

GEF ID 72

Title Gulf of Aqaba Environmental Action Plan

World Bank PMIS 41

World Bank PO 5237

Duration (Yrs) 3

Impl. Agency World Bank

Project Status Project Completion

Country Jordan Add/Delete

Focal Area International Waters

Project Type Full Size Project

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Global  
List

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Add/Delete

OP List

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Expected Grant Signing

Project Review Meeting

Grant Signing Date

Expected Pipeline Entry

Expected Start Date

Tech. Clearance Date

Start Date 06/27/1996

Pipeline Entry

Proposed Closing 06/30/2002

Re-Pipeline Entry

Actual Closing 12/01/1999

Expected Entry into WP

Financial Closing

Entry into Work Program 10/01/1995

ICR Date 12/24/2002

Expected CEO Endorsement

Cancellation Date

CEO Endorsement 05/14/1996

Resubmitted

PIF Review

Project Review

Review GEF-4

Reports

Close

**PROPOSAL FOR REVIEW**

**Project Title:** Jordan: Gulf of Aqaba Environmental Action Plan

**GEF Focal Area:** International Waters

**Country Eligibility:** Convention Ratified November 1993

**Total Project Costs:** US \$ 12,67 million

**GEF Financing:** US \$ 2.70 million

**Country Contribution:** US \$ 2.20 million

**Cofinancing/Parallel Financing:** Upper Gulf of Aqaba Oil Spill Contingency Plan  
(EU/Japan): US \$ 1.90 million - EU  
US \$ 5.60 million - Japan  
Egypt Sinai National Parks/Regional Aspects  
(EU): US \$ 32,500 - EU  
Jordan Marine Protected Area (USAID):  
US \$240,000 - USAID

**GEF Implementing Agency:** World Bank

**Local Counterpart Agencies:** Ministry of Planning/Aqaba Regional Authority

**Estimated Approval Date:** April 1996

**Project Duration:** 3 years

**GEF Preparation Costs: --** GEF PPA US \$ 295,000

## JORDAN GULF OF AQABA ENVIRONMENTAL ACTION PLAN

### I. BACKGROUND

1. **Overview.** The Red Sea, which contains globally unique ecosystems and biodiversity, is being seriously degraded as a result of pollution, physical destruction and unsustainable exploitation of marine and coastal natural resources. The primary environmental "hot spot" of the region, the Gulf of Aqaba, is threatened by significant recent and planned developments at Aqaba that are leading to transboundary degradation of Red Sea ecosystems (paras. 11-19). As a result of its semi-enclosed nature, the Gulf of Aqaba is particularly susceptible to marine pollution and ecosystem degradation. Development and implementation of a comprehensive strategy and plan for environmental protection of the entire Red Sea will require a considerable gestation period. A framework for collaboration and cooperation among the littoral nations must be established, one which would demonstrate its replicability for integrated management and development of Red Sea natural resources appropriate for the region.
2. **Links with Regional Strategic Work.** The proposed project would address priority threats to the international waters of the Gulf of Aqaba and Red Sea in a comprehensive manner. It would facilitate development of an approach to halt and prevent marine pollution, and protect globally important coral reefs throughout the Red Sea area. As the primary "hot spot" activity it represents, this project is being prepared in parallel to the recently GEF-approved Strategic Action Programme for the Red Sea and Gulf of Aden Region, which supports the Programme on the Environment of the Red Sea and Gulf of Aden (PERSGA). The proposed project would also contribute to operationalizing the Regional Convention for the Conservation of the Red Sea and the Gulf of Aden Environment (Jeddah Convention).
3. The project complements ongoing and planned GEF projects which address broad development impacts on the Red Sea. These include: a) *Egypt Red Sea Coastal Zone Management*, focusing primarily on tourism impacts, and b) *Yemen Marine Ecosystem Protection*, targeted primarily at environmental monitoring and mitigation of oil-based pollution activities. Other current efforts designed to facilitate regional environmental cooperation between Red Sea littoral states at a policy level include UNEP's ongoing Regional Seas Programme and the recent signing by Jordan of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). In addition, coordination with the Bank's program in the region -- including the Egypt Private Sector Tourism project, the proposed Jordan Second Tourism project, the proposed Jordan Aqaba Thermal Power II Project and the Rift Valley exercise -- is ongoing. The proposed Aqaba program would provide an important sub-regional activity and an essential complement to ongoing activities, catalyzing the development of a more comprehensive and coherent system of resource management and ecosystem protection for the entire Red Sea region.
4. **National and Regional Actions in the Gulf.** In November 1991, the Jordanian Government requested that a proposal for a regional Gulf of Aqaba Environmental Action Plan be submitted to the GEF participants. The Jordanian Government asked the Bank to facilitate the preparation of the proposed Aqaba program. Subsequently, a World Bank mission assisted the Government in preparing a framework for an environmental action plan for the Jordanian portion of the Gulf of Aqaba. In May 1992, the Government of Jordan presented the framework for a proposed Environmental Action Plan to the Multilateral Working Group on Environment of the Middle East Peace Process (WGE), in Tokyo. In October 1993, the Government of Jordan, with GEF and World Bank assistance, prepared the "Gulf of Aqaba Environmental Action Plan, Jordan" (GAEAP). The plan was presented at the 4th meeting of the WGE in Cairo, in November 1993.

## **JORDAN GULF OF AQABA ENVIRONMENTAL ACTION PLAN**

<b>Focal Areas:</b>	International Waters
<b>Country Eligibility:</b>	Signed MARPOL, December 1994 Ratified Biodiversity Convention, November 1993 National Environmental Strategy Prepared
<b>Total Project Cost:</b>	US \$12.67 million
<b>Proposed GEF Contribution:</b>	US \$2.70 million
<b>Government Co-financing:</b>	US \$2.20 million
<b>Associated Projects &amp; Co-financing:</b>	Upper Gulf of Aqaba Oil Spill Contingency Plan (EU/Japan):       US \$1.90 million - EU US \$5.60 million - Japan Egypt Sinai National Parks/Regional Aspects (EU):               US \$32,500 - EU Jordan Marine Protected Area (USAID): US \$240,000 - USAID
<b>GEF Implementing Agency:</b>	World Bank
<b>Local Counterpart Agencies:</b>	Ministry of Planning / Aqaba Regional Authority
<b>Estimated Starting Date:</b>	April 1996
<b>Project Duration:</b>	3 years
<b>GEF Preparation Costs:</b>	GEF PPA US \$295,000

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5. The GAEAP proposes 23 actions (investments and technical assistance) in six categories of activity, namely: legal and regulatory framework; institutional strengthening; infrastructure investments; protected area management; monitoring and applied research; and public awareness and environmental education. A number of crucial transboundary "priority 1" actions would be undertaken under the first phase of the proposed GEF project. The highest priority action is setting up the legal and regulatory framework for implementation of curative and preventive environmental measures addressing transboundary water issues.

6. During 1994 and 1995, Egypt, Israel and Jordan have taken a first step toward developing a regional approach to Gulf of Aqaba environmental protection through the preparation of an Upper Gulf of Aqaba Oil Spill Contingency Plan funded by the European Union (EU) and the Government of Japan. Under this plan, currently under implementation, emergency response centers in each of the three nations will coordinate in the event of a spill requiring a regional response. Moreover, components of a Jordanian Marine Protected Area strategy are being developed with USAID and US National Park Service funding. In parallel, Egypt has recently extended the area along the Egyptian coastline of the Gulf of Aqaba under protected status, an important step toward ensuring the protection of the coast's biodiversity while allowing for environmentally sustainable tourism development.

7. Jordan's commitment to pursuing a regional approach to Gulf of Aqaba environmental protection was further advanced by the signing of a peace treaty with Israel, in October 1994. Under Annex IV of that treaty, the two governments agreed to cooperate in developing legislative, regulatory, planning and emergency response measures to protect key areas including the Gulf of Aqaba. As a specific outgrowth of the peace treaty with Israel, Jordan has advanced a Binational Red Sea Marine Park Concept, involving cooperation between the two nations in developing and implementing a marine park management strategy for the upper Gulf of Aqaba. Building upon this regional model, the Government of Jordan has recently responded favorably to the Government of Egypt's offer of technical assistance in

marine park management, to be provided by Ras Mohammed National Park, under the auspices of the Egyptian Environmental Affairs Agency. Jordan's commitment to tackling the Gulf's marine pollution problems is further indicated by signature, and expected ratification in 1995, of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).

8. **Geographic Characteristics and Global Biological Significance.** The Gulf of Aqaba, one of the two northward extensions of the Red Sea, is bounded by Egypt, Israel, Jordan and Saudi Arabia. The Gulf of Aqaba is 180 km long, 14-26 km wide, has an average depth of 800 m, and is connected to the Red Sea at the narrow (6 km) Strait of Tiran. Atypical oceanographic characteristics of this semi-enclosed portion of the Red Sea have resulted in the evolution of biological diversity that is unique to the Gulf of Aqaba, making the area a global priority for conservation. Many endemic species occur among the Gulf of Aqaba's coral reef communities. The Gulf's coral diversity, which includes over 192 scleractinian (reef-building corals) and 120 soft coral species, is higher than in other parts of the Red Sea. Twelve percent (80 known species) of mollusks and a similar proportion of echinodermata occurring in the Gulf may be endemic. Fifteen percent of the Gulf's amphipod species have only been recorded in the Gulf of Aqaba and adjacent neighboring Red Sea areas. Of the 268 species of fish that have been recorded, seven are recognized as endemic.

9. **Environmental Threats and Priorities.** The same semi-enclosed characteristics of the Gulf of Aqaba that have led to its rich and unique biodiversity also results in limited water exchange with the Red Sea and Indian Ocean. Based on preliminary observations made in the Strait of Tiran, the residence time for shallow water is one to two years, while the lower mass of water experiences a three-year average residence time. The Gulf's relatively small size, combined with the low rate of water circulation and renewal, reduces the potential for dispersion of oil and other water pollutants. The problem of confinement and concentration of pollutants is particularly acute in the Jordanian portion of the Gulf of Aqaba, whose relatively shallow waters lie at the Gulf's northern tip, furthest from the narrow strait of Tiran that separate the Gulf from the Red Sea.

10. Until the 1960s, the Gulf of Aqaba was relatively unaffected by development, with a coastline only sparsely populated by Bedouins. Since then, the Gulf has become a strategic international resource, with major industrial facilities, shipping activities and rapidly expanding tourism. These developments have already caused severe disturbance and damage to the Gulf's coastal and marine ecosystems. Phosphate deposition from ship loading operations, frequent small to moderate oil spills, sewage discharges, and thermal pollution from coastal industries have severely eroded coral life, particularly in the Gulf's intensively developed northern reaches. Transboundary movement of pollutants is a priority issue. Moreover, poorly regulated resort development and over-fishing have transformed coastal and marine ecology in many areas, causing particular devastation to near-shore reefs in a number of popular diving areas.

11. **Focus on Aqaba - the Red Sea Primary Environmental Hot Spot.** Jordan's Gulf coastline has been modified by a variety of developments which accompanied the nation's economic growth from the mid-1970s to the mid-1980s. The Port of Aqaba gives Jordan its only outlet to the Red Sea and is of crucial importance to the Jordanian economy. Since the 1970s, the port has changed from a modest complex servicing Jordan's local needs to a regional transportation hub through which diversified cargo has moved at a rate of 11.6 to 18.7 million tons per year since 1989. The increase in shipping activities through Aqaba over the past decade has made it, in times of political stability, the busiest Red Sea port after Suez in Egypt and Jeddah in Saudi Arabia.

12. Along Jordan's northern Gulf shoreline lies the city of Aqaba, whose population has grown from 10,000 in 1972 to 65,000 today. Aqaba's existing hotel district has developed along a half-kilometer

stretch of sandy beach front in this area, to the immediate north of Aqaba's main port area where 3.6 to 6.4 million tons of phosphate rock have been exported annually since 1989. South of the main port are specialized berths for rice, cement livestock, and containers, as well as a ferry terminal serving some 1.26 million passengers and 87,000 motor vehicles per year. South of the ferry terminal begins Jordan's only stretch of undeveloped shoreline - a 6-kilometer expanse that the Government has slated for hotel and resort development. Between this proposed "South Coast Tourism Zone" and the Saudi Arabian border lies Jordan's South Coast Industrial Zone, featuring a 260 megawatt oil-fired power station (soon to be doubled in capacity), major fertilizer manufacturing and storage facilities, storage tanks for chemical solvents and vegetable oil, and a petroleum export jetty. Ready access to large quantities of cooling water, unavailable elsewhere in Jordan, is a major inducement to industrial development in this zone.

13. The rapid pace and intensive scale of development along Jordan's Gulf of Aqaba coastline are reflective of broader threats to Gulf ecosystem stability that call urgently for regional and sub-regional solutions. Pollution prevention and resource conservation measures are urgently needed to prevent irreversible loss to the biodiversity and overall ecosystem functioning of the Gulf of Aqaba and Red Sea environments. However, since port and industrial activities along Jordan's Gulf coastline which impact international waters far exceed the scale of such activities in other Gulf-bordering states, it is both appropriate and necessary that Jordan take this vital first step toward facilitating an overall marine pollution action plan for the Gulf of Aqaba.

14. **International Waters Impacts.** The enclosed nature of the environment of the Gulf of Aqaba, which has given rise to its unique biodiversity, causes the sea to be particularly susceptible to pollution. Marine pollution sources include oil spills originating from both shipping and road haulage activities, discarded solid waste, and spills of minerals (e.g., phosphate, sulfur) and of organic matter (such as grains) resulting from bulk cargo loading operations.

15. With intensive port, industrial and tourism development activities concentrated along Jordan's 29-kilometer shoreline, environmental protection measures advanced under the proposed GEF project would have a profound beneficial impact extending beyond Jordan's territorial waters. Oil pollution and discarded garbage from land-based recreational activities and from ships traveling to and from the Port of Aqaba have tangible adverse impacts on coastal and marine habitats in all adjacent littoral states. The introduction of non-indigenous species into the Gulf's marine waters through ballast water discharges may also threaten the delicate balance of marine organisms in reef areas throughout the Gulf.

16. Other transboundary environmental impacts affecting all four Gulf-bordering states include pollution from mineral-loading operations in the adjacent ports of Aqaba (Jordan) and Eilat (Israel). Phosphate deposition on marine waters, a continuing problem despite the recent installation of choke feeders in the Port of Aqaba, inhibits coral growth in adjacent waters and may have a broader adverse impact on overall rates of coral reproduction in the Upper Gulf region. Chemical and thermal discharges from fertilizer factories, power generation facilities and chemical tank farms in Jordan's South Coast Industrial Zone endanger marine life not only within Jordan but in immediately adjacent Saudi Arabian waters.

17. Over-fishing of Jordanian coastal waters poses an immediate threat to the diversity and abundance of fish life throughout the Upper Gulf. The widespread use of cage traps and small-aperture nets in fragile reef areas has caused direct damage to reefs and has all but eliminated larger fish species from Jordanian waters. Poorly regulated fishing in adjacent coastal areas of Egypt and Israel further contribute to depletion of this resource.



18. Major plans for tourism development along the Egyptian, Israeli and Jordanian coasts further threaten marine water quality and ecosystem stability, unless effective coastal zone management guidelines and marine protected area plans are effectively implemented. In Jordan's South Coast Tourism Zone, construction of marinas and beachfront accommodations may result in the direct destruction of near-shore reefs; inadequate flood control measures may result in damaging siltation and nutrient deposition in highly sensitive reef areas; and anticipated large numbers of snorkelers, divers and tour boats may cause further direct damage to near-shore reefs. Effective coastal zone management and marine protected area initiatives in Jordan will be an essential counterpart to parallel, coordinated measures addressing present and potential tourism impacts in Egypt and Israel.

19. Pollution of the shallow, brackish water aquifer immediately underlying the coastal towns of Aqaba and Eilat is another important area of international waters concern. Sewage from the Aqaba municipal sewage treatment ponds infiltrates this aquifer, whose depth averages only 1.5 to 2 meters below the land surface. Waste oil from truck repair facilities in Aqaba is a further identified threat to this shallow groundwater resource. Given the region's extreme water scarcity and the increasing use of desalination as a necessity to meet mounting water demand, brackish water from the Aqaba-Eilat transboundary aquifer is a valuable resource, offering a less costly alternative to the treatment of highly saline Gulf marine water. Current pollution of this aquifer may render it unusable in future years.

## **II. PROJECT OBJECTIVES**

20. **Background.** The proposed GEF project is part of the broader Environmental Action Plan for the Gulf of Aqaba (GAEAP) (paras 4-5). The primary objective of the GAEAP is to contain existing damage and prevent further environmental degradation of the Gulf of Aqaba's coast, coral reefs and marine ecosystems through the implementation of environmental management activities accompanied by required investments. The GAEAP was presented at the 4th meeting of the Multilateral Working Group on Environment of the Middle East Peace Process in November 1993. Implementation of the GAEAP is currently underway and includes: (a) preparation and implementation of an oil spill contingency plan for Egypt, Israel and Jordan (funded by the EU and Japan); (b) installation of two choke feeders to reduce phosphate dust pollution from shiploading operations at the Port of Aqaba (funded by the Aqaba Ports Corporation); and (c) as part of the GEF PPA activities related to coral reef protection, development of transboundary components of the marine protected area (with partial USAID funding) (see para. 25E).

21. **GEF Project.** The proposed GEF project specifically targets those components of the GAEAP which address international waters issues from which expected additional global benefits will only be attained through joint action. The primary objective of the proposed GEF project is to enable Jordan to take the lead in establishing and implementing a regional collaborative framework for sustainable management and protection of the Gulf of Aqaba and the conservation of its unique coral reefs. The project utilizes the comprehensive approach outlined in the GEF Council strategy for international waters to develop mechanisms for control of transboundary pollution, and addresses environmental issues that constitute regional and global priorities. A related international waters issue addressed by the proposed project is the prevention of further degradation of the transboundary aquifer in the Aqaba coastal zone (see para. 25C).

22. Specific project objectives would be to: (a) develop regional collaborative mechanisms for environmental management to strengthen capacity for the protection of the coastal zone and marine biodiversity; (b) develop and enforce the legal framework and regulations for control of transboundary pollution; (c) provide for safeguards against oil pollution of aquifers and the marine environment; (d) establish and implement guidelines for the sustainable development of the coastal zone; (e) assess the effects of wastewater seepage on the quality and level of the transboundary groundwater table; (f)



implement a plan to control transboundary solid waste impacts on the marine and coastal water resource systems; and (g) implement a marine protected area.

### **III. PROJECT DESCRIPTION**

23. Under the proposed GEF project, the Government of Jordan, in concert with Egypt and Israel, would develop and implement priority measures to halt and prevent pollution of the marine environment and the transboundary aquifers in the Aqaba coastal zone.

24. Important groundwork for this project has been laid by the GEF PPA for the Gulf of Aqaba, which has been implemented by the Aqaba Region Authority (ARA) under the supervision of the Ministry of Planning. Under the PPA, Jordanian and foreign engineers, lawyers and planners have worked together to produce recommended regulations addressing priority Gulf of Aqaba environmental protection concerns. Primary documents produced under the PPA include environmental impact assessment procedures for new developments in the Aqaba region; coastal zone management guidelines for Jordan's planned South Coast Tourism Zone as well as other development areas; environmental auditing procedures applicable to existing industries in the Aqaba region; performance and discharge standards for industries located along or near Jordan's Aqaba coast; a management plan for a Jordan marine protected area strategy; and a report on marine vessel pollution prevention and port reception facility needs. A report on marine vessel pollution prevention and port reception facility needs, prepared under the PPA by the International Maritime Organization's leading expert on MARPOL implementation, was submitted to the ARA and the Aqaba Ports Corporation in May 1995. Since that time, both the ARA and the Ports Corporation have invited further IMO involvement in carrying these recommendations forward. In July 1995, the PPA team presented EIA and environmental auditing procedures to the ARA, which is now preparing final guidelines in these areas. Coastal zone management guidelines prepared under the PPA will be presented to the ARA in August 1995, and recommended pollution standards for coastal industries will be submitted to the ARA in September 1995.

25. Project components are the following:

**(A) Development of Regulatory and Institutional Framework for Gulf of Aqaba Environmental Protection.**

**(i) Definition of Overall Goals, Policies and Guidelines for Environmental Management of International Water Transboundary Issues of the Aqaba Region, and Establishment of Collaborative Mechanisms for Coordination of Relevant Institutions and Regional Partners, i.e., Egypt and Israel (\$150,000):** A priority feature of the proposed project is the development of collaborative mechanisms to foster Gulf-wide cooperation in addressing priority environmental concerns. The EU-sponsored Upper Gulf of Aqaba Oil Spill Contingency Project, forging important ties between Egypt, Israel and Jordan in responding to oil spills, provides an important beginning that the GEF project would build upon and expand to embrace the broader sphere of marine water quality and coral reef protection concerns. Direct consultation, coordinated planning and information exchange would be promoted through enhanced communication between national ministries, local government entities, port authorities, coast guard officials, and marine research institutions in the Gulf-bordering states. In Egypt, the main counterpart institutions are the Ministry of Foreign Affairs and the Egyptian Environmental Affairs Agency. In Israel, key partner institutions include the Ministry of Environment at the national level and the Eilat Municipality at the local level.

(ii) **Implementation of a Legislative and Regulatory Framework for the Control and Management of Transboundary Pollution (\$150,000):** Building on the pollution control and pollution prevention guidelines developed under the PPA, this component would implement performance and discharge standards to control pollution from industries, port facilities and ships. Priority targets for pollution prevention and control guidelines will be preservation of marine water quality, promotion of coral reef ecosystem stability, and prevention of further erosion of water quality in the transboundary Wadi Araba aquifer. Active consultations with neighboring states will be undertaken to ensure that standards and guidelines developed under this element are a harmonious component of a broader Gulf of Aqaba environmental protection regime.

(iii) **Coastal Zone Management and Implementation of EIA Guidelines (\$200,000):** Building upon the coastal zone management (CZM) and environmental impact assessment (EIA) guidelines developed under the PPA, this component would help strengthen the ARA's capacity to minimize the adverse transboundary environmental impacts associated with hotel and resort development, tourist services, and recreational facilities, particularly in the South Coast area. This component would include, in close consultation with neighboring states: (i) assistance to ARA in finalizing and proceeding with adoption proposed CZM and EIA guidelines; (ii) training of ARA staff in implementing CZM and EIA guidelines; and (iii) assistance to ARA in preparing project-specific EIA requirements and in reviewing environmental impact statements prepared during the initial period following adoption of EIA guidelines.

(iv) **Transboundary Environmental Management, including Monitoring (\$700,000):** Institutional needs assessment for strengthening the capacity of the Aqaba Regional Authority Environmental Unit would include: (a) preparation and implementation of a marine water quality management and implementation strategy including program elements for water quality monitoring; a program for pollution prevention in recharge zones; preparation and implementation of a coral reef ecosystem monitoring program; (b) preparation and implementation of a strategy for managing phosphate dust emissions otherwise blown into the sea to settle on transboundary seabed and coral reef communities<sup>1</sup>; (c) provision of training to support environmental planning, implementation of monitoring programs, and for inspectors of regulated facilities; and (d) establishment of information technology systems including GIS and database records to support planning, monitoring and enforcement in collaboration with neighboring states.

(B) **Emergency Assessment of Oil Pollution Hazards and of Pollutants Contained in Ballast and Bilge Water and Measures to Promote Waste Oil Recovery and Reuse (\$150,000):** While the Upper Gulf of Aqaba Oil Spill Contingency Plan, developed with EU and Japanese assistance, addresses risks

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<sup>1</sup> Phosphate dust resulting from shiploading activities settles on all surfaces in the loading terminal and environs. Most, however, is blown into the adjacent sea where it sinks and settles on the seabed and coral reef communities. Environmental concerns relate primarily to the detrimental effects that the dust has on marine and coral reef resources. Coral reef ecosystems in the immediate vicinity of the phosphate loading terminal have been killed or substantially altered due to the physical effects of dust settling on the polyps, which inhibits exchange of metabolites and blocks out light. Divers report that this effect may be spreading to neighboring reefs as the dust is progressively dispersed through the marine environment by wind and water currents. In addition, some of the inorganic phosphate dust from the phosphate loading terminal is converted through biological processes in the marine environment to organic phosphorous, which in turn may be a cause of eutrophication in nearby coastal waters. In the case of the enclosed water body of the Gulf of Aqaba, where natural seawater phosphorous levels are relatively low (0.2 micrograms/liter), a small increase in the available phosphorous content of sea water could have a relatively large impact on ecological systems, especially coral reefs.

associated with small to moderate Gulf oil spills, there is an urgent need to develop adequate measures to minimize the risk of potentially catastrophic oil spills.<sup>2</sup> Measures to promote environmentally responsible management of ship operations, including the provision of adequate port reception facilities for bilge and ballast water, are also needed.<sup>3</sup> In addition to developing proposed measures to address these hazards, this component would assess the hazards to transboundary aquifers and marine waters caused by waste oil from land transport vehicles.<sup>4</sup> Factors to be examined include possible leakage from underground fuel storage tanks, the use of waste oil as a dust suppressant at transportation repair facilities, and the roadside dumping of waste oil. Based on this assessment, the component would help develop a strategy and plan for collection and recycling of waste oil from ships as well as transport vehicles. Enforcement tools and financial incentives to promote waste oil recovery and reuse also would be developed under this component, with a particular emphasis on promoting private sector investment in waste oil recovery, transportation and reuse.

**(C) Safeguarding Transboundary Groundwater Resources through Groundwater Monitoring and Assessment of the Effects of Wastewater Seepage on the Quality and Level of the Groundwater Table in the Gulf of Aqaba Region (\$100,000):** To control transboundary pollution of the Wadi Araba aquifer, the quality of the groundwater around the transboundary periphery of the Aqaba municipal wastewater treatment plant would be assessed and mitigation measures would be defined. Under a second phase, a water resources assessment would be undertaken with the objective of establishing sustainable future rates of usage and management of wastewater effluent. The water resources assessment would include a multi-sector analysis of current water resource uses, an evaluation of water quality applied to these uses, and projections as to future water supply and demand. The potential for deterioration or depletion of groundwater resources under different development scenarios would be given priority focus, and measures to mitigate or avoid these negative impacts would be proposed in the form of a prioritized action plan, including management practices for pollution prevention in the recharge zone. Specific attention would be given to present management and potential uses of sewage effluent (e.g., agricultural irrigation, a proposed golf course development and landscaping in the South Coast Tourism Zone), the preparation of a plan to control potential adverse impacts on nutrient-sensitive coral reefs in nearby marine waters and transboundary pollution of the Wadi Araba aquifer.

**(D) Development of an Integrated Marine and Land-based Transboundary Solid Waste Management Strategy (\$300,000):** Large quantities of solid waste (plastic bags, foam cups, animal

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<sup>2</sup> Under the Upper Gulf of Aqaba Oil Spill Contingency Plan, emergency response centers are to be established in Egypt, Israel and Jordan, each with a capacity to handle spills of up to 200 metric tons of oil. As tankers now plying the Gulf's waters carry 100,000 to 150,000 tons of oil, measures to maximize tanker safety are urgently needed. The project would explore the possibility of promoting regional agreement on tanker design and operational requirements, and other measures to reduce the likelihood of a major oil spill in the Gulf.

<sup>3</sup> In the enclosed waters of the Gulf of Aqaba, the cumulative effects of oil contamination caused by bilge and ballast water discharges can cause serious environmental degradation. The Port of Aqaba does not have facilities for the reception and treatment of ballast or bilge water.

<sup>4</sup> Trucks servicing Aqaba's port and industrial facilities, numbering well in excess of 300,000 per year, are a major source of oil contamination in sensitive coastal areas as well as in areas overlying the shallow brackish water aquifer that straddles the Jordan-Israel border in the Araba valley. Poorly managed repair facilities and transport depots, combined with the uncontrolled roadside dumping of waste oil, pose major hazards. Following Jordan's signing of a peace treaty with Israel, commercial road traffic around the coast of the Gulf of Aqaba is due to escalate dramatically with the anticipated increase in commercial exchange between littoral states.

carcasses, glass, metal, etc.) pollute the Gulf's international waters. Sources include recreational beach waste, litter generated by passengers aboard the Aqaba (Jordan) - Nuweiba (Egypt) ferry and the discharge of dead livestock from cargo ships. This component would ensure control of litter and transboundary garbage contamination of coral reef and the marine environment. The following activities would be included: (i) the development of consultative mechanisms to promote the development of an effective regional action plan for transboundary solid waste management for waste originating from marine and land-based sources; (ii) the improvement of port reception facilities for ship-generated solid waste; (iii) the strengthening of current mechanisms to ensure that ship operators strictly enforce anti-litter provisions against passengers and crew; (iv) the development of a solid waste collection, recycling and disposal plan that ensures reliable collection of domestic garbage, effective sorting of recyclable materials, and environmentally sound disposal (containment) of non-recyclable waste; (v) development of strong anti-litter and anti-dumping provisions to be adopted by the Aqaba Regional Authority; and (vi) the hiring and training of staff and the purchase of equipment for patrolling beach areas and coastal waters to enforce anti-litter provisions.

**(E) Protection of Globally Important Coral Reefs - Development and Implementation of a Managed Resource Marine Protected Area (\$700,000):** This component would be undertaken within the framework of a tri-partite collaboration between Egypt, Israel and Jordan. This would entail updating and implementing the marine reserve proposal prepared by IUCN, specifically including: (i) establishment of a multi-use protected area incorporating detailed zonation and numerical and spatial limitations on different user activities (including commercial and recreational fishing regulations); (ii) installation of mooring buoys, the marking of boundaries, user zones and reef crossovers points; (iii) hiring and training of marine protected area staff engaged in controlling park entry, enforcement of zoning regulations, interpretation and visitor education, and implementation of monitoring and public awareness programs; (iv) in collaboration with ARA, the Port Corporation, NGOs, and the private sector, development and implementation of a public awareness campaign targeting hotel visitors, dive center customers, park visitors, and the general public.

#### **IV. RATIONALE FOR GEF FINANCING**

26. **Urgent Global Priority.** The proposed project meets GEF eligibility criteria by addressing critical transboundary threats to the ecological viability of a globally significant waterbody, and urgent biodiversity conservation needs that, if not addressed, would result in irreversible damage to globally important coral reef biodiversity. The Gulf of Aqaba is identified as a globally significant biogeographic zone in the 1995 World Bank/IUCN report "A Global Representative System of Marine Protected Areas." Pollution resulting from development on the coast of the Gulf of Aqaba is endangering the balance of marine ecosystems. Biological and economic value of these unique marine ecosystems may be lost as a result of poorly planned or managed coastal developments which are established without due regard for environmental consequences. The comprehensive approach of this project, addressing multi-sectoral issues, has direct application to development pressures being placed upon threatened coral systems worldwide.

27. While some elements of the project would be focused on addressing regional priority hot spot issues at a national level, the benefits would be global due to their transboundary nature, both in terms of the significance of Red Sea biodiversity, and also as a demonstration of the successful establishment of mechanisms for regional pollution management that could be replicated in other parts of the world. The proposed project would strengthen basin-wide pollution monitoring and management efforts in cooperation with the other projects in the region, and would establish the basis for further regional cooperation.

28. In addition, GEF support to implement the GAEAP, in particular the marine pollution component and the coral reef conservation strategy, is expected to leverage supplemental assistance from the European Union, Japan, the U.S. Agency for International Development, other donor agencies, and environmentally friendly private tourism developers.

## V. PARTICIPATION AND SUSTAINABILITY

29. **Participation.** Preparation of the GAEAP, including its proposed GEF components, has involved extensive and broad-based participation by representatives of national and local Government, the ARA, academic and research institutions, private sector interests and non-governmental organizations. Ongoing dialogue with potential private sector investors in the tourism industry is currently being enhanced through the sharing of experience gained from Egypt. The participation process was facilitated through a series of consultative meetings conducted in Amman and Aqaba both in Arabic and English. At the regional level, similar meetings were held in Egypt and Israel. An element of the participatory process included the preparation and distribution of GAEAP-related documentation in Arabic and English in the cooperating countries. Preparation of the GAEAP within Jordan directly involved the Royal Scientific Society (RSS), the leading applied research institute, and the Royal Society for the Conservation of Nature (RSCN), a major Jordanian non-governmental organization, both of which will be involved in implementation activities.

30. **Sustainability.** Project activities and implementation are designed (including the participation process) to achieve sustainability. Wherever possible the project would develop opportunities for the establishment of financial incentives, private sector investment, and cost recovery in environmental management (e.g., waste oil recovery, solid waste recycling and marine reserve entrance and concession fees). Project appraisal will fully address the issue of ARA's sustainability and its financing mechanisms.

31. The Government has also committed itself to the proposed project by preparation of the GAEAP. In addition, the Government is contributing \$ 1.4 million for the funding of a priority component of the GAEAP, i.e., installation of two choke feeders at phosphate loading terminals to reduce airborne phosphate. The Government is also committed to contribute an additional estimated \$800,000 in cash or kind to support environmental management and capacity building, as well as the financing of environmental audits for the major industries in the Aqaba region, notably the power plant and fertilizer factory. Finally, the regional parties (Egypt, Israel and Jordan) have requested, within the context of the Regional Economic Development Working Group in Amman in June 1995, that coordinated environmental action plans be developed for the Egyptian and Israeli portions of the Gulf of Aqaba. The World Bank has agreed to assist in the preparation of the plans for Egypt and Israel.

## VI. LESSONS LEARNED AND TECHNICAL REVIEW

32. **Lessons Learned.** Lessons learned from previous international waters projects in the region indicate that a programmatic approach to country-based international waters projects is required. The proposed project would provide linkages with ongoing regional seas initiatives, and would ensure a concerted international approach to achieve global benefits through linkages with the Strategic Action Programme for the Red Sea and Gulf of Aden Region.

33. **Project Monitoring and Evaluation.** Utilizing key process and status indicators would be an intrinsic process of the project through the establishment and integration of monitoring tools into project components. A monitoring and evaluation plan will be prepared during appraisal. The objective of this

monitoring is to contribute to improving and, if needed, adapting management of program activities as well as creating the basis for project evaluation. A project implementation review would be undertaken jointly by the Government and the World Bank after two years.

34. **Technical Review.** The initial project brief was subject to a STAP review in August 1992. It was also reviewed by UNDP and UNEP, both of which supported the project. Subsequently a PPA awarded in September 1994 to the Government of Jordan for further preparation of the project. The revised project brief, which built upon the results of the PPA, was subjected to external technical review in July 1995. Overall there was strong support for the concept and design of this international waters "hot spot" project prepared in parallel to the Strategic Action Programme for the Red Sea and Gulf of Aden Region. The reviewer deemed the project a worthwhile activity, likely to yield positive benefits to Jordan and the region, and recommended emphasizing a long-term approach to personnel investment and environmental monitoring and stressing the project's important potential role as a catalyst to parallel efforts in other littoral states. Attachment 1 summarizes the technical reviewer's comments and describes how they have been incorporated into the subject project document.

## VII. PROJECT FINANCING AND BUDGET

### 35. Preliminary Project Financing Plan (in US\$ million)

Component	Total Cost	GEF	Government	Other Donor
A(i). Collaborative Mechanisms for Regional Coordination	.15	.15		
A(ii). Legislative and Regulatory Framework	.15	.15		
A(iii). Coastal Zone Management and EIA Guidelines	.20	.20		
A(iv). Transboundary Environment Management/Monitoring	1.5	.70	.80	
B. Oil Pollution Hazards	7.65	.15		EU 1.90 / Japan 5.60
C. Transboundary Groundwater Resources	.10	.10		
D. Transboundary Solid Waste Management	.30	.30		
E. Marine Protected Areas	.97	.70		EU .03 / US .24
Industrial Pollution Control	1.40		1.40	
Contingencies	.25	.25		



<b>Total:</b>	<b>12.67</b>	<b>2.70</b>	<b>2.20</b>	<b>7.77</b>
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A detailed budget of the GEF outputs is contained in Attachment 2.

36. The total cost of the project is estimated at \$12.67 million, representing \$ 2.2 million supported by the Government of Jordan, \$7.77 million of bilateral assistance and GEF financing of \$2.7 million. The Jordanian contribution includes nominal funding of about \$100,000 annually (or \$300,000 over the life of the project) to address environmental issues in Aqaba which are of significance to Jordan, together with \$1.4 million to reduce phosphate dust pollution negatively affecting water quality and a commitment by the ARA to reallocate \$500,000 toward the institutional framework of the proposed project. The GEF PPA has been instrumental in catalyzing funds from bilateral donors. The EU and Japan are financing \$7.5 million for the oil spill contingency planning and implementation component of the GAEAP, and USAID and the EU are assisting the Government of Jordan in the development of a marine park with a contribution of \$272,500.

#### **VIII. INCREMENTAL COSTS**

37. The incremental costs of the project, set out in Annex I, have been calculated on the basis of a component-by-component analysis of reasonable project baseline costs, taking into account the relative government commitment to finance environmental management and protection measures as part of its established or expected sustainable development plans. The incremental costs to be borne by GEF financing have been estimated at \$2.7 million.

38. Domestic benefits accruing to Jordan, as well as the other littoral states of the Gulf of Aqaba, would be (a) an increase in water quality through reduction of oil, industrial pollution and solid waste, and (b) potential tourism revenue from the marine protected area. Although these benefits cannot be readily calculated due to their uncertain distributive characteristics as well as the speculative nature of tourism development in the region, it should be noted that 87% of project costs associated with the components supporting these potential benefits (oil pollution hazards, transboundary solid waste management and marine protected areas) will be borne through identified bilateral financing. The remaining 13% of these costs, covering other transboundary benefits, would be funded by the GEF.

#### **IX. ISSUES, ACTIONS AND RISKS**

39. The major issue is the need for a strengthened institutional framework. By providing a proper institutional, regulatory and enforcement system, as proposed under the project, the risks of continued environmental degradation and failure to achieve the project's objectives would be minimized. While the ARA has legal authority to introduce new regulations for the Aqaba Region, there is also a risk associated with the possible delay in enforcement of those regulations. Toward this end, the ARA environment unit should be strengthened to allow for effective management with enforcement authority. At a minimum, provision of incentives for career development and the elaboration of management enforcement authority is required.

#### **X. INSTITUTIONAL FRAMEWORK AND PROJECT IMPLEMENTATION**

40. The Government of Jordan has requested that the Bank continue its leading role in facilitating the GAEAP. The Bank would continue to support Egyptian, Israeli and Jordanian cooperation under the GAEAP which would be linked to initiatives in other sectors to promote the development of the area as

part of the Middle East Peace Process (para. 4). The GAEAP is an integral element of the Bank's regional environmental strategy and is a priority action of the Environmental Business Plan of the Middle East and North Africa Region. As in the preparation phase, the project would be closely coordinated with Bank activities in the region. This would include development of linkages with the Private Sector Tourism Project in Egypt, the proposed Second Tourism Project in Jordan, and the proposed Aqaba Thermal Power II Project, as appropriate. It would also be coordinated with studies being prepared for potential cooperative activities between Israel and Jordan in the Jordan Rift Valley.

41. Project implementation would be undertaken by the Aqaba Regional Authority under the supervision of the Ministry of Planning, and in collaboration with the agencies and NGOs that currently play a significant role in the management of Aqaba's environment and natural resources (para. 29). The Aqaba Regional Authority was established in 1984 under the authority of the Prime Ministry in order to ensure coordination and integration of all development taking place in the Aqaba region. Annex II describes the ARA.

42. In order to enable ARA to perform its mandate for overseeing the integrated development of the region, the Government issued a special law, which identifies the organization's goals and guides its activities. The law states that the ARA is responsible for the coordination of social and economic development of the region and the formulation of necessary policies, plans, regulations and programs in collaboration with the concerned public and private agencies. This law also enables ARA to introduce rapidly, and enforce, environmental regulations for the Aqaba region. While ARA currently lacks the capacity to fully address environmental issues, ARA would be strengthened to that effect through this project.

### INCREMENTAL COSTS

<b>Project Component</b>	<b>Reasonable Baseline Analysis &amp; (Cost/\$ mil)</b>	<b>Total Cost (\$ mil)</b>	<b>Incremental Cost (\$ mil) [Funding Source]</b>
A(i). Regional Coordination Mechanism	The objectives of this component consist of regional environmental management and coordination among the regional actors which the Government of Jordan cannot reasonably be expected to bear. (0)	.15	.15 [GEF]
A(ii). Legislative & Regulatory Framework	The legislative and regulatory framework needed for transboundary pollution control and management falls beyond the scope of provisions established by the Government for national environmental management. (0)	.15	.15 [GEF]
A(iii). Coastal Zone Management & EIA Guidelines	Although the Government of Jordan is committed to developing EIA guidelines to address national environmental concerns, the objective of this component is to minimize adverse environmental impacts of a transboundary nature and, as such, is an eligible incremental cost. (0)	.20	.20 [GEF]
A(iv). Transboundary Environment Management & Monitoring	The Government of Jordan is committed to providing funding of \$100,000 annually, or \$300,000 over the life of the project, to address environmental management issues in the Aqaba area which are of significance to Jordan. In addition, the ARA is committed to reallocating \$500,000 toward the institutional framework underlying this component. However, the Government cannot reasonably be expected to finance the preparation of a regional coral reef and water quality management strategy or the establishment of regional monitoring systems and requisite capacity. (.80)	1.50	.70 [GEF]
B. Assessment of Oil Pollution Hazards	The objectives of this component – to minimize the risk of potentially catastrophic transboundary oil spills and to assess the oil pollution hazards to transboundary aquifers and marine waters – requires a coordinated regional response. (0)	7.65	7.65 [GEF .15; EU 1.90; Japan 5.60]
C. Safeguarding Transboundary Groundwater	The cost of controlling transboundary pollution of the shared aquifer and to undertake, as proposed under this component, a water resources assessment of sustainable future rates of transboundary usage qualifies as legitimate incremental expenditures. (0)	.10	.10 [GEF]

Project Component	Reasonable Baseline Analysis & (Cost/\$ mil)	Total Cost (\$ mil)	Incremental Cost (\$ mil) [Funding Source]
D. Transboundary Solid Waste Management	Inasmuch as this component seeks to control transboundary solid waste contamination of the Gulf's coral reefs and marine environment, the Government cannot adequately address this issue in the absence of regional commitment for, and coordinated implementation of, a transboundary solid waste management plan, as proposed under this component (0)	.30	.30 [GEF]
E. Marine Protected Areas	This component will be undertaken within a tri-partite collaborative framework among Egypt, Israel and Jordan. The close geographic proximity of the three countries and the concentration of their industrial and urban developments at the head of the Gulf where the MPAs are proposed accentuates the need for a collaborative, transboundary framework to address threats to the protection of the proposed MPAs. This fact, combined with the globally significant nature of the coral reefs, makes it a legitimate incremental expenditure. (0)	.97	.97 [EU .03; US .24]
Industrial Pollution Control	The Government has committed \$1.4 to reduce phosphate dust pollution negatively affecting water quality. (1.40)	1.40	0
Contingencies	Contingencies for Government and other donor-financed component costs have been included in the respective component cost calculations. GEF cost contingencies are provided for separately.	.25	.25 [GEF]
<b>Total</b>	<b>(2.20)</b>	<b>12.67</b>	<b>10.47</b> [GEF 2.7; EU 1.93; Japan 5.6; US .24]

### **Brief Description of The Aqaba Regional Authority**

1. The Aqaba Regional Authority was established in 1984 under the authority of the Prime Ministry in order to ensure coordination and integration of all development taking place in the Aqaba region. The Secretary General of the Ministry of Municipal, Rural Affairs and Environment (which has a small department of environment) is a member of the board of ARA, and ensures coordination of environmental activities of the Aqaba region at the national level.
2. Composition of the 12 member Board of Management of the Aqaba Regional Authority represents the principal parties concerned with the development of the region. The ARA President is chairman of the board, eight members of the Board represent governmental institutions (including the Secretary General of the Ministry of Municipal, Rural Affairs and Environment) and the remaining three positions are occupied by representatives of the people of the Region. The President of ARA, who has the authority of a minister in running ARA, is appointed by the Cabinet of Minister and the appointment is endorsed by Royal Decree.
3. ARA responsibilities include: (a) design and execution of industrial, tourism, agricultural and infrastructure development projects in the region; (b) planning and design of other projects related to ARA objectives, and supervision of the execution of works carried out by the concerned public and private agencies in accordance with the responsibilities entrusted to them; (c) control and modification of the unbalanced growth of Aqaba town; and (d) ensuring the Aqaba Region's ability to absorb large investments and permit optimal use of resources in a variety of fields including: air, road and sea transportation; transit, free zone and services activities; medium and large scale industries; and local, regional and international tourism.
4. To date ARA has accomplished work in various sectors affecting the environment. ARA has coordinated the construction of a sewage treatment plant and a lower impact back road to divert heavy truck traffic away from coastal areas, upgraded cleanliness of the port, identified three coral reserves, and established a diving center. While an environmental committee has recently been established within ARA, as yet there are no formal mechanisms to handle environmental matters, particularly those affecting the transboundary waters of the Gulf of Aqaba.