

GLOBAL ENVIRONMENT FACILITY

PROPOSAL FOR PDF BLOCK B & C GRANTS

Country: Regional
(for GEF eligible coastal states to the Red Sea and Gulf of Aden)

Focal Area: International Waters

Project Title: Strategic Action Programme for the Red Sea and Gulf of Aden Region

Amount of Funding Requested: US \$ 340,000

Cofunding: Yes: ☐ No: ☒

Requesting Agency: Joint request by UNEP, the World Bank and UNDP

Block B: ☒ **Block C:** ☐

Block A grant awarded: Yes: ☐ No: ☒

This proposal was not submitted for Block "A" PDF funding, however, it will build upon a number of GEF-supported projects, pre-investment feasibility (PRIF) studies, and project preparation advances (PPAs) in the countries bordering the Red Sea and Gulf of Aden. Among these, the following are especially relevant to the goals and objectives of the Programme for the Environment of Red Sea and Gulf of Aden (PERSGA) and the Regional Convention for the Conservation of the Red Sea and the Gulf of Aden Environment (the Jeddah Convention):

- a) Egypt: Red Sea Coastal and Marine Resource Management Plan (World Bank project, \$ 4.75 million)
- b) Yemen: Protection of Marine Ecosystems of the Red Sea Coast (UNDP project, \$ 2.8 million)
- c) Sudan: Integrated Development and Management of Red Sea Coastal and Marine Ecosystems (UNDP project, \$ 2.3 million, presented to GEFOP of 28 March 1995)
- d) Eritrea: Conserving Coral Reefs in the Red Sea (UNDP PRIF Study, \$ 0.4 million, approval pending)
- e) Jordan: Marine Pollution (World Bank, PPA \$0.295 million)

The capacity built by the above-mentioned ongoing and proposed Pilot Phase GEF projects, PRIF study and PPA, will be a significant contribution towards the regional Strategic Action Programme (SAP) proposed. Likewise, the regional SAP, once established, will allow for effective exchange of experience and capacity in order to identify and propose concrete actions for the protection and management of this shared water body.

I. Summary Project Objectives and Description:

Background

The Red Sea, including the Gulf of Aden, is a unique physical and biological entity shared by a variety of coastal states. The narrow band of water, at once separating and joining these states represents an extraordinary ecological system, as well as an important shipping lane linking the world's major oceans.

In spite of the great disparity in the present level and potential of economic development in the coastal states, the region's environmental conditions and problems are very similar and inseparably connected (refer to Annex I, "Red Sea and Gulf of Aden").

The cooperation on environmental protection of the region gained momentum in the mid 1970s. On the initiative of the Arab League Educational, Cultural and Scientific Organization (ALECSO), and with the support of UNEP, several regional meetings were held by experts and government representatives of the countries bordering the Red Sea and Gulf of Aden in order to discuss the possibility for a coordinated action to protect their marine and coastal environment and to develop a plan for such action.

The Meetings culminated in the adoption and signing of the Jeddah Convention on 14 February 1982, by a regional inter-governmental conference. Today seven countries (Egypt, Jordan, Palestine, Saudi Arabia, Somalia, Sudan and Yemen) are parties to the Convention. ALECSO is the secretariat and the Government of Saudi Arabia is the depository of the Convention.

The same inter-governmental conference which adopted the Jeddah Convention, also adopted a Programme for the Environment of the Red Sea and Gulf of Aden (PERSGA) and established a secretariat to coordinate its implementation which is hosted by Saudi Arabia in Jeddah.

UNEP has supported the implementation of the Convention and PERSGA as part of its Regional Seas Programme. Aside from substantive (programme development and implementation) support, since the mid-1970s, UNEP has contributed about \$1.5 million to the development of PERSGA from UNEP's Environment Fund.

Project Description

A coordinated approach is proposed in the present PDF activity to maximize the impacts of and benefits from GEF-supported activities in the Red Sea and Gulf of Aden region. This PDF proposal has been prepared in accordance with the recommendations of the GEFOP of 28 March 1995, when it was noted that national projects in all of the PERSGA member countries bordering the Red Sea addressing priority issues could help achieve International Waters objectives but that such projects needed to be identified within the context of a coordinated Strategic Action Programme (SAP) of national and regional priorities. It was at the same time recommended that the IAs should consult with one another from a very early stage in the identification and

development of regional and national priority activities, and focus on their global benefits within agreed regional institutional and strategic frameworks, and in line with Council-approved operational strategy.

The present PDF proposal will therefore reinforce such a regional SAP involving the coastal states to the Red Sea and Gulf of Aden, the Secretariats of the Jeddah Convention and PERSGA, the GEF Secretariat and the three Implementing Agencies: UNEP, UNDP and the World Bank. The SAP will provide a programmatic approach to the development of country-based international waters projects so that such projects may provide and benefit from linkages with on-going regional seas initiatives as supported earlier by UNEP, and major international waters projects implemented under GEF funding by UNDP, to assure a concerted international approach to trans-boundary problems and for the realization of global and regional benefits.

It is proposed that the Strategic Action Programme for the Red Sea and Gulf of Aden will establish linkages with and learn from the UNEP Regional Seas programme and with successful GEF Pilot Phase initiatives for management of shared and transboundary water bodies, i.e. in particular the UNDP regional projects "Environmental Management in the Danube River Basin" (RER/91/G31 for GEF \$8.5 million), and "Environmental Management and Protection of the Black Sea" (RER/93/G31 for GEF \$9.3 million). The two above-mentioned projects will provide useful models for the development of regional SAP for coordinated action with the involvement and participation of the three IAs in areas where they have a relative advantage.

The approach proposed includes utilization of PERSGA and the Jeddah Convention as the general framework for GEF-supported activities; integrating a regional component within all country based GEF projects and the concerns of PERSGA and the Jeddah Convention and of UNEP's Regional Seas Programme. It is proposed that a greater emphasis be placed upon training of national experts and strengthening of national institutions. To the maximum extent possible experts from within the countries of the Red Sea region should be utilized in the elaboration of the SAP. The proposed Task Force would ensure national participation in the planning exercise, notably through national membership in the Task Force.

The Secretariat of PERSGA will act as the clearinghouse for official publications, data and information, and will be responsible for components requiring regional coordination. Member countries will be invited to submit proposals to house the central repository for publications and relevant data and information. In as far as possible greater decentralization and task-sharing will be promoted in order to facilitate interaction and collaboration between member countries of PERSGA.

It is proposed that the three GEF IAs will support the countries of the Red Sea and Gulf of Aden region and the Secretariats of PERSGA and the Jeddah Convention in order to develop a Strategic Action Programme for the protection and management of the region's international waters. UNEP building on its Regional Seas Programme and upon its relationship with PERSGA, is responsible for providing the Secretariat of PERSGA with the necessary logistic and substantive support and backstopping for its activities. The goal is to strengthen the regional

coordinating framework to meet new incremental responsibilities. UNEP with assistance from UNDP and the World Bank in potential "hot spots" will be responsible for assisting the proposed Regional Task Force in identifying priority environmental problems of national and regional importance for the protection of the Red Sea and Gulf of Aden marine and groundwater resources. UNDP and the World Bank will support the development of operational country strategies and projects identified as priorities in the SAP, in accordance with the framework of PERSGA and the Jeddah Convention, and building upon UNEP's coordinating role.

II. Description of Proposed PDF Activities by component

Activities proposed under this PDF proposal will be based upon a three-pronged trajectory involving (a) Establishment of necessary coordinating and institutional mechanisms, (b) Problem Analysis and Priority-Setting Exercise and (c) Development of Strategic Action Programme and of Country-based Response Strategies

All activities proposed under this project will be nationally driven by the country members of PERSGA within the Regional Task Force proposed herein, and will be carried out at the direction of the Task Force, in a joint and inter-agency fashion. Under the direction of the Task Force, it is planned that all country missions will be joint activities and that all preparatory work, terms of reference, etc. will be shared and agreed upon during their elaboration, thereby drawing on the experiences and specialties of, among others, the respective GEF agencies. To the extent feasible, all work will be carried out by national agencies and/or experts from the Red Sea region, with agency staff/specialists/consultants backstopping as necessary.

The following activities are proposed:

a) Establishment of Coordinating and Institutional Mechanisms

Activity 1: Establishment of a Regional Task Force for development of a Strategic Action Programme (SAP) for the Red Sea and Gulf of Aden. Preparation of draft Terms of Reference for the Task Force and establishment of Secretariat and Chairperson of Task Force.

It is proposed that the Executive Director of PERSGA should act as the Task Force's Chairperson, while the Rapporteur will rotate between the three GEF IAs. UNEP will provide institutional support to the PERSGA Secretariat to strengthen PERSGA's capacity to effectively coordinate and drive the SAP process. Membership in the Task Force, including national participation and representative participation of the three GEF implementing agencies, will be at the invitation of PERSGA.

The Task Force would have overall responsibility for preparing the Red Sea and Gulf of Aden SAP. To this end, it would ensure coordination of priority actions identified in the Strategic Action Programme process and coordinate preparation of SAP documents (Activities 7 and 8 below). Detailed Terms of Reference for the Task Force would be agreed upon among the members of the Task Force. UNEP will assist PERSGA in conducting these processes, including preparation of the draft Terms of Reference of the Task Force.

Planning and initiation work of the Strategic Action Programme will begin only after the establishment of the PERSGA-led Task Force and agreement among its members on the Terms of Reference for its work.

b) GEF Inter-Agency Administrative Coordination

Activity 2:

Harmonization of GEF partner agency involvement in the collaborative SAP process. Representatives of the three GEF implementing agencies will meet periodically, and at least once prior to the formation of the Task Force, to coordinate administrative issues for effective participation in and facilitation of the SAP process, including, but not limited to, (i) seeking agreement on coordinated arrangements for the disbursement of their respective funds approved under the proposal, (ii) coordinating, to the extent possible, dialogue with the Task Force, and (iii) organizing the composition and timing of joint missions and national consultative processes.

c) Analysis of Regional Problems and On-going Projects

Activity 3:

Analysis of regional marine and groundwater problems and on-going projects (including GEF projects) in the Red Sea and Gulf of Aden region, their relevance to PERSGA and suggestion for activities which may benefit from regional coordination. Based on inputs from country specialists, UNEP, will assist the Task Force in coordination and backstopping of this activity.

Activity 4:

Preparation of an up-to-date overview highlighting the major present and emerging environmental problems of the region. Based on inputs from country specialists, UNEP, will assist the Task Force in coordination and backstopping of this activity.

Activity 5: An up-to-date bibliography of environment related publications with relevance to the Red Sea and Gulf of Aden. UNEP, with the active cooperation of the other Task Force members will facilitate the preparation of this bibliography.

Activity 6: A socio-economic survey and review of management practices on the conditions of coastal populations of the region (with special reference to "hot spots" and priority eco-systems), and recommendations for activities designed to promote sustainable livelihood and resource use. UNDP, in consultation with Task Force Members will provide support to the implementation of this socio-economic survey.

d) Development of Strategic Action Programme and of Country-based Response Strategies

Activity 7 Appropriate committees with country participation will be established during the course of the Module B project for specifically identified problem areas. World Bank and UNDP will support the deliberations of these committees under the guidance of the Task Force.

Activity 8: Based upon national work listed in Activities 3, 4 and 5 and on the activities listed below, as well as on results from already approved Pilot Phase GEF projects, identification of "hot spots", important coastal and marine zones, sources of land-based pollution, degraded or threatened ecosystems etc. UNDP and the World Bank will support the committees of the Task Force in this activity. The output from this activity will be a preliminary prioritization of environmental problems and issues pertaining to the Red Sea and the Gulf of Aden that will be assembled by the Task Force, with UNEP support.

Sub-Activity 8.1: Establishment of linkages, through national coordination and consultations in the Yemen, Eritrea and the Sudan for the effective coordination and implementation of on-going and proposed parallel initiatives within the framework of the Strategic Action Programme for the wider Red Sea region.

In the case of Yemen this work will closely coordinate with the on-going the Pilot Phase project currently being implemented through UNDP. In Eritrea, this activity will build upon the significant PRIF project preparation work

coordinated by UNDP. No additional costs will be involved for activities in Eritrea and Yemen. In the Sudan, building upon previous UNDP work, national consultations will be held with partner agencies in order to ensure close coordination with the SAP. UNDP is leading the coordination of support for these activities and subsequent project funding will be requested separately.

Sub-Activity 8.2:

National coordination and consultations in Djibouti and northern Somalia in order to identify, together with government bodies and civil society institutions including NGOs, scientific and academic institutions etc., country-based responses and priority actions for the protection and management of Red Sea coastal and marine ecosystems in Djibouti and northern Somalia in coordination with the regional SAP process. UNDP will lead, in consultation with the Task Force and with the participation, as appropriate, of the World Bank, in coordinating support for this Activity, which will benefit from UNDP's active programme networks operating in northern Somalia.

Sub-Activity 8.3:

Coordination and consultation in other PERSGA countries of the region not specifically referenced above, to identify country-based responses and priority actions necessary for the protection and management of the Red Sea coastal and marine ecosystems. The World Bank will coordinate support for this activity with the respective Governments and appropriate national institutions, in consultation with the Task Force, and with participation, as appropriate, of UNDP.

Sub-Activity 8.4:

Parallel preparation of the Gulf of Aqaba Environmental Action Plan. Building upon the significant project preparation work completed as part of the Pilot Phase PPA initiative for the Gulf of Aqaba, a pilot initiative for the management of the Red Sea "hot spot" of the Gulf of Aqaba will be developed in close coordination with the Strategic Action Programme for the wider Red Sea region. Drawing upon lessons of the complementary Danube River Basin and Black Sea initiatives of the GEF Pilot Phase, the proposed Aqaba programme will provide an important sub-regional pilot activity. The World Bank will lead in coordinating support for this activity, whose project funding will be requested separately.

Sub-Activity 8.5:

Strengthening the regional coordinating framework. PERSGA, with assistance from UNEP, will identify needed actions for strengthening its regional role to address new responsibilities, including institutional arrangements, regional monitoring and analysis capabilities, possible M&E roles, etc., for incorporation into the SAP. Coordinate with regional element of the Yemen Red Sea Pilot Phase project.

Activity 9

Development by the Regional Task Force of a Strategic Action Programme (SAP) based on all identified national and regional priorities under the sub-activities listed above. Determination of the most significant and urgent global needs will be made in accordance with the GEF Operational Strategy on International Waters. The Task Force will discuss, assess and agree on priority actions to address International Waters priorities for possible GEF funded activities in line with factors such as, nature of project intervention; global threat; cross-cutting significance (biodiversity); etc.

Sub-Activity 9.1:

Development of an interim SAP. Following preliminary assessment by the Task Force of regional hot-spots, national hot-spots and other priority activities identified through national consultations (approximately 8 months after commencement of SAP process), an Interim SAP document would be produced. The identification of these priority issues and activities in the interim SAP would allow, prior to the completion of a fully elaborated SAP document, project preparation for solutions to priority regional problems to be initiated for these critical activities through follow-on GEF PDF resource requests. The Task Force, with rapporteur support of the three GEF implementing agencies, and the regional perspectives of UNEP, will be responsible for this activity.

Sub-Activity 9.2:

Completion of comprehensive SAP, including detailed regional planning and oversight of longer-term coordination of GEF activities by the PERSGA Secretariat (approximately 16 months after commencement of the SAP process). The Task Force, with rapporteur support of the three GEF IAs, will be responsible for this activity.

Sub-Activity 9.3:

Elaboration of GEF project/programme proposals as identified by the SAP, to be prepared as annexes to the SAP document. Such proposals could be both national and regional in scope.

IV. Eligibility

The Jeddah Convention and PERSGA represent the most rational general institutional and programmatic framework in which regional cooperation and coordination of GEF-supported activities should be organized. In addition, through association with UNEP's Regional Seas Programme, PERSGA benefits from UNEP's experience and expertise in organizing and implementing large-scale regionally coordinated programmes, as well as from financial and technical support provided by UNEP. The present SAP for the Red Sea region will benefit from the operational support of UNDP and the World Bank, which have together undertaken a number of national GEF projects, PRIF Studies etc.

This proposal fulfils and accords with the approach laid out in the "Scope and Preliminary Operational Strategy for International Waters" approved by the GEF Council Meeting of 22-24 February 1995:

- * It focuses on a semi-enclosed sea and estuary shared by more than one country, and proposes a holistic and regionally coordinated approach for GEF activities in this region;
- * It proposes an approach based upon (1) institution-building, (2) developing capacity needed to enable existing or new institutions to function more effectively, and (3) cost-sharing of interventions for implementing focused, priority elements of comprehensive solutions that have been adopted;
- * It proposes to help catalyze the necessary regional actions and the resulting national and local actions needed to address international waters problems in this region;
- * It aims to help decision-makers in groups of countries make the necessary decisions to change sectoral development policies and projects so that they are consistent with the principles of sustainable development and the capacity of the water environment to support them.
- * It accords with GEF's key role in promoting collective action to address the issues codified or otherwise articulated in this large body of international agreements and policy instruments, and to help ensure, to the extent possible, that international efforts are coordinated and not duplicative.

V. National Level Support

The Jeddah Convention and PERSGA represent the most rational general institutional and programmatic framework in which regional cooperation and coordination of GEF-supported activities should be organized. The Convention and PERSGA enjoy the political support of the coastal states, reflect the regional priorities as defined by these states, and are supported by national infrastructures participating in the implementation of the Convention and PERSGA under coordination of PERSGA's Secretariat.

Recognizing the advantages offered by the Convention and PERSGA, and by their association with UNEP's Regional Seas Programme, in February 1994, a contract was signed between UNDP and UNEP. According to this Inter-Agency Contract, UNEP (as UNDP's Associated Agency) is implementing the regional component of the UNDP/GEF project on the Protection of Marine Ecosystems of the Red Sea Coast in Yemen, in order to ensure effective linkage between the GEF projects in Yemen and in the longer perspective with the World Bank/GEF project in Egypt.

In order to further encourage and strengthen regional cooperation and benefit from inter-regional cooperation, a Regional Conference on Sustainable Use of the Marine Environment ("Sea to Sea") is being organized for October 1995. Envisaged participants will include national government representative, industry and commerce, national scientists and technical experts from countries involved in the two regional seas programmes covering the geographical areas of the Red Sea, Gulf of Aden, Arabian/Persian Gulf and the Gulf of Oman, as well as UN, regional and international agencies.

VI. Justification

The present PDF proposal has been prepared jointly by UNEP, UNDP and the World Bank, on behalf of the GEF eligible countries of the Red Sea and Gulf of Aden. The present proposal responds to the policy guidance of the "Scope and Preliminary Operational Strategy for International Waters" approved by the GEF Executive Council in its meeting of 22-24 February 1995 as programming guidance for GEF International Waters activities in the Operational Phase.

The present proposal is designed to support an integrated and holistic approach to the management of a shared water body, and for actions for the mitigation of trans-boundary problems leading to global and regional environmental benefits in the area of International Waters.

VII. Items to be financed

Note: As this is the first time a joint agency submission is made to the GEF, the figures presented below are followed by an indication of an implementing agency. It should be noted,

however, that these funds are merely managed by the IA, as with all other GEF projects, but are to be expended by mainly national and regional institutions and expertise. In accordance with GEF PDF rules, funds will be utilized on agency staff travel upon specific request to the GEF Secretariat by the participating member countries of the Red Sea and Gulf of Aden region.

Item	GEF
Activity 1	<p>Establishment of Inter-Agency GEF Task Force for the Red Sea and Gulf of Aden. Preparation of draft Terms of Reference for the Task Force and establishment of secretariat and Chairperson of Task Force.</p> <p>UNEP: US \$ 20,000</p>
Activity 2	<p>Harmonization of GEF Inter-Agency collaboration and administrative coordination with respect to the SAP process.</p> <p>No additional costs involved.</p>
Activity 3	<p>Analysis of regional problems and on-going projects in the region, their relevance to PERSGA etc.</p> <p>UNEP: US \$ 30,000</p>
Activity 4	<p>Up-to-date overview of major present and emerging environmental problems of the region.</p> <p>UNEP: US \$ 20,000</p>
Activity 5	<p>Up-to-date bibliography of environment-related publications relevant to the Red Sea and Gulf of Aden region.</p> <p>UNEP: US \$ 15,000</p>
Activity 6	<p>Socio-economic survey and review of management practices on conditions of coastal populations of the region, with special reference to "hot spots" and priority ecosystems.</p> <p>UNDP: US \$ 25,000</p>

Activity 7

Establishment and convening of national committees as deemed necessary during course of implementation of Module B project. (Funding requirements here approximate and may need further adjustment during implementation. Funding split between UNDP and WB as requirements will depend on nature of committees).

World Bank: US \$ 40,000

UNDP: US \$ 20,000

Activity 8

Funding requests for the identified GEF agency sub-activities will support, inter alia, (i) facilitating consultative meetings with national experts, (ii) facilitating effective national participation through technical and institutional support, (ii) provision for GEF agency staff travel, expected to be requested by Red Sea and Gulf of Aden recipient countries, to support execution of effective national consultations.

Sub-Activity 8.1

Establishment of linkages through national consultations and coordination, with parallel ongoing and proposed initiatives - Yemen, Eritrea, Sudan

UNDP: US \$ 10,000 (for activities in Sudan)

Sub-Activity 8.2

In-country consultations and priority setting process - Djibouti, northern Somalia

UNDP: US \$ 40,000

Sub-Activity 8.3

In-country coordination and consultations for priority setting process in other PERSGA countries not mentioned above

World Bank: US \$ 50,000

Sub-Activity 8.4

Parallel preparation of Gulf of Aqaba Marine Pollution plan in coordination with the regional SAP for Red Sea and the Gulf of Aden.

World Bank: No additional cost involved--funding to be requested separately

Sub-Activity 8.5

Strengthening regional framework

UNEP: US \$ 5,000

Activity 9

Development of SAP by Regional Task Force of SAP based on all identified national and regional priorities through Sub-Activities 9.1, 9.2 and 9.3

World Bank: US \$ 40,000

UNDP: US \$ 20,000

UNEP: US \$ 5,000

Item	Anchor Implementing Agency	\$
Activity 1	UNEP	20,000
Activity 2	UNEP, WB, UNDP	No cost
Activity 3	UNEP	30,000
Activity 4	UNEP	20,000
Activity 5	UNEP	15,000
Activity 6	UNDP	25,000
Activity 7	WB & UNDP	60,000
Activity 8.1	UNDP	10,000
Activity 8.2	UNDP	40,000
Activity 8.3	World Bank	50,000
Activity 8.4	World Bank	No cost
Activity 8.5	UNEP	5,000
Activity 9	UNEP, WB, UNDP	65,000
Grand total		340,000

Agency Involvement

UNEP	95,000
World Bank	130,000
UNDP	115,000

VIII. Special Features

This proposal will draw lessons from the model provided by the GEF Regional Black Sea project and the Regional Danube River Basin project from the Pilot Phase, which likewise integrated the three Implementing Agencies and a number of coastal states (6 and 11 respectively), in the formulation of strategic response strategies and in undertaking coordinated regional actions.

Implementing Agency Representative:

UNEP: Mr. William Mansfield III, Deputy Executive Coordinator, UNEP/GEF Coordinating Office

World Bank: Mr. Richard Paton, Environmental Policy Consultant, Environment Department, The World Bank

UNDP: Ms. Inger Andersen, Regional GEF Coordinator for Arab States, UNDP/GEF

ANNEX 1

The Red Sea and the Gulf of Aden

The Red Sea is an elongated, narrow and relatively very deep basin, nearly 2000 km long, with a maximum width of 360 km and depth of over 2 km. It was created by splitting of the continental platform which continues to this day, widening the Red Sea by 1 to 3 cm each year and lifting its shores by this tectonic movement. At its southern end, the Red Sea is connected to the Gulf of Aden which opens into the Indian Ocean. Surface water temperatures vary between 22 and 32 degrees centigrade, while below about 250-300 m the water maintains a constant temperature of about 21.5 degrees centigrade..

The general water flow is closely linked and driven by density gradients and prevailing winds. The surface currents are generally weak and variable, both in time and space, and are basically driven by winds, resulting in southwardly currents during summer and northwardly currents in winter. The northerly drifting surface waters are sinking near the mouth and in the Gulf of Suez, and return southwards below the thermocline. High evaporation rates throughout the year cause a net annual drift of surface waters towards the north, from about 36.5 at the Bab el Mandab to 40.5 at the entrance of the Gulfs of Aqaba and Suez.

The daily tidal movements in the Red Sea are quite unusual and follow an oscillatory pattern: the central part at latitude 20-21 N has almost no daily tides, while the northern and southern ends oscillate increasingly with increasing distance from the central node, reaching a range of up to 0.6 m. Only in the Gulf of Suez and Gulf Aqaba are the tides greater, reaching 1.5 and 1.2 m. respectively. Due to a marked seasonal tide, in winter the mean sea level is over 0.5 m higher than in summer and in the central region this is the only true tide.

The passage between the Red Sea and the Gulf of Aden is remarkably restricted, especially because the depth at the entrance at Bab el Mandab is less than 150 m. Annual precipitation over the Red Sea is rarely over 10 mm, while evaporation is about 2 m per year, and therefore there is an average net flow of water into the Red Sea, probably in the order of 30,000 cubic metres per second. The estimated renewal time is of the upper 200 m of the Red Sea is approximately 6 years, while the turnover time for the whole sea is about 200 years.

In the Gulf of Aden, the marine climate is dominated by the seasonal monsoons. In winter, winds flow from the northeast, while in summer they flow strongly southwest. The summer monsoons force surface water away from shore, allowing deeper nutrient rich water to replace it, leading every year to the highly productive summer upwelling. The severity of winds makes the shoreline generally very exposed, with concomitant reduction in some type of biota. Extensive wind-driven sand replacement of the shorelines, such as on Socotra, account for the exceptionally clean beaches of the island even though it is located near heavily used shipping lanes.

The physico-chemical characteristics of the Red Sea and the Gulf of Aden, as well as their circulation patterns and tidal regimes, are largely determining their biological features and have high relevance for the distribution of pollutants and for flushing of coastal waters.

The Red Sea and Gulf of Aden are physically characterized by arid coastal zones with low rainfall. The length of the coastline is about 9,000 km. and there are major differences in the oceanographic conditions between the Gulf of Aden and the Red Sea.

Coastal biological surveys conducted in 1980s and early 1990s provided fairly good data on the type and distribution of coastal habitats, locations of reefs, mangroves and seagrass beds, and have produced several species inventories for much of the Red Sea and parts of the Gulf of Aden. The marine environment is dominated by coral reefs in the north and by mangroves and exposed sedimentary shorelines in the south. While many important habitats have been degraded locally, no irreversible large-scale destructions have been observed.

The overall population density of the coastal zones is fairly similar due to similar coastal land use patterns and industrial activity which is similar in nature (though not size or scale). At present the environmental conditions of the marine environment and adjacent coastal areas appear to be good, but due to their inadequate systematic monitoring it is difficult to assess many likely or incipient problems. Data on sources, levels and effects of marine pollution are scarce, and the existing data is of doubtful quality and value for making a reliable region-wide appraisal.