating a core team with the adequate expertise and experience to fulfill the objectives of the project and in training a large number of local staff in various aspects of CZM. Studies would be carried out under the project to develop sources of recurrent funding to support CZM activities in a sustainable manner.

Attachments

ARAB REPUBLIC OF EGYPT

EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT

Estimated Project Cost and Financing Plan

Estimated Cost:

	Local	Foreign	Total
	----- (US\$ '000) -----		
Cairo Office	390	414	804
Red Sea Office	248	364	612
CZM Plan	94	628	722
Environmental Impact Assessment	21	193	214
Pollution Control	48	545	593
Recreation Area Management	58	975	1,033
Protected Area	108	1,238	1,346
CZM Program Review	14	138	152
Scientific Advisory Committee	-	60	60
Network & Reg. Seas Framework	-	70	70
Contingencies	-	125	125
Total Project Cost	<u>981</u>	<u>4,750</u>	<u>5,731</u>

Financing Plan:

	Local	Foreign	Total
	----- (US\$ '000) -----		
GET Grant	-	4,750	4,750
TDA	490	-	490
EEAA	440	-	440
Red Sea Governorate	<u>51</u>	<u>-</u>	<u>51</u>
Total	<u>981</u>	<u>4,750</u>	<u>5,731</u>

Schedule B

ARAB REPUBLIC OF EGYPT

EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT

Summary of Proposed Procurement Arrangements

Salaries, training, public awareness and operating costs account for 44 percent of total costs. No individual contract for the supply of equipment and civil works would be more than \$250,000. Civil works would be mostly small-scale activities requiring local knowledge and expertise. Therefore, all goods, equipment, and civil works contracts over \$50,000 would be procured through local competitive bidding. Smaller contracts would be awarded on the basis of a comparison of price quotations from at least three suppliers. The selection of consultants and technical advisors would follow the Bank's Guidelines for the Use of Consultants.

Disbursement Categories and Amounts

<u>Category No.</u>	<u>Description</u>	<u>Amount</u> <u>US\$ million</u>	<u>Percent Expenditure</u> <u>To be Financed</u>
1	Goods	0.95	100
2	Works	1.80	100
3	Technical Asst.	2.00	100
	Total	4.75	

Estimated Schedule of Disbursement of GET Grant  
(US\$ million)

	<u>IBRD Fiscal Year</u>		
	<u>1993</u>	<u>1994</u>	<u>1995</u>
Annual	1.61	1.56	1.58
Cumulative	1.61	3.17	4.75

Schedule C

ARAB REPUBLIC OF EGYPT

EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT

Timetable of Key Processing Events

- |     |                                |  |
|-----|--------------------------------|--|
| (a) | Time Taken to Prepare:         | 5 months   |
| (b) | Staff Preparing the Project:   | The World Bank, with assistance from the TDA, the EEAA and the Red Sea Governorate |
| (c) | First Identification Mission:  | December 1991  |
| (d) | Appraisal Mission Departure:   | May 1992   |
| (e) | Negotiations:                  | November 1992  |
| (f) | Planned Date of Effectiveness: | April 1993   |
| (g) | Relevant PCRs or PPARs:        | Not applicable   |

**GLOBAL ENVIRONMENT FACILITY**

**EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT**

**TECHNICAL ANNEX**

**ARAB REPUBLIC OF EGYPT**  
**EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT**

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ARAB REPUBLIC OF EGYPT  
EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT  
TECHNICAL APPENDIX

I. INTRODUCTION

1.01 The Red Sea is a body of water like no other, in that it is a semi-enclosed sea communicating only with the Mediterranean through the man-made Suez canal and with the Indian Ocean through the shallow Bab el Mandab strait. Therefore, it is the most saline body of water in direct connection with the world's oceans. This unusual physiography has created a marine environment that supports flourishing coral reefs and endemic wetland communities in latitudes far north of their limits elsewhere. Ironically, the features which make the Red Sea so valuable ecologically and economically are also leading to its demise through the demands of oil exploration, shipping and tourism. The resulting loss of biodiversity and marine pollution is not only affecting the quality of the Red Sea itself, but also the well-being of the people in the seven nations who claim shores on the Red Sea.

1.02 Like the other Red Sea nations, Egypt is in a state of rapid economic development and population growth that is placing intense pressures on its limited natural resource base. This situation is coupled with a number of socio-economic, institutional and ecological realities that provide both constraints and opportunities for how Egypt manages the short- and long-term exploitation of these resources. There is increasing pressure to shift population centers from the fertile Nile valley to the coastal areas due to anticipated opportunities for infrastructure development and income associated with leisure tourism and oil development. The Ministries of both Tourism and Petroleum recognize the need for sustainable development, as well as the relationship between these two industries for the Red Sea. For example, impacts from chronic and accidental oil spills can destroy the tourism industry.

1.03 All parties who depend on the productivity of the Red Sea realize that the fragile coral reef and marine environments of this globally unique coast cannot withstand continued unregulated, unmanaged development. Throughout the Red Sea environmental units and regulations are being developed in various government agencies, and private sector developers increasingly realize the negative impact of unplanned development on coastal areas. Yet, there is still severely limited institutional capacity, at both national and regional levels, to handle the complexity of competing interests for this resource rich sea. The global significance of the entire Red Sea region from ecological, oceanographic, political, economic and cultural perspectives, requires that a combination of cooperative and complementary regional and site-specific approaches to biodiversity protection and reduction of marine pollution in the Red Sea are urgently needed.

1.04 In recognizing the need for ecologically sustainable development of these resources by all of the Red Sea nations, the Government of Egypt (GOE) has requested funds from the Global Environment Facility (GEF) to develop a coastal zone management program that will focus on the management of the competing tourism and oil interests in a way that would be productive for all concerned agencies, the Egyptian people, and the other riparian nations. Concurrent with the request for the World Bank's GEF project, there are ongoing projects which will have reciprocally supportive impacts for promoting sustainable use of the Red Sea resources throughout the region. The Egypt GEF project is attached to a World Bank project, entitled "Private Sector Tourism Infrastructure and Environmental

Management". The World Bank is also assisting in implementing an environmental action plan through the Egyptian Environmental Affairs Agency (EEAA). The Government of Yemen is developing a GEF project to address oil pollution issues on the Yemen Red Sea coast, and finally, the World Bank (WB), United Nations Development Program (UNDP) and United Nations Environmental Program (UNEP) are collectively developing a Red Sea Regional Framework Plan to coordinate and revitalize regional activities through the implementation of the Egypt and the Yemen GEF projects.

## II. THE RED SEA CONTEXT

### A. RED SEA BIOGEOGRAPHY

#### Oceanographic Processes

2.01 The Red Sea is a rift valley formed about 70 million years ago when Africa and Arabia separated, resulting in what is today a young ocean. The Red Sea has a north-south orientation between 40°N and 12°N, with a total surface area of 440,000 km<sup>2</sup> and depth range from 3039 m near Port Sudan in Saudi Arabia to a shallow sill of only 100 m at the Bab el Mandab strait, where the sea connects with the Indian Ocean at the Gulf of Aden. The northern part of the Red Sea branches into two gulfs, Suez and Aqaba, with average bottom depths of 60 m and 1800 m respectively. The Gulf of Suez provides the only northern outlet for the sea into the Mediterranean, through the man-made Suez Canal.

2.02 The physiogeographic combination of a shallow sill at the southern end and a narrow, artificial opening at the tip of the Gulf of Suez, makes the Red Sea a nearly enclosed body of water with limited circulation, which has a determining influence on the oceanographic characteristics of the Red Sea. Because the Red Sea is surrounded by desert environments, it receives virtually no rainfall or runoff, has a high evaporation, and is therefore the most saline sea in direct connection with the world oceans.

#### Coral Reef Structure

2.03 The unique geological, climatic and hydrological characteristics of the Red Sea provide optimal conditions for coral growth, with most of the species of Indo-Pacific origin. While there are many endemic species due to the isolated nature of the Red Sea, the dominant coral genera are Acropora, Pocillopora, Pavona, Porites, Pavona, Favia and Steriatopora, exhibited in the following representative reef types: fringing reefs, barrier reefs, lagoons, coral banks, emerged reefs, bays and wadi mouths.

2.04 The fringing reefs are formed directly adjacent to the coast, or in some cases separated by a channel. A typical structure is a sandy beach followed by an old reef platform, usually covered with coral detritus, extending into seaweed, leading into a steep, fore-reef slope, usually covered with 30-70% live coral cover down to a depth of 30 - 50 meters minimum. The barrier reef areas are separated from the shore by a lagoon and are not connected to a coral reef platform. These lagoons are shallow, and rarely exceed one kilometer in width. They are protected

from the sea by the barrier reef or sand bank, and often exhibit small patches of coral, seagrass banks and some mangal or salt marsh vegetation along the shore. Coral banks can be emerged or submerged fossil coral reefs and are usually found in the open ocean, away from the shore.

2.05 Many bays are closed, sandy areas which are usually formed by mountain scarps and can be partially surrounded by corals at the perimeter, but free of corals in the center due to limited circulation and high turbidity. Open bays have well developed coral life with numerous patch reefs and small islands. Wadi mouths are also a typical feature of the Red Sea coast, with the old river extension exhibiting a sandy bottom, devoid of coral growth. Usually these are associated with sheltered coves with salt marsh and mangrove vegetation. Occasionally they are closed in by reefs, creating large sheltered lagoons.

#### Coastal Plains

2.06 Most of the coastal desert areas of the Red Sea are flat lands, approximately 3-20 km wide, with high mountain ranges behind these lands. The soil of the coastal plain is made of successive layers of different hard and porous sand types. Some clay is found along the wadi beds. Coastal vegetation is restricted to limited areas of mangroves, reed swamp vegetation in the wadis and sparse salt marsh vegetation all along the coastal plains.

### **B. RED SEA ECOLOGY**

#### The Coral Reef Community

2.07 Coral reefs are one of the most biologically productive and diverse of all the world's ecosystems, although found in nutrient poor tropical seas between 30° N and 30° S. The high productivity of coral reefs is based upon efficient biological recycling, resulting in a high retention and exchange of nutrients within the organisms that make up the coral reef community. Coral reefs are considered to be one of the world's most essential life-support systems with direct contributions of food production (fishes and other marine organisms), valuable medicinal properties, coastal protection and erosion prevention, creation of sandy beaches and harbors, and indirect contributions to sustainable development through tourism. Although coral reefs are energetically robust and productive, they are extremely susceptible to biochemical and physical alteration because of their intricate and complex recycling mechanisms.

2.08 The extensive coral reefs which fringe most of the Red Sea coast are the most extensive and conspicuous shallow water marine habitat in the Red Sea. The highest scleractinian (hard, reef-building) coral diversity has been recorded for reefs of the Gulf of Aqaba with about 129 species of scleractinian corals and 120 species of soft corals. Fringing reefs in the Gulf of Suez are less well developed than the Gulf of Aqaba because the Gulf of Suez is shallow and the sea bed is predominately calcareous sand. The mainland fringing reefs of the Hurgada area consist of an extensive series of shallow reefs bordered by a gently sloping sandy seabed within 5 km of the coast. Extensive reefs are found around the islands of this area. The reefs off Giftun and Abu Ramada islands are exposed to heavy seaward wave action, while Umm Agawish island is a low-lying sandy island with extensive

seagrass beds and coral knolls which have coastal cliffs up to 1 m high. The coastline from Kosseir to the southern border of Egypt has fringing reefs with inlets, bays offshore patch reefs and island reefs, and in some areas reef flats are submerged giving rise to shallow lagoons. From South Safaga to Ras Banas there is continuous, well-developed fringing reefs but the continental shelf is narrow and drops steeply, preventing the formation of offshore reefs. There are small islands north of Ras Banas with extensive and faunistically rich coral reefs, as well as dense stands of mangroves, migratory and resident birds and seagrasses beds which are likely feeding grounds for dugong and turtles. South of Ras Banas is the Gebel Elba region, which has been defined by the World Conservation Strategy as one of the highest priority biogeographical provinces in the world, with a combination of high mountain ranges, wadis, sandy plains, mangroves, salt marshes, extensive fringing reefs and islands which are nesting grounds for hawksbill, green, and leatherback turtles.

#### Seagrass Communities

2.09 Seagrasses are the only group of higher plants that have adapted to life submerged in sea water. In the Red Sea they are found on shores receiving regular tides in areas that have soft-bottom habitats. They are complex systems whose physical structure is dominated by their leaves, roots and detritus, and provide a valuable role in substrate consolidation and nutrient recycling. Therefore, they are highly productive and support turtles, dugongs, fish and invertebrates, as well as substrate, shelter and food for epiphytic organisms, burrowers and motile animals. Echinoderms and sea cucumbers are often associated with sea grass beds.

#### Wetlands and Mangrove Communities

2.10 The Red Sea coast provide wetlands of considerable importance to wildlife, including the extensive coastal plains with mangroves and other shoreside vegetation, intertidal sand and/or mudflats, and other shallow water, enclosed, soft-bottomed habitats. Enclosed shallow water soft-habitats usually occur in areas where water circulation is restricted, and tend to exhibit higher levels of temperature, salinity and oxygen than open water soft-bottom habitats. These are represented in the Red Sea by bays, sharms and mersas with an average width of .2 to 1 km across. They may extend for up to 10 km inland and remain narrow and winding or expand into wetland lakes several km across, yet most sharms and mersas are shallow bays mostly closed off by a fringing coral reef. These enclosed soft-bottom habitats are usually backed by extensive flats and during the very limited wet season support micro-algae blooms that contribute to the primary production of the coastal zone. They are generally restricted in number and distribution, but fine examples are found in the bay areas of south Sinai, Hurgada, Safaga, and Kosseir. These communities usually support crabs, stomatopods, mollusks, anemones, worms, bivalves, gastropods and urchins as well as breeding migrant and visiting birds.

2.11 Mangrove forests or mangal are tropical inshore communities dominated by trees and shrubs that can grow in salt water. The Red Sea mangrove communities have received relatively little scientific attention, although they are notably different from most mangroves in that they are euhaline-metahaline and found on substrates of thin sediment over sub-fossil or raised coral rock in areas with high salinity and limited freshwater. This differs from most of the world's dominant mangrove ecosystems which occur in deep, muddy, brackish substrates with considerable

freshwater inflow. The Red Sea is at the geographical limits for mangrove growth. In Egypt mangroves are found in sheltered waters with the enclosed soft-bottom habitats described above. The stands are usually protected by headlands, islands or intertidal sand spits, as well as in shallow bays protected by a fringing coral reef.

2.12 Most of the Red Sea mangroves occur in the southern areas where the tide range is higher than in the central portions and where there is a wider continental shelf, protected areas and freshwater. Avicenia marina, is the dominant species and is found starting with the area north of Hurgada and continuing south. A number of islands have dense thickets of mangroves, including Abu Mingar, Qiusoum, Safaga, Wadi el Gemal. Many of these are important bird nesting sites for Sooty Gulls, Sooty Falcons and Ospreys. Other characteristic birds include the Brown Booby, Reef Heron, Spoonbill, White-eyed Gull, Caspian Tern and White Cheeked Tern.

### C. ECONOMIC PRESSURES AND IMPACTS

#### Tourism

2.13 The development of the tourist industry in Egypt has been actively encouraged by GOE over the last two decades. Tourists are attracted to visit the historic and cultural monuments which are concentrated in Cairo and along the Nile. Coastal tourism first developed on the Mediterranean coast for the domestic market. Twenty years ago the Red Sea coast began to attract international attention among SCUBA divers due to the quality of the coral reefs and under water life. The pleasant summer and winter climate, the rich marine environment and the proximity to the tourism markets of Europe have provided an incentive to develop the Red Sea coast to mass tourism. This has led to rapid and loosely controlled development around the town of Hurgada. With minimal land use planning, land was allocated for development in an almost continuous belt along the coast. Public beaches and parks are lacking and basic infrastructure followed years behind development. The high density of development, ignorance of coastal and coral reef ecological systems and lack of forward planning and enforcement procedures has led to rapid deterioration and destruction of the coral reefs and loss of natural tourist attractions in and around Hurgada.

2.14 There is a major program of new resort developments on the coast between Hurgada and Safaga at Sahl Hasheesh, and Abu Soma to be carried out by large-scale developers. Using a lead development company enables greatly improved control over the implementation of individual developments to protect the environment. But there is a lack of knowledge of coastal environments and experience of managing visitor pressure on the marine and coastal environment available to government and private sector development interests.

#### Oil and Natural Gas

2.15 Egypt's oil industry is concentrated in the Gulf of Suez. Exploration of oil is now moving out of the Gulf into the Red Sea. The geology of the Red Sea is such that reserves of gas are more probable than oil. The Egypt General Petroleum Company (EGPC) is in process of leasing major blocks of the sea bed for oil and gas exploration. If the search is successful, new risks affecting the marine environment

and new demands for development sites will arise along the coast. The potentially disastrous impact of oil spills on the tourism industry from a major leak and more particularly from the accumulation of small leaks during operations, is a threat to both the investment in tourism and marine ecosystems. This has led the Tourism Development Authority (TDA) and the EGPC to negotiate an agreement to allocate the coastline between the two organizations and to establish rigorous requirements for environmental assessment of all projects.

#### D. INSTITUTIONAL STATUS AND OPPORTUNITIES

##### Ministry of Tourism - Tourism Development Authority

2.16 The Ministry of Tourism (MOT) is the main authority dealing with tourism in Egypt. MOT is organized into four functional parts dealing with planning and development; regulation of touristic services; administration; and financial and legal affairs. Like most other ministries, MOT suffers from over staffing, low staff motivation and inadequate technical capability. MOT operates in an ad hoc and bureaucratic manner. The decision making process is highly centralized, not only because of the system, but also because of the lack of technical capability in various layers of management.

2.17 In cognizance of these deficiencies, MOT is being streamlined to strengthen its technical expertise in support of a private sector led tourism development strategy, to be competitive with neighboring countries and to protect the unique cultural and natural resources in Egypt from environmental degradation. The first step has been the creation of the TDA in September 1991. The TDA draws principally on private sector and academic expertise to assist MOT in planning for the development of Egypt's touristic resources and guiding and promoting increased private sector investments in the sector. These changes are expected to provide the sector with a stronger institutional framework for coherent, private sector oriented and environmentally sound tourism development.

2.18 TDA has been established with a Board of Directors chaired by MOT and 16 other members representing the public and private sectors and the Managing Director of TDA. The Board of Directors is the supreme authority for setting policies concerning TDA's activities, for approval of TDA's work program and annual operating and capital budgets, for making decisions on allocating land and giving development rights to private sector developers in areas designated as tourism zones, for approving cost recovery policies for tourism related services, and for contracting loans for TDA. The initial by-laws of TDA have been approved. As TDA activities grow, it is expected that these by-laws would be suitably amended and enlarged to reflect growing environmental concerns and experience gained in the implementation of its policies.

2.19 The Chief Executive Officer (CEO) of TDA is appointed by Presidential decree. At this initial stage of TDA's operations the CEO is assisted by an Adviser with broad based experience in tourism and a Financial Adviser. The TDA is organized into a number of functional departments. The Technical Department has three units: Planning and Project Preparation, Environmental, and Project Implementation. The Environmental Unit consists of two well qualified university based consultants. TDA is a small organization and intends to remain so with a

small number of high calibre staff on a permanent basis and will contract out specific tasks to outside consultants as much as possible.

#### Egyptian Environmental Affairs Agency

2.20 At present, responsibilities for environmental protection in Egypt are widely dispersed between a large number of Ministries and governmental agencies. The only central focus is represented by the EEAA. The EEAA's responsibilities include: to prepare a national plan for environmental studies and priorities for implementation; to review and draft environmental legislation; to propose standards, specifications and conditions for control of environmental pollution; to approve projects for funding for the Environmental and Tourism Fund; and to disseminate environmental information and promote environmental awareness amongst the public. The EEAA has formed a number of units, and of particular relevance to this project is the Water and Coastal Areas Protection Unit (with 3 staff at present) and a Parks and Protected Areas Unit. The GEF project would strengthen both of these units.

2.21 The new Environmental Protection Law currently before the Peoples Assembly will give the EEAA increased powers and duties. The act includes rules for establishing and running environmental monitoring networks, and covers the handling and disposal of hazardous wastes. In particular, the EEAA would:

- Have power to inspect; and to enforce the law.
- Be responsible for the EIA's that will be required for all future investment projects; and for ensuring that requirements laid down are respected.

2.22 This represents a significant strengthening for EEAA and reflects the Government's determination to give environmental protection much more serious attention than in the past. The law establishes an environmental branch in each Governorate for which EEAA will provide technical supervision. Recruitment of significant numbers of additional staff is intended for EEAA, and by the establishment of the International Cooperation Unit to assist EEAA in negotiations with donors on the proposed Environmental Action Plan (EAP) and on related policy and project implications.

2.23 In order to effectively implement the EAP, further strengthening of EEAA's role is needed, and should focus on the following: effective powers to coordinate environmental activities of government agencies; development of an integrated monitoring and information system; key role in EIA's; expansion of the protected areas system including management capability; and enforcement of environmental standards and requirements. To ensure that the above transpires, the GOE intends to provide strong political backing and increased human and financial resources.

#### Red Sea Governorate

2.24 Although responsibilities and powers are centralized in sectoral ministries, the Red Sea Governorate has a budget for administration and social and economic development at the provincial level. The Governor controls the local administrations in the Municipalities of Hurgada, Safaga and Kosseir and has the responsibility for coordinating activities of different ministries within the governorate. However, the Governorate lacks technical staff and is therefore weak



on implementation and particularly enforcing regulations. It is necessary to strengthen the capacity of the Governorate in the management and planning of development of areas along the coast. An environmental unit is being established in each Governorate to work under the guidance of EEAA as a branch office of the Agency. This local level of environmental monitoring and control and enforcement must be made effective if the coastal zone management goals are to be realized. Professional and technical staff must be attracted to work in the governorate by defining increased responsibilities and clear procedures for the work of the local environmental offices.

#### Egyptian General Petroleum Corporation (EGPC)

2.25 The EGPC is the government agency responsible for oil and gas exploration and controls the activities of international oil companies. New exploration licenses for a large number of off shore blocks are due to be issued soon. It is anticipated that gas is more likely to be found than oil. The EGPC has developed an oil spill response capability in Ras Ghareb on the Gulf of Suez, approximately 100 km north of Hurgada, and is also considering establishing another oil spill response station in Hurgada. Petroleum exploration and operation companies operating in the Gulf of Suez are required to have oil combating capability. But contingency planning, decisional hierarchy and communication networks are inadequate to provide a rapid and integrated response capability. The available equipment is only suitable for tackling small spills in relatively good weather.

2.26 TDA and the EGPC have reached an agreement on allocating parts of the Red Sea coast for the primary development of oil or tourism and some areas for mixed use. The agreement places requirements on oil exploration companies to carry out EIAs and respect the environment. Although not involved in the agreement, EEAA supports the arrangements and has ultimate responsibility for ensuring that oil and gas exploration and exploitation have no adverse impacts on the marine environment.

#### Other Agencies and Institutions

2.27 A number of other government agencies are responsible for the protection of the marine environment. In addition to the EEAA, the following are identified in the new Environmental Law as being involved in the management of the Red Sea and Egypt's coast line: Port and Light House Authority, Suez Canal Authority, Suez Port Authority, and the General Organization for Coastal Protection.

2.28 Other agencies may be identified by Ministerial decree as having powers and responsibilities for marine environmental matters. Concerned agencies are responsible for carrying out enforcement under their own jurisdictions. No structure currently exists to bring the concerned agencies together to deal with problems of the Red Sea. Laws and regulations are overlapping, unclear, lacking detail, or absent. Fines are too low and resources for monitoring and enforcement are inadequate to provide an effective deterrent against pollution by ships, or activities of other public and private interests which cause damage or destruction to marine ecosystems. Each agency has their own priorities, determined within the organization, but not yet according to an integrated strategy for the conservation of Red Sea natural resources.

2.29 The Institute of Oceanography and Fisheries (IOC) has a major research center in Suez and a small station at Hurgada. It belongs to the Ministry of Scientific Research and has been investigating fish and corals around Hurgada for more than 70 years. A number of university centers also have teaching and research interests in the marine and coastal environment. The University Campus at Assiut has plans to establish a marine research center at Kosseir on the coast. Such centers are a potential resource for undertaking survey and monitoring work during the implementation of this project.

#### **E. RATIONALE FOR GEF FUNDING**

2.30 The marine biodiversity values of the Red Sea are high and include the coral reefs, endemic island wildlife and a diverse marine environment. These habitats are valuable to the overall ecosystem functioning of the entire Red Sea as well as the livelihood of all of the riparian nations; therefore, the protection of the Egyptian Red Sea is not just a matter for the country alone.

2.31 Sustainable development of agricultural, tourist and industrial potentials of undeveloped areas in Egypt and other Red Sea nations present plausible mechanisms to overcome economic difficulties facing the region. While tourism focusing on the promotion of natural assets, such as coral reefs may well incorporate environmental considerations into the planning and development processes, it is rare that actual protected areas in the form of parks and or reserves are incorporated into tourism development schemes. Given the resource constraints of the GOE, the intense development pressures, the single-sector nature of government agencies, the tensions between the public and the private sectors, GEF is the only funding means to meet the incremental costs to the Egyptian economy of implementing an effective coastal and marine management project that adequately address biodiversity and pollution mitigation goals in the integrated manner so critical to the Red Sea as a whole.

#### **Form of Innovation**

2.32 This project has two primary innovations: (a) the interagency coordination and joint management of a plan between different public and private sector parties; and (b) demonstration of coastal zone management activities that support both the biodiversity protection and the international waters pollution mitigation goals of the GEF. Since both this GEF and the associated Bank project have the objective of maintaining the integrity of the coastal and marine environment through economic development, incentives need to be structured which do so while preserving biodiversity, including tourism development, oil exploration and nature conservation.

#### **Demonstration Value and Replicability**

2.33 The Coastal Zone Management Plan will develop approaches that will be adaptable in the rest of the Red Sea countries. This project is the first in the region to attempt an environmental assessment of some scale, to set up an environmental monitoring program and to implement specific protection measures. It will be applicable to many other countries and regions which are facing similar development pressures. A strong emphasis of the project is in communication with

other Red Sea countries and the provision of some funds for further regional co-operation. The regional framework being developed by UNEP is thought to be an appropriate vehicle to facilitate protection of the Red Sea marine ecosystems into practice among riparian countries.

### III. THE PROJECT

#### A. PROJECT OVERVIEW

##### Project Goals and Objectives

3.01 The project has three primary goals. The first is to prevent further loss of marine and coastal biodiversity of the Red Sea, focusing on the coral reefs of the Egyptian portion. The Red Sea will no longer be able to provide the natural resource base affecting all of the riparian nations, which has traditionally supported inhabitants through fisheries, and more recently through tourism, oil and natural gas exploration if the ecological conditions continue to degrade and the natural oceanographic regimes are further altered. The second goal is to prevent continued pollution of the Red Sea, through targeting the point sources in Egypt. Pollution, caused by unregulated exploitation of oil and gas resources and unplanned tourism and urbanization activities will quickly lead to a demise of the marine and coastal environments which will in turn lead to a decline in the quality of life both for the Egyptian people as well as inhabitants of the other Red Sea riparian nations. The third goal of this project is to demonstrate institutional, legislative, scientific and management solutions that mitigate pollution and protect the coral reefs in Egypt's coastal areas which can be adopted by both other Red Sea countries and coastal nations worldwide, and support environmentally sound economic development throughout the entire region.

3.02 The project is designed to realize the following objectives, in order to support the goals described above:

(a) development and implementation of policies, plans and regulations to ensure that development is consistent with sound environmental management to protect the shared marine resources of the Red sea coastal zone;

(b) strengthening of government institutions to have a capacity to carry out integrated multi-sectoral CZM activities;

(c) development and implementation of public-private partnerships to assure that economic development is consistent with sustainable environmental management and common marine resources;

(d) development and implementation of practical solutions for the establishment, management and recurrent funding of marine protected areas and marine recreation resources; and

(e) development of a data base and inventories of the coastal and marine ecosystems and resource uses that will be available to governments, universities and private sector-interests for the purpose of expanding the knowledge base of the Red Sea.

### Project Description

3.03 The project is to develop and implement an integrated coastal zone management program based on the development of a CZM plan during the first year and implementation of the plan during the next two years, for a total project life of three years. The overall project area is the Egyptian portion of the Red Sea between Ras Shukeir in the north and the Sudanese border to the south. For purposes of site-specific project implementation the project area excludes the Gulf of Suez and Aqaba, yet some of the results of the project will be contributing to the overall health of these two extensions of the Red Sea. The implementation of CZM program is proposed for two different areas, the first being the 40 km stretch of coast between and including the towns of Hurgada and Safaga, and the other the undeveloped coastal area between Marsa Alam and the Sudanese border.

3.04 The Hurgada-Safaga area is currently experiencing rapid development pressure from tourism, oil and other urbanization pressures. Most of the development activities are concentrated in and around the towns of Hurgada and Safaga with some undeveloped areas between the towns. Yet, the informal boundary of Hurgada township continually moves south as more and more tourism resorts (locally called "holiday villages") are being developed. A World Bank project (Private Sector Tourism Infrastructure and Environmental Management) is intended to fund two major tourism developments, including hotels, condominiums and employee villages, in this area to provide examples of tourism that is based on large-scale, comprehensive and environmentally sound master planning in an effort to reduce the current trend of haphazard development. The GEF project will not only provide an environmental component to this Bank project, but also provide opportunities to implement environmentally-based monitoring, tourism planning, pollution control and recreation management activities for the area beyond the Bank project.

3.05 The second area, Marsa Alam south to the Sudanese border, is currently undeveloped and contains a high diversity of coastal and marine habitats that are both rich in species diversity and endemism. Areas of particular ecological interest include the Ras Banas area and further south the Gebel Elba area, which has been defined as one of the highest priority biogeographical provinces in the world in the World Conservation Strategy designated by the World Conservation Union (IUCN). Both areas have nearby islands, rich coral reefs, mangroves, seagrasses, turtles and numerous migratory birds, and Gebel Elba has high coastal mountain ranges with unusually dense and diverse forests for this part of the world. Both of these areas are in need of protection as well as offer nature-based tourism opportunities, and the project includes components that support the establishment of this area as a large conservation area, or biosphere reserve with some areas zoned for pure conservation with others zoned for environmentally sound, low-density tourism.

### **B. PROJECT COMPONENTS**

3.06 The project is designed around the six components with specific activities for each component. Detailed descriptions of the components including the outputs and scope of work are provided in ATTACHMENTS 2-7. A brief summary and outline of each component is provided below.

#### **COMPONENT I: COASTAL ZONE MANAGEMENT PLAN**

3.07 Development pressures from tourism and oil and gas exploration are leading to intense development of the Red Sea coast without full consideration of the integrated nature of coastal and marine ecosystems, especially the coral reef habitats and the need for the integrated, multi-sectoral planning to prevent further destruction of these ecosystems and their functioning as biophysical processes critical to the welfare of the Red Sea region as a whole. Integrated development between competing sectors, both within the private and public realm will not occur without intervention such as GEF. This component will develop an integrated CZM plan to guide a program of inter-sectoral coastal zone management during the project implementation phase and beyond.

3.08 This component will carry out necessary scientific base-line inventories analysis of the resources and zone the coast according to the allocation of significant areas for conservation and development. Resource allocation will illustrate a spectrum of management practices from pure development to conservation with an emphasis on interactive roles between the two and the private and public sectors. Due to the complex, multi-sectoral nature of developing such a plan, a high degree of background work through inventories and studies are needed to consider the broad range of concerned agencies and resource uses possible, and make judgements on what activities can be developed in an environmentally sustainable manner. This component will establish a data base incorporating existing information, new surveys, with Geographical Information System (GIS) as an interactive planning tool. Studies on resource use options and management such as tourism alternatives, recurrent funding, carrying capacity will build on the data base information. An initial strategy will be prepared to provide the policy directions needed for the plan. A final plan with policies for zoning and managing coastal and marine resources will be developed and approved by all concerned agencies.

#### **COMPONENT II: ENVIRONMENTAL ASSESSMENT CAPABILITY**

3.09 One of the most potentially effective mechanisms to support environmentally sound development is the EIA process. Yet, neither the TDA nor the EEAA currently have the capacity to evaluate and enforce rigorous EIA's. Without the development of such capacity for the TDA and EEAA, rampant, destructive development of the coastal and marine areas will continue, resulting in an irreversible loss of biodiversity and pollution of the Red Sea. An example is the filling of coral reefs with sand to provide a substrate for building hotels, restaurants and casinos "closer to the water". This is not only causing direct destruction of the coral reefs but is radically affecting coastal circulation patterns, affecting adjacent areas of the Red Sea. This component will develop EIA practices for tourism and all other development activities impacting the coast. It will improve TDA's and EEAA's capability to manage EIA requirements and review tourism and other development-based EIA studies. It will provide EEAA with a model of EIA guidelines and procedures to develop their capacity to manage EIA's for small and large-scale private and public sector investments. The TDA's and EEAA's environmental unit will be staffed and trained in EIA methods and procedures, and produce a manual on EIA procedures to be used by developers and other agencies.

### COMPONENT III: MARINE POLLUTION CONTROL

3.10 As described earlier, the Red Sea is a unique ecosystem whose physiographic configuration is conducive to a rapid concentration of land and water-based pollutants, affecting many countries. To effectively implement the CZM plan and EIA's, a capacity to monitor and enforce rules and regulations must be developed. Rather than establishing an independent regulatory system for CZM, the project will facilitate the coordination and strengthening of capacities between the TDA, EEAA and the Red Sea Governorate and other agencies. A Red Sea office will be established in the Governorate to provide a focus of operations with the establishment of a monitoring and enforcement unit, which will coordinate these responsibilities with the environmental units of EEAA with the Red Sea Governorate and TDA. Additional local staff from other concerned agencies may be attached to this unit to implement the CZM guidelines, regulations, permitting procedures, and pollution control in the project area, and receive training in how to carry out these activities.

### COMPONENT IV: REEF RECREATION MANAGEMENT

3.11 Coral reefs are the primary tourist attraction on the Red Sea. Yet, the very people who enjoy them and make their living from promoting them are also killing them, including local inhabitants and users from around the world. Uneducated snorkelers and divers can cause considerable damage to reefs through physical contact. Anchor damage is one of the major causes of direct reef destruction. To implement actions under the CZM plan there is a need to establish a capacity to manage recreational facilities to protect the coral reef habitats and promote sustainable visitor use and enjoyment. Due to the intense economic pressure and the many different user groups of the reef and the general lack of awareness of people about the vulnerability of reefs, it is likely that the reefs will continue to be "loved to death" without immediate action. This component will initially focus on recreation management activities in the Hurgada-Safaga area which is attracting intense, high-density, mass-scale tourism, and will manage activities that provide enjoyment and appreciation of the coral reefs and other coastal marine habitats in this area, through training activities, recreation facility management, public awareness efforts, in cooperation with private sector tourism businesses. The above will be done through the development of a Reef Recreation Management Action Plan and Program, the establishment of a Reef Recreation Management Unit, management arrangements between public and private sectors, and other entities. This component will also incorporate information from the nature-based tourism and carrying capacity studies developed during the CZM planning process and the monitoring and enforcement activities from the pollution control component. While this component focuses on the Hurgada-Safaga area, the activities will also apply to the establishment of the marine parks and reserves in the following protected areas component.

### COMPONENT V: MARINE PROTECTED AREA ESTABLISHMENT

3.12 The Red Sea coast offers a range of nature conservation opportunities through the establishment of protected areas to not only protect the biodiversity of the reefs and ecological integrity of other island and coastal habitats, but also to potentially support socio-economic benefits through nature-based tourism, local

pride, scientific research and environmental education. Protected areas of intact ecosystems also offer a control area that can provide valuable information in comparison with research carried out in areas being restored, e.g. Hurgada. In spite of documented economic, ecological and social benefits directly associated with protected areas, adequate funding to establish and manage protected areas, especially marine areas, is rare. Therefore too many parks are "paper parks" and in some cases are actually catalyzing in-situ habitat destruction because they do attract tourists but the management controls are not in place. Given the reality that funding for protected areas in an ecologically necessary scale through the Egyptian government and coordination with private-sector initiatives is difficult, there must be a mechanism such as this component to protect selected sites along the Red Sea.

3.13 To protect the unique biogeographical character of the Red Sea coast, the whole area from Mersa Alam to the Sudanese boarder is proposed as a protected area(s), which would incorporate a range of levels of conservation protection zones. This area includes the Gebel Elba and Ras Banas region which exhibits high biodiversity and exceptional scenic value, that is both regionally and globally significant.

3.14 The CZM plan strategy will identify areas that will support different management zones, e.g. pure protection of terrestrial and marine environments to incorporation of low density nature-based tourism. The area is well suited for the implementation of UNESCO's Man and Biosphere Reserve approach, incorporating core conservation zones as well as adjacent buffers areas, and requiring a high degree of involvement by the local communities and different government sectors. The component will conduct detailed surveys and prepare management plans for areas to be given legal protection, and support basic facilities to ensure management and control of sites, provide small scale visitor facilities in partnership with private interests and the local community, and train a core staff in park management techniques. The protected areas program will draw on the experience of the Ras Mohammed Park in South Sinai.

#### **COMPONENT VI: CZM MONITORING AND EVALUATION**

3.15 By the end the project should have demonstrated mechanisms for multi-agency and multi-disciplinary arrangements to plan, conserve and manage coastal resources and to control and promote sustainable development involving government agencies, private-sector parties and local communities. Such an approach is new to Egypt; the achievements and difficulties encountered and lessons learned will be valuable for CZM activities in the rest of the country and in other countries around the Red Sea. A review of the CZM plan and arrangements for pollution control and monitoring, recreation management and protected area management will be undertaken mid-way through the project and at 30 months into the project. Built into each of the components are a series of monitoring and evaluation activities, such as inventories and pollution monitoring. Mid-term and final reviews will concentrate on ways to improve institutional arrangements and coordination between concerned agencies, and to ensure that user fees and other sources of funding generated by the activities of CZM are available to maintain these functions when the project ends. The agencies involved need to be committed to efficient and effective functioning of CZM, so that the impetus is maintained when the project ends.

## C. PROJECT MANAGEMENT STRUCTURE

### Overall Management Structure

3.16 The GEF project will be managed by a Project Management Group (PMG) from a project office within TDA in Cairo. A Project office will also be established on the Red Sea coast by the end of the first year. Logistic support for the project will be provided by TDA who will provide project offices in Cairo and on the Red Sea. Most of the implementation will be managed from the Red Sea office within the Red Sea Governorate in association with the Environmental Branch of the EEAA and the proposed local office of the TDA. A Project Coordinator (PC) will have overall responsibility for the project. An Operational Manager (OM) will be responsible for the Red Sea Office and coordinate the Pollution Control, Protected Areas and Recreation Management Programs.

### Project Management Group

3.17 The PMG will consist of the Heads of the TDA, the EEAA and the Red Sea Governor or their representatives. The PC and the OM will be members of the PMG and the PC will act as Secretary for the PMG. The PMG may coopt representatives of other concerned agencies and will set up liaison arrangements with other Ministries involved in development and management of the Red Sea. The PMG will meet at least once every 3 months. Responsibilities of the PMG include:

- (a) provide coordination between the three beneficiaries of the project (TDA, EEAA and the Red Sea Governorate);
- (b) appoint the Project Coordinator(PC) and the Operational Manager(OM);
- (c) approve project and component work plans and budgets;
- (d) agree on and prepare progress reports for the World Bank;
- (e) negotiate approval by GOE of the Inception Report and three year project work plan, final CZM Plan, Protected Areas designations and the final report of the CZM Program; and
- (f) appoint members of the CZM Technical Advisory Committee and approve members of the Reef Conservation Network.

### Advisory Committee

3.18 Project activities will be supported by a CZM Scientific Advisory Committee (SAC) consisting of 6-7 distinguished national and/or international scientists with knowledge of coastal and marine ecology, the use and protection of Red Sea coastal resources including environmental monitoring and control in Egypt. The committee will meet every 3 months, and more frequently as required, and also be involved in the Monitoring and Evaluation review component.



### Reef Conservation Network

3.19 Implementation of programs is to be supported by network which will bring together private sector interests with operational staff to provide a forum for information exchange and discussion of environmental management issues along the coast.

### Core Team

3.20 A core project team will be formed from among the staff of TDA, EEAA, the Red Sea Governorate and other concerned agencies to work either in the Cairo or Red Sea Offices. Tables 4, 5, and 6 indicate the man-months per component, office location and salary costs respectively for the core team. Appropriate full-time staff will be recruited where local existing staff are not in post. The core team will be supported by technical and operational staff to carry out the project components drawn from the staff of the TDA, EEAA and other concerned agencies or recruited by these agencies to work on the project.

### Project Coordination

3.21 The PC will be responsible for day to day administration of the project, liaison with the concerned agencies, preparation of work plans, budgets and progress reports, coordination between the project components, lead the preparation of the CZM Plan, the CZM Program Review and the EIA Component, supervise the core staff in the Cairo office, advise on the establishment of the Red Sea office, review arrangements for the establishment of the pollution control unit, the Recreation Management Areas Unit and the Protected Areas Office.

### CZM Operations

3.22 The OM will assist the PC and take responsibility for the establishment and running of the Red Sea office, including supervision of the core and other staff based on the office and coordinate the activities of the Pollution Control Officer, the Protected Areas Manager and the Recreation Areas Manager.

### Component Management

3.23 Each project component and sub-component will be lead by a member of the core project team. International and local experts will be recruited to work with local staff and assist in carrying out the activities of components and sub-components.

### Training

3.24 Training in CZM, management of protected areas and recreational resources, and in pollution monitoring and control is an important part of the project. A Training Officer will be responsible to organize training events in the country and administer participation in overseas courses and study tours. The Training Officer will also provide administrative support to the project.

### Public Awareness

3.25 A Public Awareness specialist and Education Officer will be appointed to lead on all aspects of environmental education, distribution of information, and promotion of the aims and achievements of the project amongst the public. This person will direct the public relations and public awareness campaigns connected with the project components.

### Finance Officer

3.26 The Finance Officer will work on economic and financial and funding aspects of components and participate in negotiations with the private sector to set up management agreements to implement conservation and resource use programs. He/She will also be responsible for the project funds.

### Data-base Manager

3.27 The results of surveys and a great deal of other information will be generated by the project and will form a data-base which will require full time and expert management. This is the responsibility of the Data-base Manager who will need to be familiar with GIS systems.

### International Advisors

3.28 The project will be supported by a number of international advisors who will be available on an on-going basis during the life of the project to share expertise from other experiences as well as add an element of objectivity to the project. Advisors will be drawn from the following disciplines: CZM Planning and Management, Marine pollution and Marine Park Management. They will each provide about 7 man months of service during the project. The first visit will be early in the project when all three are present with the core team and other staff and consultants during the preparation of the Inception Report and start of the CZM Plan. The role of the Advisors is to provide conceptual and technical leadership for the project. They will also provide teach-ins and lead seminars/workshops for senior staff of the TDA, EEAA, the Governorate and other agencies involved in the CZM program. Table 7 shows the man-months and costs per component for the international advisors.

### Expert Consultants

3.29 International experts from various disciplines will assist in a number of components, notably the CZM Plan (18 mm) and EA Capability 6 mm. Experts will be contracted individually or through a consulting firm. On the job training for local staff and consultants is required from the experts. Table 7 also shows man-months and costs for the international experts.

### Regional Links

3.30 Effective links will be developed with the Yemen GEF Project - Protection of Marine Ecosystems on the Red Sea Coast, and projects in the Gulf of Aqaba. This suggests the establishment of an Operational and Technical Group. The group would involve personnel responsible for the actual implementation of the

projects. Strong mechanisms to ensure effective information exchange will be established. It would be expected to meet relatively frequently and be focussed on common problems sans solutions. The PC, OM and other senior members of the core team would take a leading role in organizing the Group.

#### **D. PROJECT COSTS AND FINANCING**

3.31 The GEF allocation is for US\$5 million of which US\$250,000 are reserved for regional collaboration under the UNDP Red Sea Regional Seas Program. GEF funding for Egypt is \$4.75 million; 45 percent is for technical assistance and 55 percent for goods, equipment and civil works. A local cost contribution of about US\$0.98 million will also be made by the TDA, EEAA and the Red Sea Governorate representing 17 percent of the total cost. This is proposed to be split between the three beneficiaries in the following proportions: TDA (50 percent), EEAA (40 percent) and Red Sea Governorate (10 percent).

3.32 Expenditure will be incurred by the core team to coordinate project component activities and give logistic support from the Cairo Office (components I, II, IV) and Red Sea Office (III, IV, V). The cost break down is by office (common costs) and by project components (component specific costs). Funds will be made available for Red Sea Regional Framework cooperation, expenditure on the Scientific Advisory Committee, and the Reef Conservation Network.

3.33 Common costs include office equipment, vehicles and vehicle maintenance, boats and boat maintenance, photographic and communications equipment, scuba diving equipment, project management services (salaries, public relations) and consumables. Specific component costs are salaries and fees, travel, training, public relations and awareness, and civil works (components III, IV, V only). Common and component costs are to be met from GEF and local funds. Local costs include staff and local consultant salaries, office accommodation, vehicle maintenance, fuel and office supplies. Foreign costs also include salary supplements to the full-time core team.

3.34 Foreign and local project costs are shown Tables 8 and 9 respectively. The costs have been calculated on the basis of the detailed description of activities in each component. The allocation of costs to each heading and component may change slightly after a detailed work program is prepared during the first 6 weeks of the project. Any revisions will be incorporated into the Inception Report and reviewed during the first supervision mission 3 months into the project.

#### **E. PROCUREMENT**

3.35 Salaries, training, public awareness and operating costs account for 44 percent of the costs. No individual contract for the supply of equipment and civil works will be more than US\$250,000, (GIS system -US\$100,000 and vehicles US\$330,000 and boats -US\$190,000 will be purchased in two stages, at the commencement of the project and 6-9 months later). Therefore all goods and equipment over US\$50,000 will be procured through local competitive bidding. Furthermore civil works are mostly small scale activities requiring local knowledge and expertise. Where individual contracts are under US\$50,000, these will use the same procedures. Other supplies and contracts will be awarded on the basis of comparison of price

quotations solicited from at least three local suppliers. Procurement of consultants and technical assistance would follow the Bank's Guidelines for the Use of Consultants. Since the project is working through a number of agencies and the number of potential suppliers is large, no problems with procurement are foreseen.

#### F. DISBURSEMENT

3.36 Project requirements over the three years is shown in Table 10. Funds will be disbursed through a Special Account which will be opened by TDA on behalf of the GEF project. The initial sum will be paid when the conditions of effectiveness have been met at the commencement of the project. The accounts of the project will be subject to audit. The audit will be carried out as part of the audit arrangements for the overall Bank Project.

### IV. PROJECT IMPLEMENTATION

#### A. PREPARATION OF INCEPTION REPORT

4.01 An Inception Report for the project, prepared by the core team, is required to be submitted to the Bank by June 30, 1993 which:

- describes the rationale for the project, sets out the project objectives and indicates the criteria by which they should be judged;
- presents details of the management structure (PMG) and the working arrangements agreed between the TDA, EEAA, Red Sea Governorate, Ministries and other concerned agencies;
- sets out a work plan for the full three years of the project;
- provides detailed work plans for the CZM Plan (Component I) and the Environmental Impact Assessment Strengthening (Component II);
- summarizes the working arrangements for the International Advisors;
- presents a revised first year budget.

4.02 The Inception Report would be used to inform other branches of GOE about the project and provide a focus for a seminar on CZM to be attended by representatives of government, academics, private and NGO interests to introduce the aims of the project and work program.

#### B. PROJECT PHASING

4.03 The timing of the project components is indicated in Table 1. The core team will provide leadership and integration between components. The approximate contribution of core staff to components is shown in Table 4. International Advisors will make up to 7 visits of one month each during the life of the project to advise component leaders and assist in the implementation of activities and programs. The contribution of international consultants to components is given in Table 7.

4.04 Experienced professional and technical staff should be selected to carry out the CZM Plan based in the Cairo office. When the Red Sea office has been

established at the end of the first year, skilled technical monitoring and pollution control staff would be transferred to the project to form a nucleus for pollution control functions and to strengthen and provide leadership to the existing monitoring and enforcement activities of the EEAA, Red Sea Governorate and TDA. The Recreation Management and Protected Area Management units will recruit suitable people for rangers, with responsibilities in natural resource and visitor management within their respective areas.

#### C. REPORTING REQUIREMENTS

4.05 Agreement was reached at negotiations that the following steps would be achieved by the dates proposed (see also the phasing and work plan):

- PMG approves an Inception Report by May 31, 1993.
- Presentation of a Monitoring and Evaluation mid-term progress report by September 30, 1993
- PMG approves draft of the CZM Plan for approval by affected Ministries and concerned agencies by December 31, 1993
- PMG approval of the Protected Area Management Plans and Recreation Management Action Plans by June 30, 1994
- Presentation of progress reports on the Coordination of pollution control, monitoring and enforcement, Protection Area Program and the Recreation Area Program by September 30, 1994, March 31, 1995 and September 30, 1995.
- PMG approves work plan for the final CZM Monitoring and Evaluation Component by March 31, 1994
- Presentation of progress report on the final CZM Monitoring and Evaluation by December 31, 1995.
- The final report of the CZM Program Review and commitment to actions to be taken including agreed responsibilities among concerned agencies for CZM in the Red Sea and distribution of project equipment by March 31, 1996.

#### D. PROJECT SUPERVISION

4.06 The project is large and complex requiring interagency cooperation and joint management through the PMG. During the preparation of the CZM Plan in the first year, Bank staff will need to keep closely in touch with the development of detailed work planning, appointment of staff and local consultants by the TDA and EEAA to realize activities and hiring international experts to assist in studies, the preparation of policies and implementation. Supervision visits will be every 4 months (3 times a year) and include specialists in biodiversity, environmental planning, and tourism. In the second and third years during the implementation phase supervisory visits will be reduced to every 6 months and should include the operations of the Pollution Control Unit, the Protected areas unit and Recreation Areas Management Unit in the Red Sea office. Annual work plans and 6 monthly progress should be prepared prior to supervisory visits and reviewed during missions.

## V. PROJECT IMPACTS

### A. BENEFITS

5.01 The extensive Red Sea coral reefs are the most complex and valuable habitat in the Red Sea in terms of species richness, endemism, diversity and ecological functioning. They are not only invaluable on a site-special local scale but are also critical to the overall functioning and health of the entire Red Sea, as well as representing a truly unique global resources. Protection of the Egyptian reefs and other coastal habitats and actions to mitigate pollution of the semi-enclosed Red Sea waters will not only benefit the people of Egypt but also the riparian nations as well as provide an example of integrated management that is needed on coastal areas worldwide.

5.02 The marine biodiversity values of the Red Sea are high and the project will make a significant contribution to the global achievements in protecting coral reefs, endemic island wild life and diverse marine environments. The project aims to assist interagency coordination and joint management of a plan between different public and private sector parties. The plan will allocate resources and promote policies for sustainable economic development and income generation from tourism, oil, fishing and nature conservation. Organizational and practical skills in the management of marine and coastal resources, protected areas and visitor access and enjoyment will be learnt in the implementation of programs. The project is the first of its scale in the region and the CZM program will develop approaches which are adaptable in other Red Sea countries through the Regional Framework being developed by UNDP and with a parallel GEF project in Yemen.

### B. RISKS

5.03 The project faces a number of risks. Until recently the Government has shown a limited understanding and support for integrated decision making which is required to plan and manage vulnerable coastal resources. Consequently, the presence of TDA, EEAA and the Governorate of Red Sea staff dealing with environmental matters in the coastal areas has been rather limited. Funds have been scarce to recruit and retain experienced and qualified staff to work in these remote areas. Environmental regulations which exist have not been enforced properly. These risks will be reduced under the project by the preparation of a CZM Plan, and by developing a plan for cooperation and joint action among the various concerned agencies to protect the coastal resources of the Red Sea. The project will contribute funds to assist in creating a core team with the adequate expertise and experience to fulfill the objectives of the project and to train a large number of local staff in various aspects of CZM. Studies will be carried out under the project to develop sources of recurrent funding to support CZM activities in a sustainable manner.

### C. SUSTAINABILITY

5.04 The livelihood of all coastal people sharing the common resources of the Red Sea, and ultimately the long term viability of the tourism industry itself depends upon maintaining biological diversity and reducing marine pollution through the implementation an integrated conservation program. The protection of the Red Sea coral and marine habitats requires the creation of institutions with clear mandate, personnel who have the appropriate skills, implementing agencies with equipment and working

space, and adequate financial resources for maintaining the activities after they have been initiated. The Red Sea Coastal and Marine Resource Management Project has been designed to address these issues and particularly the rational allocation of coastal resources through a CZM plan, and establishing Protected Areas and multiple use policies with realistic and workable regulations and procedures for their enforcement. An emphasis in the project is on developing recurrent cost mechanisms through the protected area, pollution controls, tourism development activities and training staff in monitoring and pollution control, natural resource and visitor management that will together ensure that the actions developed in this project can be continued.

5.05 The project also establishes a sound information base to inform decision making concerning development, resource conservation and protected areas management. Implementation will focus on introducing mechanisms to involve the private sector in managing and maintaining areas under intense tourist pressure. Cost recovery and recurrent funding techniques will be studied in the CZM plan activity and built into the implementation programs. The project will promote public awareness campaigns amongst coastal resource users and managers, tourists, government officials, academics and NGOs. Through information, education and interpretation activities, visitors will better understand and appreciate the coral and marine life. Through this project a wide range of training experiences, institutional arrangements, environmental regulations, research, monitoring mechanisms will have been both designed and implemented at local, national, regional and international levels. Sustainability is built into each component of the project as it is designed as an evolutionary process facilitating the involvement of a wide-range of private and public sector parties. The project is considered a seed, a catalyst, from which the respective agencies, private developers and local communities will continue based on what has been established and learned in this project.

## VI. AGREED ACTIONS

6.01 Agreement was reached during negotiations on the following actions: (a) by April 30, 1993: (i) TDA and EEAA would have set up a Project Management Group; (ii) appointed a Project Coordinator and Operations Manager; (iii) established the Cairo office; (iv) appointed an advisory committee of distinguished scientists; (b) by June 30, 1993: (i) prepared an inception report including a draft work plan for the first year of the project; (ii) appointed the three project advisers for the duration of the project; and (iii) TDA and EEAA have appointed suitable staff to its Environmental Unit and Water and Coastal Zone Management Department, respectively; (c) a Protected Areas Manager and a Recreations Area Manager would be appointed by September 30, 1993, and a Pollution Control Officer would be appointed by December 31, 1993; (d) GOE would approve the CZM Plan and approve the boundaries and legal status of the Protected Areas by March 31, 1994; and (e) reporting requirements according to para 4.05. There will be cross-effectiveness required between this grant and the associated Bank project.

ARAB REPUBLIC OF EGYPT  
EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT

**SUMMARY OUTLINE OF PROJECT COMPONENTS**

**COMPONENT 1: COASTAL ZONE MANAGEMENT PLAN (11 months)**

**Sub-Component 1. DATA BASE (9 months, excluding activity 1.8)**

- 1.1 GIS Selection (1-2)
- 1.2 Remote Sensing (2-4)
- 1.3 Collecting Existing Information (2-4)
- 1.4 Ecological Reconnaissance Surveys (2-4)
- 1.5 Resource-use user Surveys/interviews (3-4)
- 1.6 Inventory of Environmental Resources and Uses (4-5)
- 1.7 Atlas of Environmental Resources and Uses (6-8)
- 1.8 Ongoing Use and Development of the Data Base (6-36)

**Sub-Component 2. BASE-LINE STUDIES (5 months)**

- 2.1 Survey and Analysis of Marine Pollution (2-5)
- 2.2 Analysis of Development Pressures and Impacts (2-5)
- 2.3 Nature-based Tourism (2-5)
- 2.4 Carrying Capacity Analysis (5-6)
- 2.5 Recurrent Funding (5-7)

**Sub-Component 3. ENVIRONMENT-BASED CZM STRATEGY (2 months)**

- 3.1 Information Synthesis (4)
- 3.2 Assess Opportunities and Constraints (4)
- 3.3 Prepare Initial CZM Strategy (5)

**Sub-Component 4. REGULATORY NEEDS ASSESSMENT (5 months)**

- 4.1 Legislative Review (4)
- 4.2 CZM Plan Maps (5-6)
- 4.3 Draft CZM guidelines (5-7)
- 4.4 Draft Rules and Regulations (6-8)

**Sub-Component 5. REVIEW INSTITUTIONAL CAPACITY FOR CZM (4 months)**

- 5.1 Institutional Capacity Assessment (4-5)
- 5.2 Propose Institutional Arrangements (6-7)

**Sub-Component 6. PREPARE CZM PLAN (4 months)**

- 6.1 Prepare a Draft CZM Plan (7-8)
- 6.2 Plan Approval Process (9-10)



COMPONENT II. ENVIRONMENTAL ASSESSMENT CAPABILITY (12 months)

- Activities:
- II.1 TDA and EEAA Environmental Units (1)
  - II.2 Tourism Regulations Review (2-3)
  - II.3 EIA Manual (4-6)
  - II.4 EIA Applications (3-12)
  - II.5 Training (2-12)

COMPONENT III. MARINE POLLUTION CONTROL (26 months)

- Activities:
- III.1 Establish Environmental Monitoring and Enforcement Coordination Unit and Prepare a Work Plan (10-11)
  - III.2 Develop Permitting Procedures (12-15)
  - III.3 Project to combat marine pollution and coastal habitat (14-16)
  - III.4 Training (10-18)
  - III.5 Co-ordination of Pollution Control, Monitoring and Enforcement Services (12-36)

COMPONENT IV. REEF RECREATION MANAGEMENT (26 months)

- Activities:
- VI.1 Establish Reef Recreation Management Unit and prepare work plan (10-12)
  - VI.2 Reef Recreation Management Action Plans (10-14)
  - VI.3 Implement Reef Recreation Management Plans (14-36)
  - VI.4 Training (10-30)
  - VI.5 Public Awareness (12-36)

COMPONENT V. MARINE PROTECTED AREAS PROGRAM (30 months)

- Activities:
- V.1 Detailed Inventories (6-24)
  - V.2 Selection Criteria and Suitability Matrix (6-7)
  - V.2 Boundary Establishment (8-9)
  - V.4 Establish Protected Areas Unit and Prepare Work Program (12-12)
  - V.5 Management Plans (10-14)
  - V.6 Facility Construction and Operation (15-36)
  - V.7 Training (12-36)
  - V.8 Public Awareness (12-36)

COMPONENT VI. CZM MONITORING & EVALUATION (8 months)

- Activities:
- VI.1 CZM Plan and Mid-term Program Review (18-20)
  - VI.2 CZM Plan and Program Review (30-32)
  - VI.3 Implementation Evaluation (30-32)
  - VI.4 Institutional Roles and Structures (30-36)
  - VI.5 Achievements (32-36)

ARAB REPUBLIC OF EGYPT  
EGYPTIAN RED SEA COASTAL AND MARINE RESOURCE MANAGEMENT PROJECT

**COMPONENT I: COASTAL ZONE MANAGEMENT PLAN**

Total time: 10 months, Total foreign costs: \$628,100

**OUTPUTS**

1. Establishing a data base incorporating existing information, the results of surveys and the analysis of remote sensing information contained in a GIS.
2. Publishing an atlas of the environmental resources of the Red Sea coast.
3. A preliminary strategy for the allocation of marine and coastal resources defining areas to be conserved and protected and other areas where development, compatible with the sustainable use of resources, may be appropriate.
4. A study of the opportunities for nature based tourism on the coast.
5. A study of appropriate mechanisms for recurrent funding to support CZM activities and encourage public private partnership.
6. A regulatory needs assessment and draft guidelines, rules and regulations for control of activities on the coast and at sea to achieve the policies of the CZM plan.
7. A review of the institutional capacity for CZM and recommendations for improvements.
8. An analysis of development pressures and impacts including assessment of the environmental costs and benefits of conservation.
9. Detailed ecological studies of the area south of Marsa Alam for the preparation of a management plan and program for a national park(s) or similar protected areas and possibly the development of a scientific program under the Man and the Biosphere (MAB) program for an international biosphere reserve.
10. A CZM plan with policies for zoning and managing coastal and marine resources to be approved and legally binding on all concerned agencies.

SCOPE OF WORK

**SUB-COMPONENT 1. DATA BASE (8 months, excluding activity 1.8)**

**ACTIVITY 1.1. GIS selection and design of information-gathering techniques (mo. 1-2)**

- a. Evaluate comprehensive GIS needs based on: project goals, existing GIS and data base systems with cooperating agencies/ universities, and capability for compatibility and accessibility with these systems.
- b. Select appropriate system(s) to be used throughout all relevant phases of the project, ensuring that training is part of the acquisition package.
- c. Design the computer based inventory so that it can be expanded and updated through time.
- d. Data manager participates in comprehensive resource-management GIS training course, with an emphasis on coastal zone management. Work with CZM specialist familiar in GIS to design survey techniques that will achieve maximum incorporation into the GIS system.
- e. Selected technician(s) participate in data specific (e.g. socio-economic, ecological) training courses to assist in design of applicable data-gathering (surveys) techniques.

**ACTIVITY 1.2. Remote Sensing (mo. 2-4)**

- a. Concurrent with above, purchase remote sensing images for entire project area and digitize into form appropriate for selected GIS system.
- b. Analyze images for habitats and human-use settlement areas.

**ACTIVITY 1.3. Collecting existing information (mo. 2-4)**

- a. Identify and collect literature from universities (within and outside of Egypt), government agencies and private firms on: species/habitat descriptions for terrestrial coastal flora and fauna, marine organisms, Red Sea oceanography, resource management, development activities, natural and human-use disturbances, environmental impact studies and maps (geological, navigational, historical).
- b. Catalog information into archival and retrievable form and store in a secure, accessible place.

ACTIVITY 1.4. Ecological reconnaissance surveys (mo. 2-4)

- a. Develop methodology appropriate for doing ecologically-based quick reconnaissance surveys using rapid data gathering techniques (e.g. diving, snorkeling, manta tows, hiking). This information is intended to verify and expand the remote sensing imagery, focusing on demarkation and condition of terrestrial, coastal and marine habitats.
- b. Conduct surveys throughout the project area.
- c. Make comparisons with historical data from the literature search (e.g. information since the 1930's on Hurgada's coral reefs have been recorded) with regard to natural and human-induced changes.

ACTIVITY 1.5. Resource-use surveys/interviews (mo. 3-4)

- a. Conduct interviews with resource users including: fishermen, tourists, business people regarding trends in yield, recreation/touristic interests, and visitation, respectively.
- b. Document human-use settlement patterns and impacts on the coast in a form that can be incorporated into an visually-based atlas, written inventory and the CZM plan.

ACTIVITY 1.6. Inventory of Environmental Resources and Uses (mo. 4-5)

- a. Record and produce the information from the surveys in a way that can be published and stored in the computerized data base system that will be used for the Plan and all other components of the project.

ACTIVITY 1.7. Atlas of Environmental Resources and Uses (mo. 6-8)

- a. Produce and publish an atlas (detailed series of maps) incorporating ecological and resource-use surveys to be used as planning and public awareness tool through out the project.
- b. Design the computer based inventory so that it can be expanded and updated through time.
- c. Make survey information available to be incorporated into environmental and social impact analysis studies by development interests.

ACTIVITY 1.8 Ongoing use and development of the DATA BASE (mo. 6-36)

- a. Data will be from components III, IV and V and will be added to the data base as an ongoing monitoring and planning tool.

**SUB-COMPONENT 2: BASE-LINE STUDIES (2-6 months)**

**ACTIVITY 2.1 Survey and Analysis of Marine Pollution (mo. 2-5)**

- a. Survey in detail all potential sources of pollution from oil and gas exploration, production, transport, storage and processing. The survey should include the installations in the Gulf of Suez as these are a potential source of pollution in the study area.
- b. Analyze historic records of oil pollution incidents, their cause and effects on the marine environment; and in the perception of government agencies and the public.
- c. Review activities of the EGPC, EEAA and other agencies in controlling potential oil pollution, including:
  - national contingency planning for the Gulf of Suez and the Red Sea;
  - oil combatting facilities and the capacity to respond;
  - oil reception facilities;
  - inspection and monitoring capacity; and
  - record of enforcement relating to pollution of: high seas, oil terminals and production platforms and from land sources.
- d. Review plans, programs and projects of these agencies to develop and improve capacity to effectively avoid oil pollution affecting the marine environment.
- e. Prepare a risk assessment of oil pollution in the Red Sea using data from above elements.
- f. Identify gaps and weaknesses in the institutional responsibilities, regulatory framework, and facilities required to prevent oil pollution; adapting MEDPOL program in an expanded form for the Red Sea and building links with UNEP Regional Seas Project and the Yemen GEF project.

**ACTIVITY 2.2 Analysis of Development Pressures and Impacts (mo. 2-5)**

- a. Tourism Markets and Growth Patterns: Review the local, national and international trends in beach based and ocean tourism and recreation concentrating on those activities for which Egypt and the Red Sea are particularly suited. Predict the growth of both leisure tourism and activity/specialist tourism based on coral reef and desert environments. Categories and analyze the existing and proposed supply of tourist and recreation facilities in the Hurgada-Safaga area, assess the physical and socio-cultural limits to further development.
- b. Mining: Review information on the existing phosphate and other mining operations in the Eastern mountains. Using information from geological and mineral surveys assess the potential for further mining in the area. Identify the likely physical requirements eg. for roads, ports, housing and water, and assess

the present and possible future impacts from mining operations, processing and transport.

c. Oil and Gas Exploration and Production: Review the present size, structure, operational methods and impacts of the oil industry in the Gulf of Suez. Review information on exploration activities on the coast and under the Red Sea. Predict the likely methods and technologies to be used in exploration and production, including transport of oil and gas products and servicing needs of rigs. Predict the demands for urban and industrial development related to oil and gas production.

d. Fishing: Review data on inshore and deep sea fishing activities in the Egyptian Red Sea. Assess the potential for future development of fishing industry in terms of; markets, international competition, conservation of fish stocks. Assess the likely demand for shore based facilities. Review the fishing methods of local artisanal fisherman and propose changes to more sustainable practices.

e. Urban Development: Review growth of urban settlement in the Red Sea Governorate and the potential and limitations for urban development and economic activity. Review programs for infrastructure development and new urban housing. Predict employment opportunities in tourism and other industries and the likely forms of housing, settlement and urban infrastructure that may be required.

#### ACTIVITY 2.3 Nature-based Tourism (mo. 2-5)

a. Conduct a study evaluating economic and environmental costs analysis investigating a full spectrum (from camping to high quality/low density resorts) of tourism approaches/strategies that would be appropriate for Egypt's Red Sea desert/marine environments, incorporating the following considerations:

- coral-reef biodiversity and protection;
- maintenance of ecological processes;
- economic leakages;
- foreign and local ownership;
- public/private partnerships;
- proactive marketing/tourism management and policies vs. reactive;
- urban impacts and planning;
- cultural sensitivity and change;
- involvement and equity for local communities;
- carrying capacity (ecological, resource, social);
- visitor perceptions, expectations;
- nature-based recreational activities;
- integration with public sector parks;
- private sector park/conservation management; and
- protection vs. sacrifice areas.

- b. Based on the results of the above develop a set of criteria for tourism development that foster creative, profitable, ecological, culturally appropriate tourism for the project area.
- c. Using this criteria, develop tourism models that are based on protection and enhancement of the natural environment rather than alteration.
- d. Examine the models in light of the CZM Strategy and identify possible areas which would be suitable to apply the models. Integrate the needs for on existing or future uses from other coastal resource sectors, e.g. fisheries, oil into the examination process.

ACTIVITY 2.4 Carrying Capacity Analysis (mo. 5-6)

- a. Conduct an analysis of the carrying capacity of the coastal and marine areas of the Red Sea coast that address the concept of carrying capacity from the following perspectives:
  - resources use (sustainability, productivity);
  - social (crowding, enjoyment); and
  - ecological/physical (environmental alteration, degradation, conservation and protection needs).
- b. As part of (a), identify the different aspects of tourism and conservation needs applicable to the Red Sea coast that would benefit from carrying capacity analysis, such as:
  - diving related (eg. number of people a dive site can support without damaging the corals);
  - beach density (eg. number of people/unit on a beach that is suitable to the lifestyles/perception of the primary audience/markets); and
  - habitat vulnerability (eg. fragile habitats, including corals, mangroves, and impacts from people, e.g. trampling, flipper-kicking, anchors).
- c. Based on (a) and (b) above, make an estimate of the levels of people, different areas and activities that can be supported.
- d. Develop solutions of ways to accommodate visitors without negative impacts on the environment, and maintain visitor satisfaction. Examples might include: siting of roads, pathways, different transportation modes, mooring bouys, rules, regulations and zoning.
- e. Incorporate the information from this activity into the design of the marine recreation management and the protected areas component.

ACTIVITY 2.5 Recurrent Funding (mo. 5-7)

- a. Undertake a study of cost recovery and funding and finance options for conservation management and regulatory controls.

b. Review and assess public and private sector recurrent funding options drawing on international experience incorporating the following:

Financial concepts:

- personal and business motivation;
- self-interest;
- stewardship;
- public-private partnerships;
- voluntary sector;
- income generation from the beneficiaries;
- polluter pays principles; and
- income from charges to pay for resource conservation not recovered as taxes to the general treasury.

Funding types:

- Public fees, licenses, fines, taxes, lottery, trust funds, endowments; and
- Private rents, concessions, charges for services, user fees.

Others:

- sponsorship;
- selling advertising space;
- voluntary work;
- management agreements;
- purchasing rights to commercial opportunities;
- taking responsibility for conservation management out of self interest; and
- revolving funds.

c. Conduct studies of Egyptian examples of recurrent funding and public/private partnerships with regard to:

- government commitments to support privatization;
- cultural acceptance of user fees;
- legal and governmental constraints (e.g entrance fees going to the Minister of Finance); and
- practical difficulties, such as the collection of small sums of money, and the difficulties of supervising money exchange points.

d. Identify and select appropriate and practical recurrent cost models, and identify possible opportunities to apply them in the CZM program on the Red Sea. Examples might include:

- charging fishermen through licenses and taxes on landings to pay for policing and enforcement, as required for sustainable fish stock management;
- charging visitors to a park to pay a proportion of supporting and managing the park;



- licensing a private operator/owner to manage to have exclusive rights to benefit from the use of a resource with conditions on conservation management (concession), such as exclusive rights to sales outlets, e.g. restaurants in exchange for providing rights of public access and protection of the resource; and
  - commercially viable conservation projects, e.g. aquarium, management of dive sites.
- e. The above opportunities should cover:
- support public administration and control of user rights (inspection, enforcement);
  - policing of resource management areas (parks, etc.);
  - facility development and maintenance (e.g. recreation facilities, diving, boating);
  - research and information gathering; and
  - education and public awareness.

**SUB-COMPONENT 3: ENVIRONMENT-BASED CZM STRATEGY (2 months)**

**ACTIVITY 3.1 Information Synthesis (mo. 4)**

- a. Using the information from sub-component 1. (Data Base) and sub-component 2. (studies) to determine the following for the project area:
- land ownership/development status;
  - ecological character (marine, terrestrial);
  - coastal geomorphological character;
  - oceanographic character;
  - land use;
  - infrastructure;
  - sources of sewage disposal; and
  - sources of waste and pollution (e.g. ships, oil loading points, potash, fish harbors).

**ACTIVITY 3.2 Assess the Opportunities and Constraints (mo. 4-5)**

- a. Review environmental constraints.
- b. Review development intentions and proposals of all agencies and authorities as they effect the coastal zone.
- c. Assess the vulnerability of marine ecosystems to damage.
- d. Identify potential ecological reserve areas and others for selective multiple use that will be established through Component V (Protected Areas).

ACTIVITY 3.3 Prepare an initial CZM Strategy (mo. 5)

- a. Prepare a broad zoning strategy of the coast to delineate key areas for conservation management and other areas where development may be appropriate.
- b. Draw up initial policies for CZM which will focus and provide a context for the studies and later steps in the CZM plan.
- c. Produce the initial CZM Strategy in both a written and visually oriented form.
- d. Discuss widely with concerned agencies and public and private interests.

SUB-COMPONENT 4: REGULATORY NEEDS ASSESSMENT (5 months)

ACTIVITY 4.1 Legislative Review (mo. 4)

- a. Review existing laws and decrees relating to the development and use of the coast and the marine environment and on the responsibilities of authorities to manage and control activities in these areas:

- coastguards;
- navigation and shipping;
- fishing operations;
- construction, building controls, development control;
- allocation and sale of land;
- plan making, development authorization; procedures including EIAs, by different jurisdictions;
- control and licensing of marine resources including oil and gas;
- control of pollution;
- protection of fauna and flora and habitats; and
- management of parks.

- b. Treaty Obligations Assessment: Review Egypt's obligations under international conventions relating to the control of pollution, conservation of nature, rights of navigation and shipping.

ACTIVITY 4.2 CZM Plan Maps (mo. 5-6)

- a. Define and delimit on maps, the coastline for management purposes:
  - inter-tidal zone;
  - 30m/100m "no construction/development areas";
  - protected areas and marine protection areas;
  - oil exploration/production areas;
  - restricted areas for fishing; and
  - defence restrictions.

ACTIVITY 4.3 Draft CZM Guidelines (mo. 5-7)

a. Draw up draft coastal zone management guidelines according to type of development and jurisdictions, including:

Development Guidelines for:

- hotel and tourist developments;
- marinas, dive centers, boat piers, boat moorings;
- land filling, reclamation and beach enhancement;
- mining for coral and sand;
- underground water abstraction;
- irrigation use of treated water; and
- dredging.

Jurisdiction guidelines:

- TDA;
- Governorate/Municipality;
- Ministry of Defence;
- Ministry of Petroleum; and
- Protected Areas.

b. Draft guidelines for the management of marine resources including:

- coral reefs;
- fishing;
- recreation, boating, diving; and
- shipping & navigation.

c. Draft guidelines to control pollution for:

- control of discharges from land based sources eg. domestic sewage and waste water, industrial and processing effluent including brine from desalinization plants;
- oily wastes from ships, oil production facilities, shore based installations;
- dumping of solid wastes on land, at the coast and in the sea;
- littering;
- use of chemicals as fertilizers, pesticides, to control the growth of marine organisms;
- air pollution from dust;
- noise from plant eg. power generation, port facilities, speed boats; and
- dumping material including construction materials, on the beach or in the ocean.

d. Prepare the guidelines for publication and publish in forms that achieve maximum awareness and provide comprehensive technical advice and instructions.

ACTIVITY 4.4 Draft Rules and Regulations (mo. 6-8)

- a. Prepare draft regulations using the guidelines.
- b. Prepare indicative procedures for authorization of the activities.
- c. Develop a booklet or publication outlining the regulations and guidelines to be used by developers, government agencies and the general public.

SUB-COMPONENT 5. REVIEW INSTITUTIONAL CAPACITY FOR CZM (4 months)

ACTIVITY 5.1 Institutional Capacity Assessment (mo. 4-5)

- a. Analyze the present enforcement procedures and capacity of institutions with responsibilities in these matters including the following;
  - the Governorate;
  - coast guard;
  - police;
  - Municipalities;
  - EEAA;
  - TDA;
  - Min. of Petroleum;
  - Min. of Housing and Development;
  - Min. of Defense;
  - Min. of Marine Affairs;
  - General Organization for Coastal Protection;
  - Port and Lighthouse Authority; and
  - Port Authorities on Red Sea.
- b. Identify the weaknesses of the present structures in relation to the needs for integrated CZM and the proposed guidelines and regulations in sub-component 4.

ACTIVITY 5.2 Propose Institutional Arrangements (mo. 6-7)

- a. Propose institutional arrangements for inspection and enforcement in coastal areas based on the existing jurisdictions.
- b. Propose new operational arrangements and procedures to ensure well coordinated and efficient enforcement and monitoring activities.

**SUB-COMPONENT 6. PREPARE CZM MANAGEMENT PLAN (mo. 7-9)**

**ACTIVITY 6.1 Prepare a Draft CZM Plan (mo. 7-8)**

a. Using the information from the data base (sub-component 3) discussions on the CZM conservation strategy and studies of nature-based tourism, recurrent funding, regulatory needs assessment and development pressures and impacts, prepare a plan which:

- details policies for zones and activities;
- provides guidelines for conservation and development; and
- proposes legal and regulatory frameworks to support CZM.

**ACTIVITY 6.2 Plan Approval Process (mo. 9-10)**

- a. Discuss the draft CZM Plan with concerned Agencies and obtain legal approval for the plan.
- b. Negotiate revised plan and prepare final plan.
- c. Present final plan to GOE and obtain legal approval for the plan.

**IMPLEMENTATION**

The activities of the CZM Plan component require a large team bringing together all the resources available to the project from the TDA, the EEAA, Red Sea Governorate, local Egyptian Consultants, University centers in coastal and marine studies and/or the Institute of Oceanography and Fisheries and international specialists. The component would be lead by the Project Coordinator and the Operations Manager. They would be assisted by the Chief scientist and Chief planner. Core staff members will participate in the CZM plan function prior to taking up responsibility for implementing programs in the 2nd and 3rd years of the project. The Data Manager will be responsible for establishing the GIS system and assisting in setting up the data base. The Financial Manager would undertake financial analysis of activities relating to nature-based tourism, recurrent funding, economic analysis of demand and impacts.

The core team will be supported by the local staff and consultants as shown in Table 3. The list in this table is indicative of the multi-disciplinary requirements of CZM planning. Team members should be drawn from the full time staff of the three participating organizations and should be identified and in post before the project commences. Local consultants may be required for the specialized inputs. Many activities will be on going at the same time. A detailed work plan would be produced at the start of the project.

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**COMPONENT II: ENVIRONMENTAL ASSESSMENT CAPABILITY**

Total time: 12 months; Total foreign costs: \$192,900

OUTPUTS

1. TDAs and EEAA's Environmental Units to be fully staffed with competent professionals from relevant disciplines with knowledge of environmental impacts and solutions and trained in EIA methods and procedures.
2. A "manual" on EIA for tourism projects in coastal environments for use by TDA and developers (potentially useful to other authorities eg. Red Sea Governorate and EEAA).
3. Through the transfer of knowledge and experience from the TDA to the EEAA, the EEAA will have the capability to coordinate EIA operations for tourism developments in coastal and marine environments.

SCOPE OF WORK

ACTIVITY II.1: TDA and EEAA Environmental Units (mo. 1)

- a. Establish a permanent full-time Environmental Unit in TDA and EEAA with the following staff: planner/EIA coordinators, environmental engineers, terrestrial ecologists, and marine ecologists.
- b. Together they will manage and evaluate EIAs required under the TDAs regulations with the assistance of an international expert on EIAs for tourism development.

ACTIVITY II.2: Tourism Regulations Review (mo. 2-3)

- a. Review in detail TDA's rules and regulations for tourism development and conservation of nature requirements and procedures. Review recent EIA reports and agreements reached on mitigation measures.
- b. Tourism-related EIA Issues: Review the environmental impacts of recent developments and activities on the coast and identify the major issues to be addressed in future EIA studies of proposed tourist developments.

ACTIVITY II.3: EIA Manual (mo. 4-6)

- a. Based on activity 2, the environmental unit is to prepare a manual on EIA requirements for tourism projects in the coastal environment. The audience is the

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COMPONENT III: MARINE POLLUTION CONTROL

Total time: 26 months; Total foreign costs: \$545,500

OUTPUTS

1. A coordinated monitoring and inspection service to apply and enforce rules and regulations for CZM in an integrated way.
2. Staff in various concerned agencies skilled in monitoring and enforcement.
3. A technical capacity to protect certain marine habitats from pollution.

SCOPE OF WORK

ACTIVITY III.1: Establish Environmental Monitoring and Enforcement Coordination Unit (mo. 10-11)

- a. Set up a unit under the Chief Pollution Control Officer in the Red Sea office.
- b. Prepare a work plan and work schedules identifying responsibilities and duties of different agencies and their staff.
- c. Establish appropriate management and supervision, reporting arrangements, evaluation review and quality control procedures.

ACTIVITY III.2: Permitting Procedures (mo. 12-15)

- a. Review present procedures under the CZM plan regulations, (regulations of concerned agencies adopted or modified and approved in the plan), using data from the Component I (Sub-component 2: Studies, Sub-component 4: Regulatory Needs Assessment, and Sub-component 5: Review of Institutional Capacity).
- b. Conduct in-depth analysis of how different types of permissions are granted using case studies, such as:
  - to protect the environment during construction and development (according to governmental agency jurisdiction);
  - licenses for resource use, e.g. fishing and oil exploration; and
  - licenses for discharges into the marine and coastal environment.
- c. Propose improvements to procedures which are transparent, participatory, short, easy to follow and enforceable.

d. Prepare manual(s) on agreed procedures to include:

- instructions;
- redesign of application forms;
- notices; and
- model letters for guiding consultation between government agencies and with applicants, etc.

ACTIVITY III.3: Project to Combat Marine Pollution of Coral Habitats (mo. 14-16)

a. Identify priority areas of the coral reefs and other marine ecosystems most under threat, including ranking based on species richness, diversity and endemism. Use information from the inventory of resources (Activity I.1.6) and equipment needs from analysis of marine pollution (Activity I.2.1). Identify the marine pollution and oil combatting methods most appropriate to reduce or protect these habitats.

b. Prepare a project specification to tackle the top priority threats considering both the conservation of marine habitats and the protection of touristic resources.

c. Implement the project using funds allocated for this purpose in the project component.

ACTIVITY III.4: Training (mo. 10-18)

a. An in house training program will be effected for the staff from various agencies associated with the Unit which should cover the following topics:

- CZM rules and regulations;
- monitoring activities;
- marine pollution control technologies;
- permitting procedures; and
- enforcement procedures.

Initial orientation courses for all staff involved and on-the-job-training will be the responsibility of the core team staff particularly the Chief Pollution Control Officer, the International Advisors (when available) and local experts. The training program would be administered by the training manager.

b. Select 4 staff to participate in one month foreign workshop/course including a study tour on marine pollution control.



ACTIVITY III.5: Co-ordination of pollution control, monitoring and enforcement service (mo. 12-36):

- a. Project staff will implement the work plan through coordinating the activities of responsible agencies. The project will provide a control pool of equipment for monitoring purposes (boats, vehicles); disseminate information or coastal zone management guidelines and regulations and assist in management of recreation and tourist use of marine resources in the Hurgada-Safaga area.
- b. Use of improved permitting procedures, examples of successful enforcement, publicity for CZM plan aims and policies should all help to clarify good practice in the minds of developers, government officials and the public generally. The Unit will promote the merits of CZM and the importance of strict adherence to the requirements of environmental and pollution controls.

IMPLEMENTATION

The Monitoring and Enforcement Unit in the Red Sea Office will be managed by the Chief Pollution Control Officer under the direction of the Project Operations Manager. The work of local staff of the various concerned agencies will be directed from the Unit. The International Advisor on marine pollution will advise on the establishment and operation of the Unit. The permitting procedures reform will require one full-time staff member from each of the TDA, EEAA, the Governorate and other permission-granting agencies relating to the coastal and marine environment supported by local consultants (2 mm each) in public administration and law.

Local staff from concerned agencies (i.e. the Governorate, the municipality, the EEAA, the TDA and others) will be attached to the office to facilitate in the implementation of CZM guidelines, regulations, permitting procedures and pollution control within the project area. The unit will work closely with the staff of the Marine Recreation Management Program (Component IV) to monitor activities which effect the protection and management of the marine environment for tourists. The unit will share support form the pool of office space, administrative support and equipment available to the Red Sea Office eg. vehicles, boats, video and photographic equipment etc. It is the function of the Operations Manager to ensure effective use of logistic support to the Monitoring and Control Unit. The unit should coordinate pollution monitoring and laboratory testing facilities to the appropriate local agencies.

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**COMPONENT IV: CORAL REEF RECREATION MANAGEMENT**

Total time: 26 months; Total foreign costs: \$974,800

OUTPUTS

1. Effective recreation management of the coastal and marine areas between Hurgada and Safaga.
2. Staff with experience of marine recreation management.

SCOPE OF WORK

ACTIVITY IV.1: Reef Recreation Management Unit (mo. 10-12)

- a. Set up a Unit in the Red Sea Office to coordinate implementation of the above action plan. Provide the unit with logistical support from the project pool eg. vehicles, boats, and other equipment necessary to do the work.
- b. Establish a pool of staff from the concerned agencies to implement works and under take management functions.
- c. Prepare work plan and budget for project year 2.
- d. Revise and prepare work plan and budget for project year 3.

ACTIVITY IV.2: Reef Recreation Management Action Plans and Program (mo. 10-14)

- a. Assess current recreation activities and facilities for impacts on environment, visitor experience, safety, involved management entities.
- b. Assess the adequacy of facilities in terms of visitor needs and experience, and define priority needs.
- c. Develop detailed recreation management and resource conservation programs from policies developed in the CZM plan including a range of recreation facilities and uses that protect the biodiversity of the reef ecosystems.
- d. Prepare a program of works including defining management solutions and designing facilities, with costing and phasing.

ACTIVITY IV.3: Implement Reef Recreational Management Action Plans (mo. 14-36)

- a. Negotiate management agreements with developers and groups of hotel owners, groups of dive center operators/owners, oil industry and the local municipalities to provide comprehensive management of conservation/recreation sites and areas near the coast.
- b. Adopt methods of cost recovery and user fees on recurrent funding (as identified in the Component I, Sub-component 2: Activity 2.5) on recurrent funding both as experiments to test the practicality of methods and as a potential source of long-term funding.
- c. Coordinate with the Monitoring and Enforcement Unit (see Component IV) to enforce recreation and marine management regulations and guidelines.

ACTIVITY IV.4: Training (mo. 10-30)

- a. Develop a training program for field staff consisting of short courses in association with Component V (Protected Areas Establishment) and Component III (Pollution Control) based on experience at Ras Mohammed NP and else where in: design and construction, maintenance, visitor management techniques, enforcement required to implement the program.
- b. Participate in a 2 week international study tour for Recreation and Park Managers to study practical issues in the management of touristic and coastal recreation areas.

ACTIVITY IV.5: Public Awareness

Develop ongoing public awareness and training materials to educate the public about environmentally sound recreation management with some natural history and regulatory information.

IMPLEMENTATION

The Reef Recreation Management Program will be managed by the Recreation Manager under the direction of the Project Operations Manager. Advice will be available from the International Advisors and the Protected Areas Program Manager. The Recreation Management Action Plan will be prepared by staff who worked on the CZM plan. Staff to be involved should include: resource managers, land use planners, tourism planners, marine park planners, recreation planners and designers and civil engineers. The work will be undertaken by the local staff of concerned agencies (eg. the coast guards), Governorate, and through the private sector under agreements and licenses.

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**COMPONENT V: MARINE PROTECTED AREA ESTABLISHMENT**

Total time: 30 months; Total foreign costs: \$1,237,900

**OUTPUTS**

1. Detailed inventories of the flora, fauna and resource uses for the proposed project areas that will be presented both in a written-listing format and an atlas/planning format.
2. Selection criteria and suitability matrices for ranking proposed protected areas based on natural resource values, human-use values and administrative considerations.
3. Legal and operational park(s) and reserves.
4. Initial protected area office in Hurgada and a small office near the sites later in the project.
5. Management plans for each protected area.
6. Operational work plans outlining staffing, timing facilities, equipment and public awareness needs.
7. Park(s) and or reserve facilities such as visitor centers, warden housing, camping areas or mooring bouys.
8. Training program for the rangers addressing recreation management, public awareness, park administration, planning etc., incorporating both on-site training (and experience from Ras Mohammed) and study tours for example elsewhere.

**SCOPE OF WORK**

**ACTIVITY V.1: Detailed Inventories (mo. 6-24)**

- a. Based on the proposed protected area sites identified in the CZM Sub-Component, Activity 2.2 , conduct detailed inventories of sites identifying the flora and fauna, as well as any exiting resource uses (e.g. fishing) in the proposed protected areas.
- b. Ensure that in designing the inventories that the methodology (ecological transects and interviews) can be integrated into the project's Data Base (identified in the CZM sub-component 1) and be incorporated into the GIS system(s).

- c. Coordinate and integrate the inventories with the formal "geological land survey" processes required for protected area establishment in Egypt.
- d. Prepare a detailed map/atlas and written inventories indicating the key species and resource uses of the proposed sites.

ACTIVITY V.2: Selection Criteria and Suitability Matrix (mo. 6-7)

a. Develop a site evaluation matrix for the final selection of sites if more than one area was identified in the CZM plan Sub-Component 2, CZM Strategy), and delineate probable zones within the protected area(s). Some examples of criteria include:

- natural resource values (representation, biological, ecosystem structure, species richness, endemism, diversity, global significance);
- human-use values (nature-based tourism, recreational, commercial, aesthetic, research, cultural);
- administrative considerations (existing programs, management capability, access, enforcement, politics, economic); and
- potential activity impacts.

Each of these criteria can be ranked in terms of high, medium, or low value, including exceptional comments, based on biodiversity indices and global significance.

b. Use the information from the detailed inventories to complete the suitability matrices and make final site selection, zoning and timing decisions with regard to establishing the protected area(s).

ACTIVITY V.3: Legal Boundary Establishment (mo. 8-9)

- a. Based on the information from the inventories and the suitability matrices, delineate the park boundaries (marine and terrestrial) based on ecological conditions and resulting management objectives.
- b. Have these proposed boundaries cleared with other government agencies.
- c. Have the park declared by law and have a Prime-Ministerial decreed issued for the protected areas.

ACTIVITY V.4: Establish Protected Areas Unit and Work Program (mo. 10-12)

- a. Initiate the administration and management of the site(s) and recruit appropriate staff.
- b. Development of an operational work plan outlining staffing, timing, facilities, equipment purchases, interpretation and enforcement needs. The work plan is to cover the 2nd and 3rd year of the project; and to be revised at the end of year 2.

ACTIVITY V.5: Management Plans (mo. 10-14)

a. Expanding on the zoning considerations prepared above in activity 2, prepare a draft management plan outlining park management objectives, which respects and incorporates other public and private sector interests as appropriate. Incorporate information from the following related activities also developed through the project into the plan considerations:

- Nature-Based Tourism Study (CZM sub-component 2. Activity 2.3;
- Recurrent Funding Mechanisms (CZM sub-component 3. Activity 2.5);
- Marine Recreation Area Management (Component IV); and
- Pollution Control (Component III).

ACTIVITY V.6: Facility Construction and Operation (mo. 15-36)

a. Initiate the construction of key facilities (visitor center, offices, warden housing, camping areas, etc.), according to the time tables outlined above. initial management, interpretation and enforcement needs.

ACTIVITY V.7: Training (mo. 12-36)

a. Implement a training program, utilizing existing experience from Ras Mohammed and other marine park areas such as the Great Barrier Reef Marine Park, which is also zoning oriented to incorporate conservation, tourism, fishing and oil industry interests. This activity will be ongoing throughout all phases of the project, according to different training needs and time tables.

b. Participate in a 2 week international study for Park planners and Recreation Area Managers to study practical issues in the management of marine and terrestrial parks.

ACTIVITY V.8: Public Awareness (mo. 12-36)

a. Develop ongoing public awareness and environmental education activities to facilitate communication about the evolving park process as the project proceeds, in terms. of communication with government agencies, interested users, exhibit design, etc.

IMPLEMENTATION

The protected areas manager should be appointed by month 6 so as to participate in the detailed definition of the protected areas and multiple use zones identified in the CZM strategy (sub component 3 of the CZM plan), and the preparation of documentation for the establishment of protected areas in law.

A small team of ecologists and marine scientists (48 mm) would be commissioned to undertake surveys and research of the ecological conditions and habitats. An administrative office for the Red Sea Protected areas should be established by the end of the first year in the projects Red Sea office. The staff will consist of the

Protected Areas Manager, the Chief Scientist and Chief Planner (part-time), other core staff as required and supported by at least 4 warden/rangers. The protected areas team will prepare a 2 year work program and management plans for the protected areas. The Unit will need to establish a field office with residential accommodation, in the protected areas as a base for studies and implementation of civil works, resource management and visitor programs.

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**COMPONENT VI: CZM MONITORING AND EVALUATION**

Total time: 8 months; Total costs: \$137,500

**OUTPUTS**

1. Papers and reports reviewing the achievements of CZM program.
2. Revised CZM Plan/annex to the plan, approved by the TDA, EEAA, and other concerned Agencies.
3. Institutional responsibilities clearly defined and arrangements for CZM in the Red Sea in place.
4. Allocation of equipment from the project to appropriate agencies according to duties and responsibilities for CZM activities.
5. Participation in conferences and workshops on the experience and lessons of the project.

**SCOPE OF WORK**

**ACTIVITY VI.1: CZM Plan and Mid-term Program Review (mo. 18-20)**

- a. Review the CZM plan and experience so far in implementing policies and management strategies using:
  - the project files (for historical perspectives);
  - cost data on costs and quantitative data on the number of successful enforcement prosecutions, dive site bouys laid, leaflets issued etc.;
  - qualitative studies including questionnaires, surveys of attitudes and perceptions of operators and visitor/consumers; and
  - discussions with government officials and project operational staff.
- b. Identify gaps in information and policies that should be filled and identify how further CZM planning and research may be funded.

**ACTIVITY VI.2: CZM Plan and Final Program Review (mo. 30-32)**

- a. Again review the CZM plan and experience in implementing policies and management strategies using:
  - the project files (for historical perspectives);
  - cost data on costs and quantitative data on the number of successful enforcement prosecutions, dive site bouys laid, leaflets issued etc.;



- qualitative studies including questionnaires, surveys of attitudes and perceptions of operators and visitor/consumers; and
- discussions with government officials and project operational staff.

b. Identify gaps in information and policies that should be filled and identify how further CZM planning and research may be funded for sustainability of the project.

ACTIVITY VI.3: Implementation Evaluation (mo. 30-32)

- a. Evaluate experience of implementing CZM regulations and guidelines.
- b. Review the strengths and weaknesses of institutions involved in implementing the CZM Program.
- c. Review the organizational arrangements for CZM.
- d. Evaluate demonstration projects and models for nature-based tourism, recurrent funding, recreation and multi-use management areas and protected area management.

ACTIVITY VI.4: Institutional Roles and Structures (mo. 30-36)

- a. Recommend improvements, where necessary, regarding powers, responsibilities and the organizational mechanisms for CZM after the end of the project.
- b. Set up procedures and administrative arrangements for a coordinated monitoring and enforcement regime.
- c. Prepare and revise guidelines and instruction manuals for staff, and information handouts for the public on arrangements for CZM regulation and control procedures.
- d. Review the future arrangements for recreation management to ensure the Recreation Management Unit is fully integrated into the Red Sea Governorate, or other suitable organizations. Also ensure transfer of sources of income generated through the management of recreation and visitor facilities to support the activities of the Unit following the project.
- e. Review the arrangements for protected areas along the Red Sea to ensure adequate funding for further development and management of these areas according to the management plans and work programs prepared under the project.

ACTIVITY VI.5: Achievements (mo. 32-36)

- a. Record and publicize through manuals and other publications the achievements and the lessons learned through the project.
- b. Integrate project lessons and achievements into the GEF Regional Red Sea Framework component.

IMPLEMENTATION

The review will be undertaken by the core team under the direction of the Project Coordinator. The International Advisors will provide independent review advice. Negotiations between the agencies and organizations involved may take time to ensure that post project arrangements are agreed and operating successfully.

### TABLE 1: SUMMARY TIME TABLE

MONTHS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
I.	CZM Plan																																				
	1. Database																																				
	2. Studies																																				
	3. Strategy																																				
	4. Regulatory Assessment																																				
	5. Institutional Capacity																																				
	6. CZM Plan																																				
II.	Environmental Impact Analysis																																				
III.	Pollution Control																																				
IV.	Recreation Management																																				
V.	Protected Area Management																																				
VI.	CZM Program Review																																				

**TABLE 2: COMPONENT 1 (C2M PLAN) TIME TABLE**

[illegible]

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TABLE 3: COMPONENT I (CZM)-SUBCOMPONENTS: LOCAL STAFF & CONSULTANTS MAN MONTHS BY DISCIPLINE

Sub-components → Disciplines ↓	1	2	3	4	5	6	Total man month
Marine Biol.	10	2	3	3		1	19
Terrestrial Ecology	10	1	3	2			16
Resource Mngt.	3	4	2	2	1	2	14
Fisheries	1	2		1			4
Coastal Geomorphology	4	1	1	2			8
Oceanography	4	1	1	2			8
Marine Pollution	2	6		4	1	1	14
Land Use Planning	2	4	4	4	1	6	21
Eco. Dvlp. Planning		3				1	4
Engineering	1	2		2		1	6
Protected Area Planning		4	4	2	1	2	13
Sociol./Anthropology	1	2	1			1	5
Tourism Planning	1	4	1	1	1	2	10
Tourism Marketing	1	2					3
Recreation Planning		4		2		2	8
Environmental Law		1		9	1	1	12
Environmental Econ.	1	4	1	2	1	1	10
Finance		3			1	2	6
Public/Insttl. Mgmt.				2	6	1	9
Computer Techn.	10						10
Remote Sensing	4						4
TOTAL	55	50	20	40	15	25	205

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**TABLE 4: CORE TEAM - MAN-MONTH TO COMPONENTS**

STAFF - HUMAN RESOURCES	PROJECT MANAGEMENT	I	II	III	IV	V	VI	TOTAL
<b>CORE TEAM</b>								
Project Co-ordinator (PC)	14	6	3	3	3	3	4	36
Project Operations Mgr. (OM)	3	6	-	8	8	8	3	36
Chief Planner	-	10	1	6	9	8	2	36
Chief Scientist	-	9	1	8	8	8	2	36
Data-base Manager	-	9	3	8	6	6	4	36
Financial Manager	18	5	-	3	3	3	4	36
PR & Education Officer	4	5	1	2	10	10	4	36
Training & Administ. Officer	18	3	3	3	4	4	1	36
Chief Pollution Control Officer	-	-	-	25	-	-	2	27
	-	1	-	-	-	28	1	30
Protected Areas Manager	-	3	-	-	26	-	1	30
Recreation Areas Manager								
	57	57	12	66	77	78	28	375

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TABLE 5: CORE TEAM MM/OFFICE LOCATION

STAFF - HUMAN RESOURCES	MAN MONTHS
CORE TEAM	
Project Co-ordinator (PC)	36
Project Operations Mgr. (OM)	36
<u>In Cairo</u>	
Chief Planner <sup>1</sup>	36
Chief Scientist <sup>1</sup>	36
Data-base Manager	36
Financial Manager	36
PR & Education Officer	36
Training & Administrative Officer	36
<u>In Red Sea Office</u>	
Chief Pollution Control Officer (III)	27 <sup>2</sup>
Chief Planner <sup>1</sup>	-
Chief Scientist <sup>1</sup>	-
Protected Areas Mng. (V)	30 <sup>3</sup>
Recreation Areas Mng. (IV)	30 <sup>3</sup>

- 1/ Same persons moving between Red Sea and Cairo Offices.
- 2/ Appointed to Red Sea Office 9 months into the project for training and to help establish Red Sea Office.
- 3/ Appointed after 6 months to participate in CZM Plan (I) and establish implementation programs.

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**TABLE 6: CORE TEAM SALARY COSTS**

STAFF - HUMAN RESOURCES	MONTHS DURING PROJECT	LOCAL SALARIES /MONTH (LE)	TOTAL LOCAL COSTS (LE)	LOCAL SALARIES /MONTH IN \$	SALARY SUPPLEM. /MONTH (\$)	TOTAL SALARIES /MONTH IN \$
<b>CORE TEAM</b>						
Project Co-ordinator (PC)	36	1500	54,000	455	1000	1455
Project Operations Mgr. (OM)	36	1500	54,000	455	1000	1455
Chief Planner	36	1000	36,000	300	750	1050
Chief Scientist	36	1000	36,000	300	750	1050
Chief Pollution Control Officer	27	1000	27,000	300	750	1050
Protected Areas Manager	30	1000	30,000	300	750	1050
Recreation Areas Manager	30	1000	30,000	300	750	1050
Data-base Manager	36	800	28,800	245	500	745
Financial Manager	36	800	28,800	245	500	745
PR & Education Officer	36	800	28,800	245	500	745
Training Administrative Officer	36	800	28,800	245	500	745



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**TABLE 7: INTERNATIONAL CONSULTANT MAN-MONTHS/COSTS TO COMPONENTS**

INTERNAL ADVISORS	MM/ COMPONENT	MM TOTAL	FEE/ MM	DSA TRAVEL/ MM	ST/MM	TOTAL/ FOREIGN MM
CZM Planner/Manager	2 (I), 3 (IV), 1 (V), 1 (VI)	7	9,000	6,000	15,000	105,000
Marine Pollution Advisor	2 (I), 4 (III), 1 (VI), 1 (IV)	7	9,000	6,000	15,000	105,000
Marine Park Advisor	2 (I), 3 (V), 1 (IV), 1 (VI)	7	9,000	6,000	15,000	105,000

INTERNATIONAL EXPERTS (in the following fields:)	MAN/MONTHS (MM)	FEES/ MM	DSA + TRAVEL/MM	TOTAL/ MM	TOTAL IN ,000
<u>CZM Plan (I)</u>					
GIS Systems	2 MM	9,000	6,000	15,000	30 K
Marine pollution (ecology/oceanography)	3 MM	9,000	6,000	15,000	45 K
Oil pollution control	1 MM	9,000	6,000	15,000	15 K
Risk assessment	1 MM	9,000	6,000	15,000	15 K
Nature-based tourism	2 MM	9,000	6,000	15,000	30 K
Conservation funding	2 MM	9,000	6,000	15,000	30 K
Environmental law	3 MM	9,000	6,000	15,000	45 K
Environmental institutions	2 MM	9,000	6,000	15,000	30 K
Environmental economics	<u>2 MM</u>	9,000	6,000	15,000	<u>30 K</u>
Sub-total	18 MM				270 K
<u>EIA (II)</u>					
EIA Expert	6 MM	9,000	6,000	15,000	90 K
<u>Pollution Control (III)</u>					
Oil Pollution	1 MM	9,000	6,000	15,000	15 K
<u>Review (VI)</u>					
Environmental Law	1 MM	9,000	6,000	15,000	15 K
Inst. Expert	<u>1 MM</u>	9,000	6,000	15,000	<u>15 K</u>
Sub-total	2 MM				30 K

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TABLE 8: FOREIGN COSTS SUMMARY (USD)

PROJECT COMPONENT	Fees	Travel	Equipment	Consumables	Training	Public Awareness	Civil Works	TOTAL	%
Calro Office	40,000	11,400	245,000	70,000	-	47,500	-	413,900	8.7
Red Sea	-	-	284,000	80,000	-	-	-	364,000	7.7
CZM (I)	400,000	61,600	-	-	96,500	70,000	-	628,100	13.2
EIA (II)	97,500	17,400	-	-	63,000	15,000	-	192,900	4.1
PC (III)	125,000	18,900	15,000	-	56,600	30,000	300,000	545,500	11.5
RAM (IV)	115,000	18,800	-	-	51,000	40,000	750,000	974,800	20.5
PA (V)	115,000	30,400	191,000	60,000	51,500	40,000	750,000	1,237,900	26.1
Review (VI)	95,000	12,500	-	-	-	30,000	-	137,500	2.9
Scientific Advisory Committee (SAC)	60,000	-	-	-	-	-	-	60,000	1.3
Network	20,000	-	-	-	-	-	-	20,000	0.4
Regional Seas Framework (RSF)	50,000	-	-	-	-	-	-	50,000	1.1
Contingencies								125,400	2.6
Total	1,117,500	171,000	735,000	210,000	318,600	272,500	1,800,000	4,750,000	100
%	23.5	3.6	15.5	4.4	6.7	5.7	37.9	100	

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**TABLE 9: LOCAL COST SUMMARY (USD)**

PROJECT COMPONENT	Fees	Accommodation	Equipment	Consumables	Total	%
Cairo Office	70,000	240,000	30,000	50,000	390,000	39.80
Red Sea	58,000	100,000	30,000	60,000	248,000	25.30
CZM (I)	94,000	-	-	-	94,000	9.60
EIA (II)	21,000	-	-	-	21,000	2.10
PC (III)	48,000	-	-	-	48,000	4.90
RAM (IV)	58,000	-	-	-	58,000	5.90
PA (V)	82,000	-	-	26,000	108,000	11.00
Review (VI)	14,000	-	-	-	14,000	1.40
<b>TOTAL</b>	<b>445,000</b>	<b>340,000</b>	<b>60,000</b>	<b>136,000</b>	<b>981,000</b>	<b>100</b>

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**TABLE 10: PROPOSED PROJECT DISBURSEMENT**

PROJECT COMPONENT	FIRST YEAR 1993	SECOND YEAR 1994	THIRD YEAR 1995	Total
Cairo Office	332	46	36	414
Red Sea Office	304	30	30	364
CZM (I)	628	--	--	628
EIA (II)	193	--	--	193
PC (III)	55	250	240	545
RAM (IV)	30	455	490	975
PA (V)	35	678	525	1,238
Review (VI)	--	--	138	138
Scientific Advisory Committee (SAC)	20	20	20	60
Conservation Network	--	10	10	20
Regional Seas Framework (RSF)	10	20	20	50
Contingencies	--	50	75	125
Total	1,607	1,559	1,584	4,750

