

# ROPME Sea Area

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## **1 About**

## **1.1 Overview**

In April 1978, the eight Governments of the Region adopted the Kuwait Convention and Action Plan, making us one of the first Regional Seas. The Plan mainly covers programme activities relating to oil pollution, industrial wastes, sewage and marine resources. Projects range over coastal area management, fisheries, public health, land-based activities, sea-based pollution, biodiversity, oceanography, marine emergencies, GIS and remote sensing, environmental awareness and capacity building.

Milestones include the creation in 1979 of the Regional Organization for the Protection of the Marine Environment (ROPME), the establishment in 1982 of the Marine Emergency Mutual Aid Centre (MEMAC), and the adoption of four protocols addressing marine emergencies, hazardous wastes, land-based activities and sea-based pollution.

The Kuwait Convention and its protocols have made a substantial positive impact towards the protection of the marine environment and coastal areas from pollution. However, the tasks are massive and the Region is still faced with major environmental challenges.

ROPME Sea Area is particularly suffering from the impacts of haphazard coastal developments, physical alterations, destruction of habitats, sedimentation, high salinity, extremes of temperature, and a great number of land-based and sea-based pollution hot spots.

The impacts of land-based activities on the coastal waters are significant. The municipal sewage, and industrial effluents from such industries as petroleum refineries, power, desalination and petrochemical plants are major contributors to pollution loads. Dredging and reclamation activities are also a permanent feature in many coastal areas with tremendous damaging effects on the marine environment.

The draining of the Marshlands of Mesopotamia has posed serious threats to the wildlife and to the ecological balance of vast areas, affecting water quality and the spawning grounds of shrimp and migratory species of fish. Successive satellite images depict the transformation of a one-time haven for migratory birds and a major fisheries resource into an arid, barren land.

The stress factors, both anthropogenic and climatic, are a continuous threat to the marine ecosystems and to the great biodiversity of species that depend on them. Fish and corals are more susceptible to environmental stresses and respond to changes quickly. Such being the case, coral bleaching and fish mortality episodes are now familiar phenomena in the ROPME Sea Area.

The operational and accidental oil pollution is another major challenge in the Region with negative impacts resulting from offshore oil installations. The operational pollution from ships and dumping of ballast water are also among the main causes of chronic oil pollution in the Region. To this effect, the establishment of reception facilities for oily wastes and other wastes is of high priority, as is the protection of water quality in the vicinity of water intakes. There are also a great number of oil spill emergencies resulting in substantial pollution to the marine environment.

Recent military conflicts and remnants of hundreds of ship wrecks have seriously affected the Northern Part of the ROPME Sea Area. This pressing environmental

challenge should be urgently addressed in a concerted effort with international support and cooperation.

To address the environmental challenges, a series of research and monitoring projects are carried out and many programme activities for the prevention, abatement and combating of pollution and environmental degradation are developed and implemented.

## 1.2 Key Dates

1974	UNEP created the Regional Seas Programme
1978	The Regional Conference of Plenipotentiaries on the Protection and Development of the Marine Environment and the Coastal Areas of Bahrain, I.R.Iran, Iraq, Kuwait, Oman, Qatar Saudi Arabia and the United Arab Emirates was convened in Kuwait from 15-23 April 1978. The Conference adopted on 23 April 1978 the Action Plan for the Protection and Development of the Marine Environment and the Coastal Areas, the Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution, and the Protocol concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency.
1979	The Regional Organization for the Protection of the Marine Environment (ROPME) was created
1982	The Marine Emergency Mutual Aid Centre (MEMAC) was established and the adoption of four protocols addressing marine emergencies, hazardous wastes, land-based activities and sea-based pollution.
1994	Meeting of the Planning Committee for the Symposium on Umitaka-Maru Cruises in the ROPME Sea Area Task Force Meeting for the Third Umitaka Maru Cruise in the ROPME Sea Area Thirteenth Meeting of the ROPME Executive Committee (EXCOM) Meeting of the Permanent Advisory Committee Expert Meeting for Regional Marine Monitoring Programmes and Open Sea Cruises Third Legal/Technical Expert Meeting on the Draft Protocol on the Control of Marine Transboundary Movements of Hazardous Wastes and other Wastes
1995	ROPME/UNEP Experts Consultation Meeting on the Control of Marine Pollution from Land-Based Sources Expert Meeting to prepare the Regional Action Plan and Guidelines for National Action Plan – Protocol concerning Marine Pollution resulting from Exploration and Exploitation of the Continental Shelf
1996	Second Task Force Meeting on Reception Facilities Advisory Meeting for Prioritization ROPME's Programmes and Research Activities for the Period 1996-1998 Ninth Ordinary Meeting of the Council of the Regional Organization for the Protection of the Marine Environment The Fifteenth Meeting of the ROPME Executive Committee (EXCOM) Preparatory Meeting for the Ninth Ordinary Meeting of the Council of the Regional Organization for the Protection of the Marine Environment The Fourteenth Meeting of the ROPME Executive Committee (EXCOM)
1997	Fourth Legal/Technical Expert Meeting on the draft Protocol on the Control

	<p>of Marine Transboundary Movements and Disposal of Hazardous Wastes and Other Wastes  Sixteenth Meeting of the ROPME Executive Committee  ROPME Scientific Cruise Committee visit to Russian R/V Yuzhmorgeologiya  Expert Meeting on the Status of Implementation of the Protocol concerning Marine Pollution resulting from Exploration and Exploitation of the Continental Shelf  Scientific Cruise Committee Meeting on Oceanography Cruise in the ROPME Sea Area – Summer 1998  Meeting of Experts on Fish Kills in the ROPME Sea Area  Third Task Force Meeting on Reception Facilities  Meeting for the Preparation of the Regional Report on the State of the Marine Environment of the ROPME Sea Area</p>
1998	<p>Tenth Ordinary Meeting of the Council of the Regional Organization for the Protection of the Marine Environment  Seventeenth Meeting of the Executive Committee (EXCOM) of ROPME  Second Meeting of the Senior Executives Steering Committee (SESCOM) of ROPME  Preparatory Meeting for Tenth Ordinary Meeting of the Council of the Regional Organization for the Protection of the Marine Environment.  First Meeting of the Senior Executives Steering Committee (SESCOM) of ROPME  Fourth Task Force Meeting on Reception Facilities  Expert Meeting on Oil Spill Response Products  Meeting of Experts to Update Manual of Oceanographic Observations and Pollutants Analysis Methods (MOOPAM)  Regional Coordination of War-Related Environmental Claims</p>
1999	<p>The Nineteenth Meeting of the ROPME Executive Committee (EXCOM)  Meeting concerning the Assessment of the Health of Coral Reefs in the PERSGA and ROPME Regions  Fourth Meeting of the Senior Executives Steering Committee (SESCOM)  Final Task Force Meeting on Reception Facilities  Meeting of Regional Network of Experts on Marine Mortalities  The Eighteenth Meeting of the ROPME Executive Committee (EXCOM)  Expert Meeting on Integrated Coastal Area Management - ICAM  Fifth Task Force Meeting on Reception Facilities  Third Meeting of the Senior Executives Steering Committee - SESCO</p>
2000	<p>Eleventh Ordinary Meeting of the Council of the Regional Organization for the Protection of the Marine Environment  Twenty First Meeting of the Executive Committee (EXCOM) of ROPME  Sixth Meeting of the Senior Executives Steering Committee (SESCOM) of ROPME  Fourth Meeting of Regional Group of Experts on Marine Mortality in the ROPME Sea Area  Second Scientific Cruise Committee Meeting on Oceanographic Cruise in the ROPME Sea Area  First Scientific Cruise Committee Meeting on Oceanographic Cruise in the ROPME Sea Area – Summer 2000  Fifth Meeting of the Senior Executives Steering Committee (SESCOM)  Meeting of the preparation of the State of the Marine Environment Report – SOMER 2000</p>
2001	<p>Task Force Meeting to evaluate the applications of Member States for recognition for "Lead Member States" and the Project Proposals for</p>

	developing a regional procedures for toxicity testing Scientific Committee Meeting on Oceanographic Cruise in the ROPME Sea Area – Summer 2001 Technical Meeting for Remote Sensing and Environment Experts to review the Report of ROPME on Technical and Financial Aspects of the Small Receiving Station Scientific Committee Meeting on Oceanographic Cruise in the ROPME Sea Area – Summer 2001 Special Session of the Senior Executives Steering Committee (SESCOM)
2002	Second High Level Committee Meeting on ROPME High Level Committee Meeting on ROPME Twenty Third Meeting of the Executive Committee-EXCOM Eight Meeting of the Senior Executives Steering Committee (SESCOM) Meeting of Contact Persons for the Preparation of the State of the Marine Environment Report-SOMER 2003 Consultation Meeting for the participating Laboratories on Samples Analyses of the Cruise - Summer 2001
2003	Special Session of the Senior Executives Steering Committee-SESCOM Ad hoc Meeting on Integrated Management for Coastal Area and Marine Resources

Source: Adapted from ROPME (2003)

### ***1.3 Geographic and General Information***

**Region:** ROPME Sea Area

**Participating States:** State of Bahrain, Iran, Republic of Iraq, State of Kuwait, Sultanate of Oman, State of Qatar, Kingdom of Saudi Arabia and the United Arab Emirates (UNEP 2001)

**Large Marine Ecosystems:** LME #32: Arabian Sea

**GIWA Region:** Subregion 50: The Gulf; Subregion 52: Arabian Sea

**Map**

#### **1.3.1 Oceanographic Information**

On the whole there is little stratification of the water within the ROPME region, as the entire water column is well mixed due to strong winds. However, in the central part of the region during the summer months, a temperature stratification may develop. There is a well defined seasonal pattern in the sea surface temperatures. The widest temperature range occurs in the north-western part of the area (15-35°C). The water circulation in the inner part of the region is driven by density gradients. Water of normal oceanic salinity enters through the Strait of Hormuz at the surface and through a compensatory out flowing current of high salinity water along the bottom. The general circulation pattern is counter clockwise. There is a water movement northwards along the Iranian coast and a corresponding one southwards along the Arabian coast (UNEP 1999).

Due to the high rate of evaporation in the area, the salinity increase gradually from southern to northern parts of the region, with lower salinity along the Iranian side (e.g. in summer the surface salinity is 37‰ off the Omani coast). Salinities as high as

70‰ have been reported in the Gulf of Salwah. In the winter, the salinities are higher than the summer due to freshwater influx through the Shatt al'Arab and to evaporation (UNEP 1999).

The strong tidal current of the area flushes out the waters, completely renewing its total volume every three years. Throughout most of the region dissolved oxygen is near saturation in surface waters. In general nutrients show a large variation in the area. For example around Oman in area of intense upwelling during the south-west monsoon, nitrate levels rise from 5-20mg/m<sup>3</sup> NO<sub>3</sub>m<sup>3</sup> and phosphate values of 1.5-2.5 at PO<sub>4</sub>m<sup>3</sup>. The se values are 3-5 times greater than the winter, non-upwelling values (UNEP 1999).

### **1.3.2 Coastal Geography and Geology**

The region is subtropical zone surrounded by arid land masses. Air temperatures frequently reach 0°C in the winter and 50°C in the summer. Climatic effects are strongly influenced by prevailing winds. Winds generally cross the are from the east to the north east. During this period strong storm (*shamal*) winds often carry large amounts of dust and sand, which are deposited in the regions waters. Winds from the north can also cause a dramatic temperature drop in shallow waters, often resulting in large scale mortality of the nearshore tropical fauna. The *shamal* is a north west wind that occurs year round and is nearly continuous from June to July. Annual precipitation in the area averages 152mm and is limited almost entirely to the winter months (UNEP 1999).

The marine basin of the region is approximately 1,000km long and 200-300km wide. It is separated from the Gulf of Oman by the Strait of Hormuz, which is restricted to 56km at its narrowest part. Its depth averages 35m. Most of the basin is less than 60m deep. It is generally deeper in the south east (over 100m) and near the opening of the Strait of Hormuz. The bottom topography is mostly flat and featureless, dominated by soft sediments, however island ecosystems are also present. A series of low sandy islands with fringing reefs extend from Kuwait Bay south along the Saudi Arabian coast. The waters between Qatar and the United Arab Emirates are also very shallow and form an area of restricted circulation and pronounced evaporation. A series of islands off the western the United Arab Emirates restrict water flow further in the shallow coastal area (UNEP 1999).

The Shatt al'Arab is the major freshwater inflow that drains into the basin area (1,456 m<sup>3</sup>/s). It is based along the boundary between the Islamic Republic of Iran and Iraq. It is a combination of three rivers: the Iraqi rivers Tigris and Euphrates and the Iranian river Karun (UNEP 1999).

### **1.3.3 Ecosystem Diversity**

#### **1.3.3.1 Islands**

A series of low sandy islands with fringing reefs and patch reefs of coralline origin extends from Kuwait Bay south along the Saudi Arabian coast and off the western the United Arab Emirates. These shallow reefs make up the most diverse habitat of the areas. The Gulf of Salwa between Bahrain, Saudi Arabia and Qatar is shallow

and hyper saline, and has many islands and reefs, with productive sea grass beds (UNEP 1999).

### **1.3.3.2 Mangroves**

The Iranian coast contains most of the mangrove vegetation of the region, approximately 90km<sup>2</sup>, while less than 10km<sup>2</sup> remain along the coasts of Saudi Arabia, Bahrain and the United Arab Emirates coastline. These mangroves have low species diversity, which is attributed to severe climatic and environmental conditions as well as limited habitats and niches. Nevertheless they play an important role in the ecology of the region. *Avicennia marina* varies from 2-6m in height in the Gulf of Oman and up to 10m in the Arabian Sea. In the Arabian Sea mangroves sustain large scale shrimping centred on *Penaeus indicus* and *Penaeus semisulcatus*. Mangrove communities include faunal assemblages of many species, consisting mainly of fish (86 species), crustaceans (40 species) and molluscs (50 species) as well as a smaller numbers of sponge, echinoderm, coelenterate, polychaete and ascidian species. Wildlife associated with mangroves includes over 200 bird species, 3 species of turtles and 4 species of mammals (UNEP 1999).

### **1.3.3.3 Seagrass**

The ROPME region is known to have four seagrass species of which *Halodule uninervis* and *Halophia ovalis* are the most prevalent. Further offshore, however, these species appear to be less prevalent, at least along the coasts of Saudi Arabia. In Bahrain, seagrass is more extensive, although generally it does not extend below a depth of 8m. The biota show the greatest affinities with those found in subtidal sand and mud. They are characterised by a small proportion of seagrass 'specialists' and a larger proportion of seagrass 'generalists' (UNEP 1999).

### **1.3.3.4 Coral Reefs**

Coral coverage is abundant, although the number of species is limited. Both species diversity and percent coverage decrease with proximity to the shoreline. The most northerly reefs in the inner part of the area lie near the islands off Kuwait where around 26 coral species are present. Corals also occur in the isolated colonies on rocky outcrops on the southern mainland of Kuwait but towards the northern part of the country, the influence of the Shat Al-Arab estuaries precludes coral growth. The six Saudi Arabian Islands have the most developed reefs in the area, with approximately 50 coral species. Patch reefs close to the mainland are much less diverse. Bahrain has numerous reefs along its northern and north eastern shores and offshore, patch reefs extend down its coast. The offshore waters of the United Arab Emirates are very shallow and muddy with numerous patches of reef dominated by *Acropora* spp. Fringing reefs occur around numerous low islands, as well as along the eastern and northern coasts of Qatar. These areas tend to have a high coral cover, but a low diversity with approximately 20 species. In Oman there are four regions which support coral growth: the Musandam Peninsula; the bay and islands adjacent to Muscat; the strait west and south of Masirah island; along the southern mainland of Dhofar; and the offshore Hallaniya islands. There are 91 species of corals belonging to 53 genera and 18 families. *Porites* is the dominant builder of framework reefs throughout Oman (UNEP 1999).

### **1.3.3.5 Sabkha**

Sabkha is a widespread inter- and supra-tidal habitat, measuring many kilometers across in places. It forms flat plains, with crusts of sodium chloride and gypsum, with important 'algal mats'; a few centimeters thick, beneath which is a black reducing layer. The mats are complex associations of cyanophytes, bacteria and diatoms. Pools are a special feature of sabkha. Those with subterranean connection with the sea have a relatively high benthic diversity. With increasing isolation from the sea, diversity falls and the persistent microbial biota then forms a typical mat. These are highly productive and fix nitrogen. When desiccated in summer, mats become dry and crisp, breaking into characteristic polygons. Large areas of Sabkha are found in the United Arab Emirates and the Bar al Hiskmann peninsula in Oman (Chiffings 1995).

## **1.3.4 Species Diversity**

### **1.3.4.1 Fish and Shellfish**

There are marked differences throughout the ROPME region in the structure and composition of fish assemblages, which reflect the heterogeneous nature of the environment. The area is characterised by a low diversity of fish species, although individual fish species may occur in high numbers. The inner part of the area supports more than 100 species of which 125 are found on reefs, including 85 from reefs off Kuwait, 71 from Bahrain and 106 from reefs in Saudi Arabia. On the other hand approximately 1000 fish species have been recorded in the Gulf of Oman and the Arabian Sea, most of them reef species (UNEP 1999).

Of the 1000 fish species, six species of shrimp (*Penaeus semisulcatus*, *P. indicus*, *Metapenaeus affinis*, *M. stebbinigi*, *M. monoceros*, *Parapenaeopsis styliifera*), two species of spiny lobster (*Panulirus homarus homarus* and *P. versicolor*), one species of shovel lobster (*Thenus orientalis*), one species of cuttlefish (*Sepia pharaonis*), one species of abalone (*Haliotis mariae*) and one species of crab (*Portunus pelagicus*) support the commercial fisheries in this region. In the past Pearl oysters (*Pinctada margaritifera*) have been harvested (UNEP 1999).

### **1.3.4.2 Reptiles**

All five of the pantropical species are known in the region: hawksbill, green, leather-back, loggerhead and Olive Ridley. The most important part of the region for turtles is the Arabian Sea in both the number of breeding species and number of individuals. The loggerhead is the most numerous turtle with almost 30,000 breeding females nesting on the north-western side of Masirah Island. Oman also supports the largest nesting population of green turtles with 6,000-13,000 females nesting annually at Ra's al Hadd (UNEP 1999).

10 species of sea snakes occur in the coastal waters of Saudi Arabia. All but one species of sea snake are found in shallow coastal waters, which may be turbid and where there is organically rich substrate (Chiffings 1995).

### 1.3.4.3 *Birds*

The area supports a diverse marine bird community of great international importance. Huge numbers of sea-birds breed on the offshore islands, especially the Socotra cormorant (most of the world's population) and *Sterninae* terns (e.g. bridled tern, white cheeked tern, lesser crested tern). The intertidal zone is estimated to support 4 million Charadrii waders in winter, making the area one of five most important regions in the world for wintering waders. The intertidal and shallow subtidal zones are also internationally important in winter and during the migration seasons for another 20 species, including grebes, cormorants, herons, flamingos, gulls and terns. The Gulf of Oman and the Arabian Sea are also of great importance for wintering shore birds and other waterfowl, as well as many resident birds. These include egrets, cormorants, herons, spoonbills and terns. The most important shore birds are crab plover, sand plover, dunlin and redshank (UNEP1999).

### 1.3.4.4 *Marine Mammals*

The dugong (sea cow) is found in the inner part of the area. It is not known to exist along the shores of the Arabian Sea. The largest herd ever recorded of over 600 individuals was observed in the Gulf of Sulwa between Bahrain and Qatar peninsular. Dugongs also occur in insignificant numbers in the islands west of Abu Dhabi. The estimated population is 7,310 individuals, making the inner part of the area the most important area for this species in the western part of its range, second only to Australia in global importance (UNEP1999).

20 species of whales and dolphins are found in the region, representing 25% of all known species in the world. Baleen whales (toothless whales) include Bryde's, humpback, minke, fin and blue whales. Toothed whales include sperm, killer and false killer whales. Bottlenose dolphin and the Indian-Pacific humpback dolphin have also been recorded in the area (UNEP1999).

## 1.3.5 Information on Participating States

### 1.3.5.1 Bahrain

**Total Population:** 698,000 (World Bank 2002)

**GDP (US\$ Current):** 7,682,917,000 (World Bank 2002)

**Maritime Claims:** territorial sea: 12 NM

continental shelf: extending to boundaries to be determined

contiguous zone: 24 NM (CIA 2004)

**Length of Coastline:** 126km (UNEP 1999)

**Marine Protected Areas:**

Bahrain has no identified marine conservation areas except for Ras Tubli (Tabuli Bay) as a Nature Reserve.

**Proposed New MPAs:**

The Persian Gulf, Gulf of Salwa  
(Chiffings 1995).

### 1.3.5.2 Iran

**Total Population:** 65,540,000 (World Bank 2002)  
**Maritime Claims:** territorial sea: 12 NM  
continental shelf: natural prolongation  
contiguous zone: 24 NM  
exclusive economic zone: bilateral agreements or median lines in the Persian Gulf (CIA 2004)  
**GDP (US\$ Current):** 108,242,993,152 (World Bank 2002)  
**Length of Coastline:** 1,259 km (UNEP 1999)  
**Marine Protected Areas:**  
Shidvar Wildlife Refuge (Chiffings 1995).

### 1.3.5.3 Iraq

**Total Population:** 24,174,000 (World Bank 2002)  
**Maritime Claims:** territorial sea: 12 NM  
continental shelf: not specified (CIA 2004)  
**GDP (US\$ Current):** -  
**Length of Coastline:** 90 km (UNEP 1999)  
**Marine Protected Areas:**  
There are no declared MPAs  
**Proposed New MPAs:**  
Marshes of the Tigris and Euphrates (Chiffings 1995).

### 1.3.5.4 Kuwait

**Total Population:** 2,328,000 (World Bank 2002)  
**Maritime Claims:** territorial sea: 12 NM (CIA 2004)  
**GDP (US\$ Current):** 35,368,906,752 (World Bank 2002)  
**Length of Coastline:** 350 km (UNEP 1999)  
**Marine Protected Areas:**  
Kuwait has no designated marine protected areas (Chiffings 1995).

### 1.3.5.5 Oman

**Total Population:** 2,538,000 (World Bank 2002)  
**Maritime Claims:** territorial sea: 12 NM  
contiguous zone: 24 NM  
exclusive economic zone: 200 NM (CIA 2004)  
**GDP (US\$ Current):** 20,309,493,760 (World Bank 2002)  
**Length of Coastline:** 1,700 km (UNEP 1999)  
**Marine Protected Areas:**

- Daymaniyat Islands National Nature Reserve
- Khawr Salalah BS Managed Nature Reserve
- Quru Managed Nature Reserve
- Ra's al Hadd (Turtle Reserve) Managed Nature Reserve
- Ra's al Jumayz National Nature Reserve

(Chiffings 1995).

### 1.3.5.6 Qatar

**Total Population:** 610,000 (World Bank 2002)

**Maritime Claims:** territorial sea: 12 NM

contiguous zone: 24 NM

exclusive economic zone: as determined by bilateral agreements or the median line (CIA 2004)

**GDP (US\$ Current):** 17,466,482,688 (World Bank 2002)

**Length of Coastline:** 700 km (UNEP 1999)

**Marine Protected Areas:**

Qatar has recently completed a detailed coastal inventory using fine scale, airborne image analysis, but has not declared MPAs as yet

**Proposed New MPAs:**

The Persian Gulf, Gulf of Salwa  
(Chiffings 1995).

### 1.3.5.7 Saudi Arabia

**Total Population:** 21,886,000 (World Bank 2002)

**Maritime Claims:** territorial sea: 12 NM

contiguous zone: 18 NM

continental shelf: not specified (CIA 2004)

**GDP (US\$ Current):** 188,479,045,632 (World Bank 2002)

**Length of Coastline:** 790 km (UNEP 1999)

**Marine Protected Areas:**

- Farasan Islands Protected Area
- Um Al-Qamari Island Protected Area

**Proposed New MPAs:**

- The Persian Gulf, Gulf of Salwa
- Farasan, Gizan Area, Red Sea
- Tiran Islands Area
- Wejh Bank
- Qishran Islands-Ras al Askar
- Ras Suwahil

(Chiffings 1995).

### 1.3.5.8 United Arab Emirates

**Total Population:** 3,754,000 (World Bank 2002)

**Maritime Claims:** territorial sea: 12 NM

continental shelf: 200 NM or to the edge of the continental margin

contiguous zone: 24 NM

exclusive economic zone: 200 NM (CIA 2004)

**GDP (US\$ Current):** 70,959,833,088 (World Bank 2002)

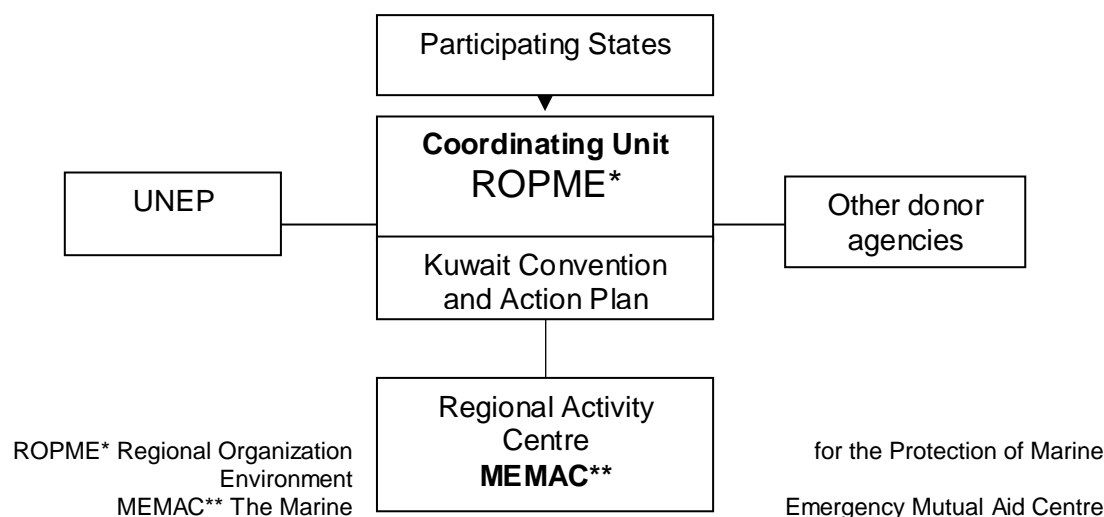
**Length of Coastline:** 650 km (UNEP 1999)

**Marine Protected Areas:**

Khor Dubai has been declared a Nature Reserve (Chiffings 1995).

## 1.4 Organization

### 1.4.1 Institutional Structure



### 1.4.2 Coordinating Unit

#### **Regional Organization for the Protection of Marine Environment (ROPME)**

ROPME was created in 1979 and became the secretariat for the Kuwait Convention and Action Plan on 1 January 1982. Since its establishment, ROPME has provided technical co-ordination to the Kuwait Action Plan and assisted its eight Member States in the implementation of the Convention and its Protocols, as well as a number of projects, covering environmental assessment and environmental management, including public awareness and training. The objective of ROPME is to coordinate the Member States efforts towards protection of the water quality in ROPME Sea Area and protect the environment systems as well as marine living and to abate the pollution caused by the development activities of the Member States. ROPME consists of three organs: the Council, the Secretariat and the Judicial Commission. For a flowchart showing the organizational structure of ROPME link to: <http://www.ropme.net/pages/structure.htm#>

Executive Secretary  
Dr Abdul Rahman Al-Awadi.

Acting Co-ordinator  
Dr Hassan Mohammadi

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Website: <http://www.ropme.net>

#### **1.4.2.1 Ministerial Council**

Council is consisted of the Contracting States' Representatives at Ministerial level. ROPME is governed by the Council decisions concerning the administrative affairs and implementation of programmes of the organization. The Council holds ordinary meetings biennially and is assisted by an Executive Committee responsible for carrying out the function of the Council during the period between the Council meetings. Extraordinary meetings of the Council shall be held upon the request of at least one Contracting State, or upon the request of the Executive Secretary endorsed by at least two Contracting States. The Council established an Executive Committee consisting of the Council Members of Bahrain, I.R. Iran, Iraq and Saudi Arabia as Members and the Executive Secretary of ROPME, as the Chairman, with the objective of carrying out the functions of the Council during the period between the Council Meetings (ROPME 2003).

#### **Contacts**

##### **Bahrain**

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##### **Iran**

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ISLAMIC REPUBLIC OF IRAN - P.O.Box 15875- 5181 - Tehran -  
Telephone:(9821) 8908233 / 8903724  
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##### **Kuwait**

H.E. Sheikh Jaber Mobark Al Sabah Deputy Prime Minister And Minister of Defence

##### **Oman**

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##### **Qatar**

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Fax:(974) 4439177

##### **Saudi Arabia**

H.R.H. Prince Turki Bin Naser Bin Abdulaziz – President - Presidency of Meteorology & Environment (PME) - Ministry of Defence & Aviation  
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Telephone:(966) 2 6519868 / 6518305  
Fax:(966) 2 6511424 / 6570945

**United Arab Emirates**

H.E. Mr. Hamad Abdulrahman Al-Midfa - Minister of Health and Chairman, Federal Environmental Agency  
UNITED ARAB EMIRATES - P.O.Box 5951, Abu Dhabi  
Telephone:(9712) 6341444  
Fax:(9712) 6334000

For further information link to the ROPME website:  
<http://www.ropme.net/pages/structure.htm#>

**1.4.2.2 Secretariat**

ROPME Secretariat is comprised of an Executive Secretary, Co-ordinator, Officers and other necessary personnel to perform, inter alia, the following functions:

- a. carry out the assignments under the Convention and its Protocols
- b. convene meetings of the Council and its subsidiary bodies, legal/technical expert meetings and ad hoc working groups
- c. transmit to Contracting States, notifications, reports and other information
- d. consult with the Contracting States on questions relating to the Convention and its Protocols
- e. prepare reports on matters relating to the Convention and to the administration of the Organization (ROPME 2003).

**Contacts:**

Kuwait  
Regional Organization for the Protection for the Marine Environment  
P.O.Box 26388 Safat 13124 Kuwait  
Telephone:5312140  
Fax:5335243 - 5324172  
Email:[ropme@qualitynet.net](mailto:ropme@qualitynet.net) - [info@ropme.org](mailto:info@ropme.org)  
Website:<http://www.ropme.org>

Bahrain  
MEMAC  
KINGDOM OF BAHRAIN - P.O. Box 10112 Manama  
Telephone:(973) 274554  
Fax:(973) 274551  
Email:[memac@batelco.com.bh](mailto:memac@batelco.com.bh)  
Website:[www.memac-rsa.org](http://www.memac-rsa.org)

For further information link to the ROPME website:  
<http://www.ropme.net/pages/structure.htm#>

### 1.4.2.3 Judicial Commission

The Judicial Commission is composed of six nationals of ROPME Member States (Iran, Iraq, Kuwait, Qatar, Saudi Arabia and the United Arab Emirates), who are highly qualified and experienced in international law and juridical matters. The Members are appointed on ad hoc basis for a period of five years. The Judicial Commission's main functions are as follows:

- a. Jurisdiction to settle disputes between the Contracting States, inter alia, concerning:
- b. Jurisdiction in disputes relating to the determination of civil liability and compensation for damage resulting from pollution of the marine environment.
- c. Jurisdiction to give an advisory opinion in all legal questions at the request of the Council concerning (ROPME 2003).

For further information link to the ROPME website:

<http://www.ropme.net/pages/structure.htm#>

### 1.4.3 Regional Activity Centres

#### **The Marine Emergency Mutual Aid Centre (MEMAC)**

MEMAC was established in Bahrain and started functioning in March 1983. The objectives of MEMAC are contained in Article III of the Protocol, which read as follows:

- a) To strengthen the capacities of the Contracting States and to facilitate cooperation among them in order to combat pollution by oil and other harmful substances in cases of marine emergencies;
- b) To assist Contracting States, which so request in the development of their own national capabilities to combat pollution by oil and other harmful substances and to co-ordinate and facilitate information exchange, technological co-operation and training.
- c) A later objective, namely the possibility of initiating operations to combat pollution by oil and other harmful substances at the Regional level. This will be subject to approval by the Council after evaluating the results of previous objectives and in the light of financial resources, which could be made available for this purpose.

#### **Contacts:**

Marine Emergency Mutual Aid Centre (MEMAC),  
PO Box 10112,  
Manama, Bahrain  
Telephone: +973-274554  
Telefax: +973-274551  
E-mail: memac@batelco.com.bh

### 1.4.4 National Focal Points

#### 1.4.5

Bahrain

Prof. Ismail M. Al Madani - Director General for Environmental Affairs General  
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KINGDOM OF BAHRAIN - P.O. Box 32657  
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Bureau Department of the Environment  
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Kuwait  
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Authority  
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Saudi Arabia  
President - H.R.H. Prince Turki Bin Naser Bin Abdulaziz - Presidency of Meteorology  
& Environment (PME) Ministry of Defence & Aviation  
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United Arab Emirates  
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## ***1.5 Financial Arrangements***

Currently no information is available.

## **1.6 Partners**

ROPME has received the support and cooperation of many regional and international organizations on training and other programme activities. The cooperation of Gulf Cooperation Council (GCC), GAOCSAO (RECSO), UNEP/ROWA, PERSGA, CAMRE, EU, FAO-RNE, IAEA-MEL, IHB, IMO, IOC-UNESCO and WHO/EMRO have been particularly significant and constructive (ROPME 2003).

### **UN Economic and Social Commission for Western Asia (ESCWA)**

The UN ESCWA has a mandate for raising the level of economic development and cooperation among the countries of its region and between them and other parts of the world. The Natural Resources and Environment Management Programme under its Energy, Natural Resources and Environment Division includes a water resources component covering issues like assessment of water resources in ESCWA member states; harmonisation of environmental standards in the water sector of ESCWA member states; and Progress achieved in the implementation of chapter 18 of Agenda 21, with emphasis on water for sustainable agricultural production (case studies); Development of fresh water resources in the rural areas using non-conventional techniques; and Current water policies and practices in selected ESCWA countries.

<http://www.escwa.org.lb/>

### **Islamic Development Bank (IDB)**

Priorities of the bank's agriculture-oriented programmes within its Technical Cooperation Programme among IDB member countries include Agricultural Research and Extension; Crop Protection; Soil Conservation; Livestock Breeding and Husbandry; Water Management; and Environmental Sustainability.

<http://www.isdb.org/>

### **Global Environment Facility (GEF)**

GEF was established in 1991 by the World Bank, with UNEP and UNDP to help developing countries fund projects and programs that protect the global environment. GEF grants support projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. GEF has played an integral role in funding many projects within the Regional Seas Programmes.

GEF Projects in the region: UNDP/GEF Conservation of Iranian Wetlands

The project will develop biodiversity conservation management plans and sustainable management for two or three major wetlands areas using the incremental cost (GIWA 2004).

### **International Centre for Living Aquatic Resources Management (ICLARM)**

An international research organization "devoted to improving the productivity, management and conservation of aquatic resources for the benefit of users and consumers in developing countries". ICLARM is one of the research centres of CGIAR, Consultative Group on International Agricultural Research. See, for example, Caribbean Marine Protected Areas Project: The Role of Marine Protected Areas in Fisheries Management and Biodiversity Conservation in Coral Reef Ecosystems. ICLARM, in collaboration with the the Food and Agriculture Organization of the United Nations (FAO) and other partners, and with support from the European Commission, has also developed FishBase, a global information system on fishes for research scientists, fisheries managers, zoologists and many more. FishBase contains full information on 23,500 species. Furthermore, ICLARM has developed

similar systems on coral reefs and their resources (ReefBase) and management of fish stocks in Asia (TrawlBase) (GIWA 2004).

#### **International Coral Reef Initiative, (ICRI)**

An environmental partnership that brings stakeholders together with the objective of sustainable use and conservation of coral reefs for future generations. ICRI is an informal mechanism that allows representatives of over 80 developing countries with coral reefs to sit in equal partnership with major donor countries and development banks, international environmental and development agencies, scientific associations, the private sector and NGOs to decide on the best strategies to conserve the world's coral reef resources (GIWA 2004).

#### **Coral Health and Monitoring Programme, (NOOA)**

The mission of the NOAA Coral Health and Monitoring Program is to provide services to help improve and sustain coral reef health throughout the world. The long term goals are: to establish an international network of coral reef researchers for the purpose of sharing knowledge and information on coral health and monitoring; provide near real-time data products derived from satellite images and monitoring stations at coral reef areas; provide a data repository for historical data collected from coral reef areas; and add to the general fund of coral reef knowledge (GIWA 2004).

### **1.6.1 Wider Cooperation**

To promote cooperation on the development of cleaner production programmes based on the best available techniques and the best environmental practice, the large oil companies (e.g. ARAMCO, ADCO) have means at the national level to develop such programmes. International organisations such as UNEP, IOC, IAEA and IMO and regional organisations such as GAOCMAO, PERSGA and Gulf Cooperation Council (GCC) need to continue their cooperation with ROPME. Although such cooperation has existed since 1979 and has helped in implementing programmes and activities related to marine monitoring and researches, support and continued cooperation should be directed toward implementing the Global Programme of Action for the Protection of the marine Environment from Land Based Activities in the ROPME region (UNEP 1999).

## **2 Our Work**

### **2.1 Programme Strategy**

Link to Regional Seas Strategic Directions 2004-2007, downloadable document.

### **2.2 Action Plan**

#### **2.3**

**Action Plan for the Protection of the Marine Environment and the Coastal Areas of Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates**

**Participating States:** State of Bahrain, Iran, Republic of Iraq, State of Kuwait, Sultanate of Oman, State of Qatar, Kingdom of Saudi Arabia and the United Arab Emirates (UNEP 2001)

**Adopted:** 24 April 1978 (UNEP 2001)

**Entered into Force:** 1 July 1979 (UNEP 2001)

**Depositary State:** Kuwait (UNEP 2001)

**Objectives:**

The Action Plan consists of four main components; Environmental Assessment, Environmental Management, Legal Component, and Institutional and Financial Arrangements. Protection of the marine environment is the first priority with a view to promotion of human health and well-being as the ultimate goal, the Action Plan aims to achieve, the following:

- Assessment of the state of the environment including socio-economic development activities related to environmental quality and of the needs of the Region in order to assist Governments to cope properly with environmental problems, particularly those concerning the marine environment;
- Development of guidelines for the management of those activities which have an impact on environmental quality or on the protection and use of renewable marine resources on a sustainable basis;
- Development of legal instruments providing the legal basis for cooperative efforts to protect and develop the Region on a sustainable basis; and
- Supporting measures including national and regional institutional mechanisms and structure needed for the successful implementation of the Action Plan.
- 

## **2.4 Convention**

### **Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution**

**Short Title:** Kuwait Convention

**Contracting Parties:** State of Bahrain, Iran, Republic of Iraq, State of Kuwait, Sultanate of Oman, State of Qatar, Kingdom of Saudi Arabia and the United Arab Emirates (UNEP 2001)

**Adopted:** 24 April 1978 (UNEP 2001)

**Entered into Force:** 1 July 1979 (UNEP 2001)

No Signatories without ratification, acceptance, or approval.

**Objectives:**

To prevent, abate, and combat pollution of the marine environment from various sources of pollution, such as pollution from ships, pollution caused by dumping from ships and aircrafts, pollution from land-based sources, pollution resulting from exploration and exploitation of the bed of the territorial sea and its subsoil and the continental shelf, pollution from other human activities, co-operation in dealing with pollution Emergencies. The Convention shall apply to the sea area in the Region bounded in the south by the following rhumb lines: from Ras Dharbat Ali in (160 39 / N, 530 3 / 30//E) then to a position in (160 00/ N, 530 25/E) then to a position in (170 00/ N, 560 30/E) then to a position in (200 30/ N, 600 00/E) then to Ras Al FasteH (250 04 / N, 610 25 / E), referred to as the "Sea Area" (UNEP 2001).

**For full text of the Convention link to the ROPME Website:**

<http://www.ropme.net/pages/legal.htm>. or  
<http://fletcher.tufts.edu/multi/texts/BH730.txt>

## 2.4.1 Protocols

### **Protocol concerning Regional Co-operation in Combating Pollution by Oil and other Harmful Substances in Cases of Emergency**

**Adopted:** Kuwait, 24 April 1978

**Entered into force** on 1 July 1979

Same status of participation as the Convention;

### **Protocol concerning Marine Pollution resulting from Exploration and Exploitation of the Continental Shelf**

**Adopted:** Kuwait 1989.

**Entered into force** on 17 February 1990.

Same status of participation as the Convention

### **Protocol for the Protection of the Marine Environment against Pollution from Land-Based Sources**

**Adopted:** Kuwait 1990.

**Entered into force** on 2 January 1993.

Six Parties by 6 January 2003. One Signatory without ratification, acceptance, or approval

### **Protocol on the Control of Marine Transboundary Movements and Disposal of Hazardous Wastes and other Wastes**

**Adopted:** Tehran, 17 March 1998.

Five ratifications by 6 January 2003.

Two Signatories without ratification, acceptance, or approval.

Drafts of the Protocol Concerning the Conservation of Biological Diversity and the Establishment of Protected Areas and the Concept Paper on Biodiversity have been prepared. The Second Legal/Technical Expert Meeting on the draft Protocol concerning the Conservation of Biological Diversity and the Establishment of Protected Areas was held in Tehran, I.R.Iran, 3-5 July 2004. The Third Legal/Technical Expert Meeting on the draft Protocol concerning the Conservation of Biological Diversity and the Establishment of Protected Areas will be held in Tehran, Islamic Republic of Iran, 11-13 September 2004.

**For full text of the Protocols link to the ROPME Website:**

<http://www.ropme.net/pages/legal.htm>.

## 2.5 Issues and Threats

### 2.5.1 Over fishing

The total marine harvest for this region ranged from 327,000 to 580,000 metric tons from 1985-1993. Artisanal fisheries contribute to over 79% of the total landings. In the late 1980s and early 1990s fish landings stagnated due to fishing effort reaching the maximum sustainable yield on some stocks. This has led to restrictions on fishing in many countries in the region. In addition to the increasing pollution, degradation or loss of nursery area has caused declines in yield. In Kuwait shrimp

trawlers were removed from the industry in order to implement a buy-back policy. Fishing is also restricted through closed seasons and area. Shrimp trawling season is closed from January-March and from July-September. Fisheries management is seriously hampered by lack of data. Multinational coordination of data collection and management is essential to safeguard future yields. To manage these marine resources effectively there is a need to strengthen cooperation between ROPME and FAO (UNEP 1999).

For further information refer to:

UNEP (1999) Overview on Land Based Sources and Activities Effecting the Marine Environment in the ROPME Sea Area. Regional Seas Reports and Studies No.168. [http://www.gpa.unep.org/documents/technical/rseas\\_reports/168-eng.pdf](http://www.gpa.unep.org/documents/technical/rseas_reports/168-eng.pdf)

## 2.5.2 Land Based Sources of Pollution

Land based activities include sediment run off, agriculture and reduction in fresh water seepage due to groundwater extraction. Signs of eutrophication close to some industrialised areas are common where dense mats of filamentous green algae in the intertidal zone are obvious signs of organic pollution and increased levels of nutrients in the water. No inventory has been compiled of significant marine areas in the region where nutrient inputs are causing pollution directly or indirectly. There is a need to identify the source of pollution, calculate nutrient inputs, implement measures to reduce nutrient input and develop strategies for reducing eutrophication.

The ROPME shallow coastal areas are being used as repositories for large quantities of industrial, commercial and residential litter and other solid waste. Often this takes the form of plastics, metal containers, wood and tyres. Much of the lighter debris has been spread along extensive tracts of shoreline through wind and water movements. In Bahrain, Qatar, Saudi Arabia and the United Arab Emirates these sludges are disposed on the ground, often close to the sea. In Kuwait and Oman they are burned, while about 10% of sludges generated in the United Arab Emirates are directly discharged into the sea. All of these disposal methods are unsafe, resulting in groundwater contamination and negative impacts on marine life. Regional actions are needed for the promotion of regional cooperation for the exchange of information on practises of waste management, recycling, reuse and cleaner production (UNEP 1999).

Several states in the region monitor levels of heavy metals (mercury, cadmium, copper, lead and vanadium) in the marine environment (in fish, bivalves, water and sediment) as part of national monitoring programmes. In rock and pearl oysters in Bahrain, increased lead concentrations were noted in an area influenced by effluents from a refinery. In Saudi Arabia, pearl oysters selectively accumulated cadmium, zinc and phosphorus in their tissue (UNEP 1999).

The ROPME Sea Area hosts the largest desalinisation plants in the world. The major environmental problems associated with desalinisation plants are: the disposal of waste brine into the sea; thermal pollution resulting from brine disposal; and pre and post treatment chemicals and corrosion products (UNEP 1999).

There is limited data on the production, use and environmental distribution of persistent organic pollutants (POPs) in the marine environment of the ROPME Sea Area. The ROPME Council have approved funds for a pilot study to determine types

and amounts of POPs manufactured in the region and their significance to the marine environment (UNEP 1999).

For further information refer to:

UNEP (1999) Overview on Land Based Sources and Activities Effecting the Marine Environment in the ROPME Sea Area. Regional Seas Reports and Studies No.168. [http://www.gpa.unep.org/documents/technical/rseas\\_reports/168-eng.pdf](http://www.gpa.unep.org/documents/technical/rseas_reports/168-eng.pdf)

### **2.5.3 Sea Based Pollution**

Oil is a major polluter in the region. 25,000 tankers navigate in and out of the Strait of Hormuz every year carrying about 60% of the one billion tons per year of oil carried by all ships in the world. Most oil is transported in super tankers as large as ¾ million tons. Illegal discharges by tankers of crude and fuel oil wastes remain the most serious marine pollution problem. Beach tar oil is widespread, often in high concentrations throughout the region, however, the low levels are generally found in the water column and biota due to rapid break down resulting from intense solar radiation and high summer temperatures. To help combat this problem in accordance with the recommendations of the Global Programme of Action there is an urgent need for inventories to be conducted of significant sources of oils (UNEP 1999).

### **2.5.4 Destruction of Habitats**

Coastal and marine environments all over the ROPME sea area are becoming subjected to increasing human pressures. In some countries almost 40% of the coastline has now been developed. Over 20 major industrial complexes have either been constructed or are under construction. Other land based activities contributing to coastal degradation include sediment run off, agriculture and reduction in fresh water seepage due to groundwater extraction. Dredging and coastal reclamation probably represent one of the most serious impacts on the ROPME environment. Reclamation has been undertaken for developments, ports, bridges, causeways, etc often on intertidal flats, mangrove forests and low embayments. A considerable proportion of mangrove forest has been lost over the last 20 years. Degradation of coral reefs from fishing practises, tourism and recreation is also becoming widespread (UNEP 1999).

### **2.5.5 Marine Protected Areas**

#### **2.5.6**

Bahrain, Oman and Saudi Arabia have developed Integrated Coastal Zone Management (ICZM) plans, some are in the process of being implemented. Marine Protected Areas (MPAs) have been established in Oman and Saudi Arabia. There is thereof an urgent need for an ICZM plan for the ROPME region, where a system of MPAs can be established (UNEP 1999).

The most successful and recent marine reserve in the ROPME Sea Area is the Wildlife Sanctuary at Jubail, Saudi Arabia. The Gulf of Sulwa, including Bahrain and Qatar waters contain the worlds second largest population of dugong and therefore constitutes an area of vital conservation significance of this species. In addition all

five of the pantropical species of turtles are found in the region: hawksbill, green, leather-back, loggerhead and Olive Ridley. These turtles are classified as endangered in the World Conservation Union (IUCN) Red Data Book (UNEP 1999). Another area that has been proposed as a new MPA is the marshes of the Tigris and Euphrates (Iraq). The draining of these marshlands and the damming of the two rivers has the potential of dramatically altering the ecology of the marine systems in the northern Gulf, as well as critical trans migratory feeding, and breeding habitats for waders (Chiffings 1995).

## **2.6 Current Activities**

In June 1996, the ROPME Council approved four projects for the protection of the marine environment from land based activities:

1. Updating the survey of LBA source categories and impacts, capabilities and constraints in the region;
2. Development of criteria, guidelines and standards for the management of land based activities;
3. Preparation of a river basin management programme; and
4. Conduction of a pilot study on POPs.

In addition ROPME Council allocated \$350,000 for their implementation (UNEP 1999).

The Council at its Eleventh Ordinary Meeting of ROPME in Jeddah, Saudi Arabia, 22 October 2000, approved the following programmes activities for implementation for the period of 2000-2002.

- State of the Marine Environment Report – SOMER CM11/1
- Survey of Existing Habitats CM11/2
- Quality Control / Quality Assurance and Monitoring of Contaminants in the Marine Environment of the ROPME Sea Area CM11/3
- Monitoring of variables affecting Public Health in the ROPME Sea Area CM11/4
- The Protection and Sustainable Management of Fisheries Resources CM11/5
- Satellite Receiving Station CM11/6
- Open Sea Cruise CM11/7
- The Research Component of Marine Monitoring and Research Programme – MMRP CM11/8
- Protection of the Marine Environmental from Land-Based Activities-LBA CM11/9
- Oil Dispersant Project CM11/10
- Protocol concerning Marine Pollution resulting from Exploration and Exploitation of the Continental Shelf CM11/11
- Protocol on the Control of Marine Transboundary Movements and Disposal of Hazardous Wastes and Other Wastes CM11/12
- Development of a Protocol on Biological Diversity and the Establishment of Protected Areas CM11/13
- Environmental Awareness CM11/14
- Regional Contingency Plan CM11/15

- Development of Regional Guidelines for Pollution Damage Assessment and Regional Manual for Compensation Claims CM11/16
- Establishment of an Emergency Fund for Marine Environment Protection CM11/17
- Development of Port State Control Procedures CM11/18
- Development of a Safety Programme for Harmful Substances CM11/19
- Development of an Annex to the Protocol concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency CM11/20
- Periodical Report on Marine Emergency CM11/21
- Establishing Reception Facilities in the Region CM11/22
- Enabling MEMAC to effectively coordinate emergency activities CM11/23
- Cooperation between ROPME and IHO on Hydrographic Activities in the ROPME Sea Area CM11/24
- Participation in Environmental Events of the Region CM11/25
- Memorandum of Understanding between ROPME and IOC CM11/26
- Designation of Lead Member States CM11/27
- ROPME's Financial Status (1998-99 and 1999-2000) CM11/28
- ROPME's Budgetary Requirements for the period 2000-2002 CM11/29
- Settlement of Arrears CM11/30
- SESCO and EXCOM Meetings CM11/31
- The Twelfth Meeting of ROPME Council CM11/32

For a comprehensive list of the programs and activities that are being undertaken by ROPME link to the ROPME website: <http://www.ropme.net/pages/activities.htm>

ROPME is active in the promotion of public education and awareness throughout the region. For further information on this subject link to the ROPME Website: [http://www.ropme.net/pages/env\\_aware.htm](http://www.ropme.net/pages/env_aware.htm)

## **3 Publications**

### ***3.1 Regional Seas Reports and Studies***

Link to the Regional Seas Reports and Studies

### ***3.2 Other Publications***

UNEP (1999) Overview on Land Based Sources and Activities Effecting the Marine Environment in the ROPME Sea Area. Regional Seas Reports and Studies No.168. [http://www.gpa.unep.org/documents/technical/rseas\\_reports/168-eng.pdf](http://www.gpa.unep.org/documents/technical/rseas_reports/168-eng.pdf)

For a comprehensive list of publications link to the ROPME website: <http://www.ropme.net/pages/publications.asp>.

### 3.3 Website Links

ROPME website: <http://www.ropme.net>.

Federal Environment Agency for the United Arab Emirates

[http://www.fea.gov.ae/portal/page?\\_pageid=33,41679&\\_dad=portal&\\_schema=PORTAL](http://www.fea.gov.ae/portal/page?_pageid=33,41679&_dad=portal&_schema=PORTAL)

## 4 Calendar of Events

For a full list of upcoming events and meetings link to the ROPME website:

<http://www.ropme.net/pages/events.asp>.

## 5 Professionals

For a full list of Regional Scientists in the ROPME Sea Area link to the ROPME

website: <http://www.ropme.org/scontacts/conta>

## 6 Advertisements

For a full list of upcoming events and meetings link to the ROPME website:

<http://www.ropme.net/pages/events.asp>.

## 7 References

UNEP (1999) Overview on Land Based Sources and Activities Effecting the Marine Environment in the ROPME Sea Area. Regional Seas Reports and Studies No.168.

[http://www.gpa.unep.org/documents/technical/rseas\\_reports/168-eng.pdf](http://www.gpa.unep.org/documents/technical/rseas_reports/168-eng.pdf)

ROPME (2003) Regional Organisation for the Protection of the Marine Environment (ROPME) Website. [www.ropme.org](http://www.ropme.org). (Accessed 05/08/04)

UNEP (2001) Ecosystem-based Management of Fisheries. Opportunities and challenges for coordination between marine Regional Fishery Bodies and Regional Seas Conventions. UNEP Regional Seas Reports and Studies No.175.

Chffing,T (1995) A Global Representative System of Marine Protected Areas. A Report to the World Bank Environment Department. MARINE REGION 11: ARABIAN SEAS. *Great Barrier Reef Marine Park Authority/The World Bank/The World Conservation Union (IUCN) 1995.*

<http://www.deh.gov.au/coasts/mpa/nrsmpa/global/volume3/chapter11.html> (Accessed 05/08/04)

CIA (2004) Central Intelligence Agency. World Fact Book (Accessed 11/06/04) <http://www.cia.gov/cia/publications/factbook/>. (Updated 11/08/04)

GIWA (2004) Global International Waters Assessment, GIWA Website (last Updated 27/12/2001) <http://www.giwa.net/areas/area50.phtml> (Accessed 05/08/2004)