ROPME Member States (Iraq, Iran, Oman, Qatar, Kuwait, Saudi Arabia, Bahrain, UAE)
Regional Organization for the Protection of the Marine Environment (ROPME)

The ROPME-JICA Partnership Program (2015-2019)

Final Report

November 2019

Japan International Cooperation Agency (JICA)

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19-067

<Summary>

This 4 years project was conducted aiming; 1) sharing knowledge and experience in management of marine environment between ROPME, member states and Japan for future cooperation and 2) promoting regional/bilateral cooperation among ROPME member states and Japan.

The outputs from the project are summarizes as follows:

(1) Gathering basic information of each country regarding marine environment

Basic information regarding marine environment (e.g. conservation policy, related organization) was gathered visiting the target country and interviewing with the related organization, including questionnaire survey, to retrieve the challenges for conservation of marine environment. As one of activities of the ROPME EBM Strategy, baseline study is being conducted by consigning to the Oman-based environmental consultant.

As common issues in ROPME Sea Area (RSA), water quality deterioration by development, occurring of HAB, oil pollution, ballast water management, impact of desalination plants, lack of capacity of wastewater treatment facilities, and bycatch and over catch in fishery sector are raised. In addition to that, lack of baseline data to assess the above mentioned issues is also realized as a common issue in RSA.

(2) Holding international seminar/workshop in Japan

International seminar was held in Japan, with joint-hosting by ROPME and JICA. The seminar aimed knowledge sharing on marine environmental conservation, introduction of advanced technology for matching between needs from ROPME countries and technologies of enterprises in Japan for further cooperation and business chance.

Through the lectures by Japanese knowledgeable persons, discussions and field visits, experiences and techniques of Japan regarding the conservation of marine environment focusing marine ecosystem (Ecosystem Based Management: EBM) and helped to grasp an idea for EBM strategy of ROPME. Participants requested continuous providing of experience and information from Japan, regarding establishment of EBM strategy.

Two regional workshops organized by JICA was held in Oman and Kuwait. The workshop in Oman (held on September 2017) was to share the results of the preparatory study on the cost-sharing technical cooperation project. Wide range of coastal environment, such as mangrove, coral conservation and eco-tourism, w.as discussed and the results of training program for remote sensing to evaluate such coastal habitats were shared with member states. The work shop in Kuwait (held in held on September 2019) focused on the common item to the prioritized challenges of ROPME, such as recognition of policy for conservation of coastal ecosystem and realization of conservation and rehabilitation techniques. It was re-confirmed the importance of multi-beneficial activity, not only for conservation of coastal ecosystem, but also for measures to issues on climate change and conservation of biodiversity. Also networking system between regional countries and Japan's experience, which is supposed to be continued even after the Project ends, was established.

(3) Holding ROPME regional workshop

Holding regional workshops, which are originally planned by ROPME, was supported by dispatching JICA Expert Team member(s) and lecturer(s) based on the topic of the workshop

Following workshops were supported.

a) Workshop on ROPME EBM Strategy (April 2016)
b) First EBM Strategy working group meeting (October 2016)
c) Workshop on Communication Tools for Working Group on EBM Strategy (September 2017)
d) Workshop on Sand Dust and Storm (September 2016)
e) Meeting of the Regional Task Force on Marine Climate Change Dimensions in ROPME Sea Area (RSA) (April 2017)
f) Meeting of the Regional Task Force on Eutrophication and HABs (January 2018)
g) Workshop on Marine Climate Change (January 2019)
h) Workshop in Bahrain on Fishery Resource Conservation and Management (February 2019)
i) Workshop in Saudi Arabia on Marine Environment and Resource Management (April 2019)

(4) Needs finding for JICA technical cooperation

JICA has been conducting the study for establishment the scheme of cost-sharing technical cooperation. During the project period, the JICA Expert Team conducted needs surveys by questionnaire and interview. The result of information gathering is also referred and needs from UAE, Bahrain, Iran, Iraq and Kuwait were obtained.

(5) Preparation of procedure for cost-sharing scheme

JICA and Oman have been trying to finalize the detailed discussion on a project for marine environmental conservation. This matter was prioritized to continue and the JICA Expert Team concentrated on this subject. The Terms of Reference (TOR) of the project was prepared between the JICA Expert Team of this project and Oman Technical Committee and financial aspects, such as money flow on cost-sharing, were also discussed and draft documents were prepared.

Since then, however, the budgetary concerns arose within the government of Oman, due to downturn of oil price over the world, and the discussion on the cost-sharing technical cooperation was suspended.

On May 2016, JICA decided one-year activity within this project as a preliminary activity of the cost-sharing technical cooperation. After several discussions with the counterpart of Oman, the Ministry of Environment and Climate Affaires (MECA), regarding the contents of the one-year activity (herein after referred to as "Preparatory Survey"), the survey started on September 2016. At the end of the

one-year programme, a regional workshop organized by JICA was held to share the results and experience of the programme with member states and international organizations.

Due to the difficulties to secure the budget for the cost-sharing project by Omani government, the project scale was reduced from several million USD to several hundred thousand USD and new cost-sharing programme, training course related conservation of coastal environment, was proposed and discussed. At the end, however, the cost-sharing ratio (Japan side less than 30%) was not approved by the Ministry of Foreign Affairs of Oman. At the implementation of the programme was suspended.

(6) Joint announcement with ROPME

Aiming publishing the activities regarding the management of marine environment, focusing marine ecosystem, a side event at the CBD COP13 was held.

Outcomes from the project and activities challenged by ROPME and member countries was originally planned to announce at the side event of international conferences. Since the progress of establishment of EBM Strategy is delayed, joint announcement with ROPME were passed over after the CBD COP13.

(7) Discussion and recommendation

In this Project, the activity targeted on environmental sector and fishery sector to cooperate with ROPME for establishment of EBM Strategy. ROPME lists five (5) important challenges, such as EBM, marine climate change, marine biodiversity, eutrophication/HABs and sand storm/dust, and it is considered that the EBM Strategy comprehends those challenges. Through the project activities, such as participation in regional workshops held by ROPME, holding international workshops/regional workshops organized by JICA, needs finding study visiting member countries, considering the important challenges, common prioritized items, such as sharing information, uniformed monitoring and networking, were recognized.

As the result of the JICA's technical cooperation to Oman on mangrove conservation, regional cooperation by Oman with Kuwait and Bahrain has being started. Intensive regional training to enhance such regional cooperation is highly expected. Other networking has started and those activities might be a possibility of JICA's cooperation in the future.

A JICA project, the Project on Development and Implementation of a Master Plan for Environmental Conservation and Management of Southern Coastal Areas of the I.R. Iran (Case Study Hormozgan), is being conducted from 2017 to 2020. The project aims to establish a master plan for conservation of coastal environment focusing ecosystem conservation, based on the idea of ecosystem based management. The idea of the master plan is similar to the one of the EBM by ROPME. Since preparation of the EBM Strategy by ROPME is delayed, the master plan is supposed to be the first example for EBM-like policy in the region.

Therefore, exchange the experience on preparation of master plan between Iranian counterpart and ROPME countries through JICA is recommended.

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List of abbreviations

AIS	Automatic Identification System (for ship traffic)
BAISDS	Baseline Assessment of Impact of Sand and Dust Storm
CBD	Convention on Biological Diversity
CMS	Convention on the Conservation of Migratory Species of Wild Animals
COP	Conference of the Parties
C/P	Counterpart
EAD	Environment Agency – Abu Dhabi
EBSA	Ecologically or Biologically Significant marine Area
EMECS	Environmental Management of Enclosed Coastal Seas
EPA	Environment Public Authority State of Kuwait
GCC	Gulf Cooperation Council
GoJ	Government of Japan
HABs	Harmful Algal Bloom(s)
JAMSTEC	Japan Agency for Marine-Earth Science and Technology
JCG	Japan Coast Guard
JICA	Japan International Cooperation Agency
JMA	Japan Meteorological Agency
JMBS	Japan Meteorological Business Support Center
KFAS	Kuwait Foundation for Advancement Science
KISR	Kuwait Institute for Scientific Research
MASINGAR	Model of Aerosol Species IN the Global AtmospheRe
MEMAC	Marine Emergency Mutual Aid Centre
MEWA	Ministry of Environment, Water and Agriculture
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
MOE	Ministry of Environment
MOU	Memorandum of Understanding
NRFS	National Research Institute of Fisheries Science
PARI	Port and Airport Research Institute
PERSGA	Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden
RESTEC	Remote Sensing Technology Center of Japan
ROPME	Regional Organization for the Protection of the Marine Environment
RSA	ROPME Sea Area
SATREPS	Science and Technology Research Partnership for Sustainable Development
SPF	Sasakawa Peace Foundation
TEMM	Tripartite Environment Ministers Meeting among Japan, China and Korea

UNEP	United Nations Environment Programme
WAO	UN Environment West Asia Office
WMO	World Meteorological Organization

CHAPTER 1 OUTLINE OF THE PROJECT

1.1 Background of the Project

The coastal area of the ROPME Sea Area (RSA, see Figure 1.1) has rich ecosystem, such as mangrove, tidal flat, coral and seagrass bed. This ecosystem provides important habitats for birds, fish and sea mammals, leading to special natural resources and fisheries resource for human.

On the other hand, this area has been influenced by the human activities such as oil and gas development and discharge of wastewater due to rapid economic growth.

The Regional Organization for the Protection of the Marine Environment (ROPME) was established in 1979 for conservation of marine environment. The ROPME Sea Area is the one of the Regional Seas Program established by the United Nations Environment Programme (UNEP). And the ROPME tightly cooperate with UNEP for the activities on conservation of marine environment.

In the circumstances, the Memorandum of Undertaking (MOU) between ROPME and JICA was signed in 2014 to cooperate each other to ensure the sustainability and improvement of the marine environment. And this project has been started on November 2015.

JICA is now considering a new scheme of the technical cooperation, cost-sharing technical cooperation, targeting ODA-graduated countries, such as Saudi Arabia, UAE, Oman, Kuwait and Bahrain. Formation of new cost-sharing technical cooperation project through the activities in this project was also expected.

Source: NOAA National Centers For Environmental Information

Blue underline shows the member country.

Figure 1.1 ROPME Sea Area and Member Country

1.2 Objective of the Project

The followings are the project purpose, activities and program period, agreed in the MOU.

Program Purpose:

- Sharing knowledge and experience in management of marine environment between ROPME, member states and Japan for future cooperation.
- Promoting regional/bilateral cooperation among ROPME member states and Japan.

Activities:

- Gathering basic information of each country regarding marine environment
- Holding international seminar / workshop in Japan (once a year)
  - ✓ Sharing knowledge and information among participants
  - ✓ Site visits
  - ✓ Discussing further cooperation with the Japanese side
- Holding (assisting) ROPME regional workshop
  - ✓ Dispatching JICA Expert Team member(s) for assistance
  - ✓ Dispatching Japanese knowledgeable person for presentation, if agreed
- Needs finding for JICA technical cooperation
  - ✓ Promoting program
  - ✓ Enhancing bilateral cooperation in member states
- Preparation of procedure for cost-sharing scheme
  - ✓ Preparation of cost-sharing scheme targeting Oman
  - ✓ Finding potential project in other countries, if any
- Joint announcement with ROPME
  - ✓ Holding side event on the international convention (e.g. CBD COP 13[1])

Program Period:

Originally, this project was stared as a 3-year program (November 2015 to October 2018). Considering the progress of the reginal program, however, the duration of the project was revised as 4 years (November 2015 to November 2019). On December 13, 2018, JICA and ROPME have exchanged a minute of meeting regarding the extension of the partnership period from original 3 three years to 4 years.

[1] CBD: Convention on Biological Diversity, COP: Conference of the Parties

1.3 Area of the Project

This project targets eight (8) ROPME member countries as follows and its sea area (see Figure 1.1):

- Republic of Iraq,
- Islamic Republic of Iran,
- Sultanate of Oman,
- State of Qatar,
- State of Kuwait,
- Kingdom of Saudi Arabia,
- State of Bahrain, and
- United Arab Emirates

1.4 Organizational structure of ROPME

ROPME consists of three (3) organizations as follows.

1.4.1 Council

Council is consisted of the Contracting States' Representatives at Ministerial level. And 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.

In addition, by decisions of the First and Second Meetings of the Council (April 1981/November 1982) 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.

1.4.2 Secretariat

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

- To carry out the assignments under the Convention and its Protocols
- To convene meetings of the Council and its subsidiary bodies, legal/technical expert meetings and ad hoc working groups
- To transmit to Contracting States, notifications, reports and other information
- To consult with the Contracting States on questions relating to the Convention and

its Protocols

- To prepare reports on matters relating to the Convention and to the administration of the Organization

1.4.3 Judicial Commission

As per the decision of the Executive Committee (March 1989), the Judicial Commission was established 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 Statutes of the

Judicial Commission stated clearly the functions of the Judicial Commission as follows:

- jurisdiction to settle disputes between the Contracting States
- jurisdiction in disputes relating to the determination of civil liability and compensation for damage resulting from pollution of the marine environment.
- jurisdiction to give an advisory opinion in all legal questions

1.5 Structure of the Project

Figure 1.2 shows the activities of the project and the relationship between activities and outputs from the project.

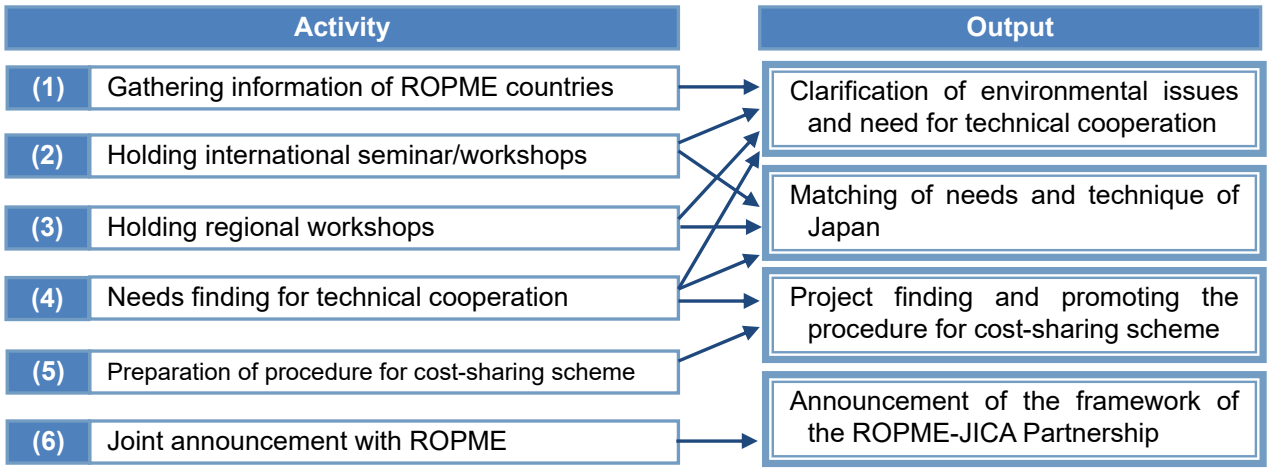


Figure 1.2 Structure of the Project

1.6 Work schedule

The work schedule for the commencement of the project is shown in Table 1.1.

At the time of the commencement of the project, ROPME Secretariat was too busy to discuss and schedule activities for this project, due to already-scheduled own programmes. Therefore, detailed discussion with ROPME Secretariat and the activity of information gathering started in April 2016.

Meanwhile, discussion of cost-sharing scheme in Oman was continued.

Table 1.1 (1) Work Schedule

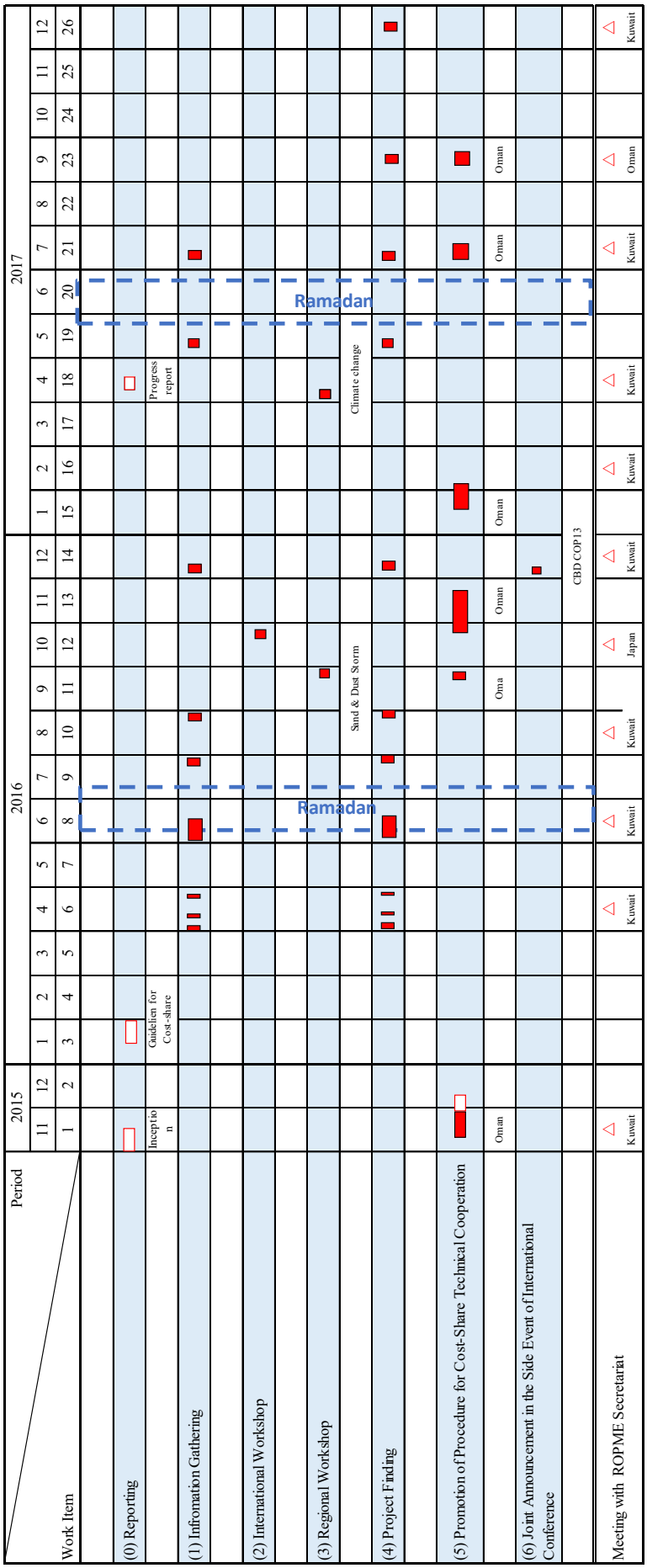
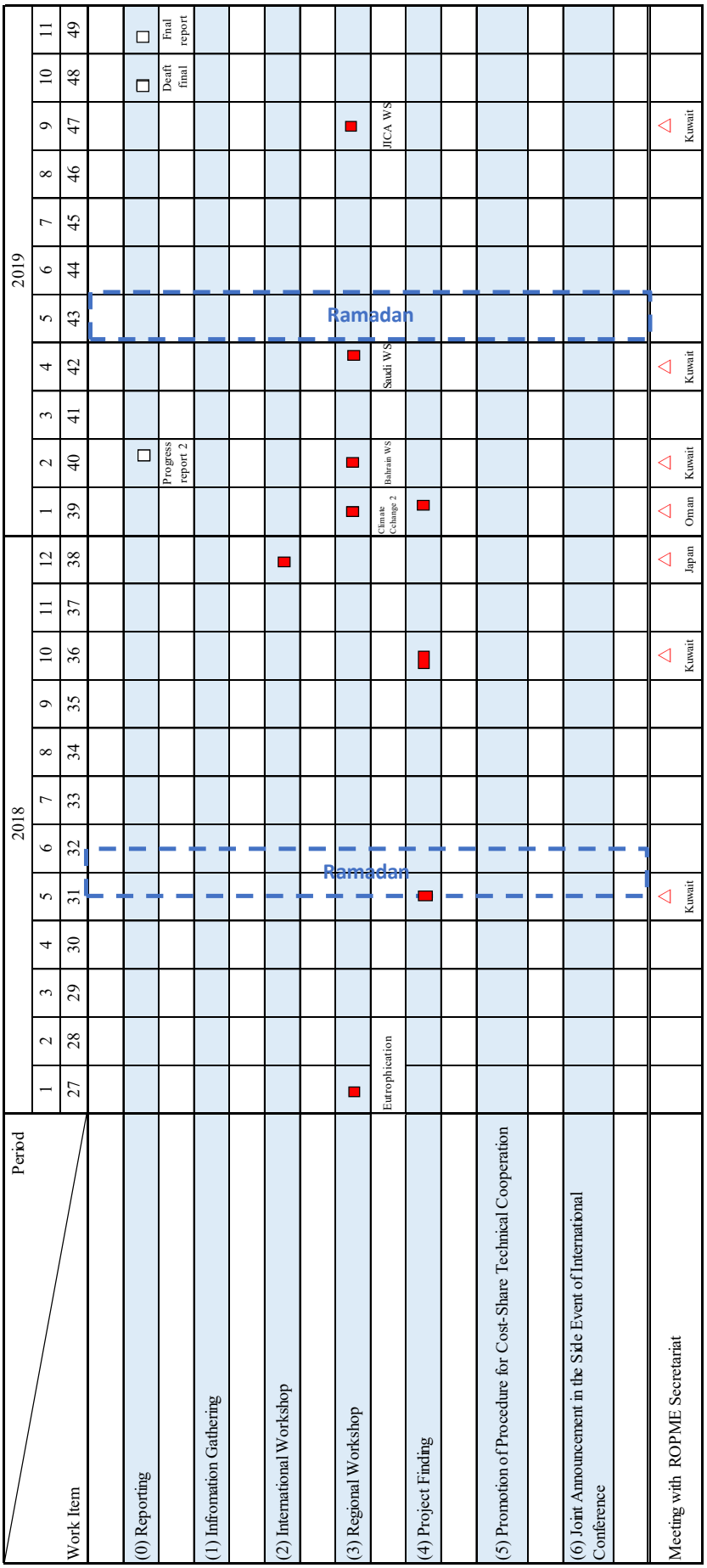


Table 1.1 (2) Work Schedule



CHAPTER 2 OUTPUTS OF THE PROJECT

The outputs of the project are reported in this section.

2.1 Gathering basic information of each country regarding marine environment

Basic information regarding marine environment (e.g. conservation policy, related organization) was gathered visiting the target country and interviewing with the related organization, including questionnaire survey, to retrieve the challenges for conservation of marine environment and potential JICA's technical cooperation for future.
Table 2.1 shows the visited countries and the summary of interviews and questionnaires survey.

Desktop study was also conducted accessing the homepages of related organizations of each country to supplement the gathered information.
Appendix 1 shows the result of the desktop study.

As one of the activities of the ROPME EBM Strategy (see Section 2.3.1), baseline study was conducted by consigning to the Oman-based environmental consultant. This study includes stakeholder dirctory, environmental legistaltion, plicies, data souces, EBM case studies, Marine coastal habitat mapping and gap analysis.
The study mainly targeted the environmental sectors and interviews were carried out based on the published information, including organizational structure, legislation system, policy, environmental information and EBM related activities. Those were arranged and environmental maps were generated to conduct the gap analysis.
The final report is attached as Appendix 2.

Table 2.1 Summary of the Result of the Interview and Questionnair

Period: Nov. 2015 - Mar. 2017

Country	Organization	Activity on the protection of marine environment	Challenges	
			Institutional	Technical
Bahrain	Marine Resources Development Division, Ministry of Works, Municipalities Affaires and Urban Planning	Fisheries directorate developed the strategy to increase aquaculture production to 30% of all fishery production. Seedling production and release to the sea Fishery control in terms of total catch	Improving hatchery and minimizing facility size. Due to decrease of fishery production, they plan the conversion of fishing method from trawling to aquaculture.	Efficient retrieve of recovery of released seedlings. Over fishing.
	Supreme Council of Environment	Accession of international conventions such as CBD, RAMSAR and CITES. Transplantation of Mangrove	Although proptected areas are designated, the management plan is not prepared.	Monitoring of biological aspect (sea turtle, dugon and fisk kill) and coastal water quality (inc. plankton, ballast water and waste water) is the urgent challenges. However, baseline data is not sufficient.
Iran	Marine Environment Division, Department of Environment	Environmental Protection and Enhancement Act, 2005 Law on Establishing Facilities for Wastewater	Inconsistencies between the organizations, Insufficient guidelines for marine and coastal management. Insufficient standards for discharge to marine area.	Destruction of habitats. Weakness of waste management. Weakness of HABs prevention. Transboundary issues.
Iraq	Marine research Centre,	Ecological studies	Illegal fishing.	Oil pollution.

Country	Organization	Activity on the protection of marine environment	Challenges	
			Institutional	Technical
	Basra University	Environmental monitoring Coral study	River water reduction. Agricultural waste. Coastal erosion.	Sewage.
Kuwait	Water pollution section, Environment Public Authority	Install of 15 monitoring buoys New Environmental Law, 2014 New research vessel	Guideline of the new law.	Desalination plant, Red tide, Sewage, Oil pollution. Monitoring of coastal water, wastewater and HAB [2] is the challaenges.
	Shuaiba Center, Environment Public Authority	Quality assessment of Kuwait bay (Cefas UK 2004) The Rehabilitation of Kuwait Bay (JETRO model project 2006) The evaluation of existing environmental conditions and health of marine biota impacted by Mishref pumping station (Cefas UK 2013) EPA ongoing strategy; routine sampling of phytoplankton(HAB), zooplankton, marine fauna and physical and chemical parameters data collection	N/A	Fish health assessment. Rehabilitation of coral and management of micro plactics are also challenges.

[2] HAB: Harmful Algal Bloom

Country	Organization	Activity on the protection of marine environment	Challenges	
			Institutional	Technical
	Environment Science Department, Environment and Urban Development Division, Kuwait Institute for Scientific Research	Coastal eutrophication study using MIKE III Model Proposal was submitted to KFAS (Kuwait Foundation for the Advancement of Science) on Health Assessment of sea water quality and sediment	ICZM[3] and conservation of coral is the priority.	Limited capacity of waste water treatment facility. High temperature waste water discharge from desalination plants.
	Coastal Management Program (CMP), Environment and Life Sciences Research Center, Kuwait Institute for Scientific Research	Study various coastal hydrodynamic and water quality processes in Kuwait water and the inner ROPME sea area Real-time coastal assessment buoy in Kuwait Bay	Lack of regional collaboration between ROPME member countries. No data sharing.	CMP has excellent facilities but they are not utilized enough due to capacity and manpower.
Oman	Marine Conservation Department, Ministry of Environment and Climate Affairs	Coastal Zone Management National Biodiversity Strategy and Action Plan, 2016 National Wetland Strategy, 2016 National Strategy for Development of Fishery and Aquaculture National Management of Coral Reef	Dredging guideline. Environmental Laws.	Beach erosion. Red tide monitoring. Wetland inventory. Coral reef monitoring. Master plan study on marine environment conservation strategy is under planning.
	Tourism Development Minitry of Tourism	Tourism development is planned on consulting basis.	Eco-tourism development plan, targetting Bandar Al Khayran, has been prepared.	N/A
	Ministry of Agriculture and	Study on fishery resources is conducted by the	Cooperation of fishermen is	Indetification of sporning ground and

[3] ICZM: Integrated Coastal Zone Management

Country	Organization	Activity on the protection of marine environment	Challenges	
			Institutional	Technical
	Fishery Welfare	Marine Science and Fshery Center. The Fisheries Resources Development is responsible of the Directorate General of Fisheries Resources Development, which carries out the management of fishermen and control of fishery.	fundamental for the conservation of marine resources. Questionaaire survey to fishermen is also avairable.	other basic study is necesary.
	Facuty of Marine Science and Fisheries Sultan Qaboos University	A lot of study on marine environment and fishery resources has been carried out.	Database of the previous studies can be accessed.	Study papers can be shared through the database.
Qatar	Fish Wealth Department/ Environment Monitoring Department, Mistry of Municipality and Environment	Marine environmental monitoring for chemical, physical, marine sediment on regular basis	Lack of expert of aquaculture, fish diseases.	Lack of scientific data (mangrove, seagrass, coral). Fish stock assessment. Protection of coral reef.
Saudi Arabia	The General Authority of Meteorology and Environmental Protection	National contingency plan for combating marine environment pollution by oil and other harmful substances (1991) General environmental law and its regulation Coordination between several organizations for marine pollution control Conduct studies and researches to assist the marine life Ratified on marine international and global conventions.	Updating laws and regulations. Cooperation with NGOs. Coordination between regional and international organizations. Lack of policies related to marine traffic. Public awareness strategies.	Lack of historical data. Strengthening of marine and coastal monitoring programs. Control of land-based impact. Control of dredging/land filling. Regional action plan on HABs/invasive species. Shortage in Ballast water treatment reception facilities. Restoration of mangroves and coral

Country	Organization	Activity on the protection of marine environment	Challenges	
			Institutional	Technical
		Daily monitoring programme of coastline Application of national standards for wastewater discharge Designation of marine sanctuaries		reefs. Integrated monitoring and assessments. Water demand, desalination and potential impact on fisheries. Coastal zone management. Fish stock enhancement.
UAE	North Region, Ministry of Climate Change and Environment	Conducting several activities such as climate changes, marine environment, alien species, wildlife protection and agriculture since organization has been changed	Even UAE observes fishery restriction such as King fish based on RECOFI's decision, UAE carried out fishing of king fish in other countries and there are some countries did not observe. Some countries don't accede to IMO. Crossborder related subjects, such as fishing regulation and ballast water, might be a issue that need to be solved.	Ballast water control.
	Marine Centre, Ministry of Climate Change and Environment	Strategy on Biodiversity Strategy on Marine Environment Fishing regulation based on fish size and fishing season (no total catch)	Biodiversity strategy and marine environment have been prepared in UAE.	Protection of spawning ground and its protection. Indentification of sporning ground of fishery species and its conservation if important.

Country	Organization	Activity on the protection of marine environment	Challenges	
			Institutional	Technical
	Abu Dhabi Global Environmental Data Initiative (AGEDI)	Coastal zone management, assessment of ecosystem services and vulnerability, assessment of greenhouse gases, blue carbon, assessment of desalination plants etc. Current simulation and ecological model in UAE peninsula	N/A	Impact on desalination plants. (It is forecasted that environmental capacity will be exceed in terms of high salinity). They can provide resional information, such as flora/fauna, habitat, protected area, fisheries species, point sorce load, ocean dinamic model, ocean meteorological model.
	Environmental Department, Dubai Municipality	Management on coastal development, water channel, water quality control (Coastal Zone and Waterways Management Section) Management on wildlife, biodiversity, protected area, fishery, soil, ground water (Natural Resource Conservation Section) Real time monitoring (tide, ADCP, HF Rader) and water quality monitoring at 20 locations quarterly Fishing regulation	Marine Special Planning to regulate offshore development and fishery, including establishment of habitat map, is necessary. Capacity building on Dubai Wetland Center and Fishery Research Center would be necessary.	Coastal erosion and water quality deterioration due to increasing reclamation and residential area in coastal zone. Monitoring on marine protected area (Coral reefs, mangroves). National strategy for climate change adaptation.
	Environmental Agency, Abu Dhabi	Water quality monitoring Conservation of dugongs, sea turtle	N/A	United Arab Emirates Sustainable Fisheries Programme, consisting 9 sub-programmes, targetting

Country	Organization	Activity on the protection of marine environment	Challenges	
			Institutional	Technical
				establishing national fishery policy has just stared. Details, however, cannot be shared at moment.
International organization	ROPME Secretariat	The activitiy on the partnership programme shall be based on the Goal 14 of the SDGs[4].	The priority of ROPME is the activitirs on the Strategic Direction 2017-2020（1)Pollution, 2) Climate Change, 3) Extraction, 4) Ocean Governance） of the Reasional Seas Programme[5].	Challenge to an issue of marine micro plastics.
	Regional Seas Programme, UNEP		Tight cooperation between UNEP and JICA regarding the activity of ROPME was confirmed and agreed.	Isuues on land based pollution control, marine litter, wastewater are important.
	Regional Office West Asia, UNEP	They have signed MOU with various organizations, such as ROPME, IUCN, EU, and Arab League. The relationship with IUCN is tight.	Dissemination of environmental consciousness is fundamental.	They believe that establishement of management plan of marine protected area is urgently necessary.
	Convention on the Conservation of Migratory Species of Wild Animals (CMS)	Conservation of Dugong and see glass beds based on MOU with UAE, Qatar, Bahrain and Saudi Arabia.	Lack of coordination and collaboration amongst member countries which limits regional marine conservation efforts in RSA. Organisations also tend to hold data	Lack of standardised baseline data that can be shared and accessed is a challenge to conservation and marine management. Bycatch of dugong and sea turtles.

[4] SDG: Sustainable Development Goal, Goal 14: Conserve and sustainably use the oceans, seas and marine resources.
[5] Regional Seas Programme: An international collaborative approach to protect the marine environment and its resources, managed by the United Nations Environment Programme (UNEP).

Country	Organization	Activity on the protection of marine environment	Challenges	
			Institutional	Technical
			in-house.	Lack of Habitat map except UAE. Information on the distribution of seagrass, sea turtle and dugon is scattered in ROPME Sea Area. Therefore, tight cooperation between regional countroes is necessary.

2.1.1 Discussion

As common issues in RSA, water quality deterioration by development, occurring of HAB, oil pollution, ballast water management, impact of desalination plants, lack of capacity of wastewater treatment facilities, and bycatch and over catch in fishery sector are raised. Also an issue of marine wastes, which is recently recognized worldwide, is considered. In addition to that, lack of baseline data to assess the above mentioned issues is also realized as a common issue in RSA.

Each member country is carrying out monitoring and protection of ecosystem based on national laws, regulations, standards and strategies. However, as CMS[6] mentioned, coordination activities and integrated data and data sharing among the member countries are limited.

Therefore, baseline data should be gathered and shared among the member states to carry out an integrated assessment for the marine environment and ecosystem in RSA.

ROPME secretariat has a plan to develop ROPME Integrated Information System (RIIS) and showed an interest in clearing house system which has been developed and introduced by Japan Coast Guard in ROPME-JICA Seminar in 2016.

2.2 Holding international workshop in Japan

International workshops were held in Japan, with joint-hosting by ROPME and JICA. The workshops aimed knowledge sharing on marine environmental conservation, introduction of advanced technology for matching between needs from ROPME countries and technologies of enterprises in Japan for further cooperation and business chance.

2.2.1 First workshop

(1) Outline of the seminar

International seminar was held in Tokyo, Japan, in October 2016 as follows:

Period: from 11th October 2016 to 14th October 2016.

Venue: The Prince Sakura Tower Tokyo

3-13-1 Takanawa, Minato-ku Tokyo, 108-8612 Japan

Number of participants: 26

Participated countries: Kingdom of Bahrain, Islamic Republic of Iran, Republic of Iraq, State of Kuwait, Sultanate of Oman, State of Qatar, Kingdom of Saudi Arabia

Hosts: ROPME, JICA

[6] CMS: Convention on the Conservation of Migratory Species of Wild Animals

Joint hosts: UNEP

During the seminar, questionnaire was distributed to know the challenges of each country regarding conservation of the marine environment and to know their expectation on application of Japanese technology to the region.

Detailed report is attached as Appendix 3.

(2) Discussion

1) General overview

Through the series of presentations by Japanese experts, site visits and discussions, Japanese experience and technologies related to the Ecosystem Based Management (EBM) seemed to have impressed the participants and helped them to have ideas towards drafting the EBM Strategy.

They also required further continuous inputs from Japan's experience and technology towards completion of the EBM Strategy.

2) Achievement of the purpose of the seminar

The purpose of the seminar, to introduce the experience of Japan regarding EBM to the ROPME member countries and to share the challenges of each member country regarding marine environment, is considered as achieved.

3) Challenges of the member countries

According to the answers to the questionnaire survey, each country pointed their challenges regarding conservation of the marine environment, while common issues in the region were also realized. The challenges in each country will be followed up by the JICA Study Team to retrieve their needs in details for future technical cooperation. The common issues in the region, such as establishment of database, monitoring system, aquaculture and environmental awareness will mainly be handled and discussed in the meeting of the EBM Strategy Working Group, which might lead to the regional action plans.

Those policies mentioned above were explained and agreed in the wrap-up session at the end of the seminar.

In addition, technologies of private sector in Japan such as improvement of desalination process and oil discharge monitoring using satellite image were introduced and drew attention from the participants. As for the former technology (i.e. desalination), the further discussion was requested by a country, while the latter technology (i.e. oil discharge monitoring) is also being discussed on how to introduce to the RSA.

4) Acknowledgements from the participants

Finally, it appeared that participants enjoyed learning Japanese experience and technologies and also staying in Japan and appreciated the Japanese experience of EBM approaches. Several e-mails were sent by the participants after they come back to their country, expressing the acknowledgment of the hospitality of the seminar.

2.2.2 Second workshop

(1) Outline of the workshop

International workshop was held in Tokyo, Japan, in December 2018 as follows:

Period: from 10th December 2018 to 14th December 2018.

Venue: Intercontinental Tokyo Bay

1-16-2 Kaigan, Minato-ku Tokyo, 105-8576 Japan

Number of participants: 33

Participated countries: Kingdom of Bahrain, Islamic Republic of Iran, Republic of Iraq, State of Kuwait, Sultanate of Oman, Kingdom of Saudi Arabia, United Arab Emirates

Resource persons for the Regional Task Force Meeting

Hosts: ROPME, JICA

Cooperation expert: UNEP

The workshop aimed the introduction of the activities and experience in Japan regarding the conservation of marine ecosystem. Various experiences in Japan, such as conservation of coastal ecosystem, blue carbon, conservation of coastal environment and habitat by Private-Public scheme, conservation of fisheries resources, conservation of coral and conservation of tidal flat and seagrass bed were introduced. Japanese technology of private sectors, related to the themes mentioned above, were also introduced. And applicability of those themes and technologies to the region were discussed.

Detailed report is attached as Appendix 4.

(2) Discussion

1) General overview

Through the series of presentations by Japanese experts, site visits and discussions, Japanese experience and technologies related to the conservation of biodiversity seemed to have impressed the participants and helped them to have ideas toward regional activities.

They also required further continuous inputs from Japan's experience and technology.

2) Achievement of the purpose of the workshop

The purpose of the workshop, to introduce the experience of Japan regarding conservation and management of coastal ecosystem and biodiversity to the ROPME member countries and to share the challenges of each member country regarding marine environment, is considered as achieved.

3) Challenges of the member countries

Although positive interest to the presentations regarding marine biodiversity conservation by Japanese experts were expressed during the Q & A sessions and the wrap-up discussion, the participants do not seem to have concrete ideas about further activities regarding conservation of biodiversity especially coral reefs, seagrass beds and mangroves, because they are not decision makers. It is considered, therefore, that follow-up visit and discussion with not only the participants but also with their superiors in each country might be important. While JICA and JICA Expert Team originally decided to support the activities of ROPME on formation of EBM Strategy at the beginning of the project, various ideas of strategy including marine biodiversity conservation, EBM, marine climate change, marine litter, etc. were risen by ROPME and those meetings were held. During the back-to-back meeting of this workshop, on the Regional Task Force on Marine Biodiversity Strategy for the ROPME Sea Area, present situation of marine biodiversity in the ROPME Sea Area were shared and the framework and schedule for establishing the strategy were discussed. In the discussion, broad approach focusing the conservation of marine environment based on the various strategies mentioned above were proposed by a participant. This policy was explained and agreed in the wrap-up session at the end of the workshop.

In addition, technologies of private sector in Japan such as rehabilitation and creation of tidal flat, coral reef were introduced and drew attention from the participants.

4) Acknowledgements from the participants

Finally, it appeared that participants enjoyed learning Japanese experience and technologies, and also staying in Japan. Several e-mails from the participants were received after they come back to their countries, expressing the acknowledgment of the hospitality of the workshop.

2.2.3 Regional Workshop Held by JICA

Although regional workshop is basically planned and held by ROPME, two regional workshops organized by JICA were held, inviting ROPME member countries and international organizations, to share the progress/result of the project and to introduce Japan’s technique.

(1) Workshop in Oman

1) Outline

This workshop was held on September 2017, inviting ROPME member countries and

international organizations, to share the results and experience of the preparatory survey for the cost-sharing technical cooperation project, which was conducted for one year from September 2016 (see Section2.5).

Programme, participants list, presentations, etc. are filed as Appendix 16 (see Appendix 6 of the appendix)

- Title: Workshop on Development of Marine Environment Conservation Strategy 2050 and Action Plans in Oman - Preparatory Survey for full scale project -
- Period: From 17 September (Sunday) to 19 September (Tuesday), 2017
- Venue: Muscat, Oman
- Programme, participants list: See Appendix
- Number of participant: 35

2) Output of the meeting

- This is the first regional workshop organized by JICA to introduce the Oman's effort, which is expected to lead to EBM Strategy. The ROPME Secretariat and the member countries expressed their gratitude to have had the opportunity of information exchange and intercommunion.
- It was commonly recognized that understanding of present situation of the marine environment including ecosystem and its sharing within the area was important. The expectation of the project Oman and opportunity of similar project were realized.
- There was several participants, who participated in the series of workshops related to this Project (EBM workshop on April 2016, Tokyo workshop on October 2015). With these participation, network within the participants was established. In addition to that, new communication with the participants from Iran, Iraq and Saudi Arabia was also formed, since the number of invitee of each member country was expanded this time.
- As for the further challenges, contribution from fishery sector was weak this time, although participation from both environment and fishery sector were brought into reality. It is considered that enhancement of collaboration between environment sector and fishery sector was necessary by JICA's initiative.

3) Expectation from each country

During the workshop, expectation from each ROPME member country was collected as shown in Table 2.2.

Table 2.2 Expectation from ROPME Member Countries

Country	Expectation
Bahrain	・Advice and cooperation not only for measures to environment for conservation of habitat, but also for the comprehensive measure to damage of habitat caused by illegal fishing and coastal development are expected. ・ According to UNEP/ROWA, Ministry of Energy, Bahrain, is planning transplantation of mangrove and expecting the technical cooperation for that.
Iran	・Inquiry came from fishery sector for a project including assessment and mitigation on the impact to natural and fishery resources caused by discharged water from desalination plants, which are planned in Hormozgan State.
Iraq	・Reduction of water volume at the downstream by the dam construction at the upstream causes as well as intrusion of salt water due to the reduction cause serious impact to ecosystem. Advice and cooperation for measures and policy of management and mitigation is necessary. ・Although UNEP is planning a project on establishment of protected area (coastal area including wet lands), cooperation of JICA for rest of the area, where UNESCO convers. It is important project, from the viewpoint of ecosystem network between Iran, Iraq and Kuwait.
Kuwait	・Cooperation of JICA on coastal monitoring and management of waste water discharge, which were also requested in Tokyo workshop) is expected.
Oman	(It is included in the terms of the cost-sharing technical cooperation, which is now planned.)
Qatar	(Absence)
Saudi Arabia	・Request of assistance of JICA on the issues, such as marine environment pollution and breaking of coastal habitat in the eastern part of the country, was confirmed.
UAE	・Marine waste is the interested theme.

(2) Workshop in Kuwait

1) Outline

This workshop was held as a wrap up of the project to overview of the activities, to update the information of regional challenges on conservation of marine environment, to share ecosystem restoration techniques, to re-confirm the regional common issues and to establish the personal networking for further regional activities.

Programme, participants list, presentations, etc. are filed as Appendix 5.

Period: From 16 September (Monday) to 17 September (Tuesday), 2019

Venue: Conference room of ROPME Headquarters, Kuwait

Number of participant: 44

2) Output of the meeting

- With the presence of the Ambassador of Japan and Dr. Jaseem Beshara, who became the Deputy Secretaries General on September 2019, the workshop started. At the end of the opening ceremony, courtesy call from H.E. Sheikh Abdulla Ahmad Al-Humood Al-Sabah, Director General of the Environment Public Authority, Kuwait, was received.

- JICA Expert Team introduced the objective of the workshop, activities of the Project and Japan's techniques for conservation of natural environment, which might be applied to the region.
- UN Environment introduced policies and various guide lines on conservation of marine environment and challenges in the region.
- Interest in the conservation of mangrove, coral and seagrass was expressed by the member countries during the introduction of measures to conservation of marine environment by member countries.
- As for the regional challenges, such as mangrove transplantation, geographical network of coral, information sharing, costal environment management, and restoration of seagrass bed, were commonly recognized. And further discussion and establishment of sub-committees toward the actual actions were proposed.

3) Expectation form each country

- As the result of the JICA's technical cooperation to Oman on mangrove conservation, regional cooperation by Oman with Kuwait and Bahrain was commonly recognized, expecting the sustainable networking in the region.
- Principles and actual activities on Blue Carbon was introduced, aiming the establishment of policy incentive from viewpoint of multi-beneficial action on climate change (for both mitigation and adaptation) by the project of conservation of coastal ecosystem. Oman and Bahrain expressed strong interest and requested further cooperation.
- Regarding the conservation of coral, high interest for coral conservation by Iraq and Kuwait, which has less coral habitat, was commonly recognized. Especially, activities of Kuwait KISR on conservation and transplantation of coral drew attentions of member countries to form a foundation of sustainable regional activities.

2.3 Holding ROPME regional workshop

Holding regional workshops, which are originally planned by ROPME, was supported by dispatching JICA Expert Team member(s) and lecturer(s) based on the topic of the workshop.

2.3.1 Workshop on ROPME EBM Strategy

(1) EBM Strategy

The United Nations Environment Plan (UNEP) operates the Regional Seas Programmes, targeting 18 sea areas over the world. And the ROPME sea area is one of them. As one of the activities of the programme, UNEP and ROPME have agreed to establish a ROPME Ecosystem Based Management (EBM) Strategy. Since the ideas of the strategy well match with the objective of this

project, JICA decided to join the activity in establishing the strategy.

(2) Outline of the workshop

The first workshop of EBM Strategy was held in April 2016 in Dubai, UAE.

The objectives of the workshop were set as the following:

- To review existing marine environment related policies and management mechanisms at the national and regional levels in the ROPME Sea Area;
- To review the global discussions affecting the Regional Seas policies and strategies, such as 2030 Sustainable Development Goals and CBD Biodiversity Strategic Plan (Aichi Targets);
- To discuss on how the Ecosystem Based Management can be incorporated into a regional strategy, which eventually involves various ocean related sectors (mainly, environment and fisheries);
- To explore common objectives across the two sectors for the development of a Regional EBM Strategy;
- To learn lessons from the other regions which established strategies/programmes on a regional seas scale based on the ecosystem approach; and
- To agree on the process and timeline for the development of the ROPME EBM Strategy mainly through a ROPME-EBM working group.

During the workshop, a working group for ROPME EBM Strategy was formed, and JICA was involved.

At the end of the workshop, Terms of Reference of the Working Group and the Work plan were prepared.

The report of the workshop is attached as Appendix 6.

2.3.2 First EBM Strategy working group meeting

The first EBM Strategy working group meeting was held in Japan on October 2016, as a back-to-back meeting of the International Seminar (See Section 2.2.1 for the details).

In this meeting, common issues in the region, such as wastewater management, monitoring program (ecosystem, water), data management / sharing and ecosystem conservation, etc., were shared and those were prioritized to be solved with the uniformed strategy in cooperation with JICA.

At the end of the workshop, a work plan was modified and shared.

The programme and output are attached as Appendix 7.

2.3.3 Workshop on Communication Tools for Working Group on EBM Strategy

Workshop on communication tools for working group on EBM Strategy was held from 20th to 21st September 2017.

The term "communication" is defined as follows:

> "*Communication for development is a researched and planned process, crucial for social transformation, operating through three main strategies: advocacy to raise resources and political and social leadership commitment for development goals; social mobilization for wider participation and ownership; and programme communication for changes in knowledge, attitudes and practices of specific participants in programmes.*"

This workshop aimed to train the EBM Strategy working group members for further communication to enhance establishment of the strategy.

Programme, materials are stored as Appendix 8

2.3.4 Workshop on Sand and Dust Storm

(1) Objectives

The Scientific Committee Meeting on Monitoring and Assessment of Sand and Dust Storms in ROPME Sea Area was held in Dubai, UAE on 26 – 28 September 2016. This is the second workshop following the Technical Workshop on Monitoring and Assessment of Sand and Dust Storms in the Marine Environment of the ROPME Sea Area held on October 2015, which was held by ROPME before this project started.

The objective of the meeting was to obtain consensus within the member countries for a monitoring and a baseline assessment plan to clarify the impact of sand and dust storm on the marine environment amid concerns that mineral and trace metal included in the sand and dust might bring red tide generation and the sand and dust might accumulate on coral reefs and benthic animals.

The meeting was organized in cooperation with NFP-UAE, GEOMAR (Germany) and the University of Birmingham (UK).

Programme, participants and report are attached as Appendix 9.

(2) Presentation by dispatched Japanese expert

Dr. Masao Mikami of Japan Meteorological Business Support Center (JMBS) was dispatched to present a case study for the assessment of SDS impact on the marine environment entitled "Monitoring and Modeling of Dust Storm and its Impact to the Ocean". He showed that the characteristics of Asian dust are complex due to its complex ground surface condition and topography. And the snow cover and seasonal change of vegetation will affect the outbreak of dust storm in the Northeastern Asia.

In order to monitor the wind erosion process in this region, he has been conducting field campaigns with the cooperation of China and Mongolia. And based on the observational information, a new

dust emission process model was integrated into the new global dust model, Model of Aerosol Species IN the Global AtmospheRe (MASINGAR), which is now used for operational dust forecast information by Japan Meteorological Agency (JMA).

In the presentation, international cooperation through the World Meteorological Organization (WMO) and the Tripartite Environment Ministers Meeting between Japan, China and Korea (TEMM) was introduced and comments were also made of dust impact on the atmospheric environment and the ocean ecosystem.

(3) Output of the meeting

In this meeting, the member discussed the plan and time frame such as a Pilot Study and Baseline Assessment of Impact of Sand and Dust Storm (BAISDS) based on the basic concept which agreed in the 1st meeting. The major outputs are as follows;

- Continuous monitoring will be carried out July to October in 2017 when SDS is frequently generated at 3 to 5 locations as the Pilot Study.
- Full scale continuous monitoring will be carried out during a year of 2018 and Impact on the Ocean by SDS will be assessed as BAISDA-2018.
- Monitoring equipment will be purchased by each member country and analysis will be carried out by one laboratory to secure uniformity of data.
- Analysis will be done by several laboratories and the accuracy of the analysis will be assessed as Follow up study.
- GEOMAR will conduct some trainings on methodologies of data acquisition, analysis and assessment (the training will be conducted step by step from April 2017)
- The acquired data will be input and managed by ROPME Integrated Information System (RIIS)

(4) The way forward in ROMPE-JICA partnership

The implementation of BAISDS-2018 has taken initiative by GEOMAR in cooperation with ROPME and its framework is based on an oceanographical basis. In the BAISDS, only aerosol will be analyzed in the air and only water quality will be analyzed in the sea.

Dr. Mikami thinks that it is a significant program to carry out air and ocean monitoring by member countries in same methodology, however, not only the concentration of the aerosol but also settlement volume shall be taken by sediment sampling and analysis of mathematical model shall be done to calculate flux of aerosol into the ocean.

In Japan, a study is being carried out from the viewpoint of material transportation from air to ocean and Dr Mitsuo Uematsu of Atmosphere and Ocean Research Institute, University of Tokyo takes initiative in this field.

KISR owns the LIDAR, which is able to monitor sand dust vertically, and implements some studies

on the reduction of SDS by greening and on the impact on the ocean by SDS. So, KISR showed high interest in Dr. Mikami's presentation, especially in the methodology of the monitoring and modeling.

In these contexts, cooperation approaches from Japan can be summarized as follows;

- To introduce the Japanese experience in material transportation from air to ocean in the field of oceanography.
- To introduce the Japanese experience in the modeling and monitoring of SDS and carry out activities of information collection in this field and deepening relations with the member countries. The activities might be effective to carry out for KISR or I.R Iran. Iran was absent from the meeting, but Iran shows the high interest in this field and Ministry of the Environment of Japan is continuously carried out political dialogues with Iran in SDS and other environmental issues.

2.3.5 Meeting of the Regional Task Force on Marine Climate Change Dimensions in ROPME Sea Area

(1) Outline

British organization, Center for Environment Fisheries and Aquaculture Science (CEFAS), is cooperating ROPME on marine climate change.

This meeting was held from 10 to 12 April 2017, aiming establishing the concept of the activities for next 30 months.

JICA Expert Team member and one lecturer attended the meeting.

Programme, participants and report (Japanese) are stored as Appendix 10.

(2) Presentation by dispatched Japanese expert

Dr. Yoichi Ishikawa, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), made a presentation on activities for climate change adaptation in coastal region in Japan. And measures and challenges for both bottom-up adaptation and top-down adaptation were discussed. The importance of continuous monitoring for quantitative evaluation of adaptation effectiveness was realized.

(3) Output of the meeting

Task force team was formed for establishing concept. And the further schedule was determined for establishing strategy of adaptation and mitigation for climate change as shown in Table 2.3.

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Table 2.3 Schedule of the task force team

	Risk assessment and adaptation	Mitigation against capacity degradation of Blue Carbon fixation
Phase 1 (18 months)	Analysis of present situation and potential threats Preparation of summary report card	Listing of Blue Carbon inventory Preparation of summary report card
Phase 2 (8 months)	Risk assessment of each sector Analysis if potential adaptation Preparation of summary report card	Plan of mitigation for enhancement of Blue Carbon fixation capability Preparation of summary report card
Phase 3 (6 months)	Summary of adaptation and mitigation, and action plan Monitoring plan for evaluation of the action plan Approval of ROPME committee	
phase 4 (after)	Implementation of adaptation and mitigation measures, modification of the plan based on the result of the monitoring	

Note: 1-2 times of workshop will be held in each phase.

(4) Expected contribution of JICA

According to the closing remarks by ROPME, expectation for contribution of JICA in line with the activity on EBM Strategy was expressed.

2.3.6 Meeting of the Regional Task Force on Eutrophication and HABs

(1) Outline

British organization, Center for Environment Fisheries and Aquaculture Science (CEFAS), is cooperating ROPME on eutrophication and Harmful Algal Blooms (HABs).

This meeting was held from 16 to 18 January 2018, aiming establishing the concept to establish eutrophication and HABs strategy.

JICA Expert Team members and one lecturer attended the meeting.

Programme, concept note and report (Japanese) are stored as Appendix 11.

(2) Presentation by dispatched Japanese expert

Dr. Yasuo Fukuyo, Emeritus Professor of Tokyo University, made a presentation on activities in Japan related to eutrophication and HABs. International activities and challenges on eutrophication and HABs were discussed.

(3) Output of the meeting

Concept note on Regional Eutrophication and Harmful Algal Blooms Strategy for the ROPME Sea Area was agreed.

(4) Expected contribution of JICA

Some of ROPME member countries desire to establish red tide monitoring system, using remote sensing technique. This kind of needs might lead to multiple-country-involved project in the region.

2.3.7 Workshop on Marine Climate Change

(1) Outline

This workshop was held from 15 to 17 January 2019 as the second workshop on marine climate change (see Section 2.3.1), and the first meeting of the Task Force Team Member for discussing the terms of reference and the work plan of the Task Force Team.

JICA Expert Team member attended the meeting as an observer. and gathered information for further cooperation.

Programme, concept note and report (Japanese) are stored as Appendix 12.

(2) Output of the meeting

In this meeting, the terms of reference and the work plan of the Task Force Team were discussed.

(3) Expected contribution of JICA

According to ROPME Secretariat, they plan to form a technical support team other than the task force team. It is considered that JICA can contribute this task by dispatching experts.

2.3.8 Workshop in Bahrain

(1) Outline

Among the collaboration between ROPME and JICA, Ecosystem Based Management (EBM) is regarded as the most important theme. The working group on the EBM Strategy was established with two focal points of environment and fisheries fields from each member state. At the beginning of this programme, the national focal point of Kingdom of Bahrain for EBM working group has expected to communicate with Japanese expert in fisheries sector. Thus, a workshop focusing on fishery resource conservation and management including aquaculture technology development was held on 20th February 2019.

Professor Yoshifumi Sawada, Aquaculture Research Institute, Kindai University was invited, to make two presentations on the fisheries resource conservation and management and DNA-based identification technology in fisheries.

Programme and participants are stored as Appendix 13.

(2) Output of the meeting

It was shared that the techniques and expertise on the conservation and management of fisheries resources, including aquaculture techniques in Japan would contribute to solve the challenges in Bahrain, and the education is most important way and feasible collaboration.

(3) Expectation of the Bahrain side

Bahrain side desired to dispatch staff(s) to Japan as master course and possible supports from Japan side.

2.3.9 Workshop in Saudi Arabia

(1) Outline

One of the scope of ROPME~JICA Partnership programme is to share the Japanese technologies and experience in the marine environment conservation to contribute to tackle the challenges of ROPME member states.

In response to a request from the Ministry of Environment, Water and Agriculture of the Kingdom of Saudi Arabia (MEWA), which is actively engaged in marine environmental conservation management and fishery resource conservation management, Japanese experts were invited to a workshop held on the 23rd April 2019, which is focused on marine environment issues, and fisheries resource management and human resource development.

Programme and participants are stored as Appendix 14.

(2) Output of the meeting

The lecture from Professor Hideshige Takada on the microplastic problem and the lecture from Professor Yoshifumi Sawada on the use of multipurpose DNA technology for fisheries resource conservation and aquaculture received great interests from the Saudi Arabian side. The importance of continuous network and training and studying abroad of students were confirmed.

Saudi Arabia's interests was high because of hosting G20 Summit in 2020, and the marine environmental issues including marine plastics in the Red Sea was introduced by the expert from the Red Sea and Gulf of Aden Marine Environment Protection Organization (PERSGA).

In addition, the staffs of Fisheries Department, MEWA reported on the status of aquaculture activities.

(3) Expectation of the Saudi Arabia side

The Saudi Arabia side expected supports of Japan for implementation of training course and studying Japan for Saudi Arabian students.

2.4 Needs finding for JICA technical cooperation

JICA has been conducting the study for establishment the scheme of cost-sharing technical cooperation. During the project period, the JICA Expert Team conducted needs surveys by questionnaire and interview. The result of information gathered is also referred.

Based on the result of the needs survey, JICA Expert Team will visit the member countries to find a potential project for further discussion.

2.4.1 Needs findings

Table 2.4 summarizes the potential needs of each country which might be a project, based on the

interviews and questionnaires.

Table 2.4 Potential Needs

Country	Organization	Field	Potential Needs
UAE	Marine Center, Ministry of Climate Change and Environment	Fishery (aqua culture)	1) Protection and identification of spawning grounds for principal fishery species is a national issue. DNA analysis technology for identification of spawning ground is necessary. UAE government has already requested a cooperation of JICA based on cost share scheme 2) UAE government would like to expand the production of aquaculture. Currently, production of aquaculture in UAE is less than 1,000 ton/year.
	Coastal Sustainable Department, Ministry of Climate Change and Environment	Environment(database) Environment (technical seminar)	1) Several water quality standards are set up in UAE not only national standards but also standards by emirates and several sectors such as oil or fishery. Monitoring methodology, parameter and frequency etc. are also different in each organization. Therefore, UAE would like to establish integrated environmental standards and standard procedure for environmental monitoring and develop integrated database to manage the acquired data. Especially, Development of real time monitoring system and data base system using GIS are requested to JICA. 2) Since ROPME-JICA Seminar is held in Japan and number of participants is limited, a regional seminar sharing Japanese experience and technologies is requested to be held in the region. Comprehensive topics for the theme of the seminar are recommended including laws/regulations, organizations, technical issues related to environment.
Bahrain	Ministry of Works, Municipalities Affaires and Urban Planning	Fishery (aqua culture)	1) Dispatch of Japanese expert to share advanced aquaculture technologies in Japan is requested. Facility for aquaculture has been already developed, so technologies for management and minimizing the facility are necessary, since Bahrain has limited land area. 2) Bahrain would like to develop Regional Aquaculture Center in the future.
	Supreme Council of Environment	Ecosystem (ecosystem monitoring)	1) Monitoring of Dugong and Sea turtle is required since Bahrain accede to international conventions such as CBD, RAMSAL and CITES. In addition to this, monitoring for fish kill, reclamation and dredging is also necessary.

Country	Organization	Field	Potential Needs
			2) Immigration of alien species from ballast water is concerned, however, the impact cannot be assessed since there are limited baseline data for plankton and coastal species. Hence, monitoring programme on above issues is needed to be developed under the cooperation with Ministry of Transportation.
		Ecosystem (mangrove plantation)	3) Mangrove rehabilitation project is carried out. Mangrove is also transplanted in Alert bay, but it does not work well due to sediment pollution and high salinity. Therefore, technical cooperation for the mangrove transplantation is requested.
		Water quality (wastewater treatment)	4) There are a lot of issues in waste water and solid waste management. Recycle of the solid waste is not carried out and all solid waste is landfilled except medical waste which is incinerated by an incinerator made by France. There is no centralized waste water treatment facility in Bahrain and some factories treats the waste water by their own facility however, some of them don't work due to maintenance. Study and training for waste water treatment were carried out in cooperation with JICA in 2005, additional technical improvement is necessary.
Iran	Department of Environment	Ecosystem (ecosystem evaluation)	1) Sharing Japanese experience in Ecosystem Evaluation is requested.
	Iran Fisheries Organization	Fishery (resource management)	1) Detail studies for spawning grounds and seasons to protect fishery resources are necessary but budget is limited.
Iraq	University of Basra	Fishery (resource management) Ecosystem (inventory, coral conservation)	1) Capacity developments for fishery resource management and modeling are necessary. 2) Study for development of Ecological Map is necessary 3) Cooperation to carry out monitoring and management of coral reef which has been found in Iraqi water area is highly requested to JICA.
Kuwait	Environment Public Authority	Waste (marine litter)	1) While the issue of micro plastics in the ocean has been a world-wide concern, there is little attention in Kuwait. Therefore, JICA's assistances for enhancement of awareness, research and measurements are strongly requested.
		Water quality (wastewater management	2) There are a lot of emergency outlets for discharging storm water and emergently over flown wastewater along the coast of Kuwait, but unexpected discharges, which might be illegally discharged, have been observed in some of them. Such waste discharges have caused serious degradation in coastal environment, especially in Kuwait Bay.

Country	Organization	Field	Potential Needs
			Accordingly, JICA's assistance for developing monitoring system on major outlets, methodology of identifying illegal discharge and plan of restoration in polluted area are requested.
		Ecosystem (ecosystem monitoring)	3) At the same time, JICA's assistance for implementation of the biological monitoring project which can evaluate the health of coastal environment through monitoring on fishes and sessile organisms are requested.
		Ecosystem (coral conservation)	4) Coral bleaching and coral reef disruption have been serious problems in southern coastal sea of Kuwait. It is considered that those problems are caused by water temperature rising, water quality degradation and navigational channel dredging, and 70 % has been disappeared. Accordingly, Japan's assistance based on coral transplanting and coral reef restoration techniques are requested.
	Kuwait Institute for Scientific Research (KISR)	Ecosystem (conservation of tidal flat)	1) As demonstrated in the JETRO study project on Kuwait Bay rehabilitation during 2004-2008, there is a vast extends of tidal flat in Kuwait Bay, and a study of water purification project based on evaluation of diversity and biomass of benthic organisms in the intertidal zone has been planning. There is possibility of cooperation with JICA.
Saudi Arabia	Ministry of Environment, Water and Agriculture	Environment (monitoring) Waste (marine litter) Fishery (resource management)	1) Interest to hold a workshop in Saudi Arabia is raised with following topics. 1. Pollution impacts Measurement on the marine environment (vessels coating to inhibit microbiological adhesion ） 2. The effect of the use of oxidizing degradable additives on plastic materials, impact on decomposition, and production of micro plastics on the marine environment and its health effects 3. Activation of circular economy and recycling programs 4. Study of the level of mercury and heavy metals pollution in the marine environment, aquatic organisms, fish tissues, and its effect on human health 5. Study of fish stocks and capacity in the Red Sea, how to sustain it, activating manufacturing industries of the fishery sector, developing fishing harbors, fishing associations and fishing efficiency programs 6. Environmental Capacity-building related to the marine environment and fisheries

Country	Organization	Field	Potential Needs
	Directorate of Fisheries, the national fisheries development Program	Fishery (value chain, fisherman's union, resource management)	1) Interest to visit Japan to learn following subjects. 1 Value-chain Development for Sustainable Use of Fisheries Resources (with an emphasis in sixth industrialization activates) 2 The Fisheries Organization roles toward Responsible Fisheries and Port Development- 3 Sustainable Use of Fisheries Resources through an Integrated Analysis Model of fish stock assessment.
	General Authority of Meteorology and Environmental Protection	Environment (database) Waste (marine litter)	1) Lack of baseline data is highly recognized in Saudi Arabia based on security issue. Japanese technology or experience would be highly useful regarding data sharing and publication 2) Microplastics is also recognized a priority issue for ecosystem conservation.
	Saudi Wildlife Commission (SWC)	Ecosystem (inventory)	1) Saudi Arabia has the top second population of Dugong in the world. However, no survey has been conducted due to lack of budget and experts. Cooperative survey is necessary together with Saudi Arabia, UAE and Qatar, however, coordination of these countries is not very well, Thus the role of JICA would be effective. 2) There are no regulations or strategies for marine mammal. Priority of SWC is sea turtles, dugong, seagrass and seaweed, coral and mangrove. 3) Inventory survey in Red sea has not been conducted since JICA survey in 2002. So update of the inventory is highly important

2.4.2 Discussion

(1) UAE

Cooperation in the study for identification and protection of spawning grounds has been already requested to JICA by UAE government based on cost share scheme. Preferentially implementation of the study is deemed to be necessary.

Environmental monitoring is a regional issue in RSA. Since Japan has advanced monitoring technologies and best practices of water quality management, Japan could contribute on this issue. Holding a national or regional workshop on environmental monitoring and water quality management is recommended within the ROPME-JICA partnership framework.

(2) Bahrain

National maricluture strategy is already approved by Deputy Prime Minister and Minister of Works, Municipalities and Urban Planning and the proposal for technical cooperation on aquaculture has already submitted to JICA.

Requested process is as follows;

- The short term expert is dispatched to develop detail programme and budget.
- Trial implementation of the programme is carried out (dispatch of expert around 4 to 6 months is requested)
- The full scale programme is carried out (from 2017)

The submitted proposal is specialized in fishery fields, so if the cooperation is carried out within the ROPME-JICA partnership framework, association with sustainable fisheries or ecosystem management is required.

(3) Iran

A project on Masterplan for the Coastal Ecosystem Conservation is being planned under cooperation with JICA. Above mentioned issues raised (see Table 2.1 and Table 2.4) could be accommodated in this study.

(4) Iraq

A proposal for seafloor mapping and delineation of the coral reefs was submitted to JICA on May 2016 from University of Basra. Sharing Japanese experience or technology in this field could be accommodated in the above mentioned seminar for the environmental monitoring (see UAE section).

(5) Kuwait

While there is a fundamental issue that the international commitment with Kuwait is still difficult to agree, all three issues raised by Environmental Public Authority, State of Kuwait (EPA) are highly expected on Japan's assistance because of technical aspects.

For the issue of micro plastics, Japan would be able to organize appropriate bilateral cooperation as well as UNEP or European country's involvement, since Japan government has been recognized to lead development of monitoring procedure in the ocean in the framework of G7 meeting. On the other hand, ROPME also plans to hold a seminar regarding this topic and, therefore, JICA Expert Team will handle this matter as a regional common issue.

For the issue of illegal discharge of wastewater, it should be very urgent needs for the cooperation, because the illegal discharge has been recently prohibited by the law in Kuwait. Japan's experience in control and inspection of wastewater discharge is a good practice for this request, and would contribute to solve it.

Japan would contribute to develop a system of biological monitoring in intertidal zone as well.

For the coral transplanting and restoration of coral reef, Japan's assistance would be very effective, since Japan has developed practical procedures and accumulated various experiences.

While the technical cooperation in Kuwait might be conducted with EPA as the focal point of ROPME as well as a policy maker and measure executor, KISR would be one of good partners in

these study projects.

(6) Saudi Arabia

Saudi Arabia government and JICA are now discussing for the planning of mini workshop for the expected fields and Japan visit for the fishery field. It could be realized by cost sharing basis.

Dugong survey seems like important since limited survey is conducted even the country has the second largest population in the world.

2.5 Preparation of procedure for cost-sharing scheme

If practical need of a project was realized, procedure of cost-sharing technical cooperation would have been confirmed and its detailed technical matters would have been discussed. Since financial matters must be considered for cost-sharing scheme, legal framework, such as public finance law, would have also be studied.

At the beginning of the project, JICA and Oman have been trying to finalize the detailed discussion on a project for marine environmental conservation. This matter was prioritized to continue and the JICA Expert Team concentrated on this subject.

2.5.1 Oman

(1) Background

Oman desires to set up a master plan for conservation of coastal environment based on the Oman Vision 2050. After Oman graduated from ODA country in 2013, JICA and Oman have been discussing regarding cost-sharing technical cooperation.

And practical discussion of the scheme started in November 2016 as one of the activities of this project. The Terms of Reference (TOR) of the project was prepared between the JICA Expert Team of this project and Oman Technical Committee, which consists of representatives from the Ministry of Environment and Climate Affairs, the Ministry of Agriculture and Fishery Welfare, the Ministry of Tourism and Sultan Quaboos University.

Financial aspects, such as money flow on cost-sharing, were also discussed and draft documents were prepared.

The prepared documents are attached as Appendix 15.

Since then, however, the budgetary concerns arose within the government of Oman, due to downturn of oil price over the world, and the discussion on the cost-sharing technical cooperation was suspended.

On May 2016, JICA decided one-year activity within this project as a preliminary activity of the cost-sharing technical cooperation. After several discussions with the counterpart of Oman, the

Ministry of Environment and Climate Affaires (MECA), regarding the contents of the one-year activity (herein after referred to as "Preparatory Survey"), the survey started on September 2016.

(2) Preparatory Survey

The Preparatory Survey consists of five (5) phases as shown in Table 2.5

As the prepared TOR, mentioned above, planned EBSA[7] screening as the first step, the study on EBSA screening was mainly focused on this study. Transfer of technique of satellite image analysis, as a tool of EBSA screening and further activity of cost-sharing technical cooperation, was also aimed.

The report of the Preparatory Survey is are attached as Appendix 16.

Table 2.5 Outline of Preparatory Survey

Phase	Period	Activity
1	25-29 Sep., 2016	・Forming of the working group ・Confirmation of existence of information ・Discussion of the idea of a pilot project ・Discussion of the candidate site of the pilot project
2	23 Oct.-17 Nov., 2016	・EBSA Screening Study ・Study on a pilot project
3	22 Jan.-1 Feb., 2017	・Workshop on satellite image analysis
4	17-19 May, 2017	・International workshop to share the experience of Oman.
5	Apr. 2018	・Submission of final report

(3) Cost-sharing project

Oman and JICA had several discussions on the preparation of the cost - sharing project. But, due to the difficulties to secure the budget for the cost-sharing project by Omani government, the project scale was reduced and new cost-sharing programme, training course related conservation of coastal environment, was proposed and discussed. At the end, however, the cost-sharing ratio (Japan side less than 30%) was not approved by the Ministry of Foreign Affairs of Oman. And the implementation of the programme theme was suspended.

2.5.2 Other country

Although several potential projects were identified and some projects were actually requested (see Section 2.4), project formulation is not progressed due to the difficulties of agreement between the target country and Japan, based on the principle of cost-sharing ratio (Japan side less than 30%), as

[7] EBSA: Ecologically or Biologically Significant marine Area

like Oman's case (see above).

However, workshops were held based on the cost-sharing from both party (target country and Japan), since the cost did not cost much..

(1) Bahrain

Regarding the Ecosystem Based Management (EBM) strategy, advice from Japanese expert of fisheries sector has been requested by the national focal point of Kingdom of Bahrain. Thus, one day workshop focusing on fishery resource conservation and management including aquaculture technology development was held (see Section 2.3.8).

(2) Saudi Arabia

Request of mini workshop regarding environmental issues was submitted from Ministry of Environment, Water and Agriculture to JICA through the Embassy of Japan in Saudi Arabia.

After detailed discussion, one day workshop was held (see 2.3.9).

2.6 Joint announcement with ROPME

Outcomes from the project and activities challenged by ROPME and member countries was planned to announce at the side event of international conferences, such as CBD/COP 13. Since the progress of establishment of EBM Strategy is slow and another outcome of this project is minor, joint announcement with ROPME were passed over during this period, although Ramsar COP 13 in October 2018 and CBD COP 14 in November 2018 were held.

2.6.1 Side Event on CBD COP13

During the 13th Conference of the Parties of Convention on Biological Diversity (CBD COP13), a side event was held in cooperation with UNEP to share the activity on ecosystem based management in the ROPME sea area.

Date: 15th December 2016.
Time: 18:15-19:30
Venue: The Moon Palace Hotel, Cancun, Mexico
Universal Building Main Floor, Contact Group 6 Meeting Room
Number of audience: 35

Two (2) presenters were invited from Oman and Kuwait to introduce of their challenges and activities regarding marine environment.

Representatives from ROPME secretariat, however, did not attend the event, due to pre-scheduled

affairs.

The ideas of ecosystem based management seemed to have impressed and thus, the purpose of the side event, to introduce the JICA's cooperation on EBM Strategy, is considered as achieved.

Details are reported as Appendix 17.

2.6.2 Announcement in another conference

Outcomes from the project and activities challenged by ROPME and member countries was originally planned to announce at the side event of international conferences. Since the progress of establishment of EBM Strategy is delayed, joint announcement with ROPME were passed over after the CBD COP13.

CHAPTER 3 DISCUSSION AND RECOMMENDATION

3.1 Discussion on achievement

3.1.1 Available information

Baseline data collection study was carried out to provide a series of directories that list i) major stakeholders, ii) national environmental legislation, iii) what types of data are held by which government organizations, iv) case studies demonstrating how the EBM approachs, and v) brief gap analysis in the region concerning EBM that has been applied in each member state.

The development of a 'baseline‘ report that puts together highly relevant information for the first time will contribute significantly to the process of preparing a strategy for EBM in the RSA. As a basic study, this is expected to be an clear indicator that the region is still a some way from having sufficient organizational capacity to be able to organize, plan and execute a complex EBM programme. Therefore, it is recommended to ensure that such study shall be simple with achievable and fundamental objectives (actually, ROPME decided to organize the EBM working group consisting only environmental and fishery sector at the beginning).

However delivering some fundamental objectives will improve the capacity of the ROPME region as a whole to meet its obligations towards environmental management and conservation under national and international commitments. Such fundamental objectives should include i) coastal habitat mapping, ii) identifying significant ecological areas, iii) planning and delivering more comprehensive and systematic network of protected areas, and iv) establishing a regional environmental monitoring network. Agreeing a strategic framework with explicit goals, objectives, indicators and assumptions within which these fundamental objectives sit as well as potential future objectives will be a very significant achievement for ROPME member states. The contribution of this baseline study lies in providing some of the building blocks on which the coordination and development of a robust and integrated EBM program depends.

It was realized during the baseline study that there are limitations of access to the data contained in the directory, such as the policy and data such as environmental mappings. It is estimated that the directory information is changed frequently at a rate of approximately 10% every six months, so it is recommended that a process of updating the directory must be conducted every 12-24 months in order to keep the records as current as economically feasible.

It is also recommended that some or all of the gaps in coastal habitat mapping shall be filled during the EBM process using a harmonized habitat classification system, to contribute to the ROPME’s role in compiling and sharing the consolidated and updated coastal habitat map of the region to the member states.

3.1.2 International workshop

Several Japanese experts were dispatched to a series of international workshops and regional

workshops, in line with the priority issues of the region, collected through needs survey under the project.

Table 3.1 lists the priority issues of the region and the topics introduced in the workshops.

At the international workshop held in Tokyo, matching events between regional needs and technologies of Japanese private companies were also conducted. Amongst other things, the technology identifying polluter vessels by using of AIS (Automatic identification system) and satellite images attracted interest of ROPME secretariats, and Skyperfect JSAT co. visited Kuwait to have discussion with ROPME secretariat.

Until now, there were few occasions to communicate Japanese researcher or companies with ROPME member states on coastal environment fields. Thus, the providing networking occasions at the workshops create precious opportunities both Japan and ROPME member states.

It is recommended that opportunities or mechanisms for continuous networking with Japanese experts and ROPME member states should be created.

Table 3.1 Priority Issues of the Region and Topics introduced in the Workshops

Priority issue	**Required technology / introduced topics**
Conservation, creation and sustainable management of biodiversity	● Habitat restoration through slope structures [PARI] ● Artificial tidal flats using dredged material and by-product (steel slag) [PARI] ● Satellite image analysis for habitat and EBSA identification [RESTEC] ● Management methodology of marine habitat under public participation [Yatsu Tidal flat] ● Coral Reef Conservation [Dr. Kakuma] ● Technology on habitat conservation and restorations (Tidal flat, Mangrove, Seagrass) [Toa construction and Toyo construction] ● Activities of Coastal Ecosystem Restoration in Port and Harbour Sectors in Japan [Dr. Nakamura] ● Our ongoing mangrove activities focused on SDGs [Dr. Baba]
Climate change mitigation and adaptation, and Blue Carbon	● Ecosystem-based Disaster Risk reduction (Eco-DRR) [Yachiyo Engineering Co.] ● Global scale ocean monitoring and simulation technology to assess impact of climate change.[JAMSTEC] ● Roles of blue carbon ecosystems in climate change measures and blue infrastructure [Dr. Kuwae]
Integrated coastal area management (ICAM)	● Ecological simulation with consideration of ecosystem network [Dr. Furukawa] ● Introduction of Sato-umi concept and sharing experience of the Sato-umi activities (improvement of biological productivity and diversity through human interaction) [Dr. Matsuda] ● Introduction and sharing inter-sectoral approach and public-private cooperation [MLIT] ● Integrated Data base system [JCG] ● A turning-point of Japanese policies for the management of water environment [Dr. Okada] ● Conservation of Marine biodiversity and ecosystem service-Several case studies in Japan [Dr. Shirayama]

Priority issue	Required technology / introduced topics
	● Conservation of Enclosed Seas in Japan and its contribution to ROPME Sea Area [Dr. Suzuki]
Pollution mitigation and control	● AIS and satellite images (remote sensing) for tracing polluters in the ROPME Sea Area (with MEMAC) [Skyperfect JSAT Co.] ● Water treatment technology both centralized treatment plant and on-site facilities (Johkasou) [MOE] ● Introduction of Total Pollutant Load Control System and relevant regulations [MOE] ● Introduction of on-site Inspection technique. [MOE] ● Marine litter and oil collection vessel [MLIT] ● Oil collection technology [World chemical Co.] ● Technology on reducing impact by Desalination Plant on marine environment [the Salt Industry Center of Japan] ● Eco friendly Dredging Technology [Hayamizu Gumi Co.]
Sustainable fisheries and aquaculture	● Designation of Essential Fish Habitats (including methodology development) [RESTEC] ● Fishery resource management [NRFS] ● Introduction of Fisheries co-management [NRFS] ● Effort on Restoration of Tidal-flat and Seagrass Bed by fishermen [Mr. Tanaka] ● Identification of Spawning ground using DNA analysis and Bio-logging system [Dr. Sawada] ● Fishery Resource Management and Ecosystem Preservation [Dr. Kaneko]
Prevention and control of Invasive species and HABs	● Introduction of Total Pollutant Load Control System and relevant regulations [MOE] ● Automated water quality monitoring system [Dr. Matsuda, JCG, JFE Advantec] ● Monitoring and Modeling of Dust Storm and its Impact to the Ocean [Dr. Mikami] ● Japanese activity for climate change adaptation in coastal region [Dr. Ishikawa] ● Activities in Japan related to eutrophication and HABs [Dr. Fukuyo]
Marine Litter	● Microplastic and its impacts on marine organisms and human health [Dr. Takada]

Note:
PARI: Port and Airport Research Institute
RESTEC: Remote Sensing Technology Center of Japan
EBSA: Ecologically, Biologically or Significant (Marine) Area(s)
JAMSTEC: Japan Agency for Marine-Earth Science and Technology
MLIT: Ministry of Land, Infrastructure, Transport and Tourism
JCG: Japan Coast Guard
AIS: Automatic Identification System (for ship traffic)
MEMAC: Marine Emergency Mutual Aid Centre
MOE: Ministry of Environment
NRFS: National Research Institute of Fisheries Science
HAB: Harmful Algal Broom

3.1.3 Regional workshop

As the cooperation for regional workshops, JICA has dispatched Japanese experts to the working group/task force meeting on the five important themes determined by the High-level Committee of ROPME, and held two workshops for all member states in Oman and Kuwait which were organized

by JICA, and bilateral workshops in Bahrain and Saudi Arabia.

(1) ROPME working group/task force meeting on the five important themes

For the five important themes of ROPME, EBM, marine climate change, marine biodiversity, eutrophication & HAB, and dust & sandstorms were held during this project period, and JICA study team have participated in two times of the EBM (including 1 preparatory meeting), two times of the marine climate change, and one time of the eutrophication & HAB and the dust & sand storm (no participation in the marine biodiversity).

Japanese experts in each field have been dispatched to those meetings (except the second time of the marine climate change) to share Japan's knowledge and experience. On the other hand, ROPME had ever talked a plan of hiring experts, who could contribute to the working group/task force meeting constantly, but it wasn't realized during the project period due to undefined TOR. In addition, all of the technical preparation for those meetings, such as determine the objective of the meeting and programme, are being led by external consultants hired by ROPME, so the cooperation from the Japanese side is fairly limited.

(2) Workshops organized by JICA in the region

The workshop in Oman (held in September 2017) intended to share the results of the preliminary study for the cost-sharing technical assistance project. In this workshop a wide range of viewpoints such as mangrove, coral conservation and eco-tourism were discussed, and the result of remote sensing training for evaluation of coastal habitat was shared with the member states. In addition, a training course on the capacity building organized by the United Nations Development Program and the United Nations Environmental Programme was held with this workshop back-to-back. This was efficient for member states.

The workshop in Kuwait (held in September 2019) was focused on the aspects of both policy and practice on the coastal ecosystem conservation, which were common to the important themes of ROPME, and aimed to re-recognize the multi-beneficial significance for the climate change countermeasures and biodiversity conservation, etc. and to form a network within the region and with Japan that will be sustainable after the completion of this project. This achievement includes the following points.

- It was recognized that the outcomes of the JICA's technical assistance project for the mangrove conservation in Oman has been transferred to Kuwait and Bahrain, and also that there is possibility of expansion of independent activities within the region by Oman in cooperation with Kuwait.
- The concept of Blue Carbon seemed to have provided incentives on the coastal habitat conservation to the participants because of its multi-beneficial functions, such as mitigation and adaptation for the climate change and biodiversity. The participants from Kingdom of

Bahrain and Sultanate of Oman expressed their strong interests and requested future cooperation.

- It was shared that the coral conservation is common interests even for Iraq and Kuwait, which are not so rich in coral, especially the efforts of the Kuwait Institute for Science (KISR) on coral conservation drew the high attention of each member state, and seemed to have made a basement of independent activities in the region with coral rich state, such as Oman.

(3) Bilateral workshops

Bilateral workshops held in Bahrain and Saudi Arabia in February 2019 and April 2019, respectively, as response to the request from each country. Both workshops were effective in terms of forming a connection with Japanese experts.

Professor Yoshifumi Sawada from Kindai University made lectures at both workshops, and both countries expressed high interests in studying abroad, which is thought to be a hint for future cooperation. .

As Saudi Arabia will be the chair of the G20 Summit in 2020, they were very interested in the marine plastic issues lectured by Professor Hideshige Takada from Tokyo University of Agriculture and Technology, as well as the fisheries field. Both subjects could build good cooperation relationship between Japan and Saudi Arabia.

3.1.4 Regional needs

It is important that the ROPME regional needs should be considered as two aspects; 1) the diplomatic and political marine environmental conservation initiatives led by the ROPME Secretariat and 2) specific initiatives for marine environmental conservation that each member state has.

For the former aspect, JICA's participation in the EBM strategy development under the collaboration with UNEP was highly significant, and although it was not possible to see the completion of the strategy during this project period, the possibility of contribution through the pipes of JICA and UNEP is considered to be maintained.

As for the latter aspect, as the results of each country's needs survey have already been introduced in the former section of this report, and it was confirmed by the aforementioned workshop in Kuwait and bilateral workshops, the need for implementation for environmental conservation activity is extremely high, and it is considered that the viewpoint of promoting measures with various benefits by linking with blue carbon could be fostered.

It is also clear that the needs for these efforts do not necessarily to be large-scale projects, but to be small activity, such as training seminar for human resource development requested from Bahrain and Saudi Arabia.

3.1.5 Cost sharing project

Due to the difficulties for secure the budget of Oman side, the cost-sharing scheme with Oman has been withdrawn. According to the interview with Omani counterpart, the ratio of cost sharing (Japan side less than 30%) seems to be difficult to convince the budgeting authority of the country, because a lot of developed countries offer technical cooperation for free of charge.

It is understandable that this situation is same in the region.

During the project, JICA Expert Team noticed that technical cooperation such as study-based cooperation was active from UK and USA, although the details of the mechanism are not clear.

Therefore, other scheme needs to be planned and might be considered. (At the time of this report, high income countries in middle-east is not applicable for SATREPS[8].)

3.1.6 Joint announcement

Although the second side event during the CBD COP14 in 2018 was planned, it was skipped due to the delay of preparation of the EBM Strategy. The necessity of obtaining approval through hi-level committee of ROPME, consisting of representatives from environmental sectors in each countries, is also cause of the delay, due to the souring of relations in the region.

Therefore, it is necessary to take long time for preparation for joint announcement with ROPME.

Since approach of ecosystem based coastal management is quite new in the world and regional cooperation is also considered eye-opening topic, further opportunity for joint announcement in the international conference shall be considered by JICA, although the project is over in December 2019,

3.2 Recommendation on further partnership

3.2.1 Utilization of the regional network

JICA carried out a technical cooperation project to construct Mangrove Environmental Information Center for transplant and conservation of mangrove in Oman. A counterpart for the project in Oman was enhanced its capacity on the mangrove conservation and now is undertaking an important role to transfer its capacity in the region, such as Kuwait and Bahrain. JICA is also carrying out a project to develop master plan for coastal environmental conservation in Iran. On the other hand, Kuwait and UAE are leading coral reef conservation and Bahrain and UAE are taking lead on aquaculture fields.

Therefore, it is very important to transfer capacities by leading country to the regions for sustainable regional development.

It is idealized mechanism that ROPME collects and consolidates the experience and information of each country to disseminate such information to the member states. Such mechanism, however, is not working very well due to the limitations of human resources and decision making system in ROPME and political frictions.

[8] SATREPS: Science and Technology Research Partnership for Sustainable Development

Under this circumstances, JICA or other third parties could play an important role in the intervention to enhance regional network.

3.2.2 Bilateral/multilateral cooperation

(1) Ecosystem conservation/rehabilitation

Ecosystem conservation/rehabilitation is a technical field which Japan can collaborate with other countries with strong communication capabilities based on the background of challenges and efforts to overcome them.

Systematic and coordinated technical cooperation projects is highly expected to establish a new scheme for technical cooperation. Since it is easy to share the skills of researcher/experts in Japan, and to create opportunities of advice or training, dispatch of Japanese researchers into the region, matching based on the requests from the region with Japanese research institutes, specific-group-and-region-focused training programmes by JICA are considered highly feasible.

(2) Coastal environment management

A JICA project, the Project on Development and Implementation of a Master Plan for Environmental Conservation and Management of Southern Coastal Areas of the I.R. Iran (Case Study Hormozgan), is being conducted from 2017 to 2020. The project aims to establish a master plan for conservation of coastal environment focusing ecosystem conservation, based on the idea of ecosystem based management. The idea of the master plan is similar to the one of the EBM by ROPME. Since preparation of the EBM Strategy by ROPME is delayed, the master plan is supposed to be the first example for EBM-like policy in the region.

Therefore, exchange the experience on preparation of master plan between Iranian counterpart and ROPME countries through JICA is recommended. Iran will start implementation of the action plans from 2021 and that information and experience would also be helpful for other countries.

For that, however, mechanism of exchange of information, such as networking, will be important, as introduce below.

(3) Networking

It will be possible to make the future potential much higher, if the stable network between each country and the researcher/experts is established.

A researcher who actually participated in the Kuwait's workshop has an intention to participate in the Blue Forest Working Group in the Arabian Peninsula. Establishment of such relationships will lead to new networks and create new scheme of funds.

In addition, the cooperation of the Sasakawa Peace Foundation, which started based on the request of the Kuwait Institute for Science (KISR), consulting with Embassy of Japan, has possibilities to expand not only on KISR but also in Oman and other ROPME countries..

In such networking, it is possible for the JICA study team to be involved after the end of work, but

it is not possible to take the lead. Therefore, follow-up/cooperation of the JICA Saudi Arabia Office and overseas embassies is considered indispensable.

As mentioned above, several network on ecosystem conservation has been established between the member countries. These network could be utilized for further cooperation projects in future..

(4) Intensive training course

As mentioned earlier, the need for training is extremely high, even from graduate countries of ODA. However, the cost burden and the hurdle for concluding the Exchange of Notes between Japan and the target country is high. Therefore, it is considered that a strategic approach is necessary for realization of the needs.

Currently, Saudi Arabia is likely to conduct JICA-organized training programme, and that action is considered to be an incentive for other member countries. In addition, as Saudi Arabia is supposed to be a presidency holder of G20 in 2020, and has necessity of human resources development for Vision 2030, it is desirable to create a training program strategically by collecting information from the JICA Saudi Arabia office and the Embassy of Japan. The keywords are likely to be marine plastic issues and fisheries resource management. The focal point of ROPME in Saudi Arabia is the General Authority for Meteorological and Marine Environment Protection (GAMEP), which has different role of the diplomatic agency responsible for marine environment, Ministry of Environment, Water and Agriculture: MEWA.

Oman in cooperation with Kuwait desires intensive training course in the region for mangrove and coral conservation to enhance the capacity of staff from basic knowledge, seedlings and maintenance/management to monitoring. This kind of course could be on of regional-wide activities.

3.2.3 Collaboration with international organizations

The EBM strategy working group has been collaborated with United Nations Environment Programme. It will be able to continue without special efforts. Under this project, collaborations between the Islamic Development Bank and the Gulf Cooperation Council Secretariat were considered, although both were not realized. But it was confirmed that this kind of project scheme would be possible..

The Islamic Development Bank has some schemes on supports for climate change countermeasures and desertification prevention measures. There are possibilities of cooperation in those fields, and if the awareness of blue carbon increases, supports for the marine environment field will be increased.

Collaboration with the Gulf Cooperation Council Secretariat seemed to be theoretically possible, but the approval process by sectoral committees and ministerial committees in each country, and final approval by the ruler would be high hurdles. There is a little higher possibility of collaboration on common issues of the six member states by utilizing stronger connections (e.g. Saudi Arabia, Kuwait, Oman, Bahrain).

In addition, the Sasakawa Peace Foundation in Japan has the Ocean Policy Research Institute and the Middle East Islam Program Department, has started to collaborate with KISR, and is planning to expand the network within the region.

List of Appendix

Appendix 1　Basic Information of Each Country

Organizations and Legal Frame Work on Marine Environmental Protection in ROPME Member States

as of 2016/10/11

		Kingdom of Bahrain	Islamic Republic of Iran	Republic of Iraq	State of Kuwait	Sultanate of Oman	State of Qatar	Kingdom of Saudi Arabia	United Arab Emirates
Organization	Environmental Authority	Supreme Council for Environment (2012) Please provide Organization Chart	1．Department of Environment(DOE)(1994) 2．Environmental High Council (EHC)(Year) Please provide Organization Chart	Ministry of Health and Environment (2008) Please provide Organization Chart	Environment Public Authority (EPA) (1995)	Ministry of Environment and Climate Affairs (2007) Please provide Organization Chart	1.Ministry of Municipality and Environment (MME)(2016) 2.Environmental Assessment Department (2016) under MME	1. The Presidency of Meteorology and Environment (PME) (2001) 2. Royal Commission for Jubail and Yanbu (Est.1975) :Environmental management for a particular industrial area Please provide Organization Chart	Ministry of Climate Change and Environment (2015, date)
	Fishery Authority	Supreme Council for Environment (2012) Please provide Organization Chart	1. Iranian Fisheries Organization (IFO)(Year) Please provide Organization Chart		Public Authority of Agriculture and Fish Resources (PAAAFR) (1983) Please provide Organization Chart	Ministry of Agriculture and Fisheries (2008) Please provide Organization Chart	Fisheries Department(2016) under MME	The Ministry of Environmnet, Water and Agriculture (MEWA) (2016) Please provide Organization Chart	Ministry of Climate Change and Environment (2015, date) Please provide Organization Chart
Law and Regulation	Fandamental Environmental Law	1. Decree No. 7 of 1980 establishing the Environment Protection Committee. 2. Legislative Decree No. 21 of 1996 in Respect with the Environment 3.Legislative Decree No. 8 of 1997 amending Legislative Decree No. 21 of 1996 on environment. English ver?	1. Environmental Protection and Enhancement Act (1974, amended in 1991)	1.Law on environmental protection and improvement (No. 76 of 1986). 3. Law No. 27 of 2009 on the Protection and Improvement of the Environment	1. Environmental protection Law No. 42 of 2014 2. Envieonmental Protection Law No.99 of 2015 (Amened) English ver?	1.Royal Decree No. 114, 2001 (envirlnment and pollution) 2.Royal Decree No. 90, 2007 (Establishment of environmental authority) English ver?	1.Decree-Law No.30 of 2002 Environment Protection Implemented by 2. Resolution No. 4 of 2005 by the Chairperson of SCENR	1.Council of Ministers No.193 of 2001, promulgated by Royal Decree No. M/34 of 2001 (1422 Hegira)(enter into force Sep 2002)General Environmental law 2. Rules for Implementation of the Environmental Act No. 193 of 2001.	Federal Law No. 24 of 1999 (as amended by Federal Law No. 11 of 2006)
	EIA	1.Legislative Decree No. 21 of 1996 on environment. Article 20–22 2.Legislative Decree No. 8 of 1997 amending Legislative Decree No. 21 of 1996 on environment. 3.Resolution No. 1 of 1998 on environmental impact assessments.	1. EIA Decree 138 (1994, amend 1997) 2. Guidelines on Environmental Impact Assessment (1997) 3. Human's Environmental Laws, Regulation and Standards (2012)	1. Law No.27 Of 2009 Protection and Improvement of the Environment 2. Environmental Criteria for Industrial, Agricultural, and Public Service Projects (1990) Other Specific Laws or guidellines?	1. Environmental protection Law No. 42 of 2014 2. Envieonmental Protection Law No.99 of 2015 (Amened) Section1 Chapter1 "Environmental Impact Assessment" Other Specific Laws or guidellines?	1.MECA Guidelines for Obtaining Environmental Permits 2.Omani Guidelines on Environmental and Health Impact Assessment of Development Projects	1.Decree-Law No.30 of 2002 Environment Protection, Chapter1 Section2 Implemented by 2. Resolution No. 4 of 2005 by the Chairperson of SCENR Other Specific Laws or guidellines?	1.Council of Ministers No.193 of 2001, promulgated by Royal Decree No. M/34 of 2001 (1422 Hegira)(enter into force Sep 2002)General Environmental law 2. Rules for Implementation of the Environmental Act No. 193 of 2001. 3. Royal Commission Environmental Regulation 2015,(2004,2010) Other Specific Laws or guidellines?	Federal Law No. 24 of 1999 (amended by No.11 of 2006) Other Specific Laws or guidellines?
	Air pollution	1. Resolution No. 10 of 1999 on environmental standards (air and water). ↓ amended 2. Resolution No. 2 of 2001 ↓ amended 3. Resolution No. 3 of 2001 4. Resolution No. 8 of 2002 on pollutant standards and on standards for substances emitted by vehicles and exhaust pipes. 5. Resolution No. 10 of 2006 on the emission of air pollutants. English ver?	1. Air Pollution Prevention Act (1996) Articles 12 to 20 2. Air Pollution Prevention Executive Regulation (2000) 3. Standards for Air Emissions and Waste Water Discharge(Year)	1. National Clean Air Act (1979) 2. Law No.27 of 2009 Protection and Improvement of the Environment 3. Instruction No.3 2012, National Emmission Standard 4. Regulation Law No.4 of 2012,Protection Ambient Air Quality 5. Regulation Law No.5 of 2012, Control of materials affecting the Ozone Layer	1. Environmental Law No.21 of 1995 2. Environmetnal Law No.16 of 1996 (Amened) 3. ENVIRONMENT PUBLIC AUTHORITY Decision No. 210/2001 Pertaining to the Executive By-Law of the Law of Environment Public Authority 4. Environmental protection Law No. 42 of 2014. Section3 "Protecting The External Air Against Pollution" 5. Environmental Protection Law No.99 of 2015 (Amened)	Ministerial Decision 118 of 2004 Air pollution from stationary sources	1.Decree-Law No.30 of 2002 Environment Protection, Chapter 2 Implemented by 2. Resolution No. 4 of 2005 by the Chairperson of SCENR 3. Law no.21 of 2007 (Ozone Layer)	1.Council of Ministers No.193 of 2001, promulgated by Royal Decree No. M/34 of 2001 (1422 Hegira)(enter into force Sep 2002)General Environmental law 2. Rules for Implementation of the Environmental Act No. 193 of 2001. 3. National Environmental Standards Ambient Air Quality 4. Royal Commission Environmental Regulation 2015,(2004,2010)	Federal Law No. 24 of 1999 Article 48-57 Cabinet Decree (12) of 2006 Regulation Concerning Protection of Air from Pollution
	Water pollution	1. Resolution No. 10 of 1999 on environmental standards (air and water). ↓ amended 2. Resolution No. 2 of 2001 ↓ amended 3. Resolution No. 3 of 2001	1. Regulations for Prevention of Water Pollution (1994) 2. IRAN Water Law the Manner of Water Nationalizationiran(1968) 3. Fair Water Distribution Law (1982) 4. Standards for Air Emissions and Waste Water Discharge	1.Preservation of Rivers and Public Water from Contamination (Regulation No.25,1967) 2.The New Determinants for the Prevention of Pollution of Rivers (Instruction No.25, 1967) 3.Wastewater Discharge Quality Requirements (Instruction No.1) 4.Law regulating the exploitation and protection of aquatic life (Law No. 48 of 1976). 5.Law No. 2 of 2001 on Preservation of Water Resources. 6.Law No. 27 of 2009 on the protection and improvement of the environment.	1. ENVIRONMENT PUBLIC AUTHORITY Decision No. 210/2001 Pertaining to the Executive By-Law of the Law of Environment Public Authority 2. Environmental protection Law No. 42 of 2014. Section4 "Protecting Water and Coastal Environment Against Pollution" 3. Environmental Protection Law No.99 of 2015 (Amened)	1. Royal Decree No.29 2000 Law of protection of water resources 2. Royal Decree No.115 2001 Law on protection of source of portable water from pollution	1.Decree-Law No.30 of 2002 Environment Protection, Chapter 3 Implemented by 2.Resolution No. 4 of 2005 by the Chairperson of SCENR Other Specific Laws or guidellines?	1. National Environmental Standard Drinking Water Quality 2. National Environmental Standard Industrial and Municipal Wastewater Discharges 3. National Environmental Standard Ambient Water Quality 4.Royal Commission Environmental Regulation 2015,(2004,2010)	Federal Law No. 24 of 1999 Article 35-41
	Water quality standard	1. Resolution No. 10 of 1999 on environmental standards (air and water). ↓ amended 2. Resolution No. 2 of 2001 ↓ amended 3. Resolution No. 3 of 2001	1. Law for Environmental Protection against Water Pollution (1984) 2. Standards for Air Emissions and Waste Water Discharge Other laws for water quality standard?	1.Preservation of Rivers and Public Water from Contamination (Regulation No.25,1967) 2.The New Determinants for the Prevention of Pollution of Rivers (Instruction No.25, 1967) 3.Law 35 of 1967. (Water Quality Objectives for Source Water) 4.Law No. 2 of 2001 on Preservation of Water Resources.	1. ENVIRONMENT PUBLIC AUTHORITY Decision No. 210/2001 Pertaining to the Executive By-Law of the Law of Environment Public Authority	Omani Standard No8 2006 (Unbottles Drinking water) Other Specific Laws or guidellines?	1.Decree-Law No.30 of 2002 Environment Protection, Chapter 3 Implemented by 2. Resolution No. 4 of 2005 by the Chairperson of SCENR Are there other water quality standard?	1.National Environmental Standard Ambient Water Quality 2.National Environmental Standard Drinking Water Quality 3.Royal Commission Environmental Regulation 2015,(2004,2010)	The Water Quality regulation (4th Edition),January 2014 The Regulation and Supervision Bureau for the water, wastewater and electricity sector in the Emirate of Abu Dhabi (Every emirates don't have standard and follow Abu Dhabi standard)
	Waste water quality standard	1. Resolution No. 10 of 1999 on environmental standards (air and water). ↓ amended 2. Resolution No. 2 of 2001 ↓ amended 3. Resolution No. 3 of 2001	1. Standards for Air Emissions and Waste Water Discharge(2000) 2. IPS-E-SF-880 3. IPS-E-PR-730	1. Wastewater Discharge Quality Requirements (Instruction No.1) 2. The New Determinants for the Prevention of Pollution of Rivers (Instruction No. 25, 1967) 3.Law 35 of 1967. (Water Quality Objectives for Source Water)	1. ENVIRONMENT PUBLIC AUTHORITY Decision No. 210/2001 Pertaining to the Executive By-Law of the Law of Environment Public Authority	1. Ministerial Decision No: 159/2005 2. Royal Decree No. 114/2001 3. Ministerial Decision No. 145/93 ammende Ministerial Decision No.55/2002	Resolution No. 4 of 2005 by the Chairperson of SCENR Are there other waste water quality standard?	1.National Environmental Standard Industrial and Municipal Wastewater Discharges 2. Royal Commission Environmental Regulation 2015,(amended 2004,2010)	The Water Quality regulation (4th Edition),January 2014 The Regulation and Supervision Bureau for the water, wastewater and electricity sector in the Emirate of Abu Dhabi (Every emirates don't have standard and follow Abu Dhabi standard)

Organizations and Legal Frame Work on Marine Environmental Protection in ROPME Member States

as of 2016/10/11

	Kingdom of Bahrain	Islamic Republic of Iran	Republic of Iraq	State of Kuwait	Sultanate of Oman	State of Qatar	Kingdom of Saudi Arabia	United Arab Emirates
Fishery	1. Legislative Decree No. 20 of 2002 regulating the fishing, exploitation and protection of marine living resources 2.Resolution N.7 of 2009 establishing a Committee to monitor and prosecute abuses by fishermen and sea-goers.	1. Game and Fish Law(1967 amend 1996) 2. The Game Lows & Regulations 1970-71 3. Law concerning the Exploitation and Protection of Aquatic Resources of the Islamic Republic of Iran(1976) 4. General Guidelines for Aquaculture and Fisheries (1999, as amended in 2007) 5. Law of Protection and Exploitation of the Fisheries Resources of the Islamic Republic of Iran (1995) 6. The Executive Regulations of Conservation and Utilization of Aquatic Resources in the Islamic Republic of Iran (1999) 7. Temporary Regulations for the catching of fish, shrimp and other sea animals in the Persian Gulf, the Sea of Oman and all rivers of southern parts of Iran.(1973)	1. Law regulating the exploitation and protection of aquatic life (Law No. 48 of 1976). 2. Law No. 10 of 1981 exploitation and protection of living aquatic species (amendment of Law No. 48 of 1976)	Law No. 46 of 1980 on protecting of fisheries resources	**1. the Law of Fishig and Protection of Living Aquatic Resouces of 1981(ammende 1993 ~ 2013)** Ammended by (Ministerial Decision No. 121/98,136/98, 89/2000, 6/2001, 15+18+40/2002, 32/2005, 37/2009, 116/2011, 128/2011, 241/2012, Resolution No.42/98, 16/2001) 2. Ministerial Decision No. 136 of 1998 (Quality Control Regulations of Omani Exported Fish) Englsih version of this AP that the latest update was reflected? 3.The Decision on the Territorial Sea, the Continental Shelf and the Exclusive Economic Zone (No.15 of 1981)	1. Law No. 4 of 1983 ↓ implement 2.Executive Regulations No. 2 of 1985 of the Law on the exploitation and conservation of living aquatic resources ↓ amend 3.Environment Minister Decision No. 36 of 2011 English ver? 4.Resolution No.54 of 1997(standard Fish size)English ver? Other Specific Laws or guidellines?	1.Decree regulating the exploitation and conservation of living aquatic resources. 2.Fishing Regulation in Saudi Arabia. 3.Regulation of fishing, exploitation, and protection of the marine life in the territorial waters of Saudi Arabia, issued by Royal Decree No. M/9 of 27 Rabi Awal 1408 (18 November 1987). Eng ver? 4.Agreement for the establishment of the Regional Commission for Fisheries. No Specific Laws or guidellines?	Federal Law 23 of 1999 Articl-41 Other Specific Laws or guidellines?
Coast and Ocean	1. Law for Environmental Protection against Water Pollution (1984) 2.Legislative Decree No. 23 of 1982 issuing the Sea Law. (DL NO.4 1991, DL No.18,1991,Law No.35, 2014) 3. Law No.37 of 2014 on the extraction and sale of marine sand 4. Law no 5 of 1981 on Fishing Regulation 5. Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution. (1978)	1. Law for Environmental Protection against Water Pollution (1984) 2. Law Concerning the Exploitation and Protection of Aquatic Resources of the Islamic Republic of Iran (1976) 3. Law of protection and exploitation of fisheries resources of the Islamic Republic of Iran (1995) 4. Law of Marine Areas of the Islamic Republic of Iran in the Persian Gulf and the Oman Sea (1993)		1. Decree No. 11 of 1983 prohibiting fishing within 3 miles from the coasts of Kuwait. 2. Environmental protection Law No. 42 of 2014, Article 67, 68 Other Specific Laws or guidellines?	1.Royal Decree No. 34 of 1974 2.Ministerial Decision 39 of 2004 Marine Environmental Management Bylaws	1. Decree-Law No.30 of 2002 Environment Protection, Chapter 3 2. Environment Minister Decision No. 36 of 2011 Law No. 4 of 1983, Executive Regulations No. 2 of 1985) 3. Law No.19 of 2003 amendment of the Law No.4 of 1983	1.Council of Ministers No.193 of 2001, promulgated by Royal Decree No. M/34 of 2001 (1422 Hegira)(enter into force Sep 2002)General Environmental law 2. Rules for Implementation of the Environmental Act No. 193 of 2001. 3. Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution. 4. Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment 1982.	1.Federal Law No. 23 of 1999 2.Federal Law No. 24 of 1999 Article 17-34 3.Ministerial Decree No. 500 for the Year 2014 on Regulating the Fishing and Trading of Sharks
Biodiversity and Wildlife	1. Legislative Decree No. 2 of 1995 on the protection of the wildlife in Bahrain. (LD No.12,2000) 2. Resolution No. 44 of 2011 establishing the National Steering Committee for Biological Diversity.	1. National Biodiversity Strategy and Action Plan 2. The Game Lows & Regulations 1970-71	1. Protection of Wild Animals and Birds (Law No.17, 2010) 2. National Biodiversity Strategy and Action Plan 2015－2020)	1. Environmental protection Law No. 42 of 2014. Section5 "Biodiversity" 2. THE NATIONALBIODIVERSITY STRATEGY FOR THE STATE OF KUWAIT (1998) Other Specific Laws or guidellines?	1. Royal Decree No. 6 of 2003 the Law on Nature Reserves and Wildlife Conservation 2.Ministerial Decree No. 110/2007 issuing the implementing regulations of the Law on Nature Reserves and Wildlife Conservation 3. Royal Decree No. 114/2001_Article 33	1. Decree Law No. 11 (2000) "Establishing the Supreme Council for the Environment and Natural Reserves (SCENR) 2. Law No. 4 (2002)"Organization of Wild Animals, Birds and Reptiles Hunting 3. Law No 19 Wildlife and habitat protection for the year (2004) 4. Law No.32 of 1995 Prohibiting damage of plants 5.Ministry Resolution No. 37 of 2010 on the Conservation of Turtles and Seabirds from Extinction	1.Forest and Pastures Act.(1978) 2.Implementing Regulation of Forest and Pasture Act. (1999) 3.Regulation of the National Authority for the Protection and Development of the Natural Primordial Wildlife. (1986) 4.Act on the protected zones of the natural primordial wildlife, issued by the Royal Decree No. M/12 of 26 Shawal 1415 Hegira (27 March 1995). 5.The Act on Trade in Endangered Wildlife Speicies and their Products (2000) 6.Regulation implementing the Livestock Act issued by Royal Decree M/13 of 2003 (1424 Hegira). 7. Trade in Endangered Species and their products Act(2000)	Law No. (22) of 2005 Regulating Wildlife Hunting Federal Law No. (16) of 2007 Concerning Animal Protection Federal Law No. (11) of 2002 Concerning the Regulation and Control of International Trade in Endangered Species of Wild Fauna and Flora National Biodiversity Strategy and Action Plan of the UAE (2014-2021) English version of this AP?
Protected area	1.Legislative Decree No. 2 of 1995 on the protection of the wildlife in Bahrain. 2.Resolution No. 16 of 1996 considering the Hawar islands and the surrounding territorial sea a protected area in accordance with provisions of Decree Law No. 2 of 1995 on the protection of the wildlife. 3.Decree No. 28 of 2000 includes the protected area of Alarian under the control of the National Authority for Wildlife Protection. 4.Resolution No. 1 of 2002 declaring the Mishtan Island a protected area. 5.Resolution No. 4 of 2003 declaring the zone of Douha Araad a marine protected area. 6.Law No. 53 of 2006 considering the Toubly Gulf a natural protected area. 7.Resolution No.8 of 2007 declaring the zone of Bulthama reef a marine protected area.	1. Regulations Concerning the Movement of Animals (1994) 2. Regulation for the Protection of Wildlife 3. Hunting & fishing amendment Act(1956 amended 1967) 4. Act on the Protected Zone(Year) 5. Plant Protection Act (1967)	1. Forest Law No. 75 of 1955(amende Domestic Law 30 of 2009). 2. Forests and Woodlands Law No. 30 of 2009. 3. Law on the protection of wild animals and birds (No. 21 of 1979). 4. Law No. 17 of 2010 on the Protection of Wild Animals. 5. Natural Reserves Act No.2 of 2014.	1. Land: Law No. 33 of 1964 on the expropriation of lands for public utilities. 2. Sea: Decree No. 13 of 1983 prohibiting fishing in certain areas of the territorial waters of Kuwait. 3. The ministers' council no. 1/2011 on 3 January 2011 4. Environmental protection Law No. 42 of 2014. Section5 "Biodiversity" Article 100 - 110.	1. Royal Decree No. 6 of 2003 issuing the Law on Nature Reserves and Wildlife Conservation 2. Ministerial Decree No. 110/2007 issuing the implementing regulations of the Law on Nature Reserves and Wildlife Conservation 3. Establishment of Turtles Reserve (Law No.25 of 1996) 4. Establishment of Al Demaniyat Islands Nature Reserve (No. 23 of 1996)	1.Law No 19 Wildlife and habitat protection for the year (2004) 2.Ministry Resolution No. 37 of 2010 (for Sea turtle and Birds) 3. the Executive Regulations of the Environmental Protection Law issued by Decree-Law No. (30) of 2002.	1.Regulation of fishing, exploitation, and protection of the marine life in the territorial waters of Saudi Arabia, issued by Royal Decree No. M/9 of 27 Rabi Awal 1408 (18 November 1987). 2.Act on the protected zones of the natural primordial wildlife, issued by the Royal Decree No. M/12 of 26 Shawal 1415 Hegira (27 March 1995). 3.Act on hunting of wild birds and animals.(1978,1979) 4.Decree regulating the exploitation and conservation of living aquatic resources. 5.Implementing Regulations of fishing, investment and protection system of living aquatic resourses in Saudi Arabia. 6.Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution. (ROPME PSA)(1978)	1. Federal Law No. 24 of 1999 Article63-68 2. Federal Law No. 9 of 1983 (hunting) 3. Federal Law No. 11 of 2002 (trading wild life) 4. Emiri Decree No. (18) of 2001 Declaring Marawah as a Protected Marine Area 5. Emiri Decree (33) of 2005 Declaring Al Yasat as a Protected Marine Area ENG AP?
Port and Navigation	1. Legislative Decree No. 23 of 1982 issuing the Sea Law. (DL NO.4 1991, DL No.18,1991,Law No.35, 2014) 2. Law No. 61 of 2006 issuing the Law of the General Institution for Marine Ports. ↓ amended 3. Decree No.46 of 2012 4. Resolution No.8 of 2010 issuing Fishing Ports Regulation.	Act on the Protected Zone	Law concerning Ports (No. 27 of 1995).	1. Law No. 28 of 1980 on Maritime Trade. 2. Law No. 12 of 1964 on the water pollution by oil	1. Royal Decree No. (98/81) for Regulation of Navigation 2. Royal Decree No. (35/81) 3. Royal Decree No. 34 of 1974 issuing Law on Marine Pollution Control. 4. The Decision on the Territorial Sea, the Continental Shelf and the Exclusive Economic Zone (No.15 of 1981) English version of this AP?	1.Decree-Law No.30 of 2002 Environment Protection, Section 2 2. Law no.19 of 1966 Maritime Ports) ↓ amend Law no.4 of 1996 ↓ addition Law No.17 of 2015 3. Law No.17 of 2009 Qatar Ports Managements Company 4. Law No.15 of 1980 Promulgating the Maritime Law 5. Resolution of the Minister of the Environment No. (52) for the year 2012 For approving Gulf Technical Bills	1. The UN Convention on the Law of the Sea (1982) 2. Saudi Aramco Ports and Terminals Rules Regulations and General Information No Specific Laws or guidellines?	Federal Law 23 of 1999 Federal Law No. 24 of 1999 Article-29 Other Specific Laws or guidellines?
Coastal Development and Management	1. Resolution No. 302 of 1988 redefining requirements and conditions for obtaining licences for the division of lands destined to construction or reconstruction. ↓ amended 2. Resolution No. 66 of 1992	1.Comprehensive Coastal Management Guideline 2.Integrated Coastal Zone Management		1. Environmental protection Law No. 42 of 2014. Section4 "Protecting Water and Coastal Environment Against Pollution"Art.97-99	Ministerial Decision No. 20 of 1990	1.Law No (4) of 1983 2.Law No. (10) of 1987 Public State Property 3.Law No.1 of 1993 Sand Beach dredging (amended:Law No.33/1995,Law32/2002) 4.Qatar Decree No. (20) for the year 2012 Regarding the ratification of the exploration agreement and production participation for the marine exploration area	1.GPA-Marine (Grobal Programme of Action for the Protection of the Marine Environment from Land-based Activities (not leagally binding) (2005)	Interim Coastal Development Guidelines Other Specific Laws or guidellines?
Tourism	Cooperation Agreement between Bahrain and Kuwait in the field of tourism ratified by Decree No. 45 of 2009			Cooperation Agreement between Bahrain and Kuwait in the field of tourism ratified by Decree No. 45 of 2009	MECA Guidelines_Group 7			

Organizations and Legal Frame Work on Marine Environmental Protection in ROPME Member States

as of 2016/10/11

		Kingdom of Bahrain	Islamic Republic of Iran	Republic of Iraq	State of Kuwait	Sultanate of Oman	State of Qatar	Kingdom of Saudi Arabia	United Arab Emirates
	Oil, Gus, and Energy	1.Lesislative Decree No.21 of 1996 for the preservation and protection of the environment are set out in the Environment Act 2. Supreme Council Order No.3 of 2000 for EIA in the hydrocarbons sector 3. Resolution No.1 of 1998 for EIA Act 4. Resolution No.3 of 2006 in the Hazardous Wastes Order	1. Law of Protection of the Sea and Internal Water Bodies Against Oil and Oil-products Pollution (1975) 2. Conservation Law of Seas and Navigable Rivers against Oil Pollution (1975, 2010) 3. IPS-G-SF-880:General standard for Water Pollution Control 4. IPS-E-CE-340:Engineering Standard for Water Resources and Distribution System 5. IPS-E-PR-730:Engineering Standard for Process Design of Waste Water Treatment Plant & Recovery System 6. IPS-E-CE-400:Engineering Standard for Sanitary Sewage Treatment	Law No. 27 of 2009 on the protection and improvement of the environment.	1. Law No. 12 of 1964 on the water pollution by oil. 2. Law No.19 of 1973 for the Conservation of Petroliam Resources 3. Environmental protection Law No. 42 of 2014.	1.Royal Decree 8 of 2011 (Oil and Gas Law). 2.Royal Decree No. 114/2001 Article 19,Handling of hazardous substances 3. OMAN National oil spill contingency plan 2004)	1.Decree-Law No. (4) of 1977 on Preserving Oil Wealth. 2.Law No. (8) of 2004 concerning Protection of the Maritime Facilities of Petrol and Gas. 3. the International Convention on Civil Liability for Oil Pollution Damage, ratified by the State of Qatar in Decree No. 33 of 1993	1.Document of the Preservation and Environmental Protection Department on the environmental protection standards. 2.Council of Ministers No.193 of 2001. promulgated by Royal Decree No. M/34 of 2001 (1422 Hegira)(enter into force Sep 2002)General Environmental law 3. Rules for Implementation of the Environmental Act No. 193 of 2001. 4.International Convention for the Prevention of Pollution from ships,1973, amended Marpol Protocol '78) Annex I: Prevention of pollution by oil, Annex II: Control of pollution by noxious liquid substances.(2005) Other Specific Laws or guidellines?	1. Article 23 of the UAE Federal Constitution 2. The Abu Dhabi Petroleum Resources Conservation Law (Abu Dhabi Law No. 8 of 1978) 3. the Abu Dhabi Petroleum Ports Law (Abu Dhabi Law No. 12 of 1973) English version of this AP? Other Specific Laws or guidellines?
	Solid Waste	1.Law No. 3 of 1975 on public health. (LD 16,1989, LD16,1993) 2.Resolution no. 5 of 1977 regulating the collection, transportation and disposal of waste. 3.Ministerial Order No. 1 of 2001 on management of hazardous waste. 4.Ministerial Order of 2002 on hazardous waste management. 5.Resolution No. 3 of 2006 on the management of hazardous wastes.	Waste Management Act (2004) Other Specific Laws or guidellines?	1. Public Health Act Law No. 89 of 1981. (The last amendment of this Law is the Resolution No.54 of 2001.) 2. Law No. 27 of 2009 on the protection and improvement of the environment. 3. Instructions No. 2 of 2014 on Environmental Protection from Municipal Waste. 4. Instructions No.3 of 2015 on Hazardous Waste Management.	Environmental protection Law No. 42 of 2014. Section2 Chapter1 "Management of Chemical Substances and Hazardous Wastes Other Specific Laws or guidellines?	1. Ministerial Decision 17 1993 Management of Solid non-hazarous waste 2. Ministerial Decision 18 1993 Management of hazardous waste	Decree-Law No.30 of 2002 Environment Protection, Forth Section	1. National Environmental Standards:Material Recovery and Recycling of Waste 2. National Environmental Standards Storage and Material Reclamation Facilities 3. National Environmental Standards:Waste Acceptance Criteria 4. National Environmental Standards Waste Classification 5.Council of Ministers No.193 of 2001, promulgated by Royal Decree No. M/34 of 2001 (1422 Hegira)(enter into force Sep 2002)General Environmental law 6. Rules for Implementation of the Environmental Act No. 193 of 2001. 7.Regulations and Procedures for hazardous waste control (Document No. 01-2002).	1. Federal law No. 24 of 1999 Article 58-62 2. Law No. 21 of 2005 for waste management in the emirate of Abu Dhabi
	Agriculture and Pesticide	1. Legislative Decree No. 11 of 1989 on pesticides. 2. Legislation decree no. 21 of 1996 article 10 use of pesticides 3. Pesticides Act of Countries of the Gulf Cooperation Council (GCC) ratified by Law No. 37 of 2005.	Environmental Protection and Enhancement Act (1974, amended in 1991) Article 9	1. Law No. 106 of 1965 on Ranges and their Protection.(Law No.2 of 1983 onpasture) 2. Agricultural Research and Water Resources Center (Regulation No. 13 of 1981). 3. Law No. 46 of 2012 regulating Agricultural Materials Handling. (This Law repeals Law No. 34 of 1970 regulating Agricultural Materials Handling). 4. Resolution No. 9 of 2013 promulgating Law No. 10 of 2013 establishing the Ministry of Agriculture.	1. Environmental protection Law No. 42 of 2014. Section2 Chapter2 "Protecting Land and Agricultural Environment from Pollution" 2. Law No. 94 of 1983 concerning the establishment of the Public Authority of Agriculture Affairs and Fish Resources.	Royal Decree No. 114/2001 Royal Decree No. 115/2001	1. Law No.24 of 2006 on the issue of fertilizers and soil improving system in GCC 2. Resolution of the Minister of Municipal Affairs and Agriculture No.61 of 2007 issuing the Executive Regulations of Law No.24 of 2005 on Agricultural Quarantine 3. Law No. 24 of 2005 on Agricultural Quarantine 4.Law No. 24 of 2010 Promulgating the Law in GCC 5.Law No. 25 of 2010 Promulgating the Law	Pesticides law	Ministerial resolution number (476) of the year 2007 Concerning by-law of AGCC fertilizers and agricultural soil conditioners law
	Others	1. Law no 3 of 1975 on Sanitation 2. Law no 13 of 1977 modified by Decreed 3. Law no. 15/1993 on Building Regulation 4. Emiri (Royal) Decree No. 11 of 1979 establishing the Department of Fish Wealth at the Ministry of Trade and Agriculture	1. Regulations on Environmental Protection Law.(1975) English version of this AP?	1.Resolution No.1 of 2015 on Rules of Procedure of the Department of Environmental Police. 2.Law No.55 of 2002 For The Antiquities & Heritage of Iraq	1. Regional Commission for Fisheries (RECOFI) Est.2001 http://www.fao.org/fishery/rfb/recofi/en#Org-LegalFoundation 2. Law No. 94 of 1983 concerning the establishment of the Public Authority of Agriculture Affairs and Fish Resources	1. Ministerial Decision 317 2001 Regulation for packing and labelling of hazardous chemicals 2. Ministerial Decision 243 2005 regulation for the control & management of ozone depleting substances 3. Ministerial Decree No. 107/2013 promulgating Regulations on the Protection of the Ozone Layer 4. Royal Decree No. 46 1995 (the Law of Handling and Use of Chemicals) 5. the Basic Statute of the State(Ammended RD 99/2011) 6. Law of Handling and Use of Chemicals (No.46 of 1995)	1. Law No. 21 of 2007 on the control of substances draining the ozone layer 2. Law No(31) Radiation Protection for the year 2002 English version of this AP?	1. National Environmental Standards:Environmental Noise 2. National Environmental Standards:Prevention of Major Accidents	Federal Law No. 19 of 1993 Articl-15
Master plan, Policy and Report	Master plan and Policy	1. Bahrain 2030 National Planning Development Strategies 2.National Environmental Strategy (2006) 3. Government program (2015-2018) Chapter 5: environment and Urban development. 4. The Economic Vision 2030 for Bahrain 5. Bahrain 2030 National Land Use Strategy 6. Future skills strategy for Bahrain 7.Strategic Environmental impact Assessment 8. National Biodiversity Strategy And Action Plan (2016-2020) 9.Ministry of Finance's Green Policies	1. National Biodiversity Strategy and Action Plan 2. Comprehensive Drinking Water Supply 3. Master Plan for Marine Tourism 4.Future Fisheries policies during sixth 5-year plan	1. The National Environmental Strategy and Action Plan for Iraq. (2013 - 2017) 2. Iraq's National Biodiversity Strategy and Acrion Plan (2015-2020)	Environmental protection Law No. 42 stipulate to set up following plan and strategy 1. National Plan for Marine Environmental Management Article 65 2. Environmental Working Strategies Article 111 What is the progress?	1. National strategy for protection the omani environemental 1986 2. National Water Resources Master Plan (2001–20)\ 3. Development of marine environment conservation strategy and action plan. (2016-2020) 4. National Biodiversity Strategy and Action Plan 2001 5. National Biodiversity Strategy and Action Plan 2016 6.National wet land strategy 2016. 7. National strategic plan for sustaibable aquaculture development in Oman(2007) 8. National strategy for the development of fisheries and aquaculture which was approved in 2012 for (2013-2020)	1.National Biodiversity Strategy and Action Plan 2004） 2.Qatar National Biodiversity Strategy and Action Plan 2015-2025 3.Qatar National Vision 2030 4.Qatar National Master Plan(QNMP) 5.Qatar National Development Strategy 2011−2016	1. The Supreme Commission for Tourism National Tourism Development Project In the Kingdom of Saudi Arabia 2.Strategy and National Forestry Plan in Saudi Arabia (2005 – 2025). (2006) 3.Strategy and National Plan for Pastures in the Kingdom of Saudi Arabia until the year 2033. (2013) 4.Strategy for Sustainable Development of Agriculture in KSA Up to 2030. (2010) 5.Saudi Arabia Vision 2030 (25th, April. 2016)	1. UAE National Strategy for Marine and Coastal sustainability 2. UAE National Biodiversity Strategy and Action Plan 3.UAE Strategy for Green Development 4. Plan Abu Dhabi 2030 5. Abu Dhabi's Biodiversity Strategy 6. UAE Vision 2021 National Agend -Sustainable Environment and Infrastructure 7. National Innovation Strategy
	Report and others				Kuwait's Initial National Communications under the United Nations Framework Convention on Climate Change （INC, 2012）		Protected Area Action Plan 2008-2013		1. Short-Term Comprehensive Assessment for the Center of Waste Management, Abu Dhabi,2014 2. Wastewater Regulations Quality Standars Review 2014 Consultation

Note; Red characters: Please provide original documents (Preferable in English)
Blue characters: Please check and revise the descriptions
Blank: Please fill out the information

Category	Title	Year	From	Availability				Remark	Format
				Eng	Arb	Prs	N/A		
Kingdom of Bahrain									
Environment	Decree No. 7 of 1980 establishing the Environment Protection Committee.	1980	Website		x				PDF
Environment	Legislative Decree No. 21 of 1996 in Respect with the Environment (Amended by Legislative Decree No. 8 of 1997)	1996	Website	x				Un Official Translation	Word
Environment	Legislative Decree No. 8 of 1997 amending Legislative Decree No. 21 of 1996 on environment.	1997	Website		x				PDF
EIA	Resolution No. 1 of 1998 on environmental impact assessments.	1998	Website		x				PDF
Air Pollution	Resolution No. 10 of 1999 on environmental standards (air and water)	1999	Website		x				PDF
Air Pollution	Resolution No. 2 of 2001	2001	Website		x				PDF
Air Pollution	Resolution No. 3 of 2001	2001	Website		x				PDF
Air Pollution	Resolution No. 8 of 2002 on pollutant	2002	Website		x				PDF
Air Pollution	Resolution No. 10 of 2006 on the emission of air pollutants.	2006	Website		x				PDF
Fisheries	1. Legislative Decree No. 20 of 2002 regulating the fishing, exploitation and protection of marine living resources	2002	Website		x				PDF
Fisheries	2.Resolution N.7 of 2009 establishing a Committee to monitor and prosecute abuses by fishermen and sea-goers.	2009	Website		x				PDF
Fisheries	Emiri (Royal) Decree No. 11 of 1979 establishing the Department of Fish Wealth at the Ministry of Trade and	1979	Website		x				PDF
Coastal Ocean	1. Legislative Decree No. 23 of 1982 issuing the Sea Law.	1982	Website		x				PDF
Coastal Ocean	Decree Law No. 4 of 1991 amending Legislative Decree No. 23 of 1982	1991	Website		x				PDF
Coastal Ocean	Decree Law No. 18 of 1991 amending Legislative Decree No. 23 of 1982	1991	Website		x				PDF
Coastal Ocean	Law No. 35 of 2014 amending some provisions of the Sea Law	2014	Website		x				PDF
Coastal Ocean	2. Law No.37 of 2014 on the extraction and sale of marine sand						x		
Coastal Ocean	~~3. Law no 5 of 1981 on Fishing Regulation~~	~~1978~~	~~Website~~		~~x~~				~~PDF~~
Coastal Ocean	4. Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution. (1978)						x		
Biodiversity Wildlife	Legislative Decree No. 2 of 1995 on the protection of the wildlife in Bahrain.	1995	Website		x				PDF
Biodiversity Wildlife	Legislative Decree No.12,2000						x		
Biodiversity Wildlife	Resolution No. 44 of 2011 establishing the National Steering Committee for Biological Diversity.	2011	Website		x				PDF
Protected area	Legislative Decree No. 2 of 1995 on the protection of the wildlife in Bahrain.	1995	Website		x				PDF
Protected area	Resolution No. 16 of 1996	1996	Website		x				PDF
Protected area	Decree No. 28 of 2000	2000	Website		x				PDF
Protected area	Resolution No. 1 of 2002	2002	Website		x				PDF
Protected area	Resolution No. 4 of 2003	2003	Website		x				PDF
Protected area	Law No. 53 of 2006	2006	Website		x				PDF
Protected area	Resolution No.8 of 2007	2007	Website		x				PDF
Port Navigation	Law No. 61 of 2006 issuing the Law of the General Institution for Marine Ports.	2006	Website		x				PDF
Port Navigation	Decree No.46 of 2012	2012	Website		x				PDF
Port Navigation	Resolution No.8 of 2010 issuing Fishing Ports Regulation.	2010	Website		x				PDF
Coastal Develop	Resolution No. 302 of 1988 redefining requirements and conditions for obtaining licences for the division of lands destined to construction or reconstruction.	1988	Website		x				PDF
Coastal Develop	Resolution No. 66 of 1992						x		
Oil Gas	2. Supreme Council Order No.3 of 2000 for EIA in the hydrocarbons sector						x		
Oil Gas	4. Resolution No.3 of 2006 in the Hazardous Wastes Order						x		
Waste	1.Law No. 3 of 1975 on public health. (LD 16,1989, LD16,1993)	1975	Website		x				PDF
Waste	Legislative Decree No.16 of 1989	1989	Website		x				PDF
Waste	Legislative Decree No.16 of 1993	1993	Website		x				PDF
Waste	2.Resolution no. 5 of 1977 regulating the collection, transportation and disposal of waste.	1977	Website		x				PDF
Waste	3.Ministerial Order No. 1 of 2001 on management of hazardous waste.	2001	Website	x					PDF
Waste	4.Ministerial Order of 2002 on hazardous waste management.	2001	Website		x				PDF
Waste	5.Resolution No. 3 of 2006 on the management of hazardous wastes.						x		
Tourism	Cooperation Agreement between Bahrain and Kuwait in the field of tourism ratified by Decree No. 45 of 2009	2009	Website		x				PDF
Agriculture	Pesticides Act of Countries of the Gulf Cooperation Council (GCC) ratified by Law No. 37 of 2005.	2005	Website		x				PDF
Agriculture	Legislative Decree No. 11 of 1989 on pesticides.	1989	Website		x				PDF
Others	Law no 3/1975 on Sanitation						x		
Others	Law no 13/1977 modified by Decreed Law no. 15/1993 on Building Regulation						x		
Mastry plan	1. Bahrain 2030 National Planning Development Strategies						x		
Mastry plan	2.National Environmental Strategy (2006)						x		
Mastry plan	3. Government program (2015-2018) Chapter 5: environment and Urban development.						x		
Mastry plan	4. The Economic Vision 2030 for Bahrain						x		
Mastry plan	5. Bahrain 2030 National Land Use Strategy						x		
Mastry plan	6. Future skills strategy for Bahrain(2009 - 2016) 4th report	2016	Website	x					PDF
Mastry plan	7.Strategic Environmental impact Assessment						x		
Mastry plan	8.National Biodiversity Strategy And Action Plan (2016-2020)						x		
Mastry plan	9.Ministry of Finance's Green Policies						x		
Islamic Republic of Iran									
Environment	Environmental Protection and Enhancement Act (1974, amended in 1991)		Website				x		
EIA	EIA Decree 138 (1994, amend 1997)		Website				x		
EIA	Guidelines on Environmental Impact Assessment (1997)		Website				x		
EIA	Human's Environmental Laws, Regulation and Standards		Website				x		
Air Quality	Air Pollution Prevention Act (1996)						x		
Air Quality	Air Pollution Prevention Executive Regulation (2000)						x		
Air Quality	Standards for Air Emissions and Waste Water Discharge						x		
Water pollution	Regulation for Prevention of Water Pollution(1994)						x		
Water pollution	IRAN Water Law the Manner of Water Nationalization(1968)	1968	Website	x					PDF
Water pollution	Fair Water Distribution Law (1982)						x		
WasteWater	General standard for Water Pollution Control (IPS-G-SF-880)	1997	Website	x					PDF
WasteWater	Engineering Standard for Water Resources and Distribution System (IPS-E-CE-340)	1996	Website	x					PDF
WasteWater	Engineering Standard for Process Design of Waste Water Treatment Plant & Recovery System (IPS-E-PR-730)	2010	Website	x					PDF
WasteWater	Engineering Standard for Sanitary Sewage Treatment (IPS-E-CE-400)	2012	Website	x					PDF
Fishery	Game and Fish Law(1967 amend 1996)		Website				x		
Fishery	Game Lows & Regulations 1970-71	1970	Website	x					PDF
Fishery	Law concerning the Exploitation and Protection of Aquatic Resources of Isramic Republic of Iran (1976)		Website				x		
Fishery	General Guidelines for Aquaculture and Fisheries (1999, as amended in 2007)								
Fishery	the Protection and Exploitation of Natural Aquatic Resources Law 1995	1995	Website	x					
Fishery	The Executive Regulations of Conservation and Utilization of Aquatic Resources in the Islamic Republic of Iran (1999)						x		
Fishery	Temporary Regulations for the catching of fish, shrimp and other sea animals in the Persian Gulf, the Sea of Oman and all rivers of southern parts of Iran.(1973)	1973	Website	x					
Coast Ocean	Law for Environmental Protection against Water Pollution (1984)		Website				x		
Coast Ocean	Law Concerning the Exploitation and Protection of Aquatic Resources of the Islamic Republic of Iran (1976)	1976	Website	x		x			Word
Coast Ocean	Law of protection and exploitation of fisheries resources of the Islamic Republic of Iran (1995)	1995	Website	x				FAO	PDF
Coast Ocean	Law of Marine Areas of the Islamic Republic of Iran in the Persian Gulf and Oman Sea.(1993)	1993	Website	x				FAO	Word
Biodiversity Wildlife	National Biodiversity Strategy and Action Plan						x		
Protected area	Regulations Concerning the Movement of Animals (1994)						x		
Protected area	Regulation for the Protection of Wildlife						x		
Protected area	Hunting & Fishing amendement Act (1956 amende 1967)						x		
Protected area	Act on the Protected Zone						x		
Protected area	Plant Protection Act (1967)						x		
Coasta Deveroplmem	Comprehensive Coastal Management Guidline						x		
Coasta Deveroplmem	Integrated Coastal Zone Management						x		
Oil Gas	Law of Protection of the Sea and Internal Water Bodies Against Oil and Oil-products Pollution (1975)						x		
Oil Gas	Conservation Law of Seas and Navigable Rivers against Oil Pollution (1975, 2010)						x		
Oil Gas	IPS-G-SF-880:General standard for Water Pollution Control	????	Website	x					PDF
Oil Gas	IPS-E-CE-340:Engineering Standard for Water Resources and Distribution System	????	Website	x					PDF
Oil Gas	IPS-E-PR-730:Engineering Standard for Process Design of Waste Water Treatment Plant & Recovery System	????	Website	x					PDF
Oil Gas	IPS-E-CE-400:Engineering Standard for Sanitary Sewage Treatment	????	Website	x					PDF
Waste	Waste Management Act (2004)						x		
Others	Regulations on Environmental Protection Law.(1975)	1974	Webxite			x		FAO	PDF
Mastry plan	National Biodiversity Strategy and Action Plan						x		

Category	Title	Year	From	Availability				Remark	Format
				Eng	Arb	Prs	N/A		
Mastry plan	4.Future Fisheries policies during sixth 5-year plan						x		
Republic of Iraq									
Environment	Law on environmental protection and improvement (No. 76 of 1986)	1986	Website		x				PDF
Environment	Law No. 3 of 1997 on the protection and improvement of the environment. (amend Law No.73,2001)	2001	Website	x					PDF
Environment	Law No. (27) Of 2009 Protection and Improvement of the Environment	2009	Website	x					PDF
EIA	Environmental Criteria for Industrial, Agricultural, and Public Service Projects (1990)	1990	Website				x	Chapter4-Policy, Legal and Administrative Framework	
Air pollution	National Clean Air Act (1979)		Website				x	Chapter4-Policy, Legal and Administrative Framework	
Air pollution	Instruction No.3 of 2012, National Emmission Standard						x		
Air pollution	Regulation Law No.4 of 2012,Protection Ambient Air Quality						x		
Air pollution	Regulation Law No.5 of 2012, Control of materials affecting the Ozone Layer						x		
Water Pollutiom	Regulation Law No.25 Preservation of Rivers and Public Water from Contamination (1967)	1967	Website	x					PDF
Water Pollutiom	Instruction No.25 of 1967, The New Determinates for the Prevention of Pollution of Rivers(1967)						x		
Water Pollutiom	Instruction No.1,Wastewater Discharge Quality Requirements						x		
Water Pollutiom	Regulation Law No.48 of 1976, Regulating the exploitation and protection of aquatic life	1976	Website	x					PDF
Water Pollutiom	Law No. 2 of 2001 on Preservation of Water Resources.	2001	Website		x				PDF
Fishery	Law No. 10 of 1981, the Fishing ,Exploitation and Protection of Aquatic specis (amendment of Law No.48, 1976)	1981	Website	x					PDF
Biodiversity Wildlife	Protection of Wild Animals and Birds (Law No.17, 2010)	2010	Website	x					PDF
Biodiversity Wildlife	National Biodiversity Strategy and Action Plan (2015—2020):NBSAP		Website	x					PDF
Protection Area	Forest Law No. 75 of 1995	1995	Website	x					PDF
Protection Area	Forests and Woodland Law No.30 of 2009						x		
Protection Area	Law on the protection of wild animals and birds (No. 21 of 1979).						x		
Protection Area	Law No. 17 of 2010 on the Protection of Wild Animals.						x		
Protection Area	Natural Reserves Act No.2 of 2014.						x		
Port and Navigation	Law concerning Ports (No. 27 of 1995)	1995	Website	x					PDF
Oil Gas	Law No. 27 of 2009 on the protection and improvement of the environment	2009	Website	x					PDF
Solid Waste	Public Health Law No. 89 of 1981	1981	Website		x				PDF
Solid Waste	Law is the Resolution No.54 of 2001						x		
Solid Waste	Instructions No. 2 of 2014 on Environmental Protection from Municipal Waste.	2014	Website		x				PDF
Solid Waste	Instructions No.3 of 2015 on Hazardous Waste Management.	2015	Website		x				PDF
Agriculture	Law No. 106 of 1965 on Ranges and their Protection	1965	Website	x					PDF
Agriculture	Law No.2 of 1983 onpasture	1981	Website	x					PDF
Agriculture	Regulation No. 13 of 1981, Agricultural Research and Water Resources Center	2012	Website		x				PDF
Agriculture	Law No. 46 of 2012 regulating Agricultural Materials Handling.	2013	Website		x				PDF
Agriculture	Law No. 10 of 2013 establishing the Ministry of Agriculture.	2013	Website				x		
Agriculture	Resolution No. 9 of 2013 promulgating Law No. 10 of 2013 establishing the Ministry of Agriculture.								
Others	Resolution No.1 of 2015 on Rules of Procedure of the Department of Environmental Police.	2015	Website		x				PDF
Others	Law No.55 of 2002 For The Antiquities & Heritage of Iraq	2002	Website	x					PDF
Mastry plan	The National Environmental Strategy and Action Plan for Iraq. (2013 - 2017)	???	Website	x					PDF
Mastry plan	Iraq's National Biodiversity Strategy and Acrion Plan (2015-2020)	???	Website	x					PDF
State of Kuwait									
Environment	Law No. 42 of 2014 on Environmental Protection	2014	Website	x	x			Arb ver From ILO	PDF
Environment	Envieonmental Protection Law No.99 of 2015	2015	Website		x				PDF
Air pollution	Environmental Law No.21 of 1995						x		
Air pollution	Environmetnal Law No.16 of 1996						x		
Air pollution	ENVIRONMENT PUBLIC AUTHORITY Decision No. 210/2001	2001	Website	x					PDF
Fishery	law No. 46 of 1980 on protecting of fisheries resources	1983	Website	x				FAOLEX	PDF
	Decree No. 24 of 1980 authorizing certain Officials of the Ministry of Public Works to enforce Law No. 46 of 1980.								
Fishery	Law No. 94 of 1983 concerning the establishment of the Public Authority of Agriculture Affairs and Fish Resources	1983	Website		x				PDF
Coast and Ocean	Decree No. 11 of 1983 prohibiting fishing within 3 miles from the coasts of Kuwait.	1983	Website	x					
Protected Area	Law No. 33 of 1964 on the expropriation of lands for public utilities.	1964	Website		x				PDF
Protected Area	Decree No. 13 of 1983 prohibiting fishing in certain areas of the territorial waters of Kuwait.	1998	Website	x					PDF
Protected Area	The ministers' council no. 1/2011 on 3 January 2011						x		
Protected Area	THE NATIONALBIODIVERSITY STRATEGY FOR THE STATE OF KUWAIT (1998)	1998	Website	x					PDF
Port Navigation	Law No. 28 of 1980 on Maritime Trade.	1980	Website		x				PDF
Port Navigation	Law No. 12 of 1964 on the water pollution by oil	1964	Website		x				PDF
Tourism	Cooperation Agreement between Bahrain and Kuwait in the field of tourism ratified by Decree No. 45 of 2009.	2009	Website		x				PDF
Oil & Gas	Law No.19 of 1973 for the Conservation of Petroliam Resources	1973	Website	x					PDF
Mastry plan	National Plan for Marine Environmental Management Article 65						x		
Mastry plan	Environmental Working Strategies Article 111						x		
Others	Kuwait's Initial National Communications under the United Nations Framework Convention on Climate Change	2012	Website	x					PDF
Sultanate of Oman									
Environment	Royal Decree No.114 of 2001	2001	Website	x					PDF
Environment	Royal Decree No. 90 of 2007 establishing the Ministry of Environment and Climate Affairs.	2007	Website		x				PDF
EIA	MECA Guidelines for Obtaining Environmental Permits	2013	Website	x				Omani Environmental Regulations International References Documents SEU Guidance Notes P.161	PDF
EIA	Omani Guidelines on Environmental and Health Impact Assessment of Development Projects	2013	Website	x					PDF
Air Quality	Ministerial Decision No.118 of 2004 Air pollution from stationary sources	2004	Website		x				PDF
Air Quality	Ministerial Decision No. 145 of 1993	1993	Website	x				Omani Environmental Regulations International References Documents SEU Guidance Notes P.161	PDF
Air Quality	Ministerial Decision No.55 of 2002	2002	Website				x		
Water pollution	Royal Decree No.29 of 2000 Law of protection of water resources	2000	Website		x				PDF
Water pollution	Royal Decree No.115 of 2001 Law on protection of source of portable water from pollution	2001	Website	x					PDF
WasteWater Quality	Ministerial Decision No: 159 of 2005	2005	Website	x				Omani Environmental Regulations International References Documents SEU Guidance Notes P.161	
Coast Ocean	Royal Decree No.34 of 1974 Marine Pollution Control Law	1974	Website	x					PDF
Coast Ocean	Ministerial Decision No.39 of 2004 Marine Environmental Management Bylaws	2004	Website	x					PDF
BioDiversity	Ministerial Decree No.110 of 2007 issuing the implementing regulations of the Law on Nature Reserves and Wildlife	2007	Website		x				Word
BioDiversity	Royal Decree No.6 of 2003 issuing the Law on Nature Reserves and Wildlife Conservation	2003	Website		x				PDF
Protection Area	Establishment of Turtles Reserve (Law No.25 of 1996)	1996	Website		x				PDF
Protection Area	Establishment of Al Demaniyat Islands Nature Reserve (No. 23 of 1996)	1996	Website		x				PDF
Fisheries	Ministerial Decision No. 136 of 1998	1998					x		
Fisheries	Ministerial Decision No. 121 of 1998,	1998					x		
Fisheries	Law of Fishig and Protection of Living Aquatic Resouces of 1981	1981					x		
Fisheries	The Decision on the Territorial Sea, the Continental Shelf and the Exclusive Economic Zone (No.15 of 1981)	1981							
Port and Navigation	Royal Decree No. 98 of 1981	1981			x				Word
Port and Navigation	Royal Decree No. 35 of 1981	1981			x				PDF
Waste	Ministerial Decision No.17 of 1993 Management of Solid non-hazarous waste	1993	Website	x					PDF
Waste	Ministerial Decision No.18 of 1993 Management of hazardous waste	1994	Website	x					PDF

Category	Title	Year	From	Availability				Remark	Format
				Eng	Arb	Prs	N/A		
Coast	Ministerial Decision No. 20 1990	1990	Website	x				Omani Environmental Regulations International References Documents SEU Guidance Notes P.161	
Oil & Gases	Royal Decree 8 of 2011 (Oil and Gas Law).	2011	Website	x					PDF
Oil & Gases	OMAN National oil spill contingency plan(2004)	2004	Website	x					PDF
Others	Ministerial Decision No.317 of 2001 Regulation for packing and labelling of hazardous chemicals	2001	Website	x					PDF
Others	Ministerial Decision 243 of 2005 regulation for the control & management of ozone depleting substances	2005	Website	x				Omani Environmental Regulations International References Documents SEU Guidance Notes P.161	PDF
Others	Ministerial Decree No.107 of 2013 promulgating Regulations on the Protection of the Ozone Layer	2013					x	under revision	-
Others	Royal Decree No.90 of 2007	2007	Website		x				PDF
Others	the Basic Statute of the State(Ammended RD 992011)	2011	Website	x					PDF
Others	Law of Handling and Use of Chemicals (No.46 of 1995)	1995	Website	x					PDF
Master plan	National Water Resources Master Plan (2001–20)		Website						PPT
Master plan	Development of marine environment conservation strategy and action plan. (2016-2020)						x		
Master plan	National wet land strategy 2016.						x		
Master plan	National strategy for the development of fisheries and aquaculture which was approved in 2012 for (2013-2020)						x		
Master plan	National Biodiversity strategy & Action Plan 2001	2001	Website	x					
Master plan	National strategy for biodaversity 2016	2016					x		
Master plan	National strategic plan for sustaibable aquaculture development in Oman(2007)						x		
Master plan	National strategy for protection the omani environemental 1986						x		
State of Qator									
Environment	Law No. 30 of 2002 Promulgating the Law of the Environment Protection	2002	Website	x					Web
Environment	Resolution No. 4 of 2005 by the Chairperson of SCENR	2005	Website		x				Web
Air pollution	Law no.21 of 2007 (Ozone Layer)	2007	Website	x					Web
Fishery	Law No.4 of 1983 on the exploitation and protection of living aquatic resources in Qatar	1983	Website	x					PDF
Fishery	Executive Regulations No. 2 of 1985 of the Law on the exploitation and conservation of living aquatic resources	1985	Website	x					PDF
Fishery	Environment Minister Decision No. 36 of 2011						x		
Fishery	Resolution No.54 of 1997(standard Fish size)						x		
Coast Ocean	Environment Minister Decision No. 36 of 2011 (Law No. 4 of 1983, Executive Regulations No. 2 of 1985)						x		
Coast Ocean	Law No.19 of 2003 amendment	2003	Website	x	x				Web
BioDiversity	Decree Law No. 11 (2000) “Establishing the Supreme Council for the Environment and Natural Reserves (SCENR)”						x		
BioDiversity	Law No 19 of 2004 Wildlife and habitat protection for the year (2004)	2004	Website	x					Web
BioDiversity	Law No. 4 (2002)“Organization of Wild Animals, Birds and Reptiles Hunting”						x		
BioDiversity	Law No.32 of 1995 Prohibiting damage of plants						x		
BioDiversity	Ministry Resolution No. 37 of 2010 on the Conservation of Turtles and Seabirds from Extinction	2011	Website		x				PDF
Port and Navigation	Law no.19 of 1966 (Maritime Ports)	1966	Website	x					PDF
Port and Navigation	Law no.4 of 1996	1996	Website	x					PDF
Port and Navigation	Law No.17 of 2015						x		
Port and Navigation	Law No.17 of 2009 Qatar Ports Managements Company	2009	Website	x					PDF
Port and Navigation	Law No.15 of 1980 Promulgating the Maritime Law	1980	Website	x					PDF
Port and Navigation	Resolution of the Minister of the Environment No. (52) for the year 2012 For approving Gulf Technical Bills						x		
Coast Development	Law No. (10) of 1987 Public State Property	1987	Website	x					PDF
Coast Development	Law No.1 of 1993 Sand Beach dredging (Law No.33/1995 ,32/2002)	1993	Website	x					PDF
Coast Development	Qatar Decree No. (20) for the year 2012						x		
Oil gas	Decree-Law No. (4) of 1977 on Preserving Oil Wealth.	1977	Website	x					PDF
Oil gas	Law No. (8) of 2004 concerning Protection of the Maritime Facilities of Petrol and Gas	2004	Website	x					PDF
Oil gas	the International Convention on Civil Liability for Oil Pollution Damage, ratified by the State of Qatar in Decree No. 33	1993	Website	x					PDF
Oil gas	the State of Qatar in Decree No. 33 of 1993						x		
Agriculture	Law No. 24 of 2006 promulgating the Law (Regulation) on Agri. Fertilizers and Soil Conditioners in GCC Countries	2006	Website		x				
Agriculture	Resolution of the Minister of Municipal Affairs and Agriculture No.61 of 2007 issuing the Executive Regulations of Law No.24 of 2005 on Agricultural Quarantine						x		
Agriculture	Law No. 24 of 2005 on Agricultural Quarantine	2005	Website		x				
Agriculture	Law No. 24 of 2010 Promulgating the Law in GCC	2010	Website	x					PDF
Agriculture	Law No. 25 of 2010 Promulgating the Law	2010	Website	x					PDF
Others	Law No. 21 of 2007 on the control of substances draining the ozone layer	2007	Website	x					Web
Others	Law No(31) Radiation Protection for the year 2002	2002	Website		x				PDF
Master plan	National Biodiversity Strategy and Action Plan (2004)	2004	Website	x					Word
Master plan	Qatar National Biodiversity Strategy and Action Plan 2015-2025	2015	Website	x					PDF
Master plan	Qatar National Vision 2030	???	Website	x					PDF
Master plan	Qatar National Master Plan(QNMP)								
Master plan	Qatar National Development Strategy 2011~2016	???	Website	x					PDF
Kingdom of Saudi Arabia									
Environment	1.Council of Ministers No.193 of 2001, promulgated by Royal Decree No. M/34 of 2001 (1422 Hegira)(enter into force Sep 2002)General Environmental law	2001	Website	x				リンク切れ	PDF
Environment	2. Rules for Implementation of the Environmental Act No. 193 of 2001.	2003	Website	x				リンク切れ	PDF
EIA	Royal COMMISSION For JUBAIL and YANBU Royal COMMISSION ENVIRONMENTAL REGULATIONS, 2015	2001	Website	x					PDF
Air Quality	National Environmental Standards Ambient Air Quality	???	Website	x					PDF
Water Quality	National Environmental Standard Drinking Water Quality						x		-
Water Quality	National Environmental Standard Industrial and Municipal Wastewater Discharges	???	Website	x					PDF
Water Quality	National Environmental Standard Ambient Water Quality	2011	Website	x				revised 2011	PDF
Fishery	1.Decree regulating the exploitation and conservation of living aquatic resources.		Website	x					PDF
Fishery	2.Fishing Regulation in Saudi Arabia.		Website	x					PDF
Fishery	3.Regulation of fishing, exploitation, and protection of the marine life in the territorial waters of Saudi Arabia, issued by Royal Decree No. M/9 of 27 Rabi Awal 1408 (18 November 1987).		Website		x				PDF
Fishery	4.Agreement for the establishment of the Regional Commission for Fisheries.		Website	x					PDF
Coast Ocean	Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment 1982.	1982	Website	x					Word
BioDiversity Wildlife	1.Forest and Pastures Act.(1978)	1978	Website		x				PDF
BioDiversity Wildlife	2.Implementing Regulation of Forest and Pasture Act. (1999)	1999	Website		x				PDF
BioDiversity Wildlife	3.Regulation of the National Authority for the Protection and Development of the Natural Primordial Wildlife. (1986)	1986	Website		x				PDF
BioDiversity Wildlife	4.Act on the protected zones of the natural primordial wildlife, issued by the Royal Decree No. M/12 of 26 Shawal 1415 Hegira (27 March 1995).	1995	Website		x				PDF
BioDiversity Wildlife	5.The Act on Trade in Endangered Wildlife Speicies and their Products (2000)	2000	Website		x				PDF
BioDiversity Wildlife	6.Regulation implementing the Livestock Act issued by Royal Decree M/13 of 2003 (1424 Hegira).	2003	Website		x				PDF
BioDiversity Wildlife	7. Trade in Endangered Species and their products Act(2000)	2000	Website		x				PDF
Protected area	2.Act on the protected zones of the natural primordial wildlife, issued by the Royal Decree No. M/12 of 26 Shawal 1415 Hegira (27 March 1995).	1995	Website		x				PDF
Protected area	3.Act on hunting of wild birds and animals.(1978,1979)	1979	Website		x				PDF
Protected area	4.Decree regulating the exploitation and conservation of living aquatic resources.	???	Website	x					PDF
Protected area	5.Implementing Regulations of fishing, investment and protection system of living aquatic resourses in Saudi Arabia.	???	Website		x				PDF
Protected area	Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution. (ROPME	1978	Website	x					Word
Port Navigation	1. The UN Convention on the Law of the Sea (1982)	1982	Website	x					PDF
Port Navigation	2. Saudi Aramco Ports and Terminals Rules Regulations and General Information	???	Website	x					PDF
Coastal Develop	GPA-Marine (Grobal Programme of Action for the Protection of the Marine Environment from Land-based Activities (not leagally binding) (2005)	2005	Website		x				PDF
Oil, Gus, and Energy	1.Document of the Preservation and Environmental Protection Department on the environmental protection standards.	???	Website		x				PDF
Oil, Gus, and Energy	3.International Convention for the Prevention of Pollution from ships,1973, amended Marpol Protocol ’78) Annex I: Prevention of pollution by oil, Annex II: Control of pollution by noxious liquid substances.(2005)	2005	Website	x					PDF
Solid Waste	Environmental Standards Material Recovery and Recycling of Waste	???	Website	x					PDF
Solid Waste	Environmental Standards Storage and Material Reclamation Facilities	???	Website	x					PDF
Solid Waste	Environmental Standards:Waste Acceptance Criteria	???	Website	x					PDF
Solid Waste	Environmental Standards Waste Classification	???	Website	x					PDF
Solid Waste	Regulations and Procedures for hazardous waste control (Document No. 01-2002).	2002	Website		x				Word
Agriculture	Pesticides Law	???	Website	x					Web

Category	Title	Year	From	Availability				Remark	Format
				Eng	Arb	Prs	N/A		
Others	Environmental Standards:Environmental Noise	???	Website	x					PDF
Others	nvironmental Standards:Prevention of Major Accidents	???	Website	x					PDF
Master plan	1. The Supreme Commission for Tourism National Tourism Development Project In the Kingdom of Saudi Arabia	???	Website		x				PDF
Master plan	2.Strategy and National Forestry Plan in Saudi Arabia (2005 – 2025). (2006)	2006	Website		x				PDF
	3.Strategy and National Plan for Pastures in the Kingdom of Saudi Arabia until the year 2033. (2013)	2013	Website		x				PDF
	4.Strategy for Sustainable Development of Agriculture in KSA Up to 2030. (2010)	2010	Website		x				PDF
	5.Saudi Arabia Vision 2030 (25th, April. 2016)	2016	Website	x					PDF
United Arab Emirates									
Environment	Federal Law No. 24 of 1999	1999	Web site	x					PDF
Air Quality	Cabinet Decree (12) of 2006 Regulation Concerning Protection of Air from Pollution	2006	Web site	x					PDF
Water Quality	The Water Qualoty regulation (4th Edition),January 2014	2014	Website	x	x				PDF
Coast Ocean	Federal Law No. 23 of 1999	1999	Web site	x					PDF
Coast Ocean	Ministerial Decree No. 500 for the Year 2014 On Regulating the Fishing and Trading of Sharks	2014	Website	x					PDF
BioDiversity	National Biodiversity Strategy and Action Plan of the UAE (2014-2021)	2014	Website		x				PDF
Protected area	Federal Law No. 9 of 1983 hunting	1983	Website	x					Webpage
Protected area	Federal Law No. 11 of 2002 trading wild life						x		
Waste	Law No. 21 of 2005 for Waste Management in the Emirate of Abu Dhabi	2005	Website	x					PDF
Waste	Short-Term Comprehensive Assessment for the Center of Waste Management, Abu Dhabi,2014	2014					x		-
Biodiversity	Law No. (22) of 2005 Regulating Wildlife Hunting187野生生物狩猟法	2005	Website		x				
Biodiversity	Federal Law No. (16) of 2007 Concerning Animal Protection187動物保護	2007	Website	x					
Biodiversity	Federal Law No. (11) of 2002 Concerning the Regulation and Control of International Trade in Endangered Species of Wild Fauna and Flora 187絶滅危惧種の国際取引規制および管理	2002	Website	x					
Protected Area	Emiri Decree No. (18) of 2001 Declaring Marawah as a Protected Marine Area	2001	Website		x				
Protected Area	Emiri Decree (33) of 2005 Declaring Al Yasat as a Protected Marine Area	2005	Website		x				
Oil, Gus, and Energy	Article 23 of the UAE Federal Constitution	2011	Website	x				the UAE Federal Constitution	
Oil, Gus, and Energy									
Agriculture	Ministerial resolution number (476) of the year 2007 Concerning by-law of AGCC fertilizers and agricultural soil	2007	Website	x					PDF
Master plan	Plan Abu Dhabi 2030	????	Website	x					PDF
Master plan	National Biodiversity Strategy and Action Plan	2014	Website		x				PDF
Master plan	Abu Dhabi's Biodiversity Strategy						x		
Master plan	UAE Strategy for Green Development								
Master plan	UAE National Strategy for Marine and Coastal sustainability								
Master plan	Interim Coastal Development Guidelines (by Plan Abu Dhabi 2030)		Website	x					PDF
Master plan	National Innovation Strategy	2015	Website	x					PDF
Report & others	Short-Term Comprehensive Assessment for the Center of Waste Management, Abu Dhabi,2014	2014					x		
Report & others	Wastewater Regulations Quality Standars Review 2014 Consultation	2014	Website	x					PDF
Others	Federal Law No. 19 of 1993	1993	Website	x					PDF
AGEDI									
Ocean	Final Technical Report Desalination final review	2016		x				Final review	PDF
Ocean	CRS - Desalination Draft Technical Report FD			x				↑Draft	PDF
ROPME									
海図	UAE沿岸部 (2889海図） オモテ ･ウラ			x				¥¥YK4FSV3¥daily¥海外事業部¥ka	PDF
海図	RSA全域 (2858海図) オモテ･ウラ			x				¥¥YK4FSV3¥daily¥海外事業部¥ka	PDF
海図	Hormuz to Qatar (2837海図） オモテ･ウラ			x				¥¥YK4FSV3¥daily¥海外事業部¥ka	PDF
海図	DUBAI-QESHM より西 (2887海図）オモテ･ウラ			x				¥¥YK4FSV3¥daily¥海外事業部¥ka	PDF

Waste Water Standard		UAE		Oman		Kuaite		Saudi Arabia								Bahrain		Iraq				Iran							Qatar				
Item	Unit	Sewer	Abu-Dhabi	Seawater	non-household liquid waste into sewage	Industrial Waste Water Discharged into the sea	Treated waste	Pretreatment			Direct Discharge to COASTAL		Irrigation Water		Ballast Watar			Industrial Effluent		Primary Water Source (river, stream)	Sewerage	Irrigation・Drainages	Marsh	Maximum Permissible Concentration of Contaminants in Effluents According to IRANIAN Environment Organization's Regulation (IPS 730)			National Effluent Standard For Industrial Waste IPS 880			Effluent Standard For Municipal Waste	Discharge of Industrial Effluents into Sewers	Ballast water	Liquid Waste to the Public Sewage for treatment	Standard for the Treated Effluents Sanitary Wastewater	Criteria and Specifications of Some Materials when Disposed of
								Jubail	unless otherwise specified																								
								Maximum	One Day	Monthly Ave	Maximum Al	Monthly Ave	Maximum Al	Monthly Ave	Maximum Al	Average of a	Monthly Ave	Maximum Value						Surface	Ground	Agriculture	SurfaceWat	Soak Away	Agriculture	Day avg.				
BOD	mg/L		125	20	1000 (5days)	30	500	— (5 days)			25 (5days)	15 (5days)	10 (5days)	–			25	50	<40		1000			20	20	100	30 (50 Instar	30 (50 Instar	100	30		50	1000	10	50
COD	mg/L	1000	25	200	1500	200	750	—			150	75	50	–			150	350	<100	–				50	50	200	60 (100 Instr	60 (100 Instr	200	60	3000	250	3000	150	100
T-N	mg/L		2					120																									
T-P	mg/L	1000	15	2				50			2	1	30	20			1	2						1	1	–							
TSS (Suspended Solid)	mg/L	500	35 -60*1	20	1000	10	300	2000			40	25	10	10	35	20	20	35	60	750				30	30	100	40 (60 Instar	–	100		500	35		10	50
TDS (Dissolved solids)	mg/L	3000			3000			2000					2000	1750										TDS effluents should not increase					–		4000		1500
Total Soluble Solids	mg/L					1500																											
pH	SU	6 – 9		6 – 9	6 – 10	6 – 8		5 – 11			6 – 9	6 – 9	6 – 8.4	–	6 – 9	6 – 9	6 – 9		6-9.5	6-9.5				6.5 – 8.5	5.0 – 9.0	5.0 – 9.0	6.5-8.5	5-9	6-8.5	6.5-8.5		6.0 – 9.0	5.0 – 10.0		6.0 – 9.0
FOG	mg/L																																	
PO_4	mg/L					2													3	–							6	6	–	1					2
NH_4^+-N	mg/L			1		3					3	1	5	–	3	1.5	1	3	–	–				2.5	0.5	–	2.5	1	–	2.5		3			3
NO_3-N	mg/L			15		30					10	1	10	–			–	1	–	–				50	1	–	50	10	–	10					
NO_2^- — N	mg/L																										10	10	–	50					
Organic-N	mg/L			5																															
Ammonia Free (as N)	mg/L																																		
Total N	mg/L			15		30		120																											
NO_2	mg/L																–	10						50	10	–								
F	mg/L	15		2		25	1000	30			25	15	15	5										2.5	2	2	2.5	2	2	2.5					1
Sulphide/Sulfide (S^{2-})	mg/L	2		0.1	3	0.5	10	6			0.1	0.05	0.1	0.05			0.5	1												1	10		10		0.1
Cl (Chlorine), Cl_2	mg/L			0.4		0.5																		1	1	0.2	1	1	0.21	1			0.1	0.05
DO	mg/L					>2					2	5	2 (min)	–					–	–				>2	>2	>2	>2	–	>2	2			>2		
Hydrocarbons	mg/L																																		
Fbatables	mg/L					Nil									NIL	NIL																			
Al	mg/L	100		5	10	5		30			25	15	5	–			15	25	0.5	20				5	5	5	5	5	5			30		3
As	mg/L	5		0.1	1	0.1	0.1	1.25			0.5	0.1	0.1	–			0.1	0.5	0.05	0.05				0.1	0.1	0.1	0.1	0.1	0.1		5		5		0.5
Ba	mg/L	10		2	10	2		2			2	1	1	–					0.4	0.1				2	1	1	5	1	1				10		2
B	mg/L	5		1		0.75		2.5																2	1	1	2	1	1						1.5
Cd	mg/L	1		0.01	2	0.01	0.1	0.5			0.05	0.01	0.01	–			0.01	0.05	0.01	0.1				1	0.01	0.01	0.1	0.1	0.05		10		2		0.05
Cr^{+6}	mg/L							0.25			0.1	0.05												1	1	1	0.5	1	1					
Cr^{+3}	mg/L																							1	1	1	2	2	2					
Chromium as Cr	mg/L	5		0.05	2	0.2	1.0	5			0.5	0.1	0.01	–			0.1	1	0.1	0.1											2				0.2
Ni	mg/L				2	0.2	0.2										0.2	0.5	0.2	0.1											4		5		0.5
Hg	mg/L	0.5		0.001	0.1	0.001	0.002	0.015			0.005	0.001	0.001	–			0.001	0.005	0.005	0.001				0	0	0	Trace	Trace	Trace		0.1		0.1		0.001
Co	mg/L	5		0.05		0.2		2			2	0.1	0.05	–					0.5	0.5				1	1	0.05	1	1	0.05						2
Fe	mg/L					5		25			10	5	5	–			5	10	2	15							3	3	3				25		1
Sb	mg/L					1.0																													
Cu	mg/L	5		0.2	1	0.2	0.5	1.2			0.5	0.2	0.2	–			0.2	0.5	0.2	–				1	1	0.2	1	1	0.2		4		5		0.5
Mn	mg/L	10				0.2		2			1	0.2	0.2	0.02										1	0.5	0.2	1	1	1						0.2
Zn as Zinc	mg/L	10		1	2	2.0	2.0	10			5	2	2	–			2	5	0.2	0.1				2	2	2	2	2	2		5		10		2
Pb , Lead	mg/L	5		0.08	2	0.5	0.5	0.5			0.5	0.1	0.5	0.1			0.2	1	0.1	0.1				1	1	1	1	1	1		5		5		0.1
T-recoverable-phenol	mg/L					1	1																												
Egg parasite	no/L						Nil																												
Worm parasites							Nil																												
Viable nematode ova (per litre)	no/L			<1																							–	–	<1						
EC	micro S/cm																																		
Be	mg/L	5		0.3	5								0.1	–										0.1	1	0.1	0.1	1	0.5			5		
Cl^- (Chloride)	mg/L	1000						1000					1000	500					1. if the proportion of wastewater to source water is 1:1000 or less, then a concentration equivalent to 1% of the background value can be added 2. if the proportion of wastewater to source water is greater than 1:1000, then a maximum chloride concentration of 200m g/L is permitted 3. If the background concentration of Chloride is less than 200m g/L,						Amount of chloride in industrial effluents should not exceed 250ppm for fresh water			600	600	600						
CN Cyanide	mg/L	2		0.1	1	0.1	0.1	3.5			0.1	0.05	0.05	–			0.05	0.1	0.05	1000				0.2	0.2	0.2	0.5	0.1	0.1		1		1		0.1
Li	mg/L	2.5		0.07		2.5							2.5	–					0.5	–				100	100	100	100	100	100						
Mg	mg/L																							2.5	2.5	2.5	2.5	2.5	2.5						
Mo	mg/L	10		0.05		0.01		0.01			0.01	–	0.01	–										0.01	0.01	0.01	0.01	0.01	0.01						
Ni	mg/L	10		0.1		0.2		2.5			0.5	0.2	0.02	–										1	1	0.2	2	2	2						
Se	mg/L	10		0.02				0.02			0.02	–	0.02	–					0.05	–				1	1	0.02	1	0.1	0.1						0.02
Ag	mg/L	5		0.01	0.1	0.1	4.0	0.25					0.5	–					0.05	0.1				1	1	0.01	1	0.1	0.1		4		5		0.005
Na ,Sodium	mg/L							1000					1000	500																					
SO_4^{2-}	mg/L	1000			500			800					600	–					1. if the proportion of wastewater to source water is 1:1000 or less, then a change in concentration equivalent to 1% of the background value is permitted 2. if the proportion of wastewater to source water is greater than 1:1000, then a maximum Sulphate concentration of 400m g/L is permitted 3. If the background concentration of Sulphate is less than 200m g/L,						300	300	500	400	400	500	400	1000		1000		
SO_3^{2-}	mg/L																							1	1	1	1	1	1						
Vanadium as V	mg/L	1		0.1		0.1		0.1			0.1	–	0.1	–										0.1	0.1	0.1	0.1	0.1	–						
Turbidity	NTU					50					75 at Jubail	50 at Jubail	5	2			25	75						50	50	50	50	–	50	50					50
Phenols (C_6H_5OH)	mg/L			0.002	5			150			1	0.1	0.002	–			0.5	1	0.01-0.05	1.0-5				1	0	1	1	Trace	1			150		0.5
Phenolic Compounds as Phenol	mg/L	150																																	
Oil&Grease	mg/L			15	30		5	120			15	8	NIL	–	10	8	8	15	–	Non permitted				10	10	10	10	10	10	10	15	Nil	15		15
Oil&Grease-Emulsfied	mg/L						5																												
Oil&Grease-Free oil	mg/L					5																													
Oil&Grease-(hydrocarbon)	mg/L	60																																	
Oil&Grease-(non-hydrocarbon)	mg/L	100																																	
TKN (Total Kjeldahl Nitrogen)	mg/L	15									10	5	60	35			5	10																	100
TOC	mg/L					5		800			75	–	40	–	150	100	50	—														100	1000		
Phescide,non-chlorinated	mg/L					clear																													
Total-Material	mg/L																																		
Fe	mg/L	50		1.5	5						10	5												3	0.5	5									
Color	mg/lpt/Co scale			raises no objection															–	–				not exceed	75	75	75	75	75	16			Non-resistance		Free
Odor	Dilution Number																																		
Taste	Dilution Number																																		
Ca Hardness at 25℃	mg/L as CaCO3																																		
Total Hardness at 25℃	mg/L as CaCO3																																		
Ca	mg/L																							75	–		75	–							
Residual Chlorine	mg/L as Cl2										0.3	0.2	0.5 (min)	–			0.5	2																	
Conductivity	μmhos/cm																																		
K (Potassium)	mg/L																																		
Endrine	mg/L																																		
Lindane	mg/L																																		
Methoxychlor	mg/L																																		
2,4 dichlorophexy acetic acid	mg/L																																		
2,4,5 trichlorophenoxy propionic acid	mg/L																																		
Heptachlor	mg/L																																		
Aldrin	mg/L																																		
DDT	mg/L																		0	–															
Chlordane	mg/L																																		
Dieldrin	mg/L																																		
Heptachlor epoxide	mg/L																																		
Total pesticide	mg/L																																		
Trichloroethene	mg/L																																		
Tetrachloromethane CCl4	mg/L								0.38	0.142																									
Tetrachloroethene	mg/L																																		
1,1-Dichloroethane	mg/L								0.059	0.022																									
1,2-Dichloroethane	mg/L								0.574	0.18																									
Benzene	mg/L								0.134	0.057									–	0.5															
Benzo(a)pyrene	mg/L																																		
Dichlorom ethane	mg/L																																		
Chlorobenzene	mg/L								0.38	0.142																									
1,2-Dichloroethene	mg/L																																		

Waste Water Standard		UAE		Oman		Kuaite		Saudi Arabia								Bahrain		Iraq				Iran							Qatar				
Item	Unit	Sewer	Abu-Dhabi	Seawater	non-household liquid waste into sewage	Industrial Waste Water Discharged into the sea	Treated waste	Pretreatment		Direct Discharge to COASTAL		IrrigationWater		Ballast Watar		Industrial Effluent		Primary Water Source (river, stream)	Sewerage	Irrigation・Drainages	Marsh	Maximum Permissible Concentration of Contaminants in Effluents According to IRANIAN Environment Organization's Regulation (PS 730)			National Effluent Standard For Industrial Waste PS 880			Effluent Standard For Municipal Waste	Discharge of Industrial Effluents into Sewers	Ballast water	Liquid Waste to the Public Sewage for treatment	Standard for the Treated Effluents Sanitary Wastewater	Criteria and Specifications of Some Materials when Disposed of
Toluene	mg/L								0.074	0.028																							
1,2-Dichlorobenzene	mg/L								0.794	0.196																							
1,3-Dichlorobenzene	mg/L								0.38	0.142																							
1,4-Dichlorobenzene	mg/L								0.38	0.142																							
Vinyl Chloride	mg/L								0.172	0.097																							
Total Coliforms	MPN/100ml					1000	1000				2400	1000	23	2.2		1000	10000								1000	1000	1000				23	
Faecal coliform bacteria(per L)	no/L			1000			1000																		4000	4000	4000					
Escherichia Coli and Thermotolerant Coliform Bacte	Number/100ml												1	-																		
Enterococci	Number/100ml0																															
Total Bacterial Count	Number/1ml																															
Digestable Coliform	mm																					100-400	100-400	100-400								
Gross α	Bq/L																															
Gross β	Bq/L																															
Uranium-238	Bq/L																															
Uranium-234	Bq/L																															
Thorium-230	Bq/L																															
Radium-226	Bq/L																															
Lead-210	mg/L																															
Polonium-210	Bq/L																															
Thorium-232	Bq/L																															
Radium-228	Bq/L																															
Thorium-228	Bq/L																															
Caesum-134	Bq/L																															
Caesum-137	Bq/L																															
Strontium-90	Bq/L																															
Iodine-131	Bq/L																															
Tritium	Bq/L																															
Carbon-14	Bq/L																															
Plutonium-239	Bq/L																															
Americium-241	Bq/L																															
Bromate	mg/L																															
Chlorate	mg/L																															
Chlorite	mg/L																															
Bromoform	mg/L																															
Bromodichbromethane (BDCM)	mg/L																															
Chloroform	mg/L								0.325	0.111																		100MPN/100ml					
Dibromochbromethane (DBCM)	mg/L																															
THMs	mg/L																																0.1
Temperature	Δ° Centigrade			<10℃ above ambient							10	10				3	-					3 (in a distance 200m)	-	3 (in a distance 200m)	3 (in a distance 200m)	-	-						3
Temperature	℃	45			43			60										<35	45												60		
Chlorinated hydrocarbons	mg/L										0.5	0.1																			0.5		
Salinity above ambient	ppt																																
Salinity	Δppt										2	1																					
Sn	mg/L	10																				2	2	-									
CH_2O	mg/L																					1	1	1	1	1	1						
SS (Suspended Solid)	mg/L																					0	0	0	0	-	-	40					
ABS (detergent)	mg/L	1			30																	1.5	0.5	0.5	1.5	0.5	0.5	1.5					
synthetic detergents	mg/L																													30		100		
Flior	mg/L																	0.5	10														
Free Chlorine	mg/L																	Trace	100														
Boron as Bo	mg/L												0.75	-				1	1														
Total Petroleum Hydrocarbonc (TPH)	mg/L																	Permitted concentration levels of TPH, prior to mixing with receiving waters are as follows. A concentration of 10mg/L is permitted if: 1. The proportion of wastewater to receiving water is less than 1:1000 2. The receiving waterbody is flowing A concentration of 5mg/L is permitted if: 1. The proportion of wastewater to receiving water is less than	non-permitted	non-permitted																
Ironic Sulphur	mg/L																	-	0.3														
Sulper Dioxide	mg/L																	-	7														
Calcium Carbite	mg/L																	-	Non permitted														
Organic Solvents	mg/L																	-	Non permitted														
Chorobenzen	mg/L																	-	-	-	-												
TNT	mg/L																	-	0.5														
Bromine Br	mg/L																	-	1~3														
Ammonium	mg/L																	-	10														
Ammonia gas	mg/L																	-	2														
Organo halogens	mg/L			<0.001																													
Organosilicon compounds (Orga-Si)	mg/L			<0.001																													
Organocopper compounds (Orga-Cu)	mg/L			<0.001																													
Organotin compounds	mg/L			0.00002																													
HCl	mg/L							0.5																									
Sodium Adsorption Ratio (SAR)	SAR unit							20					20	10																			
Total VOC	mg/L								10	-																							
Chloroethane as C_2H_5Cl	mg/L								0.295	0.11																							
1,1-Dichloroethylene as $C_2H_2Cl_2$	mg/L								0.06	0.022																							
4,6-Dinitro-O-Cresol	mg/L								0.277	0.078																							
1,2-Dichloropropane	mg/L								0.794	0.196																							
1,3-Dichloropropane	mg/L								0.794	0.196																							
Ethylbenzene	mg/L								0.38	0.142																							
Hexachlorobenzene	mg/L								0.794	196																							
Hexachlorobutadiene	mg/L								0.38	0.142																							
Hexachloroethane	mg/L								0.794	0.194																							
Methylchloride	mg/L								0.295	0.11																							
Methylene Chloride	mg/L								0.17	0.036																							
Nitrobenzene	mg/L								6.402	2.237																							
2-Nitrophenol	mg/L								0.231	0.065																							
4-Nitrophenol	mg/L								0.576	0.162																							
Tetrachloethylene	mg/L								0.164	0.052																							
1,2,4-Trichlorobenzene	mg/L								0.794	0.196																							
1,1,1-Trichloethane	mg/L								0.059	0.022																							
1,2-Trans-dichloroethylene	mg/L								0.066	0.025																							
1,1,2-Trichloethane	mg/L								0.127	0.032																							
Trichloethylene	mg/L								0.069	0.026																							
Floating Particles	mg/m^2										NIL	NIL	NIL	-			NIL																NIL
PAH (Polycyclic AromaticHydrocarbons)	mg/L	50									0.01	-																					
Protozoan Cysts	No./10mL												1	-																			
Platyhelminths-flatworms	No./1ImL												1	-																			
Max physical size of non fecal matter	mm	15																															
Organophosphrus Pesticides	mg/L	30																															
Organophochbrine Pesticides	mg/L	0.5																															
Alkalinity	mg/L				2000																												
Toxic metals	mg/L				10																										10		
CaC_2 as Calcium Carbide					Not Seen																												
Radioactive Substances					Not Seen																				0	0	0						
Yeast, Sugar, raw tar, crude oil					Not Seen																												
Hydrogen sulphide and polysulphides					Not Seen																												

Waste Water Standard		UAE		Oman		Kuaite		Saudi Arabia								Bahrain		Iraq				Iran							Qatar				
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Petroleum spirit, flammable solvents or volatile noxious solvents gases or solids.					Not Seen																												
Unpolluted water (including condensation and cooling water and water drained from roofs of buildings).					Not Seen																												
Insecticides, herbicides, pesticides, fungicides					Inperceptible																												
Any substance (whether by itself or with any other substance allowed to be discharged into sewage system).					Inperceptible																												
Any material that may render wastewater harmful or makes formal treatment of such waste difficult.					Inperceptible																												
Tar & Tar Oil	mg/L						Nil																						20				
All herbicides	mg/L					0.2																											
Most Problem number of total Coliform	MP/N/100ml					1000																											
Total Oil (Hexane Extractable)	mg/L																													15			
Insolubles	mg/L																														2000		
Caustic Akali (calcium carbonates)	mg/L																														3000		
Chlorophyll α	mg/L																														1		
Fluorecent petroleum matters	mg/L																0.1	0.1															
Urea, CH4N2O	mg/L																															2	
Halogen Hydrocarbons and Different Kinds of Pesticides	mg/L																																0.1
Dioxide / Viran	mg/L																																1.34×10^{-1}
No of infantal eggs																																	Nil
No of infantal worms																																	Nil
No of fecal colon bacillus	MPN/100ml																																100
H2S	mg/L																								3	3	3						
Settle able solid	mg/L																											0.1					
Chromium Hexavalent	mg/L							0.25																									
Reference		Abu Dhabi Trade Effluent Standards & Regulations		Ministerial Decision No: 159/2005		EPA Desicion 201/2001		RCER-2015-Volume I- FINAL-July 2, 2015								Resolution No. 3 of 2001 (air and water).		Morning Star for General Services, LLC Iraq West Quma I Project				Iranian Petroleum Standard IPS-E-PR-730(1)							Resolution No. 4 of 2005 by the Chairperson of SCENR issuing executive bylaw for law No. 3				Management of Construction Dewatering Guideline Manual Rev 3-

Water Quality Standard		UAE				Oman		Kuwait		Saudi Arabia			Bahrain	Iraq				Iran	Qatar
Item	Unit	Sea water	Lake Pond	River	Abu-Dhabi	Tap water		Sea water	Tap water	Arabian Gulf	Arabian Gulf	Jubail and Ras Al Khair		River and Tributairs	Drainages and Inidation	Lakes and Reservoirs	Wells and GroundWatae		Ocean
					MarineWater Quality	Unbottled Drinking Water		Ambient Seawater	Un-bottled Portable	COASTAL									
					Maximum	Maximum	Quality	Maximum	Mix.Value	Maximum	Month Ave	Month Ave							
BOD	mg/L				4									<5	<3	<3	-		
COD	mg/L													-	-	-	-		
T-N	mg/L																		
T-P	mg/L				0.001					0.025	0.02	0.02							30
TSS (Suspended Solid)	mg/L				<33			32.8		5	-	-		-	-	-	-	150	30
TDS (Dissolved solids)	mg/L					1000	120 - 600		1000									30000	
pH	SU				6.5-8.5	9	6.5 - 8.0	6.5-8.5	6.5-8.5	7.8-8.5	8-8.5	7.8-8.5		6.5-8.5	6.5-8.5	6.5-8.5	-	6.5-8.5	6.5-8.3
FOG	mg/L																		
PO4	mg/L				0.034			0.0337						0.4	0.4	0.1	0.4		
NH4-N	mg/L				0.004	1.5	-	0.06	1.5					1	1	1	-	500	15
NO3-N	mg/L				0.095	50		0.00947	50	1	0.1	0.1		15	15	15	50		100
Organic-N	mg/L																		
Ammonia Free (as N)	mg/L								3	1.2	0.1	0.1							
NO2	mg/L				0.034	short term :3		0.0337											35
F	mg/L					1.5			1.500	1.5	-	-							
S	mg/L				0.004														
Cl2	mg/L				0.01														
DO	mg/L				>4					5 (min)	5 (min)	5 (min)		>5	>5	>5	-		>4
Hydrocarbons	mg/L																		
Floatables	mg/L									1.5	-	-							
Al	mg/L					0.02			0.200	1	0.5	0.5		0.1	0.1	0.5	-		
As	mg/L				0.005	0.01			0.010	0.05	0.005	0.01		0.05	0.05	0.05	0.05		
Ba	mg/L					0.7			0.700	1	-	-		1	1	1	1		
B	mg/L					0.5			0.300										
Cd	mg/L				0.001	0.003		0.0007	0.003	0.005	0.001	0.001		0.005	0.005	0.005	0.005		0.7
Cr	mg/L				0.01	0.05			0.050	0.1	0.01	0.01		0.05	0.05	0.05	0.05		
Ni	mg/L				0.02	0.02		0.02	0.020	0.1	-	-		0.1	0.1	0.1	0.1		20
Hg	mg/L				No Specifi	0.001		0.00037	0.001	0.0001	0.0001	0.0001		0.001	0.001	0.001	0.001		<0.4
Co	mg/L									0.05	-	-		0.05	0.05	0.05	0.05		
Fe	mg/L				0.3	1		0.0913	0.300	1	-	-		0.3	0.3	0.3	0.5		90
Sb	mg/L								0.005										
Cu	mg/L				0.01	2		0.0155	2/1	0.015	0.015	0.015		0.05	0.05	0.05	0.1	1	15
Mn	mg/L					0.4			0.500/0.100	0.05	-	-							
Zn	mg/L				0.01	3			3	0.1	0.1	0.1		0.5	0.5	0.5	0.1		
Pb	mg/L				0.01	0.01		0.012	0.010	0.01	0.01	0.01		0.05	0.05	0.05	0.05		12
T-recoverble-phenol	mg/L																		
Total Coliforms	MPN/100mL				70					-	200	200							
Faecal coliform bacteria (per 100 mL)	/100mL									-	35	35							
Egg parasite	no/L																		
Worm parasites																			
Viable nematode ova (per litre)	no/L																		
EC	micro S/cm																		
Be	mg/L																		
Cl	mg/L								250										
CN	mg/L				0.004	0.07			0.070	0.1	0.005	0.05		0.02	0.02	0.02	0.02	5	
Li	mg/L																		
Mg	mg/L					30 Sulphite≧ 250)			150					0.1	0.1	0.1	0.1		
Mo	mg/L					0.07			0.070										
Se	mg/L					0.01			0.010					0.01	0.01	0.01	0.01		
Ag	mg/L													0.01	0.01	0.01	0.01		
Na	mg/L					400	200		200										
SO4	mg/L					400	250		250					200 or nati	200 or nati	200 or nati	200 or natural background levels		
V	mg/L				0.0094			0.0094		0.08	0.007	0.007							10
Turbidity	NTU					5	1		5	5	5	5							
Phenols	mg/L				0.001					0.12	0.1	0.1		0.005	0.005	0.005	0.005	500	
Oil&Grease	mg/L				Not Visible					5	2	2		-	-	-	-		
Oil&Grease-Emulsfied	mg/L																		
Oil&Grease-Free oil	mg/L																		
TKN (Total Kjeldahl Nitrogen)	mg/L										0.02	0.02							
TOC	mg/L				2.5					10	5	5							

Item	Unit	Sea water	Lake Pond	River	Abu-Dhabi	Tap water		Sea water	Tap water	Arabian Gulf	Arabian Gulf	Jubail and Ras Al Khair		River and Tributairs	Drainages and Irrigation	Lakes and Reservoirs	Wells and GroundWatae		Ocean
					MarineWater Quality	Unbottled Drinking Water		Ambient Seawater	Un-bottled Portable	COASTAL									
					Maximum	Maximum	Quality	Maximum	Mix.Value	Maximum	Month Ave	Month Ave							
Phesicide,non-chlorinated	mg/L																		
Total-Material	mg/L																		
Cobalt	mg/L																		
Color	mg/lpt/Co scale				Backgroun	15	Non		15units					No-discolara	No-discolara	No-discolara	No-discolaration		
Odor	Dilution Number				Not Objectionable				Acceptable										
Taste	Dilution Number					acceptable	Not offensive ac		Acceptable										
Ca Hardness at 25℃	mg/L as CaCO3																	0.2kg/0.4kgBOD	
Total Hardness at 25℃	mg/L as CaCO3					500	200		500										
Residual Chlorine	mg/L as Cl2									0.05	0.01	0.01							
Conductivity	μmhos/cm																		
K (Potassium)	mg/L								10										
Endrine	mg/L																		
Lindane	mg/L								0.002										
Methoxychlor	mg/L								0.02										
2, 4 dichlorophexy acetic acid	mg/L								0.03										
2,4,5 trichlorophenoxy propionic acid	mg/L																		
Heptachlor	mg/L																		
Aldrin	mg/L																		
DDT	mg/L								0.002					0	0	0	0		
Chlordane	mg/L								#######										
Dieldrin /Aldrin	mg/L								#######										
Heptachlor epoxide	mg/L								#######										
Total pesticide	mg/L																		
Trichloroethene	mg/L																		
Tetrachloromethane	mg/L																		
Tetrachloroethene	mg/L																		
1,2-Dichloroethane	mg/L								0.03										
Benzene	mg/L								0.010					–	–	–	–		
Benzo(a)pyrene	mg/L								#######										
Dichloromethane	mg/L																		
Chlorobenzene	mg/L								0.300					–	–	–	–		
1,2-Dichloroethene	mg/L								0.05										
Toluene	mg/L								0.700										
1,2-Dichlorobenzene	mg/L								1.000										
1,4-Dichlorobenzene	mg/L								0.300										
Vinyl Chloride	mg/L								0.005										
Total coliforms	Number/100ml																		
E.coli or thermotolerent Faecal coliform bacter	Number/100ml																		
Enterococci	Number/100ml0																		
Total Bacterial Count	Number/1ml																		
Gross α	Bq/L																		
Gross β	Bq/L																		
Uranium-238	Bq/L																		
Uranium-234	Bq/L																		
Thorium-230	Bq/L																		
Radium-226	Bq/L																		
Lead-210	Bq/L																		
Polonium-210	Bq/L																		
Thorium-232	Bq/L																		
Radium-228	Bq/L																		
Thorium-228	Bq/L																		
Caesium-134	Bq/L																		
Caesium-137	Bq/L																		
Strontium-90	Bq/L																		
Iodine-131	Bq/L																		
Tritium	Bq/L																		
Carbon-14	Bq/L																		
Plutonium-239	Bq/L																		
Americium-241	Bq/L																		
Bromate	mg/L					0.01													
Chlorate	mg/L																		
Chlorite	mg/L																		

Item	Unit	Sea water	Lake Pond	River	Abu-Dhabi	Tap water		Sea water	Tap water	Arabian Gulf	Arabian Gulf	Jubail and Ras Al Khair		River and Tributairs	Drainages and Irrigation	Lakes and Reservoirs	Wells and GroundWatae		Ocean
					MarineWater Quality	Unbottled Drinking Water		Ambient Seawater	Un-bottled Portable	COASTAL									
					Maximum	Maximum	Quality	Maximum	Mix.Value	Maximum	Month Ave	Month Ave							
Bromoform	mg/L								0.100										
Bromodichlorbromethane (BDCM)	mg/L								0.060										
Chloroform	mg/L								0.200										
Dibromochlorbromethane (DBCM)	mg/L								0.100										
THMs	?																		
Temperature	Δ° Centigrade				3	acceptable	Not offensive ac			2.2	2	10		–	–	–	–		
Chlorinated hydrocarbons	mg/L									0.01									
Salinity above ambient	ppt				<5					1.4	–	–							33-45
Sulphide (S^{2-})	mg/L									0.4	0.004	0.01						10	
Oil	mg/L																	50	
Heavy Metals	mg/L																	1.0-10	
thiocyanides	mg/L																	30	
Organic Load Variation	mg/L																	2.0-4.0	
Free Mineral Acidity	mg/L																	0	
Fluor	mg/L													0.2 or Natu	0.2 or Natu	0.2 or Natu	0.2 or Natural Backgr		Resolution No. 4 of 2005 by the Chairperson of
Free Chlorine	mg/L													Trace	Trace	Trace	Trace		
Chloride	mg/L					600	250							200 or nat	200 or nat	200 or nat	200 or natural background levels		
Boron (Bo)	mg/L													1	1	1	1		
Total Petroleum Hydrocarbonc (TPH)	mg/L				5									–	–	–	–		5
Ironic Sulphur	mg/L													–	–	–	–		
Suiper Dioxide	mg/L													–	–	–	–		
Calcium Carbite	mg/L													–	–	–	–		
Organic Solvents	mg/L													–	–	–	–		
Chorobenzen	mg/L													–	–	–	–		
TNT	mg/L													–	–	–	–		
Bromine Br	mg/L													–	–	–	–		
HS	mg/L					0.1	0.05												
Acrylamide as C_3H_5NO	mg/L					0.0005													
Alachlor as C14H20CNO2	mg/L					0.02													
Hydrocarbons	ppm							5											
SiO3	mg/L				0.89			0.8932											900
Calciumu (Ca)	mg/L								200										
Total Alkalinity	mg/L								100										
Anionic Detergents	mg/L								0.200										
Hydrogen Sulphide (H_2S)	mg/L								0.050										
Hexachlorobenzene	µg/L								1										
Xylen	µg/L								500										
Styrene	µg/L								20										
Etylbenzene	µg/L								300										
Trichlorobenzene (Total)	µg/L								20										
Pentachlorophenol	µg/L								9										
2,4,6,-Trichlorophenol	µg/L								200										
Cl_2	ppm								0.2-0.5										
Transpary / Clarity	m				10														
出典					53	manis Standard No8 20		PA Desicion 201/200		RCER-2015				72	72	72	72		

Organizations and Legal Frame Work on Marine Environmental Protection in ROPME Member States

as of 2016/6/2

		Kingdom of Bahrain	Islamic Republic of Iran	Republic of Iraq	State of Kuwait	Sultanate of Oman	State of Qator	Kingdom of Saudi Arabia	United Arab Emirates
Organization	Environmental Authority	Supreme Council for Environment (Year) Please provide Organization Chart	Department of Environment (Year) Please provide Organization Chart	Ministry of Environment (2003) Please provide Organization Chart	Environment Public Authority (EPA) (Year) Please provide Organization Chart	Ministry of Environment and Climate Affairs (2007?) Please provide Organization Chart	Ministry Of Municipality and Environment (Year) Please provide Organization Chart	The Presidency of Meteorology and Environment (PME:) (Year) Please provide Organization Chart	Ministry of Climate Change and Environment (2015, date) Please provide Organization Chart
	Fishery Authority	Ministry of Industry, Commerce & Tourism(year) Please provide Organization Chart	1. The Iranian Fisheries Organization (Shilat Iran) 2. The Iranian Fisheries Research Organization (IFRO) Please provide Organization Chart		Public Authority of Agriculture and Fish Resources (PAAAFR) (Year) Please provide Organization Chart	Ministry of Agriculture and Fisheries(year) Please provide Organization Chart		The Ministry of Agriculture and Water (MAW) (Year) Please provide Organization Chart	Ministry of Climate Change and Environment (2015, date) Please provide Organization Chart
Law and Regulation	Fandamental Environmental Law	1. Amiri Decree No. 7 of 1980 2. Amiri Decree No. 21 of 1996	1. Environmental Protection and Enhancement Act (1974, amended in 1991) 2. Article 50 of the Constitution of the Islamic Republic of Iran (1979)	Law No. (27) Of 2009 Protection and Improvement of the Environment	Environmental protection Law No. 42 of 2014 (Eng Ver?)	1. Royal Decree No. 114, 2001 (envirInment and pollution) 2.Royal Decree No. 90, 2007 Establishment of environmental authority) English ver?	Decree-Law No.30 of 2002 Environment Protection	1. General Environmental law and its Rules for Implementation (2001)[9] 2. Article No. 32 of the Basic Law (Constitution) of the Kingdom of Saudi Arabia Article 32 (1992, amend 2005)	Federal Law No. 24 of 1999 (as amended by Federal Law No. 11 of 2006)
	EIA	Article 20–22 of the Environment Act	Guidelines on Environmental Impact Assessment (1997)	1. Law No. (27) Of 2009 Protection and Improvement of the Environment 2. Environmental Criteria for Industrial, Agricultural, and Public Service Projects (1990) 3. Environmental Determinants for the Establishment of Projects and Monitor the Implementation of Safety (Instruction No.3, 2011)	Environmental protection Law No. 42 of 2014. Section1 Chapter1 "Environmental Impact Assessment"(Eng Ver?) Other Specific Laws or guidellines?	1.Omani Guidelines on Environmental and Health Impact Assessment of Development Projects 2.MECA Guidelines for Obtaining Environmental Permits	Decree-Law No.30 of 2002 Environment Protection, Chapter 1 Section2 Other Specific Laws or guidellines?	1.General Environmental law, Chapter1, Article1, Article5 2. General Environmental law_Rules for Implementation Chapter1, Article1, 27, Chaoter2 ,Article5 Other Specific Laws or guidellines?	Federal Law No. 24 of 1999 Article 3-8 Other Specific Laws or guidellines?
	Air pollution	Ministerial Order No .10 of 1999	1. Air Pollution Prevention Act (1996) 2. Air Pollution Prevention Executive Regulation (2000) 3. Standards for Air Emissions and Waste Water Discharge	1. National Clean Air Act (1979) 2. Determinants of national and private emission activities (Instruction No.3 2012)	Environmental protection Law No. 42 of 2014. Section3 "Protecting The External Air Against Pollution" (Eng Ver?) Other Specific Laws or guidellines?	Ministerial Decision 118 2004 Air pollution from stationary sources	Decree-Law No.30 of 2002 Environment Protection, Chapter 2[20]	1. General Environmental law: Rules for implementation, Chapter1, Aricle1 2. Gneral Environmental law: Environmental Protection Standards 3. General Environmental law: Rules for Implementation (2001),	Federal Law No. 24 of 1999 Article 48-57 the Air Protection from Pollution Regulation of 2006
	Water pollution	1. Law no 112/1967 modified by Law no 12/1980 on Regulation of Underground Water Uses 2. Law no 11/1991 on Regulation of Sanitary Wastewater and Surface Water Drainage	1. Fair Water Distribution Law (1982) 2. Regulation for Water Resources Preservation 3. By-Laws on Water Resources Preservation	Regulation 25 Preservation of Rivers and Public Water from Contamination (1967)	Environmental protection Law No. 42 of 2014. Section4 "Protecting Water and Coastal Environment Against Pollution"(Eng Ver?) Other Specific Laws or guidellines?	1. Royal Decree No.29 2000 Law of protection of water resources 2. Royal Decree No.115 2001 Law on protection of source of portable water from pollution[6]	Decree-Law No.30 of 2002 Environment Protection, Chapter 3 Other Specific Laws or guidellines?	Rules and Regulations Governing Water Conservation & Protection in Saudi Arabia (year)	Federal Law No. 24 of 1999 Article 35-41
	Water quality standard	The promulgation and implementation of resolution No.10 of 1999 on environmental standards (air and water), was amended by resolution No.2 of 2001 and resolution 3 for the year 2001.	There are No water quality standard?	1. Regulation 25 Preservation of Rivers and Public Water from Contamination (1967) 2. The New Determinants for the Prevention of Pollution of Rivers (No. 25, 1967)	There are No water quality standard?	There are No water quality standard?	There are No water quality standard?	Kingdom of Saudi Arabia National Environmental Standard Ambient Water Quality	The Water Quality regulation (4th Edition),January 2014 The Regulation and Supervision Bureau for the water, wastewater and electricity sector in the Emirate of Abu Dhabi (Every emirates don't have
	Waste water quality standard	There are No waste water quality standard?	1. Standards for Air Emissions and Waste Water Discharge4(2000) (River, Ground water and Agriculture) 2. Standard of Ministry oil -General standard for Water Pollution Control (IPS-G-SF-880) -Engineering Standard for Water Resources and Distribution System (IPS-E-CE-340) -Engineering Standard for Process Design of Waste Water Treatment Plant & Recovery System (IPS-E-PR-730)	1. Wastewater Discharge Quality Requirements (Instruction No.1) 2. The New Determinants for the Prevention of Pollution of Rivers (No. 25, 1967)	There are No waste water quality standard?	Ministerial Decision No: 159/2005	There are No waste water quality standard?	1. Kingdom of Saudi Arabia National Environmental Standard Industrial and Municipal Wastewater Discharges 2. Royal Commission Environmental Regulation 2004, Section 3 Water Environmnet	The Water Quality regulation (4th Edition),January 2014 The Regulation and Supervision Bureau for the water, wastewater and electricity sector in the Emirate of Abu Dhabi (Every emirates don't have standard and follow Abu Dhabi standard)
	Fishery	Amiri Decree No. 5 of 1981 regulating fishing	the Protection and Exploitation of Natural Aquatic Resources Law 1995	1. Regulating the Exploitation and Protection of Aquatic Life (Law No.48, 1976) 2. Resolution no 995 of 1985 and instructed No. 100 annexed to the decision and uncles Authority No. 359 in 1988	Law No. 46 of 1980 on protecting of fisheries resources	1. Ministerial Decision No. 136/98 of 1998 2. Ministerial Decision No. 121/98 of 1998 3. Quality Control Regulations of Omani Exported Fish Ministerial Decision No. 121/98 of 1998 4.Conditions and Specifications of Industrial Fishing Vessels Equipped for Preservation and			Fisheries Law 23 of 1999

Organizations and Legal Frame Work on Marine Environmental Protection in ROPME Member States

as of 2016/6/2

		Kingdom of Bahrain	Islamic Republic of Iran	Republic of Iraq	State of Kuwait	Sultanate of Oman	State of Qator	Kingdom of Saudi Arabia	United Arab Emirates
	Coast and Ocean		1. Law Concerning the Exploitation and Protection of Aquatic Resources of the Islamic Republic of Iran (1976) 2. Law of protection and exploitation of fisheries resources of the Islamic Republic of Iran (1995) 3. Law of Marine Areas of the		Environmental protection Law No. 42 of 2014, Article 67, 68 Other Specific Laws or guidellines?	1. Royal Decree No. 34 of 1974 (Eng Version?) 2.Ministerial Decision 39 2004 Marine Environmental Management Bylaws	1. Decree-Law No.30 of 2002 Environment Protection, Chapter 3 2. Law No.4 of 1983 on the exploitation and protection of living aquatic resources in Qatar 3. Law No.19 of 2003 amendment og the Law No.4 of 1983	General Environmental law: Rules for Implementation Chapter 1, Article1, Chapter2, Article	1.Federal Law No. 23 of 1999 2.Federal Law No. 24 of 1999 Article 17-34 3.Ministerial Decree No. 500 for the Year 2014 on Regulating the Fishing and Trading of Sharks
	Biodiversity and Wildlife	Law no 2/1995 on Protection of wildlife	1. Regulations Concerning the Movement of Animals (1994) 2. Regulation for the Protection of Wildlife 3. Act on Hunting 4. Plant Protection Act (1967)	1. Protection of Wild Animals and Birds (Law No.17, 2010)	Environmental protection Law No. 42 of 2014. Section5 "Biodiversity" Other Specific Laws or guidellines?	1. Law on Nature Reserves and Wildlife Conservation 2. Royal Decree No. 6 of 2003 issuing the Law on Nature Reserves and Wildlife Conservation[30] 3.Ministerial Decree No. 110/2007 issuing the implementing regulations of the Law on Nature	1. Decree Law No. 11 (2000) "Establishing the Supreme Council for the Environment and Natural Reserves (SCENR) 2. Law No. 4 (2002)"Organization of Wild Animals, Birds and Reptiles Hunting 3. Law No 19 Wildlife and habitat protection for the year (2004)	1. Regulation on the Protection of Aquatic Resources 2. Regulation for the Protection of Wildlife 3. Trade in Endangered Species and their products Act(2000)	National Biodiversity Strategy and Action Plan of the UAE (2014-2021) English version of this AP?
	Protected area	Law no 20/1983 on Palm Protection Other Protected Area Law?	Act on the Protected Zone			1. Royal Decree No. 6 of 2003 issuing the Law on Nature Reserves and Wildlife Conservation 2. Ministerial Decree No. 110/2007 issuing the implementing regulations of the Law on Nature Reserves and	Law No 19 Wildlife and habitat protection for the year (2004)	1. Regulation for the Protection of Wildlife 2. Act on Hunting 3. Act on the Protected Zone (1995) 4. Regulation on the Protection of Aquatic Resources	1. Federal Law No. 24 of 1999 Article63-68 2. Federal Law No. 9 of 1983 (hunting) 3. Federal Law No. 11 of 2002 (trading wild life)
	Port and Navigation					1. Royal Decree No. (98/81) for Regulation of Navigation 2. Royal Decree No. (35/81)			
	Coastal Development and Management								
	Tourism								
	Oil, Gus, and Energy								There are no Laws or Regulations on Oil, Gus and Energy?
	Solid Waste		Waste Management Act (2004)		Environmental protection Law No. 42 of 2014. Section2 Chapter1 "Management of Chemical Substances and Hazardous Wastes Other Specific Laws or guidellines?	1. Ministerial Decision 17 1993 Management of Solid non-hazarous waste 2. Ministerial Decision 18 1993 Management of hazardous waste	Decree-Law No.30 of 2002 Environment Protection, Chapter1, Section4	1. Environmental Standards:Material Recovery and Recycling of Waste 2. Environmental Standards Storage and Material Reclamation Facilities 3. Environmental Standards:Waste Acceptance Criteria 4. Environmental Standards Waste Classification 5. General Environmental law	1. Federal law No. 24 of 1999 Article 58-62 2. Law No. 21 of 2005 for waste management in the emirate of Abu Dhabi
	Agriculture and Pesticide	Law no 11/1989 on Pesticides			Environmental protection Law No. 42 of 2014. Section2 Chapter2 "Protecting Land and Agricultural Environment from Pollution" Other Specific Laws or guidellines?	Royal Decree No. 114/2001	Law No.24 of 2006 on the issue of fertilizers and soil improving system in GCC	Pesticides law	Ministerial resolution number (476) of the year 2007 Concerning by-law of AGCC fertilizers and agricultural soil conditioners law
	Others	1. Law no 3/1975 on Sanitation 2. Law no 13/1977 modified by Decreed Law no. 15/1993 on Building Regulation	Regulations on Environmental Protection Law.(1975)			1. Ministerial Decision 317 2001 Regulation for packing and labelling of hazardous chemicals 2. Ministerial Decision 243 2005 regulation for the control & management of ozone depleting substances 3. Ministerial Decree No. 107/2013 promulgating Regulations on the Protection of	1. Law No. 21 of 2007 on the control of substances draining the ozone layer 2. Law No(31) Radiation Protection for the year 2002	1. Environmental Standards:Environmental Noise 2. Environmental Standards:Prevention of Major Accidents	
Master plan, Policy and Report	Master plan and Policy		National Biodiversity Strategy and Action Plan	National Biodiversity Strategy and Action Plan 2015－2020）	Environmental protection Law No. 42 Article 69 stipulate that the integrated national plan shall be set up within two years Have any plans been set up?	National Water Resources Master Plan (2001–20)		1. National Industrial Cluster Development Program 2. The Supreme Commission for Tourism National Tourism Development Project In the Kingdom of Saudi Arabia	1. Abu Dhabi Vision 2030
	Report and others								1. Short-Term Comprehensive Assessment for the Center of Waste Management, Abu Dhabi,2014 2. Wastewater Regulations Quality Standars Review 2014 Consultation

Note; Red characters: Please provide original documents (Preferable in English)
Blue characters: Please check and revise the descriptions
Blank: Please fill out the information

	アラブ首長国連邦	オマーン	クウェート	サウジアラビア	バーレーン	イラク	イラン	カタール
環境当局	Ministry of Climate Change and Environment[60] Federal Environmental Agencyは廃止	Ministry of Environment and Climate Affairs[5]	Environment Public Authority (EPA)[7]	The Presidency of Meteorology and Environment (PME:気象環境最高会議)[4]	Supreme Council for Environment	Ministry of Environment[49]	Department of Environment[26]	Ministry Of Municipality and Environment[50]
代表的な環境法	① Federal Law No. 24 of 1999 (環境全般)[2] as amended by Federal Law no 11 of 2006 (?)[54] ② Federal Law No. 23 of 1999 (海域環境)[2]	Royal Decree No. 114, 2001 環境と汚染対策)[43] Royal Decree No. 90, 2007 環境当局の設立)[44]	Environmental protection Law No. 42 of 2014 [8]	①General Environmental law and its Rules for Implementation 2001)[9] ②Article No. 32 of the Basic Law (Constitution) of the Kingdom of Saudi Arabia 第32条 (992) ↑Amendment 2005[48]	Amiri Decree No. 7 of 1980[23] Amiri Decree No. 21 of 1996[23]	Law No. (27) 0 f 2009 Protection and Improvement of the Environment[49]	①Environmental Protection and Enhancement Act (1974, amended in 1991)[28] ②Article 50 of the Constitution of the Islamic Republic of Iran (1979)[27]	Decree-Law No.30 of 2002 Environment Protection[20]
水産当局	Ministry of Climate Change and Environment[60]	Ministry of Agriculture and Fisheries[65]	Public Authority of Agriculture and Fish Resources (PAAAFR)[64]	The Ministry of Agriculture and Water (MAW) [68]	Ministry of Industry, Commerce & Tourism 調査中		the Iranian Fisheries Organization (Shilat Iran)[72] 研究機関 :The Iranian Fisheries Research Organization (IFRO)[72]	
代表的な水産法	Fisheries Law 23 of 1999[61]	**Ministerial Decision No. 136/98 of 1998**[65] Quality Control Regulations of Omani Exported Fish **Ministerial Decision No. 121/98 of 1998**[65] Conditions and Specifications of Industrial Fishing Vessels Equipped for Preservation and Handling of Fish Products.	law No. 46 of 1980 on protecting of fisheries resources[66]	国連海洋法条約を批准[68] The UN Convention on the Law of the Sea (1982)	Amiri Decree No. 5 of 1981 regulating fishing[71]	Resolution no 995 of 1985 and instructed No. 100 annexed to the decision and uncles Authority No. 359 in 1988	the Protection and Exploitation of Natural Aquatic Resources Law 1995 [72]	
EIA	Federal Law No. 24 of 1999 第3条～8条[2]	MECA Guidelines for Obtaining Environmental Permits[6]	Environmental protection Law No. 42 of 2014. Section1 Chapter1 "Environmental Impact Assessment"[8]	①General Environmental law, Chapter1, Article1, Article5[9] ②General Environmental law_Rules for Implementation Chapter1, Article1, 27, Chaoter2 ,Article5[9]	Article 20-22 of the Environment act[70]		Guidelines on Environmental Impact Assessment (1997)[28]	Decree-Law No.30 of 2002 Environment Protection, Chapter 1 Section2[20]
大気汚染	Federal Law No. 24 of 1999 第48条～57条 (大気汚染防止)[2] the Air Protection from Pollution Regulation of 2006[77]	Ministerial Decision 118 2004 Air pollution from stationary sources[6]	Environmental protection Law No. 42 of 2014. Section3 "Protecting The External Air Against Pollution"[8]	①General Environmental law : Rules for implementation, Chapter1, Article1[9] ②General Environmental law : Environmental Protection Standards[9] ③General Environmental law : Rules for Implementation 2001), Appendix2[9] ④Environmental Standards Ambient Air Quality[10]	Ministerial Order No .10 of 1999[26]		①Air Pollution Prevention Act (1996)[27] ②Air Pollution Prevention Executive Regulation (2000)[4] 環境基準 Standards for Air Emissions and Waste Water Discharge[4]	Decree-Law No.30 of 2002 Environment Protection, Chapter 2[20]
水質汚濁	Federal Law No. 24 of 1999 第35条～第41条 (汚染対策 -地下水、飲料水の保護)[2]	①Royal Decree No.29 2000 Law of protection of water resources[6] ②Royal Decree No.115 2001 Law on protection of source of portable water from pollution[6]	Environmental protection Law No. 42 of 2014. Section4 "Protecting Water and Coastal Environment Against Pollution"[8]	①Kingdom of Saudi Arabia National Environmental Standard Drinking Water Quality[11] ②Kingdom of Saudi Arabia National Environmental Standard Industrial and Municipal Wastewater Discharges[12] ③Kingdom of Saudi Arabia National Environmental Standard Ambient Water Quality[13]	①Law no 112/1967 modified by Law no 12/1980 on Regulation of Underground Water Uses[24] ②Law no 11/1991 on Regulation of Sanitary Wastewater and Surface Water Drainage[24]		①Fair Water Distribution Law (1982)[4] ②Regulation for Water Resources Preservation[4] ③By-Laws on Water Resources Preservation[4] 環境基準 ④Standards for Air Emissions and Waste Water Discharge[4] ⑤Law concerning the Exploitation and Protection of Aquatic Resources of the Islamic Republic of Iran	Decree-Law No.30 of 2002 Environment Protection, Chapter 3[20]
水質環境基準 water quality standard	アブダビ首長国以外に水質環境基準をもっておらず、各国ともアブダビ首長国の水質環境基準を用いていると報告されている。 The Water Quality regulation (4th Edition),January 2014 The Regulation and Supervision Bureau for the water, wastewater and electricity sector in the Emirate o Abu Dhabi[36]	WHOの飲料水用の水質基準を参考にした、飲料用水の水質基準が公表されているが、海洋 -河川 -地下水用の水質基準は示されていない。 関連法規は 環境関連法規集 2012 [6] にまとめられている。 調査継続中）	Environmental protection Law No. 42 of 2014. Section4 "Protecting Water and Coastal Environment Against Pollution"8 Article 69に施行細則および関連法規を2年以内に整備するという項目があるので2016年の今年中に 水質基準」についての法令が施行されると思われる。 調査継続中）	①Kingdom of Saudi Arabia National Environmental Standard Drinking Water Quality[11] ②Kingdom of Saudi Arabia National Environmental Standard Ambient Water Quality[13]	The promulgation and implementation of resolution No.10 of 1999 on environmental standards (air and water), was amended by resolution No.2 of 2001 and resolution 3 for the year 2001.	Law 35 of 1967. (Water Quality Objectives for Source Water)	海洋、河川、湖沼を含む水域の環境基準はない。ただし、DOEはペルシャ湾、オマーン海を6つの水域に分けて環境基準の検討を行っている。 2015年詳細計画策定調査）	
排水基準 waste water quality standard	アブダビ首長国以外に水質環境基準をもっておらず、各国ともアブダビ首長国の水質環境基準を用いていると報告されている。 The Water Quality regulation (4th Edition),January 2014 The Regulation and Supervision Bureau for the water, wastewater and electricity sector in the Emirate o Abu Dhabi[36]	Ministerial Decision No:159/2005[76]	Environmental protection Law No. 42 of 2014. Section4 "Protecting Water and Coastal Environment Against Pollution"8 Article 69に施行細則および関連法規を2年以内に整備するという項目があるので2016年の今年中に 排水基準」についての法令が施行されると思われる。 調査継続中） 付記 KwaitにはKEPS (Kwait Environmental Protection Society)http://keps.org.kw/という環境行政に助言もしくは実施している機関があるが、HPがアラビア語onlyのため英語表記などがネット上にあがるまで少しタイムラグがあるものと思われる	サウジアラビア全体としての排水基準は Kingdom of Saudi Arabia National Environmental Standard Industrial and Municipal Wastewater Discharges[12] ジュベイル -ヤンブー王立委員会は、王立委員会規則 (Royal Commission Environmental Regulation) を策定し、排水水質基準、衛生排水基準、海域排水基準、地下水及び飲料水質基準等を定めている。各基準はジュベイル市とヤンブー市の個別に設定してている。 Royal Commission Environmental Regulation 2004, Section 3 Water Environmnet[37]		Law 35 of 1967 Wastewater from Industrial, Commercial and Agricultural sources)	河川、地下浸透、農地利用のための排水基準はあるが、海域への排水基準は無く、河川への排水基準を暫定的に用いている。(2015年詳細計画策定調査） Standards for Air Emissions and Waste Water Discharge4 (2000) 石油省は石油基準(PS)に基づき、以下の基準を定めている。*4 -General standard for Water Pollution Control (PS-G-SF-880) -Engineering Standard for Water Resources and Distribution System (PS-E-CE-340) -Engineering Standard for Process Design of Waste Water Treatment Plant & Recovery System (PS-E-PR-730)	

	アラブ首長国連邦	オマーン	クウェート	サウジアラビア	バーレーン	イラク	イラン	カタール
海岸 ·海洋	①Federal Law No. 23 of 1999 ②Federal Law No. 24 of 1999 第17条～第34条[2] ③Ministerial Decree No. 500 for the Year 2014 On Regulating the Fishing and Trading of Sharks[33]	Royal Decree No. 34 of 1974[73] ①Ministerial Decision 39 2004 Marine Environmental Management Bylaws[6] ②Ministerial Decision 115 2005 Discharge liquid effluent in Marine Environment[6] ↓ Implements	Environmental protection Law No. 42 of 2014, Article 67, 68[8]	①Regulation on the Protection of Aquatic Resources[4] ②General Environmental law : Rules for Implementation Chapter 1, Article1, Chapter2, Article1[9]	Law no 5/1981 on Fishing Regulation[24]		①Law Concerning the Exploitation and Protection of Aquatic Resources of the Islamic Republic of Iran (1976)[28] ②Law of protection and exploitation of fisheries resources of the Islamic Republic of Iran (1995)[28] ③Law of Marine Areas of the Islamic Republic of Iran in the Persian Gulf and the Oman Sea (1993)	①Decree-Law No.30 of 2002 Environment Protection, Chapter 3[20] ②Law No.4 of 1983 on the exploitation and protection of living aquatic resources in Qatar[22] ③Law No.19 of 2003 amendment og the Law No.4 of 1983[32]
生物多様性	National Biodiversity Strategy and Action Plan of the UAE (2014-2021) [29]	Royal Decree No. 6 of 2003 issuing the Law on Nature Reserves and Wildlife Conservation[30] ↓ implemented by Ministerial Decree No. 110/2007 issuing the implementing regulations of the Law on Nature Reserves and Wildlife	Environmental protection Law No. 42 of 2014. Section5 "Biodiversity"[8]	Trade in Endangered Species and their products Act(2000)[31]		National Biodiversity Strategy and Action Plan (2015－2020)[41]	National Biodiversity Strategy and Action Plan[4]	①Decree Law No. 11 (2000) Establishing the Supreme Council for the Environment and Natural Reserves (SCENR)"[32] ②Law No. 4 (2002) Organization of Wild Animals, Birds and Reptiles Hunting"[32]
自然保護 ·保護区	Federal Law No. 24 of 1999 第63条～68条[2] Federal Law No. 9 of 1983 (狩猟法)[4] Federal Law No. 11 of 2002 (野生動植物の希少種の国際取引に関する規制)[4]	Royal Decree No. 6 of 2003 issuing the Law on Nature Reserves and Wildlife Conservation[30] ↓ implemented by Ministerial Decree No. 110/2007 issuing the implementing regulations of the Law on Nature Reserves and Wildlife Conservation[45]		①Regulation for the Protection of Wildlife[4] ②Act on Hunting[4] ③Act on the Protected Zone (1995)[4,31] ④Regulation on the Protection of Aquatic Resources[4]	①Law no 20/1983 on Palm Protection[24] ②Law no 2/1995 on Protection of wildlife[24]		①Regulations Concerning the Movement of Animals (1994)[28] ②Regulation for the Protection of Wildlife[4] ③Act on Hunting[4] ④Act on the Protected Zone[4] ⑤Plant Protection Act (1967)[27]	Law No 19 Wildlife and habitat protection for the year (2004)[22]
農業 ·農薬	Ministerial resolution number (476) of the year 2007 Concerning by-law of AGCC fertilizers and agricultural soil conditioners law[62]	Royal Decree No. 114/2001[43]	Environmental protection Law No. 42 of 2014. Section2 Chapter2 "Protecting Land and Agricultural Environment from Pollution"[42]	Pesticides law[69]	Law no 11/1989 on Pesticides[24]			Law No.24 of 2006 on the issue of fertilizers and soil improving system in GCC[22]
港湾 ·航行		Royal Decree No. (98/81)[65] for Regulation of Navigation Royal Decree No. (35/81)[65]	Kuwait Ports Authority[64]					
沿岸開発(観光系)		Ministerial Decision No. 121/98 of 1998[65]					Iran Tourism & Touring Online	
石油 ·ガス ·エネルギー	連邦にはエネルギー政策、石油 ·エネルギー関連法規は無いとされている。UAE全体をアブダビ首長国政府と最高石油評議会 (Supreme Pertoleum Council)で決める。[63]							
廃棄物	①Federal law No. 24 of 1999 第58条～第62条 (有害物質の取り扱い、廃棄物及び医療廃棄物に係る要求事項を規定)[2] ②Law No. 21 of 2005 for waste management in the emirate of Abu Dhabi (アブダビ廃棄物管理規則)[3] ③Short-Term Comprehensive Assessment for the Center of Waste Management, Abu Dhabi,2014[33]	①Ministerial Decision 17 1993 Management of Solid non-hazarous waste[6] ②Ministerial Decision 18 1993 Management of hazardous waste[6]	Environmental protection Law No. 42 of 2014. Section2 Chapter1 "Management of Chemical Substances and Hazardous Wastes"[8]	①Environmental Standards Material Recovery and Recycling of Waste[14] ②Environmental Standards Storage and Material Reclamation Facilities[15] ③Environmental Standards Waste Acceptance Criteria[16] ④Environmental Standards Waste Classification[17] ⑤General Environmental law Appendix 4[9]			Waste Management Act (2004)[27]	Decree-Law No.30 of 2002 Environment Protection, Chapter1, Section4[20]
その他の環境法規		①Ministerial Decision 317 2001 Regulation for packing and labelling of hazardous chemicals[6] ②Ministerial Decision 243 2005 regulation for the control & management of ozone depleting substances[6] ↓Repealed by Ministerial Decree No. 107/2013 promulgating Regulations on the Protection of the Ozone Layer[46] ③Royal Decree No. 90, 2007 環境当局の設立)[44]		①Environmental Standards Environmental Noise[18] ②Environmental Standards Prevention of Major Accidents[19]	①Law no 3/1975 on Sanitation[24] ②Law no 13/1977 modified by Decreed Law no. 15/1993 on Building Regulation[24]		Regulations on Environmental Protection Law.(1975)	①Law No. 21 of 2007 on the control of substances draining the ozone layer[22] ②Law No.(31) Radiation Protection for the year 2002[22]

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マスタープラン 戦略	Plan Abu Dhabi 2030[58] Wastewater Regulations Quality Standars Review 2014 Consultation[52]	National Water Resources Master Plan (2001-20)		National Industrial Cluster Development Program (NICDP) 自国産業育成計画 家電導入など) The Supreme Commission for Tourism National Tourism Development Project In the Kingdom of Saudi Arabia[67] 観光のための環境保全)				
土壌	Federal Law No. 24 of 1999 第42 条～第47 条[2] Federal Law No. 39 of 1992 第1 条～第2 条		Environmental protection Law No. 42 of 2014. Section2 Chapter2 "Protecting Land and Agricultural Environment from Pollution"	General Environmental law Chapter2[9]	Law no 11/1989 on Pesticides[24]			Law No.24 of 2006 on the issue of fertilizers and soil improving system in GCC[22]
環境基準 (SO2)	アブダビの大気環境基準[4] 1時間平均の上限 :350 μg/m3 (0.133ppm) 24時間平均の上限 :150 μg/m3 1年平均の上限 :60 μg/m3	0.035g/m3 [6]		①1時間平均で0.28ppm を超えた回数が30日以内に3回以上あってはならない ②24時間平均で0.14ppm を超えた回数が12ヶ月以内に2回以上あってはならない ③12ヶ月平均で0.03ppm を超えては			大気環境基準、WHO に基づく[34] 年平均 0.03ppm	
環境基準 (NO2)	アブダビの大気環境基準[4] 1時間平均の上限 :200 μg/m3 (0.110ppm) 1年平均の上限 :40-50 μg/m3 (0.021-0.026ppm)	0.150g/m3 [6]		12ヶ月平均で100μg/m3未満[4]			大気環境基準、WHO に基づく[34] 年平均 0.05ppm	
光化学オキシダント濃度 (O3)	アブダビの大気環境基準[4] 1時間平均の上限 :200 μg/m3 (0.102ppm) 8時間平均の上限 :120 μg/m3 (0.06ppm)			1時間平均で0.15ppm を超えた回数が30日以内に3回以上あってはならない[4]			大気環境基準、WHO に基づく[35] 1時間最高値 0.08ppm	
呼吸域浮遊粉塵 (PM10)	アブダビの大気環境基準[4] 24時間平均の上限 :150 μg/m3 1年時間平均の上限 :50 μg/m3			年間平均 :80μg/m3未満[4]				
H2S		5 ppm v/v[6]		4時間平均で0.03ppm を超えた回数が12ヶ月以内に2回以上あってはならない[4]				
CO	アブダビの大気環境基準[4] 1時間平均の上限 :30,000μg (25ppm) 8時間平均の上限 :10,000μg (8.7ppm)	0.050 g/m3 [6]		8時間平均で8ppm を超えた回数が30日以内に3回以上あってはならない[4]			大気環境基準、WHO に基づく[34, 35] 8時間最高値 9 ppm 1時間最高値 35ppm	
フッ素化合物				30日間の平均濃度が0.001ppm を超えてはならない[4]				

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50 Ministrial of Munipality and Environment, Qatar
http://www.mme.gov.qa/cui/index.dox?siteID=2
51 Wastewater Regulations Quality Standars Review 2014 Consultation
http://rsb.gov.ae/assets/documents/1972/consultationwwregsqualitystandardsreview.pdf
52 regswaterquality4thedition UA Abu dabi 2014
file:///C:/Users/myj21617/Downloads/regswaterquality4thedition.pdf
53 Gulf Business Law Sample Page
file:///C:/Users/myj21617/Downloads/Gulf%20Law%20Publications%20-%20Lexgulf%20.pdf
54 建技研インター/セフィードルード川流域総合水資源管理調査
http://open_jicareport.jica.go.jp/pdf/12031357_01.pdf
55 General standard for Water Pollution Control (IPS-G-SF-880)
http://igs.nigc.ir/STANDS/IPS/G-SF-880.pdf
56 Engineering Standard for Water Resources and Distribution System (IPS-E-CE-340)
http://igs.nigc.ir/STANDS/IPS/e-ce-340.pdf
57 Engineering Standard for Process Design of Waste Water Treatment Plant & Recovery System (IPS-E-PR-730)
http://igs.nigc.ir/STANDS/IPS/e-pr-730.PDF
58 アブダビ産業協力プロジェクト
http://abudhabi.jccme.or.jp/information/#information02
59 アラブ首長国連邦第三国研修 「水産資源評価管理」終了時評価報告書
http://open_jicareport.jica.go.jp/pdf/11758851.pdf
60 HP_Ministry of Climate Change and Environment
http://www.moccae.gov.ae/en/about-ministry/about-the-ministry.aspx
61 FAO_Fisheries Law
http://www.fao.org/fi/oldsite/FCP/en/ARE/body.htm
62 気候変動環境省HP
http://www.moccae.gov.ae/en/search.aspx?type=pages|news|events|faqs|circulars|photos|videos|service&query=Fis
63 IEEJ_UAE
http://eneken.ieej.or.jp/data/4926.pdf
64 リサーチナビ 国立国会図書館
https://rnavi.ndl.go.jp/asia/entry/link-kwt02.php
65 Food and Agriculture Organization of the United Nations
http://www.fao.org/fishery/facp/OMN/en#CountrySector-OrgsInvolved
66 FAO_Fisheries Management
http://www.fao.org/fi/oldsite/FCP/en/KWT/body.htm

67 観光開発政府戦略 GeneralStrategy
https://www.scta.gov.sa/en/AboutSCTA/Documents/GENERALSTRATEGY.pdf
68 FAO Fishery Country Profile - Kingdom ofSaudiArabia
http://www.fao.org/fi/oldsite/FCP/en/SAU/profile.htm
69 Pesticides law
https://www.sfda.gov.sa/en/food/about/regulations/Pages/food-230810-AR1.aspx
70 JICA_SEA導入レポート2005
http://jica-ri.jica.go.jp/IFIC_and_JBICI-Studies/jica-ri/publication/archives/jica/kyakuin/pdf/200511_aid02_0
71 FAO Fisheries Country Profile - Bahrain
http://www.fao.org/fi/oldsite/FCP/en/bhr/profile.htm
72 FAO Fishery Country Profile - THE ISLAMIC REPUBLIC OF IRAN
http://www.fao.org/fi/oldsite/FCP/en/IRN/profile.htm
Morning Star for General Services, LLC _EXHIBIT Eight Iraqi Environmental Standards Contract No.: W3QR-50-M07
72 11
http://tosco.iq/s/userfiles/files/PRJ-173-Flour/Tender%20Document/PRJ172-Flour/Project_471341_Attachments/Iraqi%20Environmental%20Standards.pdf
73 Environmental Laws of Oman _ Lex Arabiae
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Ministry of Environment and Climate Affairs HP
http://meca.work/en/module.php?module=search
UAE の環境に対する市民意識と環境関連政策_JETRO
https://www.jetro.go.jp/ext_images/jfile/report/07000563/uae_kankyoseisak.pdf

ROPME		アラブ首長国連邦	オマーン	クウェート	サウジアラビア	バーレーン	イラク	イラン	カタール
植物プランクトン （調査2006年冬，ROPME2010）						サンゴ分布（2011）		サンゴ分布	
動物プランクトン（ROPME2003,2010）	I-RSA		動物プランクトン（ROPME2003,2010）						
魚系プランクトン（ROPME,2012）	RSA（Houde et al,1986），O-RSA（2001）		魚系プランクトン（調査1989～1990）					魚系プランクトン（Vosough et al,2010）	
底生生物（Meiofauna（ROPME,2013e）	RSA								
底生生物（Macrofauna（ROPME,2012b）	Northen-RSA,Southern-RSA,M-RSAの3ヶ所に分類		Macrofauna（ROPME,2012b）						
海亀	RSA		海亀（調査2005～2008）	海亀（調査2008～2011）					
ウミヘビ	RSA（Gallagher,1990）								
海洋哺乳類（ジュゴン	RSA（Preen, 1989）								
海洋哺乳類（イルカ	RSA（Basson et al,1977），（Baldwin,1995）								
海鳥	RSA（Zwarr et al,1991）		Erilcsen.，1998 and 2000）						
海藻	RSA（MNR-IR. Iran, 2003）		海藻（Jupp and Goddard, 2011）					海藻（MNR-IR. Iran, 2003）	
魚類分布	RSA（MNR-IR. Iran, 2003）（Sheppard et al, 2010）							魚類（MNR-IR. Iran, 2003）	
干潟分布	RSA（MEMAC, 2010），（Nigtingale and Hill, 1993）								
マングローブ生育調査	RSA（調査1999,2005），JAICAも2008年に調査		マングローブ（調査2007）	マングローブ（調査2012）			マングローブ（調査2007）	マングローブ（調査2005）	マングローブ（調査2010）
サンゴ分布	RSA,インド洋（Coles, 2003）		サンゴ分布			サンゴ分布（調査2011）		サンゴ分布	
環境リスクアセスメント調査	RSA,インド洋（MEHRAs, MEMAC, 2010a）								

RSA：ROPME Sea Area　　※RSAの時はUAEやカタールなども参加している？オマーンはM-RSAのため強調されやすい。

MEMAC：Marine Emergency Mutual Aid Centre）

SOMER2013－3.1.3より

Appendix 2 Final Report of the Baseline Survey

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

Baseline Data for Ecosystem Based Management Programme

January 2019

Japan International Cooperation Agency

JICA Study Team

Baseline Data for Ecosystem Based Management Programme

December 2018

Delivered to:
Ides, Inc.

Produced for:
ROPME, Kuwait

Revision 05

المحيطات الخمسة لخدمات البيئة ش م م

Five Oceans
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Issue and Revision

Revision	Date	Author	QA/QC	Issue
00	13 Dec 16	Various	SW	Draft of Part 1 and 2 for client comment
01	21 Jun 17	Various	SW	Updated Draft including Part 3 for client comment
02	5 Apr 18	Various	SW	Draft Final Report
03	23 Sep 18	Various	SW	Final report incorporating gap analysis and coastal habitat mapping
04	31 Dec 18	Various	SW	Draft final report
05	20 Jan 19	Various	SW	Revision of the draft final report

Contents

Abbreviations

AGEDI	Abu Dhabi Global Environmental Data Initiative
CBD	Convention on Biological Diversity
CITES	Convention on the International Trade in Endangered Species
EAD	Environment Agency Abu Dhabi
EBM	Ecosystem Based Management
EPAA	Environment and Protected Areas Authority of Sharjah
ESO	Environment Society of Oman
EWS-WWF	Emirates Wildlife Society – World-Wildlife Fund
FAO	Food and Agriculture Organization of the United Nations
GAMEP	General Authority for Meteorology and Environmental Protection
GCC	Gulf Cooperation Council
IUCN	International Union for the Conservation of Nature
JICA	Japanese International Cooperation Agency
KISR	Kuwait Institute for Scientific Research
MAFW	Ministry of Agriculture and Fish Wealth, Government of Oman
MARPOL	International Convention for the Prevention of Pollution from Ships
MECA	Ministry of Environment and Climate Affairs (Oman)
MEMAC	Marine Emergency Mutual Aid Center (Bahrain)
MME	Ministry of Municipality and Environment (Qatar)
MOE	Ministry of Environment (Iraq)
NYU	New York University
PERSGA	Regional Organization for the Protection of the Environment of Red Sea and Gulf of Aden
RECOFI	Regional Commission for Fisheries
ROPME	Regional Organization for the Protection of the Marine Environment
ROWA	UN Environment's Regional Office for West Asia
RSA	ROPME Sea Area
SCENR	Supreme Council for Environment and Nature Reserves
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Program
UNEP	United Nations Environment Program (also abbreviated to UN Environment)
UNEP WCMC	UNEP World Conservation Monitoring Center
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNU INWEH	United Nations University Institute for Water, Environment and Health
WHO	World Health Organization

1. Introduction

1.1. Background

The Regional Organization for the Protection of the Marine Environment (ROPME) was established in 1978 by the eight Governments of the region (Bahrain, I.R. Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and UAE). Its key objective has been coordinating the member states' efforts towards protection of the ROPME Sea Area (RSA), its water quality, marine life and to abate the pollution caused by development activities throughout the region. In a recent effort to move towards a more integrated management of the RSA and shifting away from the traditional sectoral approaches of the past, the organization signed a Memorandum of Understanding with the United Nations Environment Programme (UNEP) to develop a Regional EBM Strategy for the RSA.

A Working Group comprising ROPME, UNEP's Division of Environmental Policy Implementation (UNEP/DEPI), UNEP's Regional Office for West Asia (UNEP ROWA) and the Japanese International Cooperation Agency (JICA) was established in 2016 for the development of this Strategy[1]. The Group's provisional work plan[2] included the preparation of three studies: i) a Scoping Study to identify elements to be included in the Strategy, ii) an Inventory of existing strategies, policies, programmes, projects and organizations (this report), and iii) an Ecosystem Assessment to set the baseline of the RSA.

The collection of 'baseline data' was agreed to be undertaken as part of the initial information gathering activities that would be used as input to the scoping study and further development of the EBM Strategy. The purpose of the 'baseline data' report is therefore to provide a series of directories that list i) major stakeholders, ii) national environmental legislation, iii) what types of data are held by which government organizations, iv) a selection of case studies demonstrating how the EBM approach, and v) brief gap analysis in the region concerning EBM has been applied in each member state. The WG agreed the collection of baseline data would be undertaken by an external consultant recruited by JICA via their programme management consultant group, Ides, Inc. and IDEA Consultants Inc. of Japan.

1.2. Overall Approach to the Collection of Baseline Data

The approach employed for the data collection exercise was to delegate the responsibility to in-country consultants who work in the field of EBM and related fields, as this was considered to be the most cost and time effective method. The consultants appointed to carry out this work were:

No.	Name	Company	Country	Comment
1	Tamera Alhusseini	Environment Arabia Consultancy Services WLL (EA)	Bahrain	Bahrain based marine and coastal environmental consultancy.
2	David Wells	Earth and Marine Environmental Consultants Ltd. (EAME)	Iraq	Environmental consultancy with offices in Basra, Erbil and UK.
3	Dr Kaveh Samimi-Namin	Freelance Consultant	Iran	Iranian marine consultant with PhD in marine ecology, and previously employed at 5OES. Valuable support was also provided by Ms Farnaz Shoaie and the Iranian delegation to the

[1] ROPME/WD/EBM-5ToR of the Working Group
[2] ROPME/WD/EBM-6 Work Plan of the Working Group

				ROPME-JICA EBM Workshop held in Muscat, Sep. 2017.
4	Samia Al Duaij	Freelance Consultant	Kuwait	Kuwait based environmental consultant with experience working on World Bank projects.
5	Dr Simon Wilson	Five Oceans Environmental Services LLC (5OES)	Oman	+20 yrs environmental consultancy experience in Southern Gulf region, based in Oman and also working in UAE and Qatar
6	Dr Simon Wilson	Five Oceans Environmental Services LLC (5OES)	Qatar	+20 yrs environmental consultancy experience in Southern Gulf region, based in Oman and also working in UAE and Qatar
7	Tarek Abdel Monem	Centre for Environmental and Development for the Arab Region and Europe (CEDARE)	Saudi Arabia	Inter-governmental organization with offices in Egypt and Jeddah providing technical support to Saudi Arabian government (amongst others) on environmental management. Valuable support was also provided by Dr Ahmed Al Mansi and the Saudi Arabian delegation to the ROPME-JICA EBM Workshop held in Muscat, Sep.2017.
8	Simon Pickup	Anthesis Consulting Middle East	United Arab Emirates	Long standing environmental consultant working in UAE. Scope only included Parts 1 & 2.

Each consultant was provided with a template that was first developed for Oman by the overall project coordinator, Dr Simon Wilson, after approval from Ides, Inc. Consultants were asked to complete the tables according to this structure to ensure consistency across countries, using primary (if possible within the project constraints) and secondary information sources freely available to them such as public reports, websites, and their own personal experience and networks. Project constraints prevented a systematic collection of data directly from primary sources through an engagement process, so the information presented should be considered to be a rapid assessment only for verification in due course, rather than a complete inventory of all relevant information.

1.3. Definition of the Study Area

The Regional Organization for the Protection of the Marine Environment (ROPME) Sea Area, or RSA[3], is defined by the coastal zones and sea areas surrounded by the eight member states of the Organization as defined by the Kuwait Regional Convention (1978). Figure 1 shows how this area is divided into three geographically distinct parts. The inner part (i-RSA) broadly consists of the marine area to the north of the Strait of Hormuz, the middle area (m-RSA) covers the Oman Sea and the outer RSA (o-RSA) stretches over the entire southern boundary of the sea area across the Arabian Sea, from Ra's Al Hadd to the southern border between Yemen and Oman.

[3] ROPME Sea Area, RSA, RSA region or ROPME Area are used interchangeably throughout the report.

Figure 1. Geographical coverage and divisions of the RSA. (Source: ROPME, 2013)

1.4. Project Constraints

Following from the description of the methods used to collect information presented in this report it is necessary to highlight certain limitations to the data in order that the users of this information are aware about how it may be used. The data presented has been collected by relatively few individuals over an 18 month period. The contents of the directory will be significantly improved by wider dissemination, review and incorporation of feedback from users. Furthermore, as time progresses changes to the data set will need to be captured in an on-going process in which revisions are published in revised versions of the directory on a regular and schedule basis. Recommendations in this regard are provide in 'Data Maintenance and Improvement' at the end of this chapter.

1.5. Gap Analysis

A brief analysis of gaps inherent in this baseline report is presented in Chapter 6 to ensure that users of the data, and managers of the wider EBM process, are aware of where future efforts would be most effectively directed. The directory comprises three main data sources: i) contact details in stakeholder organizations, ii) applicable legislation and policies, and iii) habitat mapping and therefore the gap analysis focuses on these three main areas.

1.6. Report Structure

The specific contents of the Baseline Data Report were developed by the Consultant and based largely on the agreed Terms of Reference as drafted by Ides, Inc.

Chapter 1: Introduction. This chapter provides a brief summary of the background of the Regional Organization for the Protection of the Marine Environment (ROPME) and the history, methods used and the purpose of the report.

Chapter 2: Stakeholder Directory. This provides a listing of government, academic, NGO, public and private sector companies that are considered to be a stakeholder in the EBM process. While reasonable effort has been used to ensure that this list is as accurate as possible, it is inevitable that it contains outdated information and certainly has information gaps.

Chapter 3: Listing of Environmental Legislation. Appropriate and applicable legislation is listed in Chapter 3, and a matrix developed that indicates where legislation has a bearing on different sectors and activities that have an influence on the coastal and marine zones such as environmental management, fisheries and aquaculture, agriculture, offshore oil and gas, energy and utilities, navigation and shipping and coastal planning and construction.

Chapter 4: Policies, Data Sources and EBM Case Studies. For each government stakeholder a high level analysis of policies is given together with classes of data held by that entity that is pertinent to the EBM process. This chapter also gives brief profiles of case studies that demonstrate the practical application of the principles of the EBM concept.

Chapter 5: Marine Coastal Habitat Mapping. A review is made of the publicly available data and information relating to habitat mapping in the RSA, and areas for which information but no data is are highlighted. The most comprehensive coastal habitat mapping in the RSA has been conducted in the UAE, while Kuwait will carry out a very comprehensive coastal and marine resource and habitat survey until 2021 that will be used to update the country's marine atlas. However, no national scale effort has yet been carried out to map coastal and marine resources in either Iran or Oman.

Chapter 6: Gap Analysis. An assessment is made of gaps in the coverage of the four focal areas of this report, namely the directory of i) stakeholders, ii) environmental legislation, iii) policies, data holdings and EBM case studies, and iv) coastal habitat mapping. Gaps are recognized as being either a gap in the coverage of this study which by its nature has been rapid and somewhat superficial, or an actual gap in the availability of information or data available for review.

Chapter 7: Conclusion and Recommendation. Based on the preceding gap analysis and an understanding of the coverage and shelf life of the directories a set of recommendations have been compiled and conclusions drawn that set out an effective course for future action.

1.7. The Report's Target Audience

If the baseline data report is to succeed in providing key information for the development of an EBM Strategy it is vital that it is aimed at the broadest audience possible and has value beyond just informing the EBM strategy. It was therefore not developed with only a select group of beneficiaries in mind such as policy makers, although clearly they will be charged with using the data for the specific purpose of coordinating the development of the EBM strategy. Hence a tentative list could include but not be limited to:

- ROPME countries' policy makers
- ROPME key statutory bodies including Environment Departments
- Key Regulators
- Key political figures
- Non-Governmental Organizations (NGO)

- Governmental Organizations
- Key industry sectors including oil and gas, manufacturing, fisheries, tourism etc.
- Academic and research institutions
- Local, regional and international funding bodies
- UN and other International Organizations

In addition, the baseline data should be disseminated to the broadest range of public stakeholders including the general public, students in secondary and higher education, public officials, to include all sectors of public life.

Given the large number of stakeholders involved in EBM activities in the region, the normal process of organizational and institutional change and evolution and the constraints that applied to the compilation of this report feedback from users of this report concerning its accuracy, missing details and updated information is most welcome.

1.8. Data Maintenance and Improvement

As described above there are limitations in the quality and extent of the data contained in the directory, the policy and data holdings aspects and in the mapping. It is estimated that the director becomes dated at a rate of approximately 10% every six months, so it is recommended that a process of updating the directory be conducted every 12-24 months in order to keep the records as current as economically feasible.

It is also recommended that some or all of the gaps in coastal habitat mapping be filled during the EBM process using a harmonized habitat classification system, and then agreement is reached concerning ROPME's role in compiling and making available to member states that the public a consolidated and updated coastal habitat map for the region.

2. Stakeholder Directory

2.1. Bahrain

No.	Organization	Department	Mandate/Interests/Activities/Projects
1	Supreme Council for Environment	Environmental Policies and Planning Directorate	• Climate Change and Sustainability • Environmental Law and Regulation • Policy-making
2		Environmental Assessment and Control	• Environmental Impact Assessment
3		Biodiversity Directorate	• Protected Areas Management • CITES permits
4	Agriculture Affairs and Marine Resources[4]	Marine Resources Directorate	• Fisheries Statistics • Marine Resources
5		Agriculture Affairs	• Animal wealth (veterinary services) • Plant wealth • Agricultural engineering (hydrology, geology, soil etc.)
6	Ministry of Transportation and Telecommunications	Ports and Maritime Affairs	• Regulating, developing, and promoting the ports and maritime industry.
7	Electricity and Water Authority[5]	Planning and Studies Directorate	• Electricity and Water supply and transmission • Promoting public awareness
8		Electricity & Water Production & Transmission	
9	Ministry of Industry and Commerce	Tourism Authority	
10	Bahrain Authority for Culture and Antiquities		• Archeological and historical sites (coastal sites e.g. Bahrain Fort) • The Bahrain Pearling Route, a UNESCO World Heritage Site, which includes a coastal site and 3 oyster beds located in the Bahrain Sea
11	Ministry of Interior	Coastguard	• Maritime Security
12	Ministry of Works, Municipalities Affairs and Urban Planning	Sanitary Engineering Operations and Maintenance Directorate	• Collection, distribution and treatment of sewerage (i.e. networks, treatment, and treated sewage water)

[4] *Under the Ministry of Works, Municipalities Affairs and Urban Planning*
[5] *Under the Ministry of Works, Municipalities Affairs and Urban Planning*

No.	Organization	Department	Mandate/Interests/Activities/Projects
13		General Directorate of Urban Planning	• Responsible for urban planning
14		Central Planning Office	• Responsible for national planning activities including infrastructure, roads, land allocation and spatial planning
15	Ministry of Housing		• Government housing projects
16	The Bahrain Petroleum Company (BAPCO)	EHS	• Oil and Gas exploration, refinery, storage and export
17	Durrat Al Bahrain		• Private coastal housing development
18	Oil Spill Response Limited		• Provide oil spill preparedness, response and intervention services
19	Abu Dhabi Marine Dredging Company		• Dredging
20	Great Lakes Dredge and Dock Co, LLC		• Dredging
21	Boskalis		• Dredging
22	University of Bahrain	Biology	• Research and teaching • Area of Expertise: Environmental impact assessment, Ecological impact assessment, Conservation biology, Effects of environmental pollutants on species and ecosystem; Biodiversity and sustainable development, Environmental quality monitoring.
23	Arabian Gulf University	Desert and Arid Zones Program	• Research and teaching
24	United Nations Environment Programme – Regional Office West Asia	Ecosystem Management	• To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples in the West Asia region to improve their quality of life without compromising that of future generations.
25	Marine Emergency Mutual Aid Center		• To coordinate and assist member states in combating oil and other marine pollution in cases of emergency

No.	Organization	Department	Mandate/Interests/Activities/Projects
26	Fisherman's Protection Society		• Working in the interests of Bahrain's fishing community particularly with regards to safety of life at sea
27	Bahrain Environment Society		• Public awareness
28	Bahrain Women's Society		• Environmental citizenship program

2.2. Iran

No.	Organization	Department	Mandate/Interests/Activities/Projects
1	Department of Environment	Deputy for Natural Environment and Biodiversity	• Protected areas affairs • Game and Guard affairs, permits • Natural History Museum, Genetic Resources affairs • Wildlife and fresh water Aquatic Species affairs • Conservation and management of the species and their habitats
2		Deputy for Marine Environment	• Management of Marine Protected and sensitive Areas • Biodiversity related issues in Marine environment • natural resource related projects (e.g. aquaculture) • Coastal Zone Management and affairs • Pollution monitoring. Survey and control
3		Deputy for Human Environment	• EIA of projects • Air, soil and fresh water pollution issues • Debris, sewage, mine and dust storm affairs(affects as pollutant) • Climate change effects • Air pollution monitoring
4	Ministry of Agriculture -Jihad		• Policy making, planning and monitoring • Research, Education and promotion of activities related to Agriculture • Development and operation activities related to fisheries and livestock • Affairs related to Natural resources and watershed management • Development of agricultural baselines and villages • Supporting the agricultural activities
5		Fisheries organization	• Marine environmental and fisheries research including fish stock and resource assessments, marine

No.	Organization	Department	Mandate/Interests/Activities/Projects
			water quality(Caspian Sea, Persian Gulf and Oman Sea) • Development of aquaculture sector • Management of fisheries research fund • Policy making, planning, monitoring and control of fisheries resources exploitation • Stock assessment and recovery • Management development and maintenance of fisheries and aquaculture basements
5		Iran Fisheries research Organization(IFRO)	Objectives and aims of IFRO: • To develop and expand research in different fields of fisheries sciences. • developing applied research in aquaculture; • conducting scientific and applied research on aquatic habitats in order to conserve and restore stocks and for the sustainable yield utilization of aquatic bio-resources; • improvement and enhancement quality and variety of fisheries products; • To apply biotechnological techniques to produce biological products and improve their quality and quantity in terms of health and diseases; • Identification, conservation and rehabilitation of fisheries stocks and sensitive ecosystems.
6		Forests, Range & Watershed Management Organization	Vision: Conservation, reclamation, sustainable development, and sound utilization of forests, rangelands, wooded lands, natural woods, coastal areas and soil and water conservation through science-based approaches in watershed basins and sustainable developments principles throughout the country.

No.	Organization	Department	Mandate/Interests/Activities/Projects
7	Planning and Budget Organisation		Responsibilities and Aims • Land use planning and identification of the potentials • Development of short, medium and long term programmes, at national and provincial levels • Budget and funding planning and providing allocated budget to the programmes
8	Ministry of Petroleum		• All activities related to oil and gas
9	Ministry of Petroleum	Iranian Offshore Oil Company(IOOC)	• Exploration, production and development of oil and gas fields. • Conservation of oil and gas reserves while increasing the recovery factor. Continuous best utilization of reservoirs by applying modern technologies. Improving human resource management. • Renovating and reconstructing and proper utilization of the installations. • Operating as per international environmental conventions and protocols.
10	Ministry of Roads and Urban Development	Ports and Maritime organization	• Management of Ports Affairs • Monitoring of Maritime and Port Activities • Develop and preparing of Related rules and regulations • Preparing and Conducting of ICZM/coastal management and engineering • Marine pollution Combat • Marine Environment Protection • Conducting Maritime courses • International cooperation

2.3. Iraq

No.	Organization	Department	Mandate/Interests/Activities/Projects
1	Ministry of Environment (MoE)	Council for Protecting and Improving the Environment	• Provide an environmental perspective on plans, projects and national programmes before they are and implemented • Develop relations with international bodies regarding environmental issues
2		South Area	• Environmental Impact Assessment (EIA), permitting, licensing • Marine pollution • Spill response
3		International Environmental Relation Department	• International coordination
4		Basra Council of Environment Protection	• Headed by the Governor • Coordination between stakeholders in the preparation of local environmental projects as well as for the designation of sites of natural and cultural heritage • Support legal regulations at a local level
5		General Radiation Protection	• Radiation protection
6	Ministry of Transportation (MoT)	General Company Ports of Iraq (GCPI)	• Management of ports and navigation • Maintenance of navigational channels
7		Marine Inspection Department	• Inspection of marine vessels
8		State Company for Maritime Transport	• National maritime transportation company
9	Waterway Trading Petroleum Services		• Intends to construct an oil terminal with jetty adjacent to Khor Al-Zubair Port (KZP)
10	SKA International		• Operation of Khor Al-Zubair Fuel Depot within the KZP Free Zone
11	Ministry of Defense	Iraqi Navy	• Coastal protection

No.	Organization	Department	Mandate/Interests/Activities/Projects
			• Smuggling of oil, people and weapons • Protection of the Khawr Al-Amaya (KAOOT) and Al-Basra (ABOT) offshore oil terminals
12	Ministry of Water Resources (MoWR)	Environmental Policies Centre	• Manages all surface water and groundwater. • Areas of responsibility include storage dam construction, flood control, water supply, construction and management of irrigation facilities and groundwater resource management.
13		Center for the Restoration of Iraqi Marshlands	• Marshland management and wetland restoration
14		Basrah Water Directorate	• Overall planning of MoWR resources • Implementation of projects at a Governorate level
15		Al-Fao District	• Maintenance and operation of MoWR resources • Implementation of projects at a local level
16		Department for Cree river	• Management of Cree River Catchment
17	Ministry of Oil (MoO)	Environmental Department	• Environmental and technical studies for oil-related projects
18	Marine Science Centre (MSC), University of Basra		• Research institution specializing in the study of the marine environment.
19	Oil Pipelines Company (OPC)		• Operation and maintenance of gas and petroleum pipelines
20	Basra Oil Company (BOC)		• National company responsible for oil production in the southern oilfields • Formerly part of South Oil Company
21	Basra Gas Company		• Operation of Umm Qasr Storage Terminal and Marine Terminal

No.	Organization	Department	Mandate/Interests/Activities/Projects
22	South Gas Company		• Production of gas for export and domestic use.
24	Ministry of Electricity		• Policy making and electricity supply (generation, transmission and distribution)
25	Ministry of Finance	General Commission of Free Zones	• Administration of KZP Free Zone
26	Al Naser Fishing Syndicate		• Union for the fisherman using Fao Port
27	Ministry of Municipalities and Public Works (MoMPW)	Directorate General for Water	• Operation and maintenance of drinking water infrastructure • Implementing centrally funded projects in Iraq's drinking water sector. • Procurement of new drinking water infrastructure
28		Directorate General for Sewage	• Operation and maintenance of waste water infrastructure. • Identification and design of additional infrastructure needs. • Implementing centrally funded projects in Iraq's waste water sector.
29	Ministry of Planning (MoP)	Department of Sustainable Development	• Identify environmental problems with the environmental impact on the economic and social dimensions of development processes
30		Basra Planning Directorate	• Develop strategies and patterns of local development at the provincial level and administrative components. • Coordinate and follow up the affairs of the district planning in the provinces
31		International Cooperation	• Coordination with international partners • Review and approval of projects funded by donor countries and institutions

No.	Organization	Department	Mandate/Interests/Activities/Projects
32	Ministry of Health		• Assesses environmental and health impacts of projects upon Iraq's citizenry
33	FAO District Council		• Represent the people of Fao • Tackle local issues
34	Basra Provincial Council		• Responsibility for budgets, service provision, local infrastructure. • Development of local policies and strategies.
35	Nature Iraq		• Environmental NGO
36	Ministry of Agriculture	General Authority for Animal Resources Development, Fisheries Department	• Responsible for fisheries and aquaculture development and management policy
37	Basra Chamber of Commerce		• Represents local businesses' interests
38	Iraqi-British Chamber of Commerce		• Build relationships between Iraqi and British businesses.
39	Wilhelmsen Ships Service		• Port agents at KZP and Umm Qasr Port (UQP)
40	UNDP		• Provides advice, training and grants to support developing countries.
41	UNEP		• Post crises environmental assessment, post-crisis environment recovery, environmental cooperation for peacebuilding and disaster risk reduction.
42	Iraqi Oil Tankers Company		• Oil crude transportation • Operation of terminal at KZP (berth 12)
43	Martrade		• Operation of a multi-purpose terminal at KZP (berths 7 and 8)
44	GAC		• Shipping agent based at KZP and UQP

No.	Organization	Department	Mandate/Interests/Activities/Projects
45	Basra Oil & Gas Free Zone		• Operation of new free zone at Khor al-Zubair
46	Inchcape Shipping Services		• A range of shipping services for vessels and operators. • Operate at Basra Oil Terminal; UQP; KZP; Magal Port; Khor Al Amaya Terminal; Abu Floos Port.
47	Hamorabi State Constructing Contracts Company		• Government company involved in construction of roads and bridges, in girder, asphalt and concrete production
48	NGO Coordination Committee for Iraq (NCCI)		• Member-led organization that co-ordinates principled, collective NGO action in order to foster development, address humanitarian needs, and promote respect for rights in Iraq
49	University of Basra	Agriculture College	• Education and research facility in Basra
50		Department of fish and marine resources	
51	Iraq Rural and Agricultural Knowledge Exchange Network		• National platform for Information dissemination and knowledge sharing and exchange for Agricultural Research and Development
52	South Oil Company		• National oil production company
53	State Company for Petrochemical Industries		• State owned petrochemical producing facility.
54	State Company of Fertilizers		• State owned producer of sulfuric acid; ammonia; urea; ammonia sulfate • Located adjacent to the Khor al Zubair

2.4. Kuwait

No	Organization	Department	Mandate/Activities
1	Environment Public Authority	Deputy Directorate General of Technical Affairs	• Coastal and desertification monitoring • Water pollution monitoring • Conservation and biodiversity • Laboratory analysis • Water quality monitoring
2		Deputy Director General of Environmental Monitoring Affairs	• Environmental Impact Assessment and permits • Air quality monitoring • Industrial monitoring • Environmental monitoring and emergencies • Development of GIS of environmental issues including coastal zone management • Environmental Monitoring Information System of Kuwait (eMISK)
3	Public Authority for Agriculture and Fisheries	DG Fisheries	• Fisheries statistics • Fisheries regulations • Development and operation of fisheries harbors • Management of fisheries • Aquaculture • Fisheries Research • Marine environment and fisheries research, fish stock assessments • Fishing subsidies • Boat licenses
4	Kuwait Municipality	Environmental Affairs Department	• Master plan development • Land use planning • Urban planning • Projects and building permits
5	Ministry of Public Works	Sanitary Engineering Sector	• Operation of waste water treatment facilities, including marine outfalls for emergency discharge and sanitary drainage networks
6		Mega Projects Sector	• Development of Bubyan Island and Mubarak Al Kabeer Port
7	General Secretariat of the Supreme Council for	Secretary General	• National Development Planning

	Planning and Development		
8	Ministry of Finance	State Properties Affairs Sector	• Regulation and licensing of southern coastal zone residential area
9	Ministry of Transport	Maritime Transportation Department	• Coordination of maritime transportation • Inspection and licensing of shipping • Marine environmental monitoring • Implementation of international treaties related to the marine environment
10	Ministry of Electricity and Water	Environmental Department- Engineering Program	• Operation of desalination plants • Operations of mains potable water network • Regulator of potable water quality • Retail billing of electricity and water
11	Ministry of Foreign Affairs		• Coordination with International Organizations
12	Kuwait University	Faculty of Marine Science	• Marine Science Teaching and Research
13	Kuwait Institute for Scientific Research	Environment and Life Sciences	• Marine Science research • Aquaculture research
14	Kuwait Oil Company		• Exploration, drilling and production of oil and gas within Kuwait. • Storage of crude oil • Delivery to tankers for export
15	Kuwait National Petroleum Company		• Operation of refineries (Mina Abdullah, Mina Al Ahmadi) and petrochemical facilities. • Strategic Oil Storage Facility • Pipelines and Liquid Loading • Operation of Mina Al Shuaiba oil loading terminal
16	Petrochemical Industries Company		• Manufacture and supply of petrochemicals
17	Ministry of Defence	Kuwait Navy	• Responsible for maritime national defence including naval fleets and naval base
18	Ministry of Interior	Coast Guard	• Responsible for maritime security based on enforcement of national law

19	Kuwait Port Authority		• Development and operation of Kuwait's industrial and tourism ports
20	Kuwait Oil Tanker Company		• Ownership and management of tankers engaged in the transport of crude oil, refined petroleum products and LNG
21	Public Authority for Industry	Standards and Industrial Service Affairs	• Promotion and operation of Kuwait's industrial estates
22	The Scientific Center	Education and Recreation Center	• Promotion of environmental awareness. • Support for turtle conservation projects.
23	Touristic Enterprises Company	Coastal Development	• Government company responsible for coastal tourism
24	La'ala Al Kuwait Real Estate Company	Sabah Al Ahmed Real Estate City	• Development of Sabah Al-Ahmed Sea City residential and recreation city in southern Kuwait. Construction of canals and waterways
25	Kuwait Environmental Protection Society	NGO	• Artificial reef projects • Environmental awareness • Protected areas • Biodiversity rehabilitation projects
26	Environmental Voluntary Foundation	NGO	• Conservation projects in the islands of Kuwait
27	Sinyar	NGO	• Conservation and rehabilitation projects in Kuwait • Awareness campaigns

2.5. Oman

No.	Organization	Department	Mandate/Interests/Activities/Projects
1	Ministry of Environment and Climate Affairs	Directorate General of Environmental Affairs	• Environmental Impact Assessment (EIA) and Permitting, licenses • Audit and Inspection • Marine Pollution
2		Directorate General of Nature Conservation	• Management of Protected Areas • Biodiversity related issues • EIA for natural resource related projects (e.g. aquaculture) • Coastal Zone Management
3	Ministry of Agriculture and Fish Wealth	DG Fisheries	• Fisheries statistics • Registration of and outreach to fishermen • Development and operation of fishing harbours • Development of aquaculture sector • Management of fisheries research fund • Authority on agricultural related legislation
4		Marine Science and Fisheries Centre	• Marine environmental and fisheries research including fish stock and resource assessments, marine water quality • Centers in Muscat and Salalah, with office in Khasab
5		Aquaculture Centre	• Research and Development regarding aquaculture including hatcheries, shrimp culture, cage fish farming.
6		Fish Quality Control Centre (FQCC)	• Enforcement of HACCP in fisheries processing sector • Eco-toxicological testing of fish and fish products
7		DG Agriculture	• Agricultural statistics • Registration of and outreach to farmers • Pest control, quarantine & disease management • Management of agriculture research fund

No.	Organization	Department	Mandate/Interests/Activities/Projects
			• Authority on agricultural related legislation
8	Supreme Council for Planning	General Secretariat	To develop the strategies and policies required to achieve sustainable development in Oman. Spatial planning at national scale, and urban planning outside of the main urban centers.
9	Ministry of Oil and Gas	Oman Oil Company SAOC	Based on 4 main pillars: • Takamul Investment Company SAOC • Oman Oil Company Exploration and Production • Oman Oil Facilities Development Company LLC • Oman Oil Duqm Development LLC
10	Petroleum Development Oman	Marine operations	• Operation of Mina Al Fahal Oil loading terminal
11	OAPAL		• Oil industry association responsible for capacity development, training, dissemination of best practices in HSE field.
12	Oman Refinery and Petroleum Industries Company (ORPIC)		• Operation and development of refineries and petrochemical facilities at Sohar and Mina Al Fahal
13	Duqm Refinery and Petroleum Industries Company (DRPIC)		• Operation and development of refinery, strategic oil storage facility, pipelines and liquid loading and unloading berth at Duqm.
14	DNO		• Based in Norway, their focus in the Middle East has oil and gas real estate, with an active program of exploration.
15	Public Authority of Electricity and Water (PAEW)		• Operation of mains potable water network • Retail billing for electricity and water • Regulator for potable water quality
16	Oman Power and Water Procurement Company (OPWP)		• Procurement of new power generating and desalination capacity • Forecasting demand for power and water

No.	Organization	Department	Mandate/Interests/Activities/Projects
17	Haya Water		• Operation of waste water treatment facilities throughout Oman (except Dhofar), including marine outfalls for emergency discharge and treated sewage effluent (TSE) distribution network
18	Salalah Sanitary and Drainage Company		• Operation of waste water treatment facilities throughout in Dhofar, including marine outfalls for emergency discharge and treated sewage effluent (TSE) distribution network, and groundwater recharge program for Salalah coastal aquifer
19	Ministry of Transport and Communications	Ports and Maritime Affairs	• Development of Oman's industrial and tourism ports • Government JV partner for operation of Oman's main ports
20		Sohar Industrial Port Company	• Development and operation of Sohar Industrial Port and Sohar Port Industrial Area • Development and operation of Sohar Free Zone
21		Port of Duqm Company	• Development and operation of Port of Duqm • Development and operation of port zone of the Special Economic Zone at Duqm
22		Salalah Port Company	• Development and operation of Port of Salalah within the Salalah Free Zone • Large container terminal operator
23		Port Sultan Qaboos	• Development and operation of Port Sultan Qaboos in Muscat
24	AMNAS		• Installation and maintenance of aids to navigation • Administration of port fees and related procedures • Monitoring ship traffic
25	Ministry of Commerce and Industry	Public Authority for Industrial Estates	• Promotion and operation of Oman's industrial estates including Qalhat

No.	Organization	Department	Mandate/Interests/Activities/Projects
			Industrial Estate (coastal with industrial discharges to the marine environment)
26	Royal Oman Police	Coastguard	• Patrol coastal waters to uphold and enforce relevant laws and regulations.
27	Ministry of Defence	Royal Navy of Oman	• Responsible for maritime national defence including operation of naval fleet and naval bases (Musandam, Wudam, Mirbat)
28		Engineering Services	• Responsible for design and development of naval fleet and naval bases and supporting infrastructure • Engineering support to Sultan's Armed Forces including operation and maintenance of camps, plants, machinery, infrastructural services etc.
29		National Hydrographic Office	• Authority responsible for maritime charts, government bathymetric surveys, and tidal calculations. • Notice to mariners • National maritime archive
30		National Survey Authority	• Authority for national mapping and related issues
31	Sultan Qaboos University	College of Agriculture and Marine Sciences	Teaching and research in marine sciences and fisheries. Departments and Units include: • Marine Science and Fisheries • Natural Resource Economics • Research Vessel • Aquaculture
32		Centre for Excellence in Marine Biotechnology	Genetics and microbiology of marine organisms including commercial species (e.g. lobster), marine fouling organisms, bioactive organisms.
33		Centre for Remote Sensing and GIS	The application of remote sensing and GIS to environmental issues including coastal zone management.

No.	Organization	Department	Mandate/Interests/Activities/Projects
34		Centre for Environmental Studies and Research (CESAR)	Responsible for applied environmental studies, including, for example Oman's Climate Change Mitigation and Adaptation Strategy.
35	A'Sharqiyah University	Department of Fisheries and Marine Sciences	Teaching and research in marine sciences and fisheries.
36	Environment Society of Oman	Marine Research Programme	Applied research and management of marine wildlife species: • Arabian Sea Humpback Whale • Loggerhead Turtle • Hawksbill Turtle • Shorebird (and other species) migration Management orientated research into marine protected areas (e.g. Daymaniyat Islands National Nature Reserve) Capacity building of early career environmental professionals Education and awareness programs relating to natural resources and the environment.
37	University of Nizwa	Dept of Civil & Environmental Engineering	The main theme of research activities under the Chair involves the study of biologically active natural compounds from medicinal plans and marine natural product, which ranges from collection to purification and structural elucidation of the compounds.
38	Diwan of Royal Court	Office of the Advisor for the Conservation of the Environment	• Management of some terrestrial protected areas • Research relating to terrestrial wildlife • Advisory service to His Majesty regarding conservation
39		Centre for Field Based Research	• Development of centers for field based research • Hosted Earthwatch 2012 – 2015
40	Omran		• Government company responsible for development of Oman's tourism sector and JV partner for ITCs e.g. ○ Re-development of Port Sultan Qaboos ○ Ras Al Hadd Integrated Tourism Development

No.	Organization	Department	Mandate/Interests/Activities/Projects
41	Biosphere Expeditions		• Eco-tourism operator specializing in marine and terrestrial environmental surveys
42	Ministry of Heritage and Culture (Natural History Museum)		• Collections of flora and fauna of Oman including marine algae, marine invertebrates and vertebrates
43	Special Economic Zone at Duqm (SEZAD)		• Environmental management at SEZAD concession area including coastal and marine protection

2.6. Qatar

No.	Organization	Department	Mandate/Interests/Activities/Projects
1	Ministry of Municipality and Environment	Protected Areas Office	• Coordination, management, monitoring and reporting performance of natural reserves. • Developing scopes of work for development of reserves, assessment of bids, and provision of relevant technical advice. • Conducting research in reserves.
2	Ministry of Municipality and Environment	Fisheries Department	• Developing a general plan for the protection and development of fish resources. • Preparation and implementation of plans and research programs and studies on fisheries and rehabilitation of fisheries, in coordination with the concerned authorities. • Establishment & monitoring of experimental fish farms and preparation & research and development • Permitting of fishing vessels, fishermen fisheries transport operators, fish processing plants, fish markets and fish farm projects. • Awareness programs for fishermen • Preparation of plans and projects for the maintenance, expansion and operation of fishing harbours
3	Ministry of Municipality and Environment	Environmental Operations Department	• Management of the Main Operations Room of the Ministry, including coordination and reporting on environmental emergencies and evacuation plans • Managing public enquiries relating to the environment. • Following-up information from early warning systems and coordinating responses.
4	Ministry of Municipality and Environment	Environmental Assessment Department	• Review terms of reference, scoping studies, EIA, risk assessments, environmental permit applications etc. for specific projects, and conducting necessary inspections and audits. • Developing specifications, regulations, and environmental permit

No.	Organization	Department	Mandate/Interests/Activities/Projects
			conditions to ensure environmental protection in coordination with other concerned authorities. • Review and assessment of strategic environmental assessment (SEA) studies, and approval of policies, plans and program. • Review and process registration and accreditation applications from environmental consultants and contractors.
5	Ministry of Municipality and Environment	Environmental Monitoring Department	• Preparation and implementation of air, water and soil quality monitoring programs. • Monitor concentrations of pollutants in the environment to ensure compliance with specified standards. • Establish and operate continual pollution monitoring systems in the residential areas, industrial estates, commercial parks, oil fields, landfill sites etc. • Identify sources of contaminants and their standards for controlling sources. • Preparation of the 'State of the Environment' reports. • Quality assurance of environmental data provided by industry
6	Ministry of Municipality and Environment	Environmental Protection, Reserves & Wildlife Department	• Issuing permits for camps and small holdings. • Monitoring and protecting wildlife including marine wildlife • Controlling onshore and offshore environmental incidents and accidents. • Controlling the commercial use of undeveloped land, ensuring reinstatement of site after the end of the usufruct agreement • Conducting studies and evaluating proposals for establishing new reserves. • Maintenance of database of natural reserves, including the types and numbers of wildlife.

No.	Organization	Department	Mandate/Interests/Activities/Projects
			• Reinstatement of grazing areas, pastures and natural areas to control desertification • Monitoring the implementation of the state's commitments to regional and international conventions and protocols relating to biodiversity and wildlife. • Conducting studies and research related to biodiversity. • Issuance of permits for the import, export, transport and transit permits for wildlife species and their products • Assessment of proposals for borrow pits and quarries, approval of their operations and subsequent rehabilitation.
7	Ministry of Municipality and Environment	Industrial Inspection & Pollution Control Department	• Inspection of factories and business involving hazardous materials including • radioactive sources Permitting facilities following environmental audits • Drafting emergency response plans • Monitoring and controlling pollution incidents • Conducting periodic unscheduled inspection programs of industrial facilities • Contribution to preparation and implementation national waste management plans.
8	Ministry of Municipality and Environment	Climate Change Department	• Developing and implementing policies, plans and programs to i) reduce GHG emissions, ii) promoting renewable energy, iii) cleaner production. • Prepare national reports on climate change. • Encourage national initiatives in the field of climate change. • Monitoring the implementation of international conventions on climate change, and communicating the state's efforts to the international community.

No.	Organization	Department	Mandate/Interests/Activities/Projects
			• Providing information, technical reports and scientific studies, in collaboration with the national, regional and international authorities concerned with climate change.
9	University of Qatar	Environmental Science Center	• Understand and protect the precious marine natural resources for the benefit of the Qatari people. • The ESC, as the premier environmental science research center in Qatar will utilize state-of-the-art resources to conduct cutting-edge research in: ○ Marine Science (including physical & chemical oceanography, and marine biology) ○ Atmospheric Science ○ Earth & Terrestrial Sciences
10	Gulf Organization for Industrial Consulting		• Collects and disseminates information about industrial development projects and policies in order to achieve industrial cooperation and coordination between member states. • Delivers recommendations to reconcile industrial development projects • Coordinates and develops technical and economic cooperation between existing industrial institutions and others that are yet to be established. • Offers technical assistance in preparing and assessing industrial projects and puts together industrial sector-related data and studies.
11	Qatar Petroleum		• Conducts oil spill monitoring and clean up. Additionally, plant integrity also plays a vital role, to reduce risks of accidents or harm to employees, the general public or the environment. • QP is committed to the protection, preservation and conservation of

No.	Organization	Department	Mandate/Interests/Activities/Projects
			the natural environment and local amenities in all areas of operation. • QP has in place in all of its operation areas a routine environmental monitoring and reporting procedure to ensure that facilities are operating within the environmental regulations set by Qatar's Supreme Council for the Environment and Natural Reserves. • QP sponsors and promotes a number of activities and outreach programs to enhance Health, Safety & Environment (HSE) awareness among its employees and in the local community. Terrestrial and marine fauna and flora preservation programs such as the Al Reem biosphere reserve have been given a high priority. Ostrich, mangrove, marine turtle and conservation projects have been established in the appropriate QP operation areas, demonstrating the harmonious coexistence of industry and nature.
12	Qatar Natural History Group		• Organizes monthly talks, oversea trips and issues publications. • Runs a citizen science project to gather species distribution information
13	Qatar Foundation		• Qatar Foundation for Education, Science and Community Development is a private, non-profit organization that serves the people of Qatar by supporting and operating programs in three core mission areas: education, science and research, and community development.
14	Qatar Geotechnical & Environmental Co.		• Provides services in the field of geotechnical, geoscience, environmental and materials engineering for infrastructure, onshore and offshore pipelines, power, energy development and hydrocarbon resource projects.

No.	Organization	Department	Mandate/Interests/Activities/Projects
			• Services are provided through Certified Quality Management, Occupational Health and Safety and Environmental Management Systems.
15	EcoQatar	Water Quality Monitoring & Assessment Services	• Eco Qatar experienced engineers, scientists, and technicians provide technical support in the following areas: • Development and maintenance of programs to monitor and report source emissions of effluent-discharges to the marine environment, including computation of the pollution emission inventories and the overall pollution load into the Gulf (to include all regulated parameters). • Development and implementation of programs to investigate and understand the fundamentals of the physical and chemical oceanography of Qatar's coastal waters. • Development and implementation of monitoring programs to assess the ambient marine water concentrations of toxic heavy metals and micronutrients within the industrial operational areas in Qatar. • Preparation of assessment reports on the degree of compliance with the national ambient water quality standards and on the state of the marine environment at large. • Preparation of the marine environment interim monitoring reports for industrial operational activities to satisfy requirements by the central regulatory authority. • Development and supervision of the implementation of the national strategy for water quality monitoring for both marine and ground water resources by optimizing the current available facilities and proposing needed additional resources. • Development of national QC/QA Handbooks/Guidelines for water

No.	Organization	Department	Mandate/Interests/Activities/Projects
			quality monitoring and for data validation to ensure sampling and collection of accurate monitoring data by all industrial parties entrusted with monitoring activities. • Development of training materials on all issues relating to water quality monitoring and analysis and implementation of training programs for personnel involved in these activities to raise their awareness. • Development and implementation of eco-survey monitoring programs to continually assess the impact of off-shore operational activities on Qatar's marine resources.
16	Exxon Mobil Research Qatar (EMRQ)		• EMRQ conducts research in areas of common interest to the State of Qatar and ExxonMobil, including environmental management, water reuse, LNG safety and coastal geology
17	RasGas		• RasGas Elements for Excellence (RGEE), provides a framework of policies, procedures and continuous improvement processes that enables RasGas to maximize the safety and welfare of people, property and the environment. • RasGas and the University of Qatar have formed an alliance to develop conservation measures which reduce the temporal and physical impact of extracting energy deposits from the shallow waters near the coastline on the environment. • Ensure that biodiversity considerations are being built into work processes as the new energy resources are developed. E.g. turtle nesting and hatchling survey, a near-shore coral and seagrass baseline study, and an archaeological survey undertaken as part of the project's environmental, socio-economic and health impact assessment (ESHIA). The ESHIA also included a

No.	Organization	Department	Mandate/Interests/Activities/Projects
			turtle management plan and a coral management plan. • Complete restoration and rejuvenation of any disturbed areas is a critical aspect of development projects • In 2011, completed the seabed survey of the Barzan pipeline corridor and potential relocation sites. Successful relocation of coral in 2012 and creation of man-made reef development to create suitable sites.
18	Qatargas		• Engage the public in awareness raising efforts while demonstrating their own approaches to energy production and conservation. • Supports environmental events – e.g. annual Qatar Petroleum Environment Fair • Involved in a coral conservation project, working with the Ministry of Environment • Support marine ecosystems and minimize industrial process effects on the marine environment through: ○ Creating artificial reefs to help them recover from damage caused by climate fluctuations ○ Pulse-Chlorination instead of chlorine, to reduce biofouling of oysters clogging up the cooling systems, whilst lowering the impact on marine life ○ Coral relocation programs, to safely relocate coral colonies which otherwise would have been destroyed from expansion programs.
19	Ras Laffan Industrial City	Ras Laffan Environmental Association	• The Laffan Environmental Society (LES) is a joint initiative between QP Industrial Cities Directorate and the industries and other stakeholders in Ras Laffan Industrial City to

No.	Organization	Department	Mandate/Interests/Activities/Projects
			provide environmental services and management in the area. • The LES's objectives are to promote open communication and exchange of ideas among members and to maintain outreach with neighboring communities on environmental issues and social development.
20	Mesaieed Industrial City		• MIC has launched a comprehensive multi-phase plan to monitor, and develop schemes to protect the environment in Mesaieed, including the sea, land and air. • In addition, MIC is responsible for waste management, recycling and disposal procedures taken to enhance Mesaieed's environment. Some of the projects completed include: ○ Marine eco-surveys to monitor the quality of marine environment ○ 45 groundwater-monitoring wells in Mesaieed's industrial and town areas ○ An environmental laboratory to perform analysis of numerous environmental parameters
21	Hamad Port		• Extensive land and marine environmental investigations occurred prior to any works on site in order to understand the natural environment at the New Port site. • Major efforts which have been implemented during the construction phase have been extensive relocation programs for the re-location of hard corals, soft corals, seagrasses, and mangrove trees. • Ongoing monitoring of these communities indicates the success of these programs. In addition, extensive environmental monitoring schemes have been implemented during the construction phase to

No.	Organization	Department	Mandate/Interests/Activities/Projects
			ensure that the New Port's construction activities are controlled and can be adjusted to ensure environmental preservation.
22	Hamad Bin Khalifa University	Qatar Environment and Energy Research Institute (QEERI)	• QEERI's Water Security Grand Challenge has four tracks: Water Desalination and Treatment; Water Quality and Reuse; Aquifer Recharge; and Water Conservation. Moreover, the institute is active in Atmospheric and Regional Climate Change Research. The research in these tracks is aimed to increase energy efficiency, reduce costs, minimize health risks of the desalination and treatment processes and environmental impacts and is also aimed to contribute to achieving social sustainability. • Actively involves the community to help promote sustainable practices through education in energy and environmental issues, recruit the next generation of scientists and remove the barriers between science and the public.
23	Carnegie Mellon University in Qatar		• Conduct research projects focused on the key themes of the Qatar National Research Strategy, including: Energy and Environment

2.7. Saudi Arabia

No.	Organization	Department	Mandate/Interests/Activities/Projects
1	General Authority for Meteorology and Environment Protection (GAMEP)	Department of sustainable economic and social development Department of the development and protection of natural resources Department of chemical safety and hazardous waste Department of environmental standards Department of environmental evaluation, rehabilitation and licensing Department of inspection and sanctions	• GAMEP adopts the theme of environment and protection within the Basic Law and in accordance with Article (32) of the Statute which provides for the State's obligation to preserve and protect the environment
2	The Ministry of Environment, Water & Agriculture	Directorate of Environment, with the following General Departments: 1. Environmental Conservation 2. Biodiversity and Combatting Desertification 3. Meteorology 4. Climate Change and Environmental Agreements	• Focus on development in the peninsula in the fields of environment, water and agriculture for the welfare of the population in all parts of the kingdom. This will be done by: ○ Activating private sector, research centers, and NGOs ○ Encourage sustainable production ○ Encourage sustainable development ○ Protect and sustainably develop natural resources
3	Saudi Wildlife Authority (SWA)		• Prepare and implement plans to sustain terrestrial and marine wildlife and rehabilitate rare and threatened species and their habitats. The ultimate goal of SWA is restoring natural environmental balance.
4	King Fahd University of Petroleum & Minerals	Center for Environment and Water	• Improve water use efficiency and conservation and contribute to solving the immediate and long term water problems for different purposes in the Kingdom.

No.	Organization	Department	Mandate/Interests/Activities/Projects
			• Evaluate specific environmental concerns and provide workable solutions to the environmental problems they might pose. • Conduct research aiming to understand the Arabian Gulf and Red Sea marine environments, and assist government and industry in the assessment of natural and man-made impacts on the marine environment. • Develop integrated modeling systems for environmental planning and management. • Conduct technical workshops, seminars, and short courses at both the national and international levels.
5	King Abdulaziz University	Water research Center	• Active role in enhancing water related scientific research and studies. • organizations international conferences, seminars and workshops, • Cooperation with international, regional and local organizations that are renowned for their expertise and experience in the field of water research • Transferring and domesticating new technologies, • Pioneering role in preparing and training future cadres of researchers and technicians, • Develop national capabilities in various aspects of water research. • Continuing its persistent efforts to find effective solutions to the community's water problems.
6		Center of Excellence in Environmental Studies (CEES)	• focuses on the scientific research in air pollution, water pollution, and solid waste treatment • CEES look forward to be among the leading research centers in environmental studies locally and internationally through the integration of its administrators and researchers as well as the cooperating researchers from KAU and from other

No.	Organization	Department	Mandate/Interests/Activities/Projects
			bodies that have similar research interests. • CEES invite all of those interested in environmental studies including scientists, researchers, and graduate students to make use of its available human resources and facilities.
7		Center of Excellence for Climate Change Research (CECCR)	• Specialized in studies of several aspects of climate of Arabian Peninsula, in particular, Saudi Arabia. • The Center works on developing a detailed climate data base for Saudi Arabia that can be used to perform applications oriented studies. • Performing test runs of several Regional Climate Models (RCMs) over the Arabian Peninsula. • Validating the outputs from the General Circulation Models (GCMs) for the region. • A prime feature of the future research activities is to provide the necessary scientific support and guidance for the domestic and regional policy makers for adaptation of climate change impacts.
8	Saudi Society for Environmental Sciences		• Level up the environmental sciences and develop the scientific thought in fields of environment. • Spread up the environmental awareness and facilitate the means of communication and experience exchange among the concerned experts. • Potential role in providing any theoretical and empirical scientific consultancies in this important field of environment to the many of fields of development in Saudi Arabia.
9	Saudi Aramco		• A world leader in hydrocarbons exploration, production, refining, distribution and marketing. • To manage proven conventional crude oil and condensate reserves of 261.1 billion barrels, average

No.	Organization	Department	Mandate/Interests/Activities/Projects
			daily crude production is 10.2 million barrels per day (bpd), and stewardship of natural gas reserves of 297.6 trillion standard cubic feet (scf). • To supply energy to the Kingdom and the world, and continue to progress towards becoming the world's leading integrated energy and chemicals enterprise, a top refiner and a creator of energy technologies.
10	Ministry of Economy and Planning	The Deputy Ministry of Sectoral Development Affairs	• Prepares sector plans, strategies, policies and programs; • Provides support for their implementation and impact assessment on the national economy. • The Deputy Ministry is comprised of the following departments: Resources & Energy and Industry & Services. The Deputy Ministry's overall objective is to ensure a healthy approach to micro economic growth, through plan development and analysis, research, and collaboration.
11	King Abdulaziz City for Science and Technology		• Scientific government institution that supports and enhances scientific applied research. It coordinates the activities of government institutions and scientific research centers in accordance with the requirements of the development of the Kingdom.
12		The Center of Excellence for Genomics	• Analysis of complete genome sequence data to determine the function genes which leads to understanding of survival and disease resistance mechanisms. • Genome sequencing
13		Life Science and Environment Institute	• Life Sciences and Environment Research Institute (LSERI) has been established to reinforce, promote and develop the technical and scientific capacities and capabilities in this field. • Supports agricultural economy to diversify food sources and to ensure food safety and sustainability.

No.	Organization	Department	Mandate/Interests/Activities/Projects
			• biomedical applications • Performed genomic studies on species of national relevance such as camels, date palms and Hasawi rice. LSERI coordinates with four national research centers: National Centre for Biotechnology National Centre for Stem Cell Technology National Centre for Genome Technology National Centre for Environmental Technology
14	Saudi Geological Survey	Center for Marine Geology	• Coastal and marine research and development in the eastern Red Sea and the western Arabian Gulf of the Kingdom of Saudi Arabia (sediment and water related research, including coral reefs). • Map the seabed, define sediment types including coral reefs, prepare bathymetric charts and maps of islands and coastal plains, study sea level changes and coastal erosion, as well as anthropogenic input, including pollution and waste disposal, and their impact along the Red Sea and the Arabian Gulf for use by geological and environmental managers. • Increase public awareness and impart training on the preservation of the coastal and marine environment and provide advice, expertise, training and re-commendations.
15		Environmental Geology Department	• Focus on the hazards posed by natural or man-made contamination of the environment. • Identify potential sources of contamination, investigate the pathways for contaminant movement and potential human or environmental exposure, and recommend solutions to mitigate or eliminate the associated risks. • Source, pathway and receptor studies of hazardous liquid and solid waste sites to assist with site

No.	Organization	Department	Mandate/Interests/Activities/Projects
			planning, management and regulatory functions.
17	Saudi Ports Authority		The Saudi Ports are fully managed and operated by the private sector on a commercial basis. The Ports Authority retains its supervisory role. The Saudi ports provide the following services: • Handling of all types of cargo. • Four major container terminals, three on the Red Sea (Jeddah Port), the Fourth in the Arabian Gulf (Dammam), and there is a new terminal under construction in Dammam to be in operation by 2014. • Two ship repair yards (in Jeddah and Dammam) with 4 floating docks for each.
18	Saline Water Conversion Corporation	Research and desalination technologies Institute	• Achieving excellence in applied scientific research to enhance desalination techniques • Contributing to the improvement of services through innovative desalination techniques in the Kingdom
19	Ministry of Commerce and Investment		• To foster sustainable economic development
20	Ministry of Interior	General Directorate of Border Guard	• Guard and monitor borders of the Kingdom onshore and offshore and marine ports and harbors and to combat smuggling and infiltration from home and abroad.
22	Ministry of Health	Environmental and Occupational Health General Department	• Development of national strategy for health and environment • Initiated the Environmental and Occupational Health General Department (now devolved to GAMEP). This strategy includes occupational health and safety, air quality, nutritional and chemical safety, drinking water quality, sewage and its recycling, solid waste, dangerous medical waste, safe use for chemicals,

No.	Organization	Department	Mandate/Interests/Activities/Projects
			radiological contamination, and noise pollution.
23	Ministry of Energy, Industry and Mineral Resources	King Abdullah Petroleum Studies and Research Center (KAPSARC)	• The ministry's vision is to develop the oil and gas and mining industries sustainably to achieve higher added value to the national economy. • KAPSARC conducts research on energy and the environment. E.g. the efficient utilization of oil, reduction of carbon emissions, and the creation of sustainable energy solutions, and the adoption of new technologies.
24	Saudi Commission for Tourism & National Heritage (SCTH)		• SCTH works with various tourism stakeholders to achieve sustainable tourism development in accordance with the principles of Islam and the cultural and environmental realities in the Kingdom.
25	The Regional Organization for the Conservation of the Environment of the Red Sea & Gulf of Aden (PERSGA)		• To improve the sustainable management and use of the RSGA's coastal and marine resources. Sustainable management and use will be reflected in reduced threats to the environment, improved livelihoods of participating coastal communities • To conserve the current excellent state the marine environment.
26	Saudi Royal Naval Forces		• To develop of basic facilities such as naval bases and ships of war, as well as national marine development projects.
27	General Authority for Statistics		• Collection, classification, analysis and extraction of the indicators of statistical data and information that cover all aspects of life within the Kingdom from various sources, such as surveys, censuses or administrative records of the public entities or private establishments. • Preparation, update, and development of national statistical guides and classifications in accordance

No.	Organization	Department	Mandate/Interests/Activities/Projects
			with international standards, when necessary.

2.8. United Arab Emirates

No.	Organization	Department	Mandate/Interests/Activities/Projects
1	Environment Agency Abu Dhabi		• Environment Quality • Terrestrial and Marine Biodiversity • Terrestrial Environment Protection • Environmental Information Science and Outreach management • Integrated Environment Policy and Planning • Corporate Services

2	Dubai Municipality	Environmental Planning and Studies Section (EPSS)	• The Coastal Zone & Waterways Management Section (CWMS) oversees the sustainable development and the utilization of Dubai coastal and marine environment through the formulation and implementation of Integrated Coastal Zone Management (ICZM) plans and procedures within the scope of responsibilities of Dubai Municipality. The section contributes significantly to the decision-making, understanding, analysis and study of coastal phenomena aimed at achieving a sustainable coastal development.
			• Forecasting and monitoring of beaches
			  ○ Forecasting aims to provide information on waves, current, surface elevation, wind, oil spill and inundation along Dubai coastline and the Arabian Gulf.
			  ○ Coastal monitoring program has generated and continues to enhance a comprehensive database used in numerous coastal engineering applications
			• Operational Functions
			  ○ Monitoring and maintenance of past and ongoing project
			  ○ Reviewing and evaluating the outputs from all the technical and environmental studies for coastal, marine and waterways projects being implemented in the Emirate.

No.	Organization	Department	Mandate/Interests/Activities/Projects
			○ The issuance of Permits and No-Objection Certificates for all the engineering works and the projects in the coastal area • Strategic Tasks ○ Ensure that the Municipality possesses the scientific expertise, knowledge (i.e., data) and analysis resources (i.e., modeling tools) needed for a sustainable coastal management.
3	Statistics Centre, Abu Dhabi	Agriculture & Environment	• Agriculture & Environment • Develop effective statistics on most environmental aspects to support policy-makers, analysts and researchers in the development and conservation of the local environment • Hold data and publications on the following sectors: ○ Agriculture & Fisheries ○ Environment & Natural Resources ○ Energy & Water
4	Fujairah Municipality	Environment Protection and Development Department	• Responsible for management of the city municipality including environmental engineering (waste, pest control, inspections, permitting etc.)
5	Ras Al Khaimah Environmental Protection and Development Authority		• Sole authority in charge of environmental issues in the Emirate of Ras Al Khaimah.
6	Umm Al Quwain Municipality	Environment Department	• Responsible for management of the city municipality including environmental engineering (waste, pest control, inspections, permitting etc.)
7	Sharjah EPAA	Protected Areas	• The Authority aims to protect the environment, and the wildlife and its biodiversity. This happens through scientific research, setting appropriate policies to raise awareness, supporting the principle of sustainable development to preserve natural environmental resources, and by a guaranteed exploitation of natural resources

No.	Organization	Department	Mandate/Interests/Activities/Projects
			to the benefit of the present generation without wasting the right of future generations • The authority maintains a number of protected areas and also run learning centers which provide an educational and entertaining experience to its visitors • Authority's tasks and responsibilities: ○ Conducting studies and scientific research and provide the necessary information associated with the work of the Commission. ○ Identify policies needed to perform their work in coordination with the concerned authorities to preserve the environment and wildlife. ○ Coordination and cooperation with governmental bodies, institutions and academic bodies and regional organizations, research centers and that in all things that is relevant to the work of the Commission. ○ Evaluate the effectiveness of existing development activities and their environmental impacts and make recommendations to ensure their improvement. ○ Participation in activities and events pertaining to the protection of the environment and wildlife.
8	Ministry of Climate Change and Environment (MOCCAE)	Assistant Under Secretariat for Water Resources and Nature Conservation Affairs Assistant Under Secretariat for Environmental Affairs	• Development and implementation of climate change policies and protection of UAE's natural environment • Production a National Environmental Education & Awareness Strategy for 2015-2021 highlighting the key strategies to achieve a sustainable future for the UAE • Responsible for coordinating environmental policies amongst the seven

No.	Organization	Department	Mandate/Interests/Activities/Projects
			Emirates and responding to UAE obligations under international conventions.
9	Abu Dhabi Urban Planning Council		• Responsible for the future of Abu Dhabi's urban environments – with focus on achieving Vision 2030 • Defines the shape of the Emirate, ensuring factors such as sustainability, infrastructure capacity, community planning and quality of life, by overseeing development across the city and the Emirate as a whole. The Abu Dhabi Urban Planning Council ensures best practice in planning for both new and existing urban areas.
10	Executive Affairs Authority, Abu Dhabi		• Specialized government agency mandated to provide strategic policy advice to the Chairman of the Abu Dhabi Executive Council • The EAA provides the Chairman of the Executive Council with analysis and advice across all portfolios of Government, and facilitates greater coordination in the development and implementation of policy in the Emirate. • Presently, the Executive Affairs Authority consists of five specialized advisory units: ○ Economic and Energy Affairs ○ Government Affairs ○ Legal and Risk Management Affairs ○ Strategic Affairs ○ Strategic Communications Affairs • Through these specialized advisory units, the EAA provides rapid and timely advice to the Chairman of the Executive Council in the assessment of high-level policy decisions and the setting of strategic priorities. In addition, the EAA conducts research on matters of importance and implements a range of special projects at

No.	Organization	Department	Mandate/Interests/Activities/Projects
			the request of the Chairman of the Executive Council.
11	Tourism Development and Investment Centre (TDIC)		• TDIC was created to be the dedicated tourism asset management and development arm of the Abu Dhabi Tourism and Culture Authority, in order to drive the investment, growth and development of the Emirate's tourism sector. Since 2006, we have been actively involved in many of the Emirate's most prestigious and high profile projects (mainly hotel developments). Future projects include: The district and numerous museum developments. • Support sustainable tourism • Single-minded aim is to actively contribute to the economic growth and diversification of Abu Dhabi
12	Emirates Diving Association		• Communicate information regarding stewardship to caring about the world's oceans via their magazine "Divers for the environment" • Provide comprehensive environmental guidelines for divers • Utilize diver's knowledge of the fragility of the world's oceans to help educate the public and promote the need for healthy oceans. • Fully committed to create a harmonious and healthy diving environment to secure high quality diving sites for future generations • Run events (e.g. dive clean ups), research and expeditions, both for divers and non-divers • Run a coral monitoring program "Reef Check". Main objective is to study coral health, but also educate the public regarding the coral reef crisis, induce local community action to protect remaining corals and contribute to economically sustainable solutions
13	Emirates Wildlife Society-WWF		• Protecting vulnerable species on land and at sea, as well as safeguarding precious habitats.

No.	Organization	Department	Mandate/Interests/Activities/Projects
			• In addition to protecting species and habitats, WWF raises awareness of sustainable energy use • Information is communicated through online news letters
14	Gulf Research Centre		• Several key research programs: Economics, Energy, Politics, International Relations, Defence and Security, Environment and Science & Technology. Primarily focusing on critical issues for each program in the Gulf countries. • Non-profit organization, all funds are redirected to new research projects • Makes knowledge available to the public through publications, workshops, seminars and conferences.

15	Emirates Marine Environment Group		• Minimize the impact of anthropogenic activities by providing sustainable solutions towards environmental management
			• Educate the public and increase awareness
			• Protect the marine environment by:
			  ○ protecting endangered wildlife
			  ○ actively participating in conservation efforts
			  ○ advancing research, environmental education and awareness
			  ○ conserving fragile ecosystems for future generations
			• EMEG maintains a coastal sanctuary and reserve on the western border of Dubai. The area is used as a base to develop and organise educational camps for school, community and corporate groups to increase awareness and understanding of the different threats the environment faces. Within these structured programs, EMEG focuses on the cultural heritage of the UAE and incorporates traditional values and skills into each activity.
			• Communicate information through online newsletters

No.	Organization	Department	Mandate/Interests/Activities/Projects
16	Save Our Seas		• Funded over 200 projects in over 50 countries across the globe • Each project strives for deeper understanding and more innovative solutions in marine research, conservation and education. • Innovative projects make a real and lasting impact for the health of our oceans – and ultimately for every person on the planet.
17	Global Green Growth Institute (GGGI)		• GGGI is dedicated to supporting the transition of GGGI Member countries towards a green growth model by developing and implementing strategies that simultaneously achieve poverty reduction, social inclusion, environmental sustainability and economic growth • Provides Member Countries with the tools to help build institutional capacity and develop green growth policy, strengthen peer learning and knowledge sharing, and engage private investors and public donors.
18	Abu Dhabi Water & Electricity Authority (ADWEA)		• ADWEA dedicated to providing the water and electricity the Emirate needs, as well as the guidance, collaboration and partnership that's needed to help Abu Dhabi reach its full potential and the 2030 vision. • Researches and develops ways to more efficiently produce, distribute and consume water and electricity
19	National Energy and Water Research Center (NEWRC)		• NEWRC provides training for UAE Nationals at partner institutions in nuclear physics, nuclear engineering, design and operation and radioactive waste minimization. • They played a central role in the implementation of nuclear energy here in the UAE, through feasibility studies. • NEWRC laboratories, its research facilities and senior scientists can provide all the technical and assessment stud-

No.	Organization	Department	Mandate/Interests/Activities/Projects
			ies to improve efficiency, performance and cost-effectiveness of solar panels • NEWRC has state of the art monitoring equipment for both seawater and air quality • The Eco-Hydraulic Department conducts the hydrodynamic, morphological and water quality studies for the upcoming mega projects in Abu Dhabi. Allowing NEWRC to take the necessary measures to mitigate any impact if detected.
20	Dubai Electricity and Water Authority (DEWA)		• Sustainable electricity and water services at a world-class level of reliability, efficiency and safety in an environment that nurtures innovation with a competent workforce and effective partnerships; supporting resources sustainability • Committed to a long-term sustainable future for delivery of electricity and water to the Emirate of Dubai, through ethical and sustainable attitudes to the development of electricity and water.
21	Emirates Nuclear Energy Authority (ENEC)		• Deliver safe, clean, efficient and reliable nuclear energy to the UAE grid by 2017 while developing our people and building sustainable nuclear operational capacity. • Forming strategic partnerships with local and international companies and pursuing investment opportunities to support the growth of the nuclear energy industry in the UAE. • Partnering with academic institutions to develop human capital required for UAE's nuclear energy industry well into the future. • Providing the UAE community with accurate and up-to-date information about the program in line with the UAE's commitment to complete operational transparency.

No.	Organization	Department	Mandate/Interests/Activities/Projects
22	ADNOC		• Integral role in Abu Dhabi's economic development; managing, producing and preserving the Emirate's hydro-carbon reserves on behalf of the Abu Dhabi Government
23	National Centre for Meteorology & Seismology (NCMS)		• Aims to achieve excellence in meteor-ological and earthquakes services and to contribute to the development of science by endorsing sustainable de-velopment of the Country. • The National Centre of Meteorology and Seismology aims to unite the source of meteorological and earth-quakes in the Country and to control changes that occur to the atmosphere and the earth's crust and to deliver meteorological services.
24	Abu Dhabi Council For Economic Development		• ADCED facilitates economic diversifi-cation and growth through creating greater understanding, cooperation and engagement between the public and private sectors of Abu Dhabi • Provides the platform for the govern-ment and private sector to work to-gether securing a sustainable future for Abu Dhabi, through developing non-oil service sectors: tourism and fi-nancial services, as well as petro-chemical, aluminum and steel. • ADCED strategic objectives focus on four areas: ○ Policy recommendations ○ Innovation and excellence in policy development ○ Stakeholder networks ○ Initiative implementation
25	UAE University		• The College of Science is actively in-volved in many areas of research which are supported by several fund-ing bodies within the UAE (federal and non-federal) and externally from abroad. • The five departments (biology, chem-istry, geology, mathematics and phys-ics) at the COS maintain a strong re-

No.	Organization	Department	Mandate/Interests/Activities/Projects
			search agenda that spans across several areas which are aligned with UAEU's main research strategy and goals which include the development of water resources, petroleum resources, solar and other forms of renewable energy, medical developments, and the development of significant economic activities
26	Zayed University		• Areas of research of the College of Natural and Health Sciences include: environment, energy, public health and nutrition • Environmental research projects include: Coastal zone management and estuarine coastal science, applied geochemistry, environmental pollution, biodiversity and conservation, animal behavior and evolutionary processes; mitigation strategies
27	New York University – Abu Dhabi		• Research on coral reefs and other shallow water habitats in the Arabian Gulf
28	Dubai Carbon Centre of Excellence		• Dubai Carbon provides an extensive analysis of company's resource consumption patterns and carbon emissions • Advisory work covers: identifying ways of improving operational efficiency within entities and establishing green strategies linked to existing corporate strategies
29	Masdar Institute of Science and Technology (MIST) Institute Center for Water and Environment (iWATER)		• The Institute Center for Water and Environment (iWater) produces knowledge and technologies that address issues of clean water production and management, climate change and the environment and water resource challenges faced by the UAE • Research Theme Areas: o Water and environmental technologies, including desalination, water and waste water treatment, and advanced materials for water applications o Water and environmental resource management

No.	Organization	Department	Mandate/Interests/Activities/Projects
			○ Environmental sensing and monitoring ○ Climate change and adaptation
30	Emirates Natural History Group		• Encourage and assist members and other interested individuals in the study and appreciation of the natural history and archaeology of Abu Dhabi, the United Arab Emirates, the Middle East and the world at large • Provides an active and progressive forum, for experts and enthusiasts alike • Information and engagement delivered through: lectures, journal publications, newsletters and fieldtrips
31	Regional Clean Sea Organization (RECSO) – formerly GAOCMAO		• Oil industry mutual aid organization through coordination between members, training, capacity building and awareness, and promote compliance with IMO conventions, climate change mitigation and crisis management

3. Directory of Environmental Legislation

3.1. Bahrain

	Legal Code	Item	Environmental Management	Fisheries and Aquaculture	Agriculture	Offshore Oil and Gas	Energy and Utilities	Navigation and Shipping	Coastal Planning & Construction
1	LD 5/71	Extraction of sand and rocks for building and reclamation, (amended by MR 2/79)							•
2	D 8/83	Kuwait Regional Convention for the cooperation in the Protection of Marine Environment from Pollution.	•			•	•	•	
3	LD 8/85	United Nations Convention on the Law of the Sea				•		•	
4	D 9/90	Protocol Concerning Marine Pollution Resulting from exploration and exploitation of the Continental Shelf (1989) and the Protocol for the Protection of the Marine Environment against Pollution from Land-Based Sources				•	•	•	
5	D 10/90	Vienna Agreement for the protection of the Ozone Layer	•				•		
7	D11/92	Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal	•					•	
8	D 7/94	UN Framework Convention on Climate Change	•				•		
9	MR 1/95	Prohibiting reclamation of Tubli Bay							•
10	L 2/95	Protection of Wildlife	•	•					
11	L 13/95	International Convention on Civil Duty for Oil Pollution Damage (1969) and its 1967 and 1992 Protocols and the International Convention on the establishment of an International Fund for the Compensation of Damage as a Result of Oil Pollution (1971) and its 1976 and 1992 Protocols				•		•	
12	MR 16/96	Hawar Islands Protected Area	•	•					
13	MR 21/96	Protection of the Environment	•						
14	LD 18/96	The Convention on Biological Diversity (CBD)	•	•	•				

15	D 3/97	Convention on Wetlands of International Importance (Ramsar)(1994)	•	•					
16	D 9/97	UN Convention on Combating Desertification in Countries Experiencing Serious Drought and/or Desertification (1994)	•		•				
17	MR 1/98	Environmental Impact Assessment of Projects	•						•
18	MR 1/99	Ozone Depleting Substances	•				•		
19	MR 10/99	Environmental Air and Water Standards (Amended by MR 2/01 and MR 3/01)	•				•		
20	MR 4/00	Reclamation permits							•
21	D 28/00	Al Areen Protected Area	•						
22	D 41/00	Copenhagen Amendment (1992) and Montreal Amendment (1996) to the Montreal Protocol on Ozone Depleting Substances	•				•		
23	MR 54/00	Dredging							•
24	L 3/01	Regional Protocol of Maritime Transboundary Movement and Disposal of Hazardous and Other Wastes					•	•	
25	MR 1/02	Mashtan Island Protected Area	•						
26	LD 9/02	Convention for the protection and conservation of wildlife and natural habitat in GCC states	•						
27	LD 20/02	Fishing Regulations and Protection of Marine Resources	•	•					
28	MR 4/03	Dohat Arad Protected Area	•						•
29	MR 2/03	Ban on import, distribution and use of nylon nets for fishing		•					
30	MR 3/03	Ban on hunting sea cows, turtles and dolphins	•	•					
31	L 37/05	GCC Pesticides Law	•		•				
32	L 38/05	Agricultural Fertilizers and Soil Conditioners in GCC countries	•		•				
33	MR16/05	Ban on reclamation without a permit							•
34	L 45/05	Kyoto Protocol of the United National Convention on Climate Change	•						
35	L 8/05	Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal	•					•	

36	MR 7/05	Banning the use of prism nets (multi-fiber) with two or more layers		•					
37	MR 8/05	Artificial Reefs		•					
38	MR 9/05	Fishing Enclosures and *Haddrah's*		•					
39	L 32/05	Convention for the Prevention of Pollution from Ships (MARPOL) - Annex I, II, V				•		•	
40	MR 11/05	Specifications for prawn fishing nets		•					
41	MR 12/05	Permits for amateur fishing		•					
42	MR 13/05	Fishing regulations in Hawar[6]		•					
43	L 39/05	Stockholm Convention on Persistent Organic Pollutants			•				
44	MR 20/06	Coastal Protection							•
45	MR 3/06	Hazardous Waste Management	•				•		
46	MR 4/06	Hazardous Chemicals Management	•				•		
47	L 53/06	Tubli Bay Protected Area	•						•
48	D 6/06	Fish Farms		•					
49	MR 10/06	Emission Sources of Air Pollutants	•				•		
50	MR 33/06	Sewage Water and Drainage	•		•		•		
51	D 89/06	GCC Pesticides Law (Executive By-laws)		•					
52	MR 8/07	*Bulthamah* Oyster Beds Marine Protected Area	•	•					
53	MR 47/07	Commercial licensing of fishing in Muharraq		•					
54	MR 8/09	Recreational fishing		•					
55	MR 4/09	Non-ionizing radiation	•				•		
56	MR 9/09	Ban on multi-hook fishing lines (*khayya*)							
57	MR 12/09	Designated Prawn Fishing Areas[7]	•	•					
58	L 4/10	International Convention on Oil Pollution Pre-paredness, Response and Cooperation (OPRC, 1990)				•		•	

[6] Amended by MR 4/10
[7] Amended by MR 4/11

59	MR 1/11	Drift Nets (*hayali*) for Mackerel Fishing		•					
60	L 2/11	Cartagena Protocol on Biosafety	•		•				
61	MR 6/11	Controls for multi-hook fishing lines (*khayya*)		•					
62	L 27/12	Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)	•						
63	L 14/12	Rotterdam Convention (formally, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	•		•		•		
64	L 54/14	GCC Unified Law for the Control of Ozone Depleting Substances	•				•		
65	MR 1/15	HCFC's	•				•		

3.2. Iran

No.	Item	Environmental Management	Fisheries and Aquaculture	Agriculture	Offshore Oil and Gas	Energy and Utilities	Navigation and Shipping	Coastal Planning & Construction
1	Game and Fishing Law (1967 amend 1996)	•	•			•		•
2	Game Laws & Regulations 1970-71							
3	Law concerning the Exploitation and Protection of Aquatic Resources of Islamic Republic of Iran (1976)	•	•					•
4	5th Five-Year Economic, Social and Cultural Development Plan, Article 187 (2010-2015, extended for 2016)							•
5	The Protection and Exploitation of Natural Aquatic Resources Law 1995	•						
6	The Executive Regulations of Conservation and Utilization of Aquatic Resources in the Islamic Republic of Iran (1999)	•						
7	Temporary Regulations for the catching of fish, shrimp and other sea animals in the Persian Gulf, the Sea of Oman and all rivers of southern parts of Iran.(1973)		•					
8	Environmental Protection and Enhancement Act (1974, amended in 1991)	•						
9	EIA Decree 138 (1994, amend 1997)	•						
10	Guidelines on Environmental Impact Assessment (1997)	•						
11	Human's Environmental Laws, Regulation and Standards	•						
12	Air Pollution Prevention Act (1996)	•						
13	Air Pollution Prevention Executive Regulation (2000)	•						

14	Standards for Air Emissions and Waste Water Discharge	•						
15	Regulation for Prevention of Water Pollution(1994)	•						
16	Iranian Water Law the Manner of Water Nationalization (1968)	•						
17	Fair Water Distribution Law (1982)	•						
18	General standard for Water Pollution Control (IPS-G-SF-880)	•						
19	Engineering Standard for Water Resources and Distribution System (IPS-E-CE-340)	•						
20	Engineering Standard for Process Design of Waste Water Treatment Plant & Recovery System (IPS-E-PR-730)	•						
21	Law for Environmental Protection against Water Pollution (1984)	•						
22	Resources of the Islamic Republic of Iran (1976) Law of protection and exploitation of fisheries resources of the Islamic Republic of Iran (1995)	•	•					
23	Law Concerning the Exploitation and Protection of Aquatic Resources		•					
23	National Biodiversity Strategy and Action Plan	•	•					
24	Regulations Concerning the Movement of Animals (1994)	•						
25	Regulation for the Protection of Wildlife	•						
26	Hunting & Fishing amendment Act (1956 amend 1967)		•	•				
27	Act concerning Protected Areas							•
28	Plant Protection Act (1967)			•				
29	Comprehensive Coastal Management Guideline							•
30	Integrated Coastal Zone Management							•
31	Law of Protection of the Sea and Internal Water Bodies Against Oil and Oil-products Pollution (1975)					•		
32	Conservation Law of Seas and Navigable Rivers against Oil Pollution (1975, 2010)	•				•		
33	IPS-G-SF-880:General standard for Water Pollution Control	•				•		
34	IPS-E-CE-340: Engineering Standard for Water Resources and Distribution System	•				•		
35	IPS-E-CE-400: Engineering Standard for Sanitary Sewage Treatment	•				•		
36	Waste Management Act (2004)	•						
37	Regulations on Environmental Protection Law.(1975)	•						•
38	Marine Pollution (Kuwait Action Plan)	•			•	•		
39	Prevention of Pollution from Ships (MARPOL)	•			•		•	
40	International Oil Spill Compensation	•					•	
41	International Convention on plant protection	•		•				
42	Marine Pollution from the continental shelf	•			•			
43	Coastal Zone Management	•				•	•	•
44	Marine Pollution from Land Sources (ROPME)	•		•		•		•
45	Solid Non-Hazardous Waste	•			•			
46	Solid Hazardous Waste	•			•			
47	Air & Noise (Public Environment)	•			•		•	•
48	Air & Noise (Work Environment)	•					•	•
49	Basel, UNFCC,	•			•	•		

50	Oil pollution compensation	•			•		•	
51	Environmental permit amendment	•						
52	Handling and Transporting Chemicals	•					•	
53	International Treaties related to Biodiversity (The Convention on Biological Diversity, Convention on the International Trades in Endangered Species, Convention on Wetlands of International Importance, Convention on Migratory Species)	•	•	•				•
54	United Nations Convention on the Law of the Sea	•	•		•		•	
55	Protection of Agricultural Resources			•				
56	Radioactive materials	•						
57	Crushers, Quarries and Transport							•
58	Desalination				•	•		
59	Environmental Clearances and Permits	•		•				
60	Environmental Protection and Prevention of Pollution	•	•	•	•	•		•
61	Amendment to Protection of Agriculture Law			•				
62	Regulations for Environmental Permits	•	•	•				
63	Management and Conservation of Biodiversity	•		•				•
64	Conservation of Inland waters/utilization	•	•	•				
65	License to dispose of waste at sea and Land	•		•			•	
66	Permits and Ministry Inspections	•		•				•
67	The Cartagena Protocol on Biosafety of the Convention on Biological Diversity	•	•	•				•
68	Nature Conservation ROPME	•						
69	Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal	•					•	
70	Protected Areas/Forest areas	•	•	•				•
71	International Seabed Authority	•			•		•	
72	Air Pollution	•			•	•		
73	Permits (Diving, Dumping at Sea)	•						
74	Stockholm Convention on Persistent Organic Pollutants	•			•			
75	Discharges to the Marine Environment	•			•	•	•	
76	International transport of hazardous waste						•	
77	Protected Area Regulations and Management	•		•				
78	Assessment of EIA Reports	•						
79	Aquaculture and Fisheries regulations	•	•					•
80	Law Concerning Establishment of Ports & Maritime Organization (1960)						•	•
81	Ports & Maritime Organization Bylaw (1970, amended in 2009)						•	•
82	Protection of the Seas and Navigable Rivers against Oil Pollution Act (1975, amended in 2010) National Contingency Plan on Oil Pollution Preparedness, Response (2012)				•		•	•
83	The Bylaw on Construction & Use of Facilities in Continental Shelf & Iran's EEZ in Persian Gulf and Sea of Oman (1996)				•			•
84	Executive Regulation for Article 6 of the Protection of the Seas and Navigable Rivers against Oil Pollution Act (2013)						•	•

85	Executive Regulation for Article 5 of the Protection of the Seas and Navigable Rivers against Oil Pollution Act (2013)						•	•
86	Executive Regulation for Note 3 of Article 3 of the Protection of the Seas and Navigable Rivers against Oil Pollution Act (2014)						•	•
87	Integrated Coastal Zone Management (2010)							•
88	Integrated Coastal Management Guidelines (2015)							•
89	Standards for Waste Water Discharge	•						
90	Environmental Criteria for Recreational Water	•						•

3.3. Iraq

No	Law No	Item	Environmental Management	Fisheries and Aquaculture	Agriculture	Offshore Oil and Gas	Energy and Utilities	Navigation and Shipping	Coastal Planning & Construction
1	Instruction No. 1	Wastewater Discharge Quality Requirements	•		•		•		•
2	Law No. 21 of 1966	Noise Prevention	•		•		•		•
3	Instruction No. 25 of 1967	The New Determinants for the Prevention of Pollution of Rivers	•		•		•		•
4	Law No. 25 of 1967	Preservation of Rivers and Public Water from Pollution	•		•		•		•
5	IMO Convention 1974	The International Convention on for the Safety of Live at Sea (SOLAS)						•	
6	Law No.48 of 1976	Regulating the Exploitation and Protection of Aquatic Life	•	•		•		•	
7	Law No. 23 of 1979	National Clean Air Act	•			•	•		•
8	Law No. 89 of 1981	Public Health Act	•			•	•	•	•
9	Law No. 10 of 1981	First Amendment of Law No. 48 of 1976	•	•					
10	Regulation No. 13 of 1981	Establishing an Agricultural Research and Water Resources Centre	•		•			•	•
11	Law No. 2 of 1983	Law on Pasture	•		•				
12	Law No. 76 of 1986	Environmental Protection and Improvement	•		•		•		•
13	Instruction No. 4 of 1989	Safe Storage and Handling of Chemicals	•			•	•	•	•
14	Instruction No. 45 of 1990	Environmental Criteria for Industrial, Agricultural, and Public Service Projects	•	•	•		•		•
15	Decision No.1 of 1991	Concerning the Cutting of Trees	•		•				
16	Law No. 8 of 1993	Establishing the Ministry of Irrigation	•	•	•				

17	Law No. 12 of 1995	Law Relative to Maintenance of Networks of Irrigation and Drainage	•	•	•				
18	Law No. 27 of 1995	Port Law						•	•
19	Instruction No. 1 of 1998	Iraqi Ports and Harbours	•	•		•		•	•
20	Law No. 27 of 1999	General Authority for Water and Sewage Law	•		•		•		•
21	Law No. 2 of 2001	Preservation of Water Resources	•	•		•	•	•	•
22	Law No. 42 of 2007	Ratification of the Vienna Convention and Montreal Protocols To Protect the Ozone Layer	•			•	•	•	•
23	Law No. 7 of 2007	Ratification of Convention on Wetlands of International Importance	•	•	•				•
24	Law No. 37 of 2008	Law Establishing the Ministry of Environment	•	•	•		•		•
25	Law No. 50 of 2008	Ministry of Water Resources Law	•						
26	Law No. 31 of 2008	Ratification of the International Convention of Biological Diversity	•	•	•		•		•
27	Law No. 27 of 2009	Protection and Improvement of the Environment	•	•	•	•	•	•	•
28	Law No. 30 of 2009	Law on Forests and Woodlands	•		•				
29	Law No. 3 of 2009	Ratification of the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal	•					•	
30	Law No. 17 of 2010	Law on the protection of Wild Animals	•		•				
31	Instruction No.3 of 2012	National Emissions Standards	•			•	•	•	•
32	Regulation No. 4 of 2012	Protection of Ambient Air Quality	•			•	•	•	•
33	Law No. 5 of 2012	Control of Materials Affecting the Ozone Layer	•			•	•	•	•
34	Law No. 46 of 2012	Regulating Agricultural Materials Handling			•				
35	Law No. 3 of 2012	National Determinants for the Use of Treated Wastewater in Agricultural Irrigation			•				
36	Instruction No. 3 of 2012	Law of Categorization and siting of Industrial Facilities	•				•		•
37	Law No. 9 of 2013	Establishing the Ministry of Agriculture			•				
38	Instruction No. 2 of 2014	Environmental Protection from Municipal Waste	•				•		•
39	Law No. 2 of 2014	Natural Reserves Act	•		•				
40	Resolution No. 1 of 2015	Rules of Procedure of the Department of Environmental Police	•						
41	Instructions No. 3 of 2015	Hazardous Waste Management	•				•		•

3.4. Kuwait

No	Law No	Item	Environmental Management	Fisheries and Aquaculture	Agriculture	Offshore Oil and Gas	Energy and Utilities	Navigation and Shipping	Coastal Planning & Construction
1	Law No.42 of 2014	Kuwait Environment Protection	•	•	•	•	•	•	•
2	Law No. 46 of 1980	Protection of Fisheries Resources		•					
3	Law No. 105 of 1980	State Land System							•
4	Law No. 94 of 1983	Formation of the Public Authority for Agriculture & Fisheries Resources		•	•				
5	Law No. 133 of 1977	General Organization of Ports						•	•
6	Law No. 23 of 2011	Maritime Commerce Law						•	
7	Law No. 6 of 1980	Formation of Kuwait Petroleum Corporation				•			
8	Law No. 317 of 2014	The identification of marine areas of the State of Kuwait							•
9	Law No. 112 of 1976	Agricultural Quarantine		•					

3.5. Oman

No	MD/RD	Item	Environmental Management	Fisheries and Aquaculture	Agriculture	Offshore Oil and Gas	Energy and Utilities	Navigation and Shipping	Coastal Planning & Construction
1	RD 64/78	Expropriation for Public Use Law	•				•		•
2	RD 8/79	Ratification of the Kuwait Action Plan	•			•	•		
3	RD 25/81	Prevention of Pollution from Ships (MARPOL)				•		•	
4	RD 26/81	Prevention of Pollution from Ships (MARPOL)				•		•	
5	RD 94/84	International Oil Spill Compensation				•		•	
6	RD 88/88	International Plant Protection Convention	•		•				
7	RD 92/89	Marine Pollution from the continental shelf	•			•			
8	MD 20/90	Coastal Setbacks	•				•		•
9	RD 90/91	Marine Pollution from Land Sources (ROPME)	•		•		•		•

10	MD 17/93	Solid Non-Hazardous Waste	•			•			
11	MD 18/93	Solid Hazardous Waste	•			•			
12	MD 79/94	Air & Noise (Public Environment)				•	•		•
13	MD 80/94	Air & Noise (Work Environment)				•	•		•
14	RD 119/94	Conventions Basel, UNFCC, Biological Diversity	•			•	•		
15	RD 57/94	Oil pollution compensation				•		•	
16	MD 209/95	Environmental permit amendment	•						
17	RD 46/95	Handling and Transporting Chemicals	•					•	
18	RD 47/95	Protected Areas	•						•
19	RD 77/96	UN Convention on the Law of the Sea	•	•		•		•	
20	RD 31/98	Protection of Agricultural Resources			•				
21	MD 21/99	Radioactive materials	•						
22	MD 200/00	Crushers, Quarries and Transport	•						•
23	MD 263/00	Desalination				•	•		
24	MD 187/01	Environmental Clearances and Permits	•						
25	RD 114/01	Environmental Protection & Pollution Prevention	•			•	•		•
26	RD 116/01	Amendment to Protection of Agriculture Law			•				
27	MD 187/01	Regulations for Environmental Permits	•						
28	MD 3/2002	Conservation of Khawrs in Salalah	•						•
29	MD 4/2002	Conservation of Jebal Samhan	•						
30	MD 57/02	Licensing for the disposal of waste at sea	•					•	
31	MD 71/02	Permits and Ministry Inspections	•						
32	RD 55/02	Cartegena Protocol on Biosafety	•	•					
33	RD 67/02	Nature Conservation ROPME	•						
34	RD 88/02	Basel Convention Trans-boundary Waste	•					•	
35	RD 6/03	Protected Areas	•	•					•
36	RD 88/03	International Seabed Authority	•			•		•	
37	MD 118/04	Air Pollution from Stationary Sources	•			•	•		
38	MD 39/04	Environmental Permits, covering Diving and Dumping of Waste at Sea	•						
39	RD 117/04	Accession to the Stockholm Convention on Persistent Organic Pollution	•			•			
40	MD 159/05	Discharges to the Marine Environment	•			•	•		
41	RD 24/07	International transport of hazardous waste						•	
42	MD 110/07	Protected Area Regulations	•						

3.6. Qatar

No.	Minister's Decision (MD)/ Emiri Decree (ED)	Item	Environmental Management	Fisheries and Aquaculture	Agriculture	Offshore Oil and Gas	Energy and Utilities	Navigation and Shipping	Coastal Planning & Construction
1	ED 4 of 1983	Exploitation and Protection of Aquatic Living Resources	•	•					
2	ED 11 of 2010	Amendment of law No. (4) of 1983 concerning the exploitation and protection of aquatic living resources	•	•					
3	MD 2 of 1985	Implementing regulations to rule No. 4 of 1983 and its amendments concerning the exploitation and protection of aquatic living resources	•	•					
4	MD 36 of 2011	Amending some provisions of Decision No. (2) of 1985, the implementing regulations to rule No. 4 of 1983 and its amendments about the exploitation and protection of aquatic living resources	•	•					
5	MD 84 of 1993	Cessation of issuing new fishing licenses.		•					
6	MD 43 of 2005	Identifying the service's charges performed by the ministry.	•						•
7	MD 96 of 2011	Identifying fisheries service's charges.		•					
8	MD 24 of 1991	Ban of shrimp fishing		•					
9	MD 45 of 1997	On the allowable distance for fishing from coast, islands, coral reefs and petroleum installations		•		•			
10	MD 54 of 1997	On legal allowable fish sizes		•					
11	MD 16 of 2003	On legal allowable fish sizes amending MD 54 of 1997		•					
12	MD 23 of 2010	On the protection of Green Swordfish		•					
13	MD 52 of 2010	Regarding the extension of the period to prohibit shrimp fishing in Qatari waters		•					
14	MD 33 of 2011	Controlling fishing of Blue Swimming Crab		•					
15	MD 55 of 2015	Controlling fishing of kingfish		•					
16	MD 86 of 2015	To manage some fishing activities		•					
17	MD 195 of 2014	Aquaculture and fish farms conditions and controlling regulations		•					
18	MD 127 of 1998	On the export of live aquatic resources and ministerial decisions amending it		•					
19	MD 23 of 1999	On the export of live aquatic resources		•					

20	MD 7 of 2000	On the export of live aquatic resources		•					
21	MD 222 of 2004	On the export of live aquatic resources		•					
22	MD 36 of 2006	Regarding organization the fish exports and prohibiting shark finning and shark exports		•					
23	ED 30 of 2002	The Environmental Protection Law	•						•
24	MD 4 of 2005	Issue implementation regulation of the Environmental Protection law issued by Legislative Decree No. (30) of 2002, issuing the Environmental Protection Law	•						•
25	MD 78 of 1993	On the consideration of Khor Al-Udaid as a marine protected area	•						•
26	MD 88 of 1995	Regarding Protection of Khor Al-Udaid area	•						•
27	MD 1 of 2006	Regarding Protection of Al-Areeq and Al-Sahbya areas	•						•
28	MD 6 of 2006	Regarding Protection of Al-Thakheerah	•						•
29	MD 1 of 2007	Regarding Protection of Khor Al-Udaid	•						•
30	MD 5 of 2008	Amending certain provisions of decision No. (8) on the year 2005 Considering Lusail as a natural reserve area	•						•
31	ED 29 1966	Qatar's marine ports						•	•
32	ED 18 of 1980	Concerning the registration of ships and safety requirements						•	
33	ED 19 of 1980	Registration and safety of small vessels						•	
34	ED 40 of 1992	Concerning the determination of the territorial sea of Qatar and the adjacent area						•	•
35	ED 17 of 2005	On jurisdiction of crimes stipulated in the municipal laws							•
36	ED 17 of 2011	Establishing Qatar Ports Management Co						•	•
37	ED 67 of 2014	Regarding Al Ruwais Marine Port						•	•
38	ED 17 of 2015	Amending provisions of Decree Law No. (29) of 1966 to organize Qatar's ports						•	
39	MD 5 of 2005	Regarding the Jurisdiction of crimes stipulated in the municipal laws							•
40	MD 11 of 1978	To establish fisheries management and appoint its Director		•					
41	ED 20 of 1993	To organize the Ministry of Municipal Affairs and Agriculture and appoint its Minister			•				
42	MD 77 of 2002	On the organization of fisheries wealth management and appoint its Director		•					
43	ED 39 of 2009	The organization of Ministry of Environment	•						
44	ED 30 of 2014	The organization of Ministry of Environment	•						
45	MD 223 of 2015	To establish sections in the administrative units that comprise the Ministry of Environment and appoint its competence	•	•	•				•
46	ED 5 of 2016	The organizational structure of the Ministry of Municipality and Environment	•	•	•				•
47	ED 24 of 2005	Quarantine Law		•	•				

3.7. Saudi Arabia

No	Date	Item	Environmental Management	Fisheries and Aquaculture	Agriculture	Offshore Oil and Gas	Energy and Utilities	Navigation and Shipping	Coastal Planning & Construction
1	193/01	General Environmental Regulation	•	•		•			•
2	2012	Ambient Air Quality Standard 2012	•						
3	2012	Standard on Emissions from Mobile Sources	•			•			
4	2012	General Environmental Standard for Noise	•			•		•	
5	2012	National Ambient Water Quality Standard	•	•	•			•	•
6	2012	Wastewater Discharge Standard	•				•	•	
7	2012	Standard on Waste Transportation	•			•			
8	1969 (Ratified 1993)	International Convention on Civil Liability for Oil Pollution Damage	•			•			•
9	1983 (Ratified 1991)	Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)	•						
10	1973 (Ratified 1996)	Convention on International Trade in Endangered Species (CITES)	•	•					
11	1992 (Ratified 1995)	UN Framework Convention on Climate Change	•			•	•		
12	1978 (Ratified 1981)	Kuwait Regional Convention for the cooperation in the Protection of Marine Environment from Pollution.	•	•				•	•
13	1975	Seaports, Harbours and Lighthouses Regulations				•	•		•
16	1973 (Ratified 2006)	Convention for the Prevention of Pollution from Ships (MARPOL) - Annex I, II, V	•					•	
17	1982 (Ratified 1996)	United Nations Convention on the Law of the Sea	•	•				•	•
18	1989 (Ratified 1990)	Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal	•						
19	1998 (Ratified 2000)	Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	•						
20	2001 (Ratified 2012)	Stockholm Convention on Persistent Organic Pollutants	•						
21	1994 (Ratified 1997)	United Nations Convention to Combat Desertification	•		•				
22	2000 (Ratified 2007)	The Convention on Biological Diversity (CBD)	•	•					•
23	1990 (Ratified 2009)	International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC)				•	•		

24	1972 (Ratified 2006)	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Dumping Convention)	•	•				•	•
25	1989 (Ratified 1996)	International Convention on Salvage	•	•				•	•

3.8. United Arab Emirates

No	Year	Item	Environmental Management	Fisheries and Aquaculture	Agriculture	Offshore Oil and Gas	Energy and Utilities	Navigation and Shipping	Coastal Planning & Construction
Federal Law									
1	1999	Federal Law No. (23) of 1999 regarding the Exploitation, Protection and Development of the Living Aquatic Resources In the waters of the state of the United Arab Emirates	•	•					
2	1999	Federal Law No. (24) of 1999 for the Protection and Development of the Environment	•	•	•	•	•		•
3	1974	Federal Law number (81) of the year 1974 on the admission of the United Arab Emirates to the International Convention on Trade in Endangered Species of Wild Fauna and Flora	•	•					
4	2002	Federal Law number (11) of the year 2002 Concerning Regulating and Controlling the International Trade in Endangered Species of Wild Fauna & Flora	•	•					
5	2008	Regulatory Guidelines for Planning, Operation and Implementation of Environmental Control for Quarries and Crushers in the United Arab Emirates	•						
6	2004	Ministerial Decree (57/2004) Regarding the Regulations for Radioactive Waste Management	•						
7	2004	Ministerial Decree (56/2004) Regarding the Regulations for Safe Transport of Radioactive Materials	•						
8	2006	Ministerial Decision 39 of 2006 Regarding Prohibition of Import, Production and Use of asbestos sheets	•						
9	2008	Ministerial Decision No. 42 / year 2008 Regarding Asbestos Production Control Procedures and Asbestos Waste by-products Control Procedures	•						
10	2006	Cabinet Decree (12) of 2006 Regarding Regulation Concerning Protection of Air from Pollution	•						
11	2001	Federal Regulation for Handling Hazardous Materials, Hazardous Wastes and Medical Wastes, issued by Cabinet Decree No. 37 of 2001	•						

12	1999	UAE Decree No. (13) of 1999 Concerning Handling of Ozone Depleting Substances (ODSs) which includes CFCs (11, 12, 113, 114, 115) and (R500 & 502) and Halons (1211, 1301, 2402)	•						
13	1999	UAE Decree No. (23) of 1999 Concerning the Establishment of a Permanent Committee to Regulate the Imports of ODSs in UAE	•						
14	2012	UAE Ministerial Decree No. 33 of January 30, 2012 – Regulation for Handling and Use of HCFCs	•						
Abu Dhabi Emirate									
15	2005	Law No. (21) of 2005 for Waste Management in the Emirate of Abu Dhabi	•						
16	2006	Law No. (6) of 2006 Controlling and Regulating Drilling of Water Wells and its Executive Order	•						
17	N/A	Standards & Limits for Pollution to Air & Marine Environments, Occupational Exposure, Pesticides & Chemical Use	•			•	•		•
18	N/A	Abu Dhabi Environment, Health & Safety Management System	•			•	•		•
19	N/A	Abu Dhabi National Oil Company (ADNOC) HSE Codes of Practice	•			•	•		•
Dubai Emirate									
20	1991	Local Order No. 61 of 1991 on the Environmental Protection Regulations in the Emirate of Dubai	•						•
21	2003	Local Order No (11) of 2003 Concerning Public Health and Safety of the Society in the Emirate of Dubai	•						
22	2002	Local Order No (8) of 2002 Regarding Sewage Irrigation Water Drainage in the Emirate of Dubai	•						
23	2008	Law No. (15) of 2008 Concerning Groundwater Protection in the Emirate of Dubai	•						
24	2003	Environmental Standards and Allowable Limits of Pollutants on Land, Water and Air Environment May 2003	•						•
25	2013	Environmental Control Technical Guideline No. 1 Disposal of Hazardous Wastes January 2013	•						
26	2011	Environmental Control Technical Guideline No. 2 Disposal of Trade Wastewater, June 2011	•						
27	2011	Environmental Control Technical Guideline No. 3 Requirements for the Installation and Construction and Maintenance of Gravity Oil-Water Separator, June 2011	•						•
28	2011	Environmental Control Technical Guideline No. 4 Guidelines for waste audit report, June 2011	•						
29	2011	Environmental Control Technical Guideline No. 5 Requirements for the transport of hazardous wastes, June 2011	•						
30	2011	Environmental Control Technical Guideline No. 6 Bunding of Storage Tanks and Transfer Facilities, June 2011	•						
31	2011	Environmental Control Technical Guideline No. 7 Development of Emergency Response Procedures for Incidents Involving Dangerous Goods, June 2011	•						
32	2011	Environmental Control Technical Guideline No. 8 Protection against Ionizing Radiation, June 2011	•						
33	2011	Environmental Control Technical Guideline No. 9 Guidelines for Service Station Wastes Management Disposal, June 2011	•						

34	2011	Environmental Control Technical Guideline No. 10 Guidelines for the Disposal and Re-Use of Used Chemical Containers, June 2011	•			•			
35	2011	Environmental Control Technical Guideline No. 11 Safety in Handling Asbestos, June 2011	•			•			
36	2011	Environmental Control Technical Guideline No. 12 Guidelines for Marble, Mosaic and Ceramic Tiles and Related Products Factory, June 2011	•			•			
37	2011	Environmental Control Technical Guideline No. 13 Environmental Regulations for the Reuse of Treated Wastewater, June 2011	•			•			
38	2011	Marine Technical Guideline No. 1 Oil Spill Response and Preparedness, April 2011	•			•			•
39	2011	Marine Technical Guidelines No. 2 Tourism and Travel within the Emirate of Dubai, June 2011	•			•			
40	2011	Marine Technical Guideline No. 3 Marina Environmental Management Requirements, June 2011	•			•			•
41	2014	Environmental Planning Technical Guideline No. 5 Environmental Site Assessment and Restoration of Contaminated Sites, December 2014	•			•			
42	2011	Environmental Planning Technical Guideline No. 6 Requirements for the Discharge of Waste Gases, Fumes and Particulates to the Atmosphere, April 2011	•			•			
43	2014	Environmental Planning Technical Guideline No. 7 Policy on the Control of Ozone Depleting Substances, December 2014	•			•			
44	2014	Environmental Planning Technical Guideline No. 8 Management of Recyclable Waste Material, December 2014	•			•			
45	2014	Environmental Planning Technical Guideline No. 9 Requirements for Temporary and Permanent Concrete Batching Plants, December 2014	•			•			
46	2014	Environmental Planning Technical Guideline No. 10 Waste Minimization, December 2014	•			•			
47	2009	Waste Management Department Technical Guideline No.1 Waste Collection and Transportation Services, December 2009	•			•			
Trakhees – Jebel Ali Free Zone									
48	N/A	Environmental Health & Safety Guidelines & Regulations - various	•			•	•		•

4. Policies, Data Holdings and EBM Case Studies

4.1. Bahrain

4.1.1. Policies and Data Sources

No.	Organization	Department	Relevant Policies	Data Types
1	Supreme Council for Environment	Environmental Assessment and Control	• Working towards implementing environmental compensation schemes • Regulation of reclamation activities to limit environmental damage • Taxation of dredgers - dredging companies now have to register type of dredging operations which dictates annual fees/ taxes • Ensuring industrial effluent discharges meet national standards	• Environmental Impact Assessment Reports • Data (locations and size) on coastal projects, dredging and reclamation activities • Effluent monitoring data
2		Biodiversity Directorate	• Establish and manage a network of Protected Areas using the Ecosystem Based Approach. • Implementation of the National Biodiversity Strategy and Action Plan (NBSAP) • Work towards meeting international goals and targets (e.g. the 2020 Aichi Biodiversity Targets) • Regulate import/export of wild plants and animals as per CITES • Encourage and support mangrove planting initiatives	• Locations and sizes of existing Protected Areas • List of known plant and animal species in Bahrain • Data on imported/exported species (flora and fauna) for as far back as 2012.
3	Agriculture Affairs and Marine Resources	Marine Resources Directorate	• Marine rehabilitation and habitat compensation through the deployment of artificial reefs, promoting aquaculture and coral nurseries	• List of Fish species • Number of fishing permits • Types of fishing gear • Annual fish landings (2000 to 2012)

	(Under the Ministry of Works, Municipalities Affairs and Urban Planning)		• Reduce the number of fishing permits by providing financial incentives for fishermen who want to give up their permits • Regulating shrimp fishing	• Annual fish landings by type (e.g. crustaceans, jellyfish, finfish, shrimp etc.)(2004-2013) • Annual fish landing by gear type (2004 – 2012) • Market values of fisheries (2000 to 2012) • Monthly wholesale and retail prices by fish type • Location of artificial reef installations • Locations of designated shrimp fishing grounds
4	Ministry of Industry and Commerce	Tourism and Exhibitions Authority	• Guarantee constant development of the Tourism Industry based on a sound sustainable infrastructure, and social and cultural practices (relevant due to Bahrain's culturally and historically close relationship with the marine environment)	• Locations of marine and coastal related tourism sites
5	Bahrain Authority for Culture and Antiquities	(No directorate or individual concerned with Natural Heritage)	• Protect, develop and promote Bahrain's heritage site especially Bahrain's UNESCO WHS (i.e. the Bahrain Fort and the Muharraq Pearling Route both of which include marine elements)	• Locations of natural heritage sites and UNESCO World Heritage Sites related to the Marine Environment
6	Ports and Maritime Affairs	Marine Safety and Environment Protection	• Ensuring MARPOL (Annex I, II, V) is enforced • Encourages ship masters to follow other MARPOL annexes (even though Bahrain is not signatory to them) and to take due diligence with respect to the marine environment	• Data related to violations

4.1.2. EBM Case Studies

No.	Details	Description

1	**Environmental Management Plan for *Najwat and Hayr Bul Thamah, Hayr Shtayyeh and Hayr Bu Am'mah* (Northern Oysterbeds)**
	
	Project Elements
	
	• Stakeholder Engagement
	• Economic Valuation
	• Baseline Data Collection
	
	Main Stakeholders
	
	• Supreme Council for Environment (SCE)
	• Bahrain Authority for Culture and Antiquities (BACA)
	• United Nations Environment Programme – Regional Office of West Asia (UNEP-ROWA)
	• Various governmental bodies, private sector and civil society
		Background: *Najwat* and *Hayr Bul Thamah, Hayr Shtayyeh* and *Hayr Bu Am'mah* are offshore oyster bed sites located to the North of Bahrain. In 2012, the oyster beds were inscribed as UNESCO World Heritage Site under the title 'Pearling, a testimony of island economy'. Although they have been awarded international recognition, the sites have not yet been designated in national legislation as a protected area.
		
		Aim: Applying the Ecosystem Based Approach (EBA) in order to strengthen environmental protection of *Najwat* and *Hayr Bul Thamah, Hayr Shtayyeh* and *Hayr Bu Am'mah.*
		
		Main Activities: The project was jointly led by the SCE and BACA in collaboration with UNEP-ROWA. During the project period, four national stakeholder workshops were held and succeeded in attracting stakeholders from across government, the private sector and civil society. A number of studies based on the principles of EBA were also carried out, including a stakeholder analysis and an effort to evaluate the economic value of ecosystem services provided by marine resources. The project resulted in an environmental management plan for the oyster bed sites based on the principles of EBM.
		
		Project Details:
		
		• Date: Nov 2012 – March 2014
		• Location: Northern Oyster Beds, Kingdom of Bahrain
		• Further details available from:
		  ○ The Supreme Council for Environment, Bahrain
		  ○ Chapter 2, Section 4 of the Bahrain Fifth National Report to the Convention on Biological Diversity (2015): https://www.cbd.int/doc/world/bh/bh-nr-05-en.pdf

4.2. Iran

4.2.1. Policies and Data Sources

No.	Organization	Department	Relevant Policies	Data Types
1	Department of Environment	Deputy for Natural Environment and Biodiversity	• Compensation for loss of habitats due to development projects (e.g. coral reefs, mangroves etc.) • Restoration and expansion of mangrove in Iran	• Habitat maps for mangroves, coral reefs • Marine wildlife data (e.g. marine turtles)
2		Deputy for Marine Environment	• National Coastal Zone Management Plan (currently being updated)	• Marine pollution data (NB projects last 2-3 yrs at a time, so data is not continuous)
3	Ministry of Agriculture -Jihad	Iran Fisheries Organisation	• Sector plan for the development of fisheries and aquaculture i.e. increase production of fish protein • Sixth five year plan (2017 – 2022): increase fish production from 950 ktpa (2014) to 1.5 Mtpa by 2022 by investing in under-utilised stocks (e.g. lanternfish, hairtail), encouraging high seas fishing, encouraging investment in mariculture and encouraging consumption of seafood in domestic market. • Culture of *L. vannamei* (non-indigenous species of shrimp) to mitigate disease risk • Fisheries management using closed seasons (e.g. shrimp fishery only open for around 45 days each year) • Shrimp and some demersal stock enhancement • Habitat enhancement using artificial reefs (pilot stage) • Protection of nursery and spawning areas • Encouragement of co-management • Empowering fisheries cooperatives • Ban on new fishing licences and control aquaculture licenses	• Catch data for 60 species since 1997, including catch per unit effort (CPUE) • Aquaculture production by species • Stock enhancement data • Marine habitat maps (limited – mostly held by Universities) • Import of marine species and diseases of aquatic animals (with Iranian Veterinary Organisation)

			• Empowerment of fishing Guard • Government buy back scheme for bottom trawlers to reduce capacity of bottom trawling fleet	
4		Iran Fisheries Research Organisation (IFRO)	• Conduct research on aquaculture (freshwater, inland, marine), Sturgeon, Tilapia, Sea Cucumber, aquatic molecular genetics and bioprospecting, marine ecology, offshore fisheries, *Artemia*, fish processing • National research collaboration with Iranian Universities and Institutions (e.g. AREEO, Shrimp Research Centre, South Aquaculture Research Centre) on aquaculture, marine ecology, fish processing. • International research collaboration with WWF-Pakistan on climate change, protected areas, sustainable fishing	• Fish stock assessment data • Biological oceanographic data including plankton • Iranian Journal of Fisheries Science (Jan 2005 to April 2017 on line) • Library established 1990, affiliated to 16 other libraries

4.2.2. EBM Case Studies

No.	Details	Description
1	**Net Clearance from Reefs in the Gulf** **Project Elements** • Biodiversity Conservation **Stakeholders** • Department of Environment (Busher and Kharg Office) • Border Guard Command • Local community	**Background:** Extensive coral communities have developed around islands in the Iranian waters of the Gulf. These are productive fishing grounds but using gillnets and traps in coral rich areas inevitably lead to loss of this gear, which damage the habitat and continue fishing passively ('ghost fishing'). This can lead to significant bycatch of commercially important species of fish as well as marine wildlife (e.g. Hawksbill Turtles that nest on the islands). **Aim:** To remove lost and abandoned fishing gear from coral rich areas around Kharg and Kharko Islands **Main Activities:** The project removed fishing gear from the seabed within 2 km of Kharg and Kharko Islands in Northern Iranian Gulf waters. **Project Details**: • Date: July 2013 • Location: Kharg and Kharko Islands, Iran • Further details available from:

		Name: Hossein Delshab Organisation: Busher and Kharg Office of Department of Environment
2	**Series of International Conference on Environmental Planning and Management** **Project Elements** • Awareness and Coordination • Dissemination of results **Stakeholders** • University of Tehran • University of Technology	**Background:** The academic community forms the backbone of the community of practice in Iran in terms of environmental planning, environmental impact assessment etc. Every few years, a conference, the International Conference on Environmental Planning and Management, is held in Tehran to bring practitioners together to share experiences and network. This community is therefore important for future coordination and engagement with respect to ecosystem based management in Iran. **Aim:** To coordinate and exchange experience on environmental planning and management **Main Activities:** International Conference on Environmental Planning and Management held every three years in Tehran, with conference proceedings published in English and Farsi. Subjects include climate, water resources, environmental planning (including EBM), EIA, land use planning, HSE, climate change, environmental policy, environmental health, GIS • First Conference: Feb 2013 • Second Conference 15-16 May 2015 • Third Conference: 29-30 October 2013 • Forth Conference: 23 – 24 May 2017 **Project Details**: • Date: May 2017 (most recent conference) • Location: Tehran • Further details available from: Name: Dr. Saeed Karimi Organisation: University of Tehran Contact Details: Tel: ++98 (21) 66404647 Email: env_conf@ut.ac.ir

3	**Transplanting corals to compensate for impacts from Port Construction, Char Bahar** **Project Elements** • Biodiversity Conservation **Stakeholders** • Port and Maritime Organisation • Offshore Fisheries Research Centre Charbahar, Iranian Fisheries Research Organisation	**Background:** The expansion of Char Bahar Port inevitably lead to disturbance and impact of the seabed during dredging and construction work. **Aim:** To minimize the impact on coral communities and marine biodiversity in the affected area **Main Activities:** Transplanting coral communities out of the footprint of the potential zone if impact of Shahid Beheshti Port and into a receiving site with suitable characteristics for the corals to continue growing. The receiving site is 3.5 km from the donor site at Hotel Lipar. Corals were attached to areas (5m x 10m) of concrete blocks placed on the seabed in a total of 37 sites to make a total of 1850 m^2. Corals were removed by hand and placed in specially designed baskets that permitted the transport of coral without the need for removing them from the water. Corals were attached using hydraulic cement and monitored for a period of 6-8 months. A total of 28,000 colonies were transplanted, and monitoring indicated that the methods were very successful. **Project Details**: • Date: November 2011 • Location: Char Bahar Bay, Iran • Further details available from: Name: Dr Daniel Ajdari Organisation: Offshore Fisheries Research Centre, Charbahar (an office of IFRO) Contact Details: Tel: +98 54 3532 0452 Email: danielajdari@yahoo.com

4.3. Iraq

4.3.1. Policies and Data Sources

No.	Organization	Department	Relevant Policies	Data Types
1	Ministry of Environment (MoE)	Council for Protecting and Improving the Environment	• Encourage sustainable development as outlined in National Environmental Strategy and Action Plan for Iraq (2013 – 2017) including sustainable management of marine fisheries, establishment of marine and coastal protected areas and rehabilitation of degraded coastal habitats. • Target on protection and sustainable use of biodiversity. • Promote long term maintenance of ecosystems. • Restore natural biodiversity. • Provide an environmental perspective on plans, projects and national programmes before they are implemented. • Minimize environmental impact. • Provide advice on environmentally friendly alternatives. • Provide guidance for establishing environmental policies within the public sector. • Coordinate between ministries and other stakeholders in the preparation of local environmental projects before implementation. • Coordinate and support the activities of ministries active in the area of environmental protection. • Cooperate with other ministries in for the designation of sites of natural and cultural heritage and the nomination for such sites to the world heritage list. • Establish protected areas. • Develop relations with international bodies regarding environmental issues. • Implement National Biodiversity Strategy and Action Plan (2015-2020) (NBSAP).	• Stakeholder database • Details of national and local environmental improvement and protection schemes. • Details of transboundary schemes. • Locations of protected areas and areas of natural heritage sites and UNESCO World Heritage Sites • Database of EIA practitioners • Details of international involvement/knowledge transfer

No.	Organization	Department	Relevant Policies	Data Types
			• Increase the knowledge and awareness of the value of biodiversity. • Use and value biodiversity in a sustainable manner. • Increased public participation. • Work towards meeting national (e.g. National Strategic Targets) and international goals and targets (e.g. the 2020 Aichi Biodiversity Targets). • Support legal regulations on environmental protection and improvements of the governorates. • Update legislation and regulations. • Increase monitoring to protect and improve water quality. • Increase training opportunities. • Targets on reduction of oil pollution, radioactive contamination and integrated management of hazardous chemicals. • Strengthen regulatory system.	
2		South Area	• Ensure Council's policies and targets are implemented locally. • Reduce marine pollution. • Ensure industrial effluent discharges meet national standards. • Promote pollution prevention techniques. • Increase environmental awareness. • Reduce potentially contaminative discharges.	• Details of all industries. • Environmental Impact Assessment Reports. • Locations of discharges. • Effluent monitoring data. • Other information data (water quality etc.). • Governorate-level environmental protection and improvement schemes. • Details of any pollution incidents.
3		International Environmental Relations Department	• Promote International coordination with regards to promoting sustainability and environmental protection.	• Stakeholder database. • Details of international bodies working with MoE.

No.	Organization	Department	Relevant Policies	Data Types
				• Details of transboundary projects/effects.
4		Basra Council of Environment Protection	• Coordinate between stakeholders in the preparation of local environmental projects. • Designate sites of natural and cultural heritage. • Support environmental regulations at a local level.	• Details of local environmental improvement projects. • Details of local natural and cultural heritage designated sites.
5		General Radiation Protection	• Licensing conditions and decisions. • Verify conditions are being met.	• Details of all radioactive sources.
6	Ministry of Transportation (MoT)	General Company Ports of Iraq (GCPI)	• Dredging activities. • Redevelopment of port sector (additional dredging, redevelopment of existing ports).	• Locations of shipwrecks. • Details of dredging activities.
7		Marine Inspection Department	• Encourage ship captains to act in an environmentally friendly manner. • Ensure vessels operate in an environmentally efficient manner.	• Details of all marine activities/work permits issued.
8				
12	Ministry of Water Resources (MoWR)	Environmental Policies Centre	• Integrated management programme for sustainable development. • Reliable supply of irrigation and municipal water during drought periods. • Restore and maintain marshlands. • Promote efficient water use. • Implement efficient water supply and water use technologies. • Develop economically efficient and environmentally sound water management strategies policies, procedures and regulations. • Operate and maintain river basin water and delivery systems.	• Environmental data (water flow, quality, groundwater levels). • Location of infrastructure (dams, barrages, pumping stations). • Details of proposed infrastructure. • Transboundary knowledge.

No.	Organization	Department	Relevant Policies	Data Types
			• Balance national economic development with social well-being and environmental quality in an equitable manner. • Establish international water sharing agreements.	
13		Center for the Restoration of Iraqi Marshlands	• Restore 1970 footprint of the marshlands. • Continue sustainable restoration. • Develop plans and activities for the conservation and proper use of the marshlands. • Ensure conservation and protection of the marshlands. • Improve communication with ministries and governorate departments as well as oil companies. • Collaborate with national and international stakeholders. • Increase involvement of local people in projects. • Job creation for local people. • Establish international agreements.	• Ecological study, analysis and practical experimentation. • Marsh hydrological modelling data. • Future projects. • Wetland classification system. • Stakeholder views.
29	Ministry of Planning (MoP)	Department of Sustainable Development	• Develop projects in line with the National Development Plan. • Achieve Third Millennium Development goals (Goal VII: Guaranteeing the survival of the environment). • Promote green investment.	• Masterplanning.
30		Basra Planning Directorate	• Develop strategies and patterns of local development at the provincial level and administrative components that are consistent with national and regional policies. • Coordinate and follow up the affairs of the district planning in the Governorate in line with the National Development Plan. • Restriction of potentially contaminative industries away from sensitive receptors. • Information and knowledge sharing with central and other governorate levels.	• Database of proposed projects. • Areas of UXO/DU contamination. • Masterplanning.

No.	Organization	Department	Relevant Policies	Data Types
			• Looking to adopt a participatory approach to local planning and development.	
31		International Cooperation	• Coordination with international partners. • Review and approval of projects funded by donor countries and institutions.	• Database of international partners and stakeholders. • Details of transboundary projects. • Database of projects (recent, ongoing and proposed).
36	Ministry of Agriculture	General Authority for Animal Resources Development, Fisheries Department	• Regulate fishing activities. • Develop fisheries and aquaculture. • Encourage the production of indigenous fish.	• List of fish farms. • Locations of fish farms. • List of licenses for fishing and aquaculture. • Details on equipment used and species landed.

4.3.2. EBM Case Studies

No.	Details	Description
1.	**Management Plan for the Hawizeh Marsh RAMSAR Site of Iraq** **Project Elements** • Environment & water resources management • Management of cultural and social issues • Stakeholder engagement • Capacity building • Baseline data collection and interpretation. • Mapping **Main Stakeholders** • Iraq National Marshes and Wetlands Committee • Nature Iraq • UNEP • Italian Ministry of the Environment, Land and Sea • Canada Department for the Environment, Centre for Environmental Stewardship & Conservation	**Background:** The Hawizeh Marsh is part of the Mesopotamian Marshlands. The marshes serve as an important wintering site for globally threatened birds and support a wider, intricate ecosystem. Land reclamation, war and reduced flow of the Tigris & Euphrates Rivers has resulted in the significant decrease in the marshland since the 1950s. The marsh was designated a Ramsar site in 2007. **Aim:** The management plan included five 'Strategic Goals': i) Maintain the ecological character of the Hawizeh Marsh (focusing on those that justify its RAMSAR designation); ii) Maintain the natural biological diversity of this area; iii) Restore wildlife populations and needed habitats for birds and other species; iv) Establish a safe and secure living environment for the people living here and using natural resources; v) Promote sustainable economic opportunities for local people. **Main Activities:** Activities undertaken included the preparation of digital maps identifying and updating the status, characteristics and features of the Marshlands; consultations with RAMSAR experts and Iraqi MoE officials; a workshop held in Amman involving Iraqi, Italian, Jordanian and Canadian experts. The project resulted in a plan consisting of fourteen management objectives to assist the Government of Iraq in its implementation of national Ramsar Convention responsibilities. **Project Details**: • Date: 2005-2008 • Location: Hawizeh Marshlands • Further details available from: ○ Management Plan for the Hawizeh Marsh Ramsar Site of Iraq Volume 1: http://ar.natureiraq.org/uploads/9/2/7/0/9270858/_hawizeh_plan_2nd_draft_volume_1_dec_1_2008.pdf Volume 2 : http://ar.natureiraq.org/uploads/9/2/7/0/9270858/_hawizeh_plan_2nd_draft_volume_2_dec_1_2008.pdf

No.	Details	Description

2.	**Pilot Project on Water Buffalos**
	
	Project Elements
	
	• Observational field trip
	• Implementation of a pilot farm
	• Knowledge sharing exercises
	
	Main Stakeholders
	
	• Nature Iraq
	• Italian Ministry for the Environment, Land and Sea
		Background: Water Buffalo are arguably synonymous with the Mesopotamian Marshes, even being used as an indicator for marsh restoration (they population number were greatly reduced because of the draining prior to 2003 and have subsequently begun to increase again). However, one suggestion is that over reliance of local farmers on water buffalo is having an adverse effect on the marshland. This suggestion was made primarily in association with the Central Marshes that were under consideration for National Park designation.
		
		Aim: 'This pilot project aimed at describing buffalo distribution as well as its possible impacts on the National Park "core area" … and to identify constraints and opportunities for a sustainable integrated development approach to improve [farming efficiency]'
		
		Main Activities: The project involved the implementation of a 'pilot farm' where research was performed with in parallel with the monitoring of the production and health of the buffalo allowing the collection of data to identify best practice techniques. The project will then use this information to: teach locals how to manage their farm buffalos; teach locals the right way to collect, store and sell milk; teach locals the right way to improve the health of the buffalos; implement scientific research related to the buffalos.
		
		Project Details:
		• Date: 2007-2008
		• Location: Central Marshes to the north of Chubayish City in Thi Qar province.
		• Further details available from:
		  ○ The New Eden Project – Executive Summary 2003 – 2013 Activities – Section D Number 10
		  ▪ http://www.natureiraq.org/uploads/5/2/9/9/52997379/report_new_eden.pdf

No.	Details	Description

3.	**Pilot Project on Fish Cages**
	
	Project Elements
	
	• Design
	• Implementation
	• Monitoring, management and analysis
	• Capacity building
	
	Main Stakeholders
	
	• Nature Iraq
	• Italian Ministry for the Environment, Land and Sea
		Background: Aquaculture is an important income-generating activity in Iraq but is not always conducted in an efficient, sustainable or environmentally friendly manner. Most of inland fishing activities in Iraq consist of establishing fish ponds fed by and drained to the closest available water resource. Such activities have implications for land ownership, pollution from generators (used to pump water and to oxygenate the pond), and high construction and operating price.
		
		Aim: This pilot project aimed to support socio-economic development in the marsh areas by promoting the sustainable use of fisheries and increasing awareness of fisherman by teaching them about aquaculture and environmental issues. The project focused on the protection of the 'core area' of the Central Marshes, then under consideration for National Park designation and the development sustainable income for those living locally to the proposed National Park.
		
		Main Activities: The main activities of the project were: design of floating fish cages; identification of suitable sites (based on criteria published by the FAO and other agencies); defining contracts for the supply of fingerlings, food, cages, nets and framework; training the personnel to manage the fish maintenance; management and monitoring of the fish cage; Bi-monthly visits conducted by Nature Iraq staff and Italian experts.
		
		Project details:
		
		• Date: 2007-2009
		• Location: Euphrates River near to Abu Subat
		• Further details available from:
		  ○ The New Eden Project – Executive Summary 2003 – 2013 Activities – Section D Number 16
		  ▪ http://www.natureiraq.org/uploads/5/2/9/9/52997379/report_new_eden.pdf

No.	Details	Description

4.	**Darbendikhan Lake Restoration Project**
	
	Project Elements
	
	• **Phase 1 -** Characterization of Darbendikhan Lake Basin
	• **Phase 2 -** Activation of the urgent short-term investment program and development of the masterplan for water resource management of Basin
	• **Phase 3-** Implementation of the masterplan
	
	Main Stakeholders
	
	• Nature Iraq
	• Italian Ministry for the Environment, Land and Sea
		Background: This project was motivated by the reporting of a singular pollution event on the Tanjero River, a main tributary of the Darbendikhan Lake, that result in large scale fish, turtle and other fauna death. However, on further investigation of the event, there was widespread disagreement as to the exact cause of the event and on conflicting results recorded and analyzed by various entities. It was however clear that the environmental problems at the lake were wider than only the Tanjero river and so a project to *'identify the problems in terms of pressure on the environment and current state of environmental components, but also prioritize the actions to address the identified problems and furthermore to prevent future problems'.*
		
		Aims: The main aim of the project *'is to foster sustainable use of surface waters, harmonizing the needs for socio-economic development of the territory with the conservation and enhancement of the ecological structure and functions of Darbendikhan and its watershed'.*
		
		Main Activities: The project considered the entire Iraqi basin for the lake and so involved many fundamental activities including; the characterization of the Basin (involving a review of available information and wide scale data collection); the development of a short term action program; the implementation of urgent actions; the development of a master plan for water resources management of Darbendikhan Lake Basin; the implementation of the masterplan; and the involvement of stakeholders through each of the aforementioned project stages.
		
		Project details:
		
		• Date: 2008-2009
		• Location: Darbendikhan Lake, Sulaimani Governorate
		• Further details available from:
		  ○ The New Eden Project – Executive Summary 2003 – 2013 Activities – Section D Number 22
		  ▪ http://www.natureiraq.org/uploads/5/2/9/9/52997379/report_new_eden.pdf

No.	Details	Description
5.	**Empowering Iraq's First National Park** **Project Elements** • Data Collection • Capacity building • Socio-economic development • Advocacy action • Stakeholder engagement • Communication building **Main Stakeholders** • Nature Iraq • BirdLife • Aage V. Jensen Charity Foundation	**Background:** Program to improve socio-economic circumstances and culture of Marsh Arabs while also protecting the biological diversity and natural resources of the Mesopotamian Marshlands throughout an integrated program of research, development activities, training, advocacy and information sharing. **Aims:** An additional aim of this project will be to assist in bridging gaps between government bodies, including the Ministry Environment, Ministry of Water Resources, local councils, and governorate-level bodies and the local community members whose lives will be directly affected by the institution of the national park. **Main Activities:** Data collection and dissemination – bird counts, socio-economic surveys of fishing, hunting and gathering practices. Capacity building of government officials and the community to reduce unsustainable fishing and hunting activities and encourage better management of the marshlands. Furthermore, the project allowed for the regular dialogue between government bodies. **Project details:** • Date: 2014 • Location: Central Marshes National Park • Further details available from: • http://www.natureiraq.org/news/press-release-empowering-iraqs-first-national-park

No.	Details	Description
6.	**Key Biodiversity Areas (KBA) Program** **Project Elements** • Baseline data collection • Data analysis and interpretation • Biodiversity conservation • Capacity building • Advocacy action **Main Stakeholders** • Nature Iraq • Ministry of Environment • Italian Ministry of the Environment, Land and Sea	**Background:** Due to socio-political reasons, very little assessment of the wildlife populations of Iraq was undertaken between 1980 - 2003. Thus, surveys of Iraqi sites which are known or thought to be important for their wildlife component were undertaken. The project was also designed to support long-term restoration and management planning for important habitats such as the Mesopotamian Marshlands. **Aim:** The program was intended to identify, document and protect a network of sites critical for the conservation of Iraq's biodiversity. **Main Activities:** The program included site-orientated research and monitoring, education, advocacy action, management, and national and international legal protection. Scientific data collection was used to underpin the conservation and management of the KBAs and to guide practical management and action at KBAs and to target political and legal mechanisms to achieve protection. A total of 82 sites have been selected as ecologically important for non-avian criteria, birds or plants. Training for conservationists and botanists in plant identification, survey design, filed skills, data management and plant collecting was undertaken. **Project Details**: • Date: 2004 - 2014 • Location: Countrywide (Khor Al-Zubair and Fao Peninsula have been classed as ecologically important) • Further details available from: Name: Azzam Alwash Organization: Nature Iraq Contact Details: House 29, Street 47, Ashti District 104, Quarter 04, Zone 01, Sulaimani, Kurdistan Region, Iraq Tel: +964535292007 Email: azzam@natureiraq.org

No.	Details	Description
7.	**USAID- *Inma* Agribusiness Program** – Fish production **Project Elements** • Training on fish cage production • Continued monitoring of market and production of the aquaculture program • Provide technical assistance to fish producers • Sponsorship of three Iraqi Aquaculture Council meetings • Water quality assessment • Training for Ministry of Agriculture staff • Delivery of Hungarian broodstock females **Main Stakeholders** • USAID- *Inma* • Iraqi Aquaculture Council meetings • Hatcheries including the *Middle East Fish Farm (MEFF)* and the *Euphrates Fish Farm (EFF)*	**Background:** The purpose of the wider USAID- *Inma* Agribusiness program was to provide agricultural and business development services to USAID beneficiaries in strategic locations in Iraq to promote economic diversification and job generation with an emphasis on the growth of agriculture and agribusiness sectors in the provincial, regional and sub regional economies. **Aim:** This aspect of the wider project aimed to improve the 'protein value chain' from the fishery sector with by implementing a cross breeding project to produce hybrid fingerlings which would help meet consumer demand for fish protein. **Main Activities:** The program imported broodstock from Hungary to produce fast growing hybrid fingerlings which would help meet consumer demand for fish protein. Thirty-two hatcheries received broodstock and produced hybrid fingerlings for the market place. Data collection regarding number of fingerlings produced, number sold and number harvested was continuously collected. USAID-*Inma* technical staff provided continual technical assistance to producers and MoA staff concerning nutrition, fish health and licensing issues. A comprehensive water assessment was implemented to measure the impact of aquaculture on available water resources. A comprehensive monitoring plan was designed and implemented to monitor the growing aquaculture industry. **Project details:** • Date: 2009-2012 • Location: Country wide (predominantly in northern Iraq) • Further details available from: ○ http://pdf.usaid.gov/pdf_docs/PA00HN3F.pdf

No.	Details	Description
8.	**Hawizeh Stakeholder Project 2015** **Project Elements** • Baseline data collection • Biodiversity conservation • Capacity building • Advocacy action **Main Stakeholders** • Nature Iraq	**Background:** The Hawizeh Marshes are a complex of marshes that straddle the Iraq and Iran border. This marshland is the most intact part of the original Mesopotamian Marshland complex. **Aim:** Raising awareness about Hawizeh Marshes Ramsar Site among local communities and building their capacity to enable participatory approach in managing the site. **Main Activities:** Survey of 12 villages near to the marshes whose main incomes sources were directly related to the marsh resources to better understand the drivers of the changing conditions and deteriorating resources of the marshes. Comprehensive socio-economic dataset created including fisheries, water buffalo husbandry, other traditional industries, oil development, infrastructure and immigration. Using this data, discussions were undertaken with local communities on alternative economic activities to reduce the pressure and to promote the sustainable use of the marshes. Alternative livelihood opportunities were identified and presented to the local communities. A total of 16 awareness-raising workshops were undertaken focusing on the importance of the marshes, the importance of the sustainable use of wetland recourse, negative effects of overfishing and how the marshes can be managed sustainable. Also, 3,000 educational flyers were distributed. A total of 25 groups were established from local communities and activities which will be involved in the management of the marshes. **Project Details:** • Date: 2014 - 2015 • Location: Hawizeh Marshes • Further details available from: Name: Jassim Al-Asadi Organization: Nature Iraq Contact Details: House 29, Street 47, Ashti District 104, Quarter 04, Zone 01, Sulaimani, Kurdistan Region, Iraq Tel: +964535292007 Email: jassim@natureiraq.org

No.	Details	Description
9.	**Biodiversity and Ecosystem Management in the Iraqi Marshlands: Screening Study on Potential World Heritage Nomination** **Project Elements** • Literature review • Capacity building • Stakeholder engagement **Project Stakeholders** • IUCN ROWA • UNEP • Ministry of Environment • UNESCO	**Background:** Damming and draining of the Mesopotamian Marshlands from infrastructure developments as well as political reasons has led to extensive environmental damage and a significant reduction in the size of the marshlands. The marshlands are a key wintering and staging area of intercontinental migration of birds and coastal fisheries are dependent on this habitat for spawning migrations and nursery grounds. **Aim:** Joint UNEP-UNESCO initiative to use the Word Heritage nomination and management planning process to ensure the sustainable development of the Iraqi Marshlands and to conserve the values inherent in the historical, cultural, environmental and socioeconomics characteristics of the area. **Main Activities:** Inventory of data and information on the Iraqi marshland ecosystem including its biodiversity and management since the 1970s and relevant conditions of integrity and requirements for protection and management. Technical guidance on the existing assessment framework and tools for ecosystem management and biodiversity conservation. Guidance on the development of a network among academia, researchers and institutions in the field of ecosystem management and conservation in order to contribute to the planning, implementation and monitoring of the long-term management of the Iraqi marshlands. **Project Details:** • Date: 2011 • Location: Mesopotamian Marshlands • Further details available from: Name: Tobias Garstecki Organization: IUCN ROWA Contact Details: Um Uthaina, Tohama Str. No. 6, PO Box 942230, Amman 11194, Jordan Tel: +9625546912 Email: westasia@iucn.org

No.	Details	Description
10.	**Canada-Iraq Marshlands Initiative (CIMI)** **Project Elements** • Capacity building • Sustainable development • Baseline data gathering • Data interpretation and assessment **Project Stakeholders** • Canadian International Development Agency (CIDA) • Ministry of Environment • Ministry of Water Resources • Marine Sciences Centre • Thi Qar University	**Background:** Damming and draining of the marshlands from infrastructure developments as well as political reasons has led to extensive environmental damage and a significant reduction in the size of the Mesopotamian Marshlands. The marshlands are a key wintering and staging area of intercontinental migration of birds and coastal fisheries are dependent on this habitat for spawning migrations and nursery grounds. **Aim:** The goal of the CIMI was to contribute to the environmental sustainability of the Iraqi Marshlands by working with civil society to help manage, develop and restore the marshes. **Main Activities:** Phase I: Enhancing the scientific capacity of Iraqi researchers and universities in the areas of environmental monitoring and analysis. Phase II: Emphasis on wetland planning and management and meeting the basic needs of marsh residents by the development of an index of ecosystem health to better understand the spatial variability in water and soil quality in the marshes and identifying key factors that influence the restoration of the marshes and recommendations relating to each factor. **Project Details:** • Date: 2004 - 2009 • Location: Mesopotamian Marshlands • Further details available from: Name: Dr Steve Lonergan Organization: Canada-Iraq Marshlands Initiative Contact Details: Department of Geography, University of Victoria, PO Box 3060 Stn CSC, Victoria, BC, V8W 3R4, Canada Email: Lonergan@uvic.ca

4.4. Kuwait

4.4.1. Policies and Data Sources

No.	Organization	Department	Relevant Policies	Data Types
1	Kuwait Environment Public Authority	Technical Affairs Directorate	• Monitoring the marine, physical, chemical, air and oil factors, their effects on the marine pollution or balance. • Determining the sources and levels of the marine pollution resulted from the shipping traffic in the territorial waters, and others resulted from the industrial waste disposal and sanitary wastewater in the sea. • Pursuing the regional and international agreements related to the marine pollution resources and rates, supervising their application and adhering to their standards. • Monitoring the oil leakage and the other pollutants into the seawater, defining the leaked material and its quantity, the ways of controlling them. • Setting plans and programs for monitor the marine pollution, specifying its reasons and procedures to control it. • Executing the environmental, marine, physical and chemical surveys and studies, monitor them and identifying their effects on the sea life.	eMisk Portal provides the following data: • Bathymetry and geology. • Sources of pollution, marinas, groins, slipways, etc. • Wave climate, currents and tides. • Sediment budget, shoreline dynamics and grain size. • Water quality: Physical, chemical and biological. • Ecology: Coral reefs, mangrove, sea weeds, etc. • Fisheries: Species • Effluent monitoring data

		Environment Monitoring Affairs Directorate.	• Ensure compliance with EIA regulations and the Environment Law. • Licensing for coastal projects	• Environmental Impact Assessment Reports • Data on coastal projects, dredging and reclamation
2	Public Authority for Agriculture and Fisheries	Fisheries Resource Directorate	• Regulating fishing effort • Promoting aquaculture and juvenile nurseries • Monitoring fish stock • Providing Subsidies to workers in the fishing sector • Regulating and licensing of boats	• List of Fish species • Number of fishing permits • Types of fishing gear • Annual fish landings • Annual fish landings by type (e.g. crustaceans, jellyfish, finfish, shrimp etc.)(• Annual fish landing by gear type • Market values of fisheries • Monthly wholesale and retail prices by fish type • Location of artificial reef installations • Locations of designated shrimp fishing • Number of fishing vessels
3	Ministry of Communication	Department of Marine Transport	• Ensuring MARPOL (Annex I, II, V) is enforced	• Water temperature (Coordination with KISR)
4	Kuwait Ports Authority		• Control, licensing and monitoring of shipping activities • Ensuring compliance with marine pollution standards	• Shipping activities • Data related to violations

4.4.2. EBM Case Studies

No.	Details	Description
1	**Ecological Assessment of the Kuwait Oil Company's Artificial Reef** **Project Elements** • Baseline data collection • Data analysis and interpretation • Biodiversity Conservation **Main Stakeholders** • Kuwait Oil Company • KISR	**Background:** The establishment of artificial reef using reef ball clusters adjacent to non-reef area and Qitat Uraifjan natural reef by KOC as part of the CSR program. **Aim:** An assessment was conducted by KISR between January 2011 and December 2012 to examine abundance of fish and epibenthic species, frequencies of occurrence, individual number of each species and percentage coverage. **Main Activities:** The Qitat Uraifjan natural reef had the most fish and epibenthic species as well as the highest number of each species, followed by KOC's artificial reef and then by non-adjacent areas. The results indicate that KOC's artificial reef has created new habitats for a range of marine life including commercially important fish species. However, recruitment of coral and other reef associated benthos has been limited. The low abundance of coral recruits is probably due to the deployment of the reef ball clusters in a relatively turbid inshore environment at depths were the light is insufficient and sedimentation rates are too high. Results of the monitoring and assessment program are currently being replicated for Kubbar Island. **Project Details**: • Date: 2008 – 2016 (on-going) • Location: Qitat Uraifjan • Further details available from: Name: Shaker Al Hazeem Organisation: Kuwait Institute for Scientific Research Contact Details: Tel: +965 99036936 Email: salhazeem@yahoo.com

4.5. Oman

4.5.1. Policies and Data Sources

No.	Organization	Department	Relevant Policies	Data Types
1	Ministry of Environment and Climate Affairs	Directorate General of Environmental Affairs	• Oman Salinity Strategy (2009) • Coastal Erosion Management Plan (1991)	• Ambient Air Quality Data • National waste statistics • Archive of environmental impact assessment (EIA) and environmental performance reports (EPR) reports • GIS system with basic information relating to pollution, waste, projects, etc.
2		Directorate General of Nature Conservation	• National System of Conservation Areas (1986) • National Conservation Strategy (1992) • National Biodiversity Strategy and Action Plan (2001) • National Masterplan for Mangrove Restoration, Conservation and Management (2004) • Nature Reserves in Oman (2011) • National Action Plan to combat Desertification (2004) • Coastal Zone Management Plan (1991 – 1994) for Musandam, Al Batinah, Muscat, Sharqiyah, Al Wusta and Masirah Island, Dhofar.	• Terrestrial wildlife observations • Marine wildlife observations • Turtle nesting data (Ras Al Hadd and Masirah Island) and satellite tracking data • Visitor numbers to protected areas, diver licenses issued (whole country) • Export permits for biological material

No.	Organization	Department	Relevant Policies	Data Types
3	Ministry of Agriculture and Fish Wealth	DG Fisheries	• Sustainable Management of Fisheries (2015) • Aquaculture Development Strategy • Fishing harbor development strategy • Inshore fisheries plan	• Fish stock assessment data • Fisheries landing data • Location of fish landing sites, ports, harbours and fisheries infrastructure • Registered fishermen and fishing vessels, licenses for recreational fishing
4 5		Marine Science and Fisheries Centre	N/A (Research Organisation)	• Library focused on oceanography, fisheries research, marine ecology and project reports dating back to 1980s. • AVHRR satellite data archive (sea surface temperatures, SST) • Seawater quality data (chemical laboratory analysis & probe data) • Fisheries Development Fund research projects
6		Aquaculture Centre	N/A (Research Organisation)	• Research on aquaculture e.g. feed conversion ratios, breeding cycles of cultured species etc.
8		DG Agriculture	• Sustainable Agriculture and Rural Development Strategy (2010)	• Livestock, crop areas and yields • Agriculture Development Fund research projects
9	Supreme Council for Planning	General Secretariat	• Vision 2020 (1995) • 9th Five Year Development Plan (2019) • Tanfeedh (2017)	• National Oman Planning Information System (OPIS) assembled from relevant stakeholders • Review of government policies • Spatial planning strategy

4.5.2. EBM Case Studies

No.	Details	Description
1	**Monitoring Globally Significant Loggerhead Turtle Population** **Project Elements** • Baseline data collection • Data analysis and interpretation • Biodiversity Conservation • Capacity Building • Advocacy **Main Stakeholders** • Environment Society of Oman • Ministry of Environment and Climate Affairs • Local community • Other concerned ministries	**Background:** Masirah Island supports the second largest Loggerhead Turtle nesting beach. Work in the early 1980s (Ross, 1985) established that the island had 200k nests laid by over 60,000 turtles these figures need adjusting, but subsequent monitoring was not rigorous enough to accurately measure the number of nests and number of turtles and track the success or otherwise of measures put in place by the Government of Oman to conserve this critically endangered species. **Aim:** To collect a scientifically robust time series of Loggerhead turtle nesting data that informs decision making around conservation of this species **Main Activities:** The project is an extension of engagement work with the local community by ESO and MECA about the conservation of Loggerhead Turtles. The work entailed capacity building in data capture and management, design of a rigorous monitoring plan, supply of equipment (ATVs) and supervision during the nesting seasons, and scientific support to analyze, report on the data, present the findings to MECA and advise on next steps. **Project Details**: • Date: 2008 – 2016 (on-going) • Location: Masirah Island, Sultanate of Oman • Further details available from: Name: Suaad Al Harthi Organisation: Environment Society of Oman Contact Details: Tel: +968 2479 0945 Email: salharthi@eso.org.om
2	**Mangrove Restoration, Rehabilitation and Outreach**	**Background:** Mangroves are important and sensitive coastal habitats that provide important ecosystem services including serving as a fish nursery, crab and finfish fishery, wildlife and bird habitat and coastal protection during cyclones and tsunami events. In the Sultanate mangroves are generally associated with wadi mouths where some freshwater input allow the plants to thrive. Oman has a long history of exploiting mangroves for fodder, timber and

	Project Elements • Site Selection • Social Engagement and community planting • Infrastructure development (Mangrove nurseries) • Education/visitor center **Main Stakeholders** • Ministry of Environment and Climate Affairs • JICA • Local community • Other concerned ministries	fuel wood which can be dated back to the Late Iron Age. With technical support from the Japanese International Cooperation Agency (JICA), the Ministry of Environment and Climate Affairs has planted hundreds of thousands of mangrove seedlings over +15 years at tens of locations along the Sultanate's coastline. More recently the scope of the project has been extended to include the development of a mangrove visitor center and board walk in the mangroves at Qurm, Muscat. **Aim:** To maintain and enhance coastal ecosystem services provided by mangroves by developing know-how, capacity and political will for mangrove management and afforestation. **Main Activities:** The project activities started with planning work, training and capacity building of the Ministry's staff by JICA technical experts. Prolonged mentoring of MECA staff by JICA experts was a successful strategy for sustaining the project outputs. MECA staff worked with local communities to produce and plant out mangrove seedlings at multiple sites around the country. **Project Details**: • Date: 2001 (on-going) • Location: Sur, Masirah, Dhofar, Shinas, Sharqiyah Sultanate of Oman • Further details available from: Name: Badr Al Balushi Organisation: Ministry of Environment and Climate Affairs Contact Details: Tel: +968 92373173 Email: badermoon123@gmail.com
3	**Eco-Tourism Planning** **Project Elements** • Baseline data collection	**Background:** Coastal zone planning of the Muscat coastline in the 1990s identified sites for scenic reserves, one of which, Bandar Khayran was then selected as a site dedicated to eco-tourism development. The site is an inlet with spectacular cliffs at its entrances, is set in natural landscape and supports coral communities around the islands and mangroves in sheltered bays of the khawr. Bird life and gazelle are common in the area, and the site includes several secluded beaches that lend themselves to ecotourism activities. The village of Al Khayran with its population of a

	• Data analysis and interpretation • Biodiversity Conservation • Capacity Building • Advocacy **Main Stakeholders** • Ministry of Tourism • Ministry of Environment and Climate Affairs • IUCN • Local community Other concerned ministries	few thousand, many of whom engage in fishing or agriculture, has been identified as having potential for capacity development to serve a new ecotourism market in the area. **Aim:** To develop and promote Bandar Al Khayran for ecotourism activities through active management and planning, development of infrastructure, promotion & capacity building. **Main Activities:** The project activities started with planning work to collate existing information and to map the natural resources of the site. With the base maps development, site selection for enabling infrastructure (e.g. landing jetty, visitor center, trails and paths, camp sites etc.) was undertaken and appropriate by-laws controlling activities was undertaken. Signage has been installed and promotion of the site is currently underway. **Project Details**: • Date: 2011 (on-going) • Location: Bandar Khayran, Sultanate of Oman • Further details available from: Name: Andrew Lawrence Organisation: Ministry of Tourism Contact Details: Tel: +968 99358042 Email: andrew.lawrence@omantourism.gov.om
4	**Pilot Study of Fish Aggregating Devices (FAD) to enhance small scale fisheries** **Project Elements** • Design and Installation of FAD	**Background:** The majority of fish landings in Oman are generated by a day fishing fleet of skiffs operated from villages and beaches. Their maximum range extends to around 50 km from the shoreline and therefore the majority of fishing effort has been expended in the near shore zone. In northern Oman, where the population is greatest and the seabed is typically flat and sandy, there is a tradition of artificial reefs to enhance catch per unit effort (CPUE). However, further east in Northern Sharqiyah, the seabed is often rocky but the continental shelf is narrow so the greatest potential is found in migrating pelagic stocks such as tuna, kingfish, and dorado. Although sometimes difficult to find on the high seas, these species are often found under floating objects at sea, so the installation of fish aggregating devices (FADs) can improve CPUE for artisanal fishermen.

	• Engagement with local fishing communities **Main Stakeholders** • Marine Science and Fisheries Centre • Ministry of Agriculture and Fisheries • Local community • AMNAS and Hydro-graphic Office	**Aim:** To trial the effectiveness of FADs as a means to improve CPUE for local fishermen. **Main Activities:** Site selection was performed by staff from the Marine Science and Fisheries Centre (MSFC) through engagement with local fishing communities and study of charts. Once the sites were selected the FADs were de-signed for the necessary depth and sea conditions, and installed. Following installation, a maintenance period of 12 months ensured that the devices performed as required. Follow up with fishing communities was generally positive, although grievances from the dhow fleet, which uses drifting gill nets, were also recorded. **Project Details**: • Date: Installation 2010 – 11 (on-going operations) • Location: Three sites in Northern Sharqiyah, Sultanate of Oman • Further details available from: Name: Dr Lubna Al Kharusi Organisation: Ministry of Agriculture and Fisheries Wealth Contact Details: Tel: +968 99234796 Email: lubnakharusi@hotmail.com
5	**Installation of artificial reefs to enhance small scale fisheries in Al Batinah** **Project Elements** • Design and installation of artificial reefs • Engagement with local fishing communities • Monitoring	**Background:** In northern Oman, where the population is greatest and the seabed is typically flat and sandy, there is a recent tradition of artificial reefs (ARs) to enhance catch per unit effort (CPUE). Materials used to create artificial reefs in the past have included rocks, date palm trunks and fronds, building rubble, used vehicles, tyres, dis-used boats etc. Since sites were constructed within the traditional fishing areas of specific villages, there was a degree of ownership on the structures which were exploited by their owners using trapping and drop-lining. Conflicts between groups were reported to the Ministry of Agriculture and Fisheries Wealth (MAFW) who devised a plan to install open access AR areas to reduce conflict. In the early 2000's the Ministry of Agriculture and Fisheries started experimenting with AR units constructed from concrete and installed in arrays. Issues that have limited the value of this approach in the past has included substrate conditions and sedimentation. **Aim:** To enhance fisheries landings in Al Batinah using ARs to improve CPUE for local fishermen.

	Main Stakeholders • Ministry of Agriculture and Fisheries • Private sector • Local community	**Main Activities:** The artificial reef program has been delivered through a series of tenders. Large scale site selection was performed by MAFW staff, who prepared tender documents for specialized contractors to produce, design, install and monitor their effectiveness. Areas of up to 20 km in length (e.g. Suwaiq), and with water depths ranging from 10-30 m have been established. **Project Details**: • Date: First installation 2005 (estimated) • Location: Multiple sites, Al Batinah, Sultanate of Oman • Further details available from: Name: Dr Lubna Al Kharusi Organisation: Ministry of Agriculture and Fisheries Wealth Contact Details: Tel: +968 99234796 Email: lubnakharusi@hotmail.com

6	**Fish By-catch Study** **Project Elements** • Study design • Data collection and analysis • Options analysis and policy formulation • Engagement with local fishing communities **Main Stakeholders** • Environment Society of Oman • Ministry of Agriculture and Fisheries • Private sector • Local community	**Background:** Fishing causes a very significant impact on marine wildlife populations through unintentional capture or interaction of wildlife with fishing gear (bycatch). This impact can be a root cause of marine wildlife population declines for species of conservation value such as marine turtles. Bycatch is particularly detrimental were rich fishing grounds coincide with critical habitat for endangered species as is the case around Masirah Island were the world's second largest rookery of Loggerhead Turtles is found. **Aim:** To investigate options to reduce turtle bycatch in the Masirah Island fisheries. **Main Activities:** The study investigated the distribution of marine turtle species using satellite tagging and long-term surveys of nesting beaches, and the spatial distribution of different fishing gears used in the fishery. Turtle bycatch rates of different gears were estimated, leading to an estimated 9750 turtles being caught in fishing gear each year, with the highest numbers coming from drifting gillnets and monofilament nets. The study makes recommendations on policy and management options to reduce turtle by-catch. **Project Details**: • Date: 2014 • Location: Masirah Island, Sultanate of Oman • Further details available from: Name: Maia Sarrouf Organisation: Environment Society of Oman Contact Details: Tel: +968 24 790 945 Email: maia.sarrouf@eso.org.om

4.6. Qatar

4.6.1. Policies and Data Sources

No.	Organization	Department	Relevant Policies	Data Types
1	Ministry of Municipality and Environment	Secretariat for Agriculture Affairs and Fisheries (Fisheries Department)	• Development of cage fin fish farming offshore Qatar • Development of shrimp farming onshore Qatar • Fisheries management plan	• Fish stock assessment data, including historic shrimp catch data • Fisheries landing data, including recreational catch data • Location of fishing harbours and fisheries infrastructure • Registered fishermen and fishing vessels, licenses for recreational fishing
2		Secretariat for Environmental Affairs	• Al Dakhira and Al Khor MAB Reserve • Protected Area Action Plan (2007) • Captive breeding and reintroduction of species (e.g. Sand Gazelle, Ostrich, Arabian Oryx)	• Terrestrial wildlife observations • Marine wildlife observations • Species inventory for each protected area • Migration studies on birds and turtles • Export permits for biological material

4.6.2. EBM Case Studies

No.	Details	Description
1	**National Dugong Conservation Strategy** **Project Elements** • Baseline data collection • Data analysis and interpretation • Biodiversity Conservation • Capacity Building **Main Stakeholders** • Ministry of Municipality and Environment (MME) • ExxonMobile Research Qatar • Texas A&M University, Qatar University • Qatar Foundation	**Background:** The second largest population of dugong, estimated to be around 6000 animals, is found in the inner RSA between Bahrain, Qatar and western UAE where the most extensive seagrass beds in the inner RSA occur. For decades dugongs have been under pressure from a range of stressors including entanglements in fishing gear, marine pollution, and habitat degradation from coastal development. The state of Qatar initiated Phase 1 of a National Dugong Conservation Initiative in 2008 as part of a global dugong initiative under the aegis of the Convention of Migratory Species of Wild Animals (CMS). Phase 2 of the Qatar Dugong Conservation Initiative commenced in June 2014 with the technical support of Qatar University, Texas A&M university and ExxonMobil Research Qatar working with MME. **Aim:** To develop and implement a dugong management plan in Qatar that forms part of a regional effort to protect this species and the habitats on which it depends. **Main Activities:** Phase 1 focused on collating existing information, conducting seagrass and dugong surveys (facilitated by the Qatari coastguard and Qatari Air Force), tissue sample collection from stranded animals, engagement with fishermen, consultation with experts, and capacity building for Ministry staff. Phase 2 has built on the findings of Phase 1 by continuing aerial and beach surveys, fishermen interviews, technical workshops and awareness raising at schools and civil society groups. **Project Details**: • Date: 2008 – 2014 (on-going) • Location: National, State of Qatar • Further details available from: Name: Dr Mohsin Al Ansi, Assistant Professor of Marine Science Organisation: University of Qatar Tel: +974 4403 3942 Email: drmohsin@qu.edu.qa

2	**Qatar Whale Shark Research Project** **Project Elements** • Baseline data collection • Data analysis and interpretation • Biodiversity Conservation • Capacity Building **Main Stakeholders** • Ministry of Municipality and Environment (MME) • Herriot-Watt University • Maersk Oil Research and Technology Centre (MORTC)	**Background:** An aggregation of more than 100 whales sharks forms in the waters around northern Qatar, in and around the Al Shaheen Oil field. While there is a no fishing exclusion zone around the oil platforms which acts as a de facto marine protected area, the area is exposed to the risk of oil pollution from these industrial activities. In 2010 the Ministry of Environment (as it was then) initiated a research project together with a UK University, Herriot-Watt, and Maersk Oil Qatar to investigate this phenomenon and inform management decisions. Findings to date show that the Whale Sharks feed on eggs from spawning fish that may be attracted to the area by the fish aggregating effect of the platforms, and that these animals range widely in the central inner RSA and some also migrate into the northern Indian Ocean. The IUCN status of the Whale Shark is Vulnerable and it is listed in Appendix II of CITES. **Aim:** To understand behaviour, life cycle and migration pattern of the whale shark aggregation occurring in waters of northern Qatar, and to raise awareness amongst decision makers, conservation organizations and the general public about the conservation status of whale sharks **Main Activities:** The project uses satellite tagging and acoustic tags to learn about the sharks' movements, genetic and stable isotope analysis of tissue samples, environmental data collection and plankton sampling, photogrammetric sizing and spot pattern identification to recognize individuals within the populations. The project also includes a citizen science component called 'Sharkwatch Arabia' that is aimed at encouraging public participation in a wider area. **Project Details**: • Date: 2010 – 2017 (on-going) • Location: National, State of Qatar • Further details available from: Name: Mohammed Y. Jaidah Organisation: Ministry of Municipality and Environment Tel: +974 - 44348070 Email: mjaidah@gmail.com

3	**Mangrove Compensation and Restoration** **Project Elements** • Site selection • Habitat restoration • Monitoring **Main Stakeholders** • Ministry of Municipality and Environment (MME) • Hamad Port • Private sector	**Background:** Arising from the development of Qatar's new port, Hamad Port, was the requirement to carry out habitat mitigation measures for sensitive ecosystems affected by construction activities. Sensitive habitats included hard and soft coral communities, seagrass beds and mangrove stands. Given the Ministry of Municipality and Environment's (MME) policy of mitigation action for impacted coastal habitats, the environmental permit for the port included the transplanting of around 30000 mangrove plants over a 5 yr period into adjacent mangrove stands. Mangroves in the RSA area are important hotspots for marine and coastal biodiversity and provide a number of important ecosystem services including carbon sequestration, amenity value, primary productivity that supports associated habitats and life support habitat for fisheries. **Aim:** To compensate for mangroves lost as a result of coastal development and maintain coastal diversity and ecosystem services **Main Activities:** The main activities of the project were i) site selection for receiving site, ii) harvesting mangrove propagules for growing in nursery followed by planting out at the receiving area, iii) transplanting mangrove seedlings and saplings into receiving area, iv) maintenance and monitoring of performance and survival of experimental and control plants, v) reporting, and vi) appraisal of the projects in terms of impact and cost effectiveness, and development of the methods towards a more effective strategy to mangrove compensation and offsetting. **Project Details**: • Date: 2012 – 2017 • Location: Umm Al Houl, Al Wakrah, State of Qatar • Further details available from: Name: Ahmad Al-Ibrahim Organisation: Ministry of Municipality and Environment Tel: +974 55561566 Email: aaibrahim@mme.gov.qa

4.8. Saudi Arabia

4.8.1. Policies and Data Sources

No.	Organization	Depart-ment	Relevant Policies	Data Types
1	GAMEP	All de-part-ments	• Establish conservation zones (the offshore is-lands of Jurayd, Jana, Kurayan, Karan and Harqus) and Ras Abu Khamis to monitor the recovery of areas degraded by oil spills • Revegetation of mangroves, marsh and sab-kha areas following oil spill damage. • Enable disposal of waste with no harm to the environment • National plan to combat marine pollution and harmful substances • Coastal zone management plan • Collation and Preparation of State of Environ-ment Reports. • Ensure national transformation programme 2020 (NTP) is aligned with Sustainable Devel-opment Goals, Sharia and Vision 2030. • United Gulf Water Strategy 2016 • Raising public awareness on environmental is-sues	• National meteorological data (WHO and national standards), and climate data including early warning systems for extreme weather • IRIS Satellite data • Air Quality data (particulates, pollutants, GHG emis-sions) and air quality index data • Very extensive data regarding oil spill clean-up in coastal and intertidal habitats (remediation of coastal resources, marine resources and terrestrial remedia-tion, compensation for coastal habitats) • Health data relating to long term exposure to particu-late matter from oil fires (registry, exposure, clinical monitoring) • Data on coastal revegetation processes • Data concerning ecology of offshore islands (turtles, birds, corals), and Ras Abu Khamis (beaches, rocky shorelines, turtles, birds, seagrass, corals, dugongs, and fish) • Development indicators including indicators for coastal development • Seawater quality data from marine buoys network • Oil spill statistics for Gulf • Digital library
2	The Ministry of Environment,		• Data sharing, open data and transparency • Whole of Government approach to digital data service provision, with aim of being in	• Marine habitat atlas for Saudi sector of Gulf (with Saudi Aramco) NB hard copy due to be published by Jan 2018. • Satellite imagery for Gulf sector

	Water & Agriculture		the top 5 on UN list for e-Government Services • Sustainable Development • Production of safe seafood from wild fishery and aquaculture • Sustainable fisheries management including quota for different species, closed season for shrimp and some species of fish	• Habitat map for Jubail Wildlife Sanctuary • Drinking water consumption figures • Sediment quality of the Gulf including trace elements, hydrocarbon, etc. • Seafood quality data (e.g. trace elements and hydrocarbons in fish) • Fish stock assessment data (Western Region)
3	Saudi Wildlife Authority (SWA)		• To encourage and support scientific research on wildlife • Reintroduction of the Arabian Oryx and Hubara Bustard • Gazelle and Ibex Conservation • Development of protected areas system in Saudi Arabia, and their effective management	• Marine turtle (Green and Hawksbill) tagging (8000 conventional and 40-50 satellite tags) see Fisheries Research 196:75-84 • Data on terrestrial mammals and birds • Arabian Bird Breeding Atlas

4.8.2. EBM Case Studies

No.	Details	Description
1	**Compensation for losses to mangroves and corals arising from development** **Project Elements** • Baseline data collection • Research • Habitat restoration • Capacity Building • Advocacy **Main Stakeholders** • Ministry of Environment Water and Agriculture • GAMEP • King Abdullah University • Saudi Aramco • NCWDC	**Background:** This is a policy has originated from a GCC Secretariat recommendation to apply compensation measures to development projects. In the case of Saudi this has led to numerous project and activities that have reduced the loss of marine habitats and species. **Aim:** To apply hard sustainable principles to manage natural resources that are at risk from development impacts **Main Activities:** The policy has led to a number of significant projects being done such as: • Planting of two million mangrove seedlings (of which 440,000 will be in the Gulf) by 2020. The plan has been formulated, and a nursery is being built. Sites will include Ras Tanura, Ras Abu Ali. • Blue carbon studies relating to mangroves in the Red Sea and Gulf (lead by King Abdullah University) • Installation of 300 artificial reef units by Saudi Aramco to compensate for offshore impacts to corals • Other environmental enhancement projects being implemented by the MEWA, that are being monitored by NCWDC **Project Details**: • Date: since 2014 • Location: multiple sites, Gulf • Further details available from: Name: Dr Ahmed Al Mansi Organisation: Ministry of Environment, Water and Agriculture Contact Details: Email: mansi911@hotmail.com

4.9. United Arab Emirates

4.9.1. Policies and Data Sources

No.	Organization	Department	Relevant Policies	Data Types
1	Ministry of Climate Change and Environment (MOCCAE)	Assistant Under Secretariat for Water Resources and Nature Conservation Affairs	• National Climate Change Plan 2050 • National Biodiversity Strategy and Action Plan • UAE National Plan for Red Tide Management • Facilitate the development of the Green Economy and Green Finance in UAE • National Environmental Education and Awareness Strategy (2015 – 2021) • UAE food diversification strategy	• UAE Fisheries Statistics (landings, imports & exports) • Fishing licenses and registrations (fishermen, gear and boats) • CITES import and export statistics • State of the Environment reports • Data on red tides • Data on mangrove distribution in UAE • Bird nesting sites (e.g. Socotra Cormorants)
2	Dubai Municipality	*From Dubai Municipality Strategic Plan 2016 – 2021*	• Developing a happy and sustainable city • Environmental protection and the sustainability of natural resources • Community engagement and effective communication	• GIS and spatial planning data • Coastal zone management and water ways data • Hydrographic data
3		Natural Resources Protection Section	• Development of protected area network in Dubai, and development of management plans. Public awareness regarding conservation and biodiversity	• Distribution of biodiversity in Dubai (e.g. floral, invertebrates, mammals, birds) • Fish stock assessment data (to be available 2019) • Groundwater quality and distribution data
4				
7	Environment Agency Abu Dhabi	General Secretariat (policies taken from EAD Strategic Plan 2016 – 2020)	• Develop a National Climate Change strategy including targets by 2017, which includes adaptive management to protect ecosystems, sensitive species and ensure a climate resilient coastline	• Seawater quality (continuous SWQ data since 2010, HABs, fish eggs and larvae) • Industrial discharges • Marine and terrestrial biodiversity data (habitats and species) for Abu Dhabi and UAE, including breeding birds (satellite

No.	Organization	Department	Relevant Policies	Data Types
			• Improve marine water quality through informed decision making, awareness, improved regulatory controls to protect public health and reduce HABs • Protect habitat baseline at 80% of 2014 levels by mapping, monitoring, improved biodiversity conservation, and raising awareness to ensure that issues are understood and management plans are implemented. • Increase marine and terrestrial protected areas to 13.45% and 15.43% respectively. • Improve species conservation through well managed and successful re-introductions. • To improve sustainable fisheries index from 12.6% (2013) to 20% by improving understanding, raising awareness and strengthening regulations and enforcement. • Increase environmental awareness around EAD strategic priorities. • Increase uptake of environmental initiatives within Abu Dhabi government	tracks), dugong, Humpback dolphins, turtles, coral reefs. • Fish stock assessment data, including species specific data for sawfish, sharks • Pollution statistics (sources of air emissions, chemical pollution and incident reports) • Climate change data and modelling predictions (AGEDI)

4.9.2. EBM Case Studies

No.	Details	Description
1	**Raising Awareness about Ocean Climate Change Issues** **Project Elements** • Awareness raising **Main Stakeholders** • Ministry of Climate Affairs and Environment • Lush Middle East (Cosmetics)	**Background:** Changes to the climate, brought about by increasing levels of greenhouse gases in the atmosphere, are causing serious impacts to the world's oceans including the Gulf. The impacts and risks arising include rising sea levels, warmer water temperatures which causes habitat degradation through ocean acidification and coral bleaching. These risks will affect the livelihoods of coastal communities in UAE and around the world. **Aim:** To raise public awareness of climate change induced changes to coastal ecosystems, with the intention of reducing GHG emissions **Main Activities:** Public awareness campaign using social media (Twitter #ActionforOceans) and vloggers (e.g. Khalid Al Ameri) **Project Details**: • Date: Sept 2017 (on-going) • Location: UAE • Further details available from: Name: Taif Mohammad Al Amiri, Director of Government Communication Organisation: Ministry of Climate Affairs and Environment Contact Details: Email: media@moccae.gov.ae

2	**Coastal Habitat Mapping in UAE waters** **Project Elements** • Habitat Mapping • Reporting **Main Stakeholders** • Ministry of Climate Affairs and Environment • Environment Agency, Abu Dhabi • Dubai Municipality • Sharjah EPA • Emirates Wildlife Society-WWF	**Background:** The availability of consistent coastal habitat data makes the inclusion of ecological principles in coastal zone management and planning more challenging, particularly for allocation of appropriate zones for different land use types (e.g. industrial, urban, marine transport infrastructure, tourism), development of a network of protected areas network and marine spatial planning. The challenges in developing such a map includes i) merging multiple data sources (e.g. satellite data, side scan sonar data) used to obtain data from different depths, ii) consistently applying meaningful habitat classes, iii) ensuring the habitat map remains current (i.e. updated). **Aim:** To generate a national (UAE wide) habitat map using consistent and harmonized habitat classification system that is accurate and relevant for planning purposes. **Main Activities:** The first Emirate to undertake a coastal and offshore habitat mapping exercise was Abu Dhabi in June 2015 under the guidance and supervision of the Environment Agency Abu Dhabi. The mapping extended to UAE's western maritime border with Saudi Arabia, the UAE's maritime border with Iran along the axis of the Gulf, and to Abu Dhabi's eastern internal boarder with Dubai. In June 2017 the challenge to extend the extent of the mapping was taken up by EWS-WWF, and in coordination with MOCCAE and the concerned authorities in the other Emirates mapping is currently underway for coastal areas (down to the visible depth using satellite data) of Emirates in the Gulf. Once this is complete, it is hoped that mapping will be undertaken in Fujairah and the other Emirates with a coastline bordering the Gulf of Oman. Mapping is being based on satellite imagery, and is being ground truthed using drop down video to verify image interpretation. **Project Details**: • Date: June 2016 (on-going) • Location: UAE • Further details available from: Contact Details: Daniel Mateos, MPA's Project Manager for EWS-WWF Tel: Email: dmateos@ewswwf.ae

3	**Artificial Reef Program in UAE** **Project Elements** • Artificial Reefs • Research • Reporting **Main Stakeholders** • Ministry of Climate Affairs and Environment • Environment Agency, Abu Dhabi • Emirates Wildlife Society-WWF • Emirates Nuclear Energy Corporation • Al Nakheel • Other private sector companies (e.g. tourism) • New York University in Abu Dhabi	**Background:** Enhancing the habitat richness of the Gulf's seabed with different materials is a traditional method of fisheries enhancement in UAE. Traditionally palm trunks were used to form structures that would attract fish to known locations to improve yields from fishing, and such assets were owned by families. The UAE government policy on artificial reefs will lead to the Government installing AR units itself but also requiring that ARs are used to compensate for damage done to the seabed during construction of projects. **Aim:** To safeguard the sustainability of living natural resources, to enhance fish stocks in UAE and to protect the country's natural heritage. **Main Activities: Project Details**: 1. Early installation of artificial reefs of various designs and materials throughout UAE (Abu Dhabi to Fujairah) e.g. Barakah (1800 units), Al Nakheel (500 units), Dibba Rock (220 units), UAE government (1350 units, with commitment of 1300 in coming years) 2. Establishment of regulations concerning the installation of artificial reefs e.g. site selection, licensing, mapping and construction. 3. Conducting research on the ecological function of artificial reefs • Date: 2010 (on-going) • Location: UAE • Further details available from: Contact Details: Daniel Mateos, MPA's Project Manager for EWS-WWF Tel: Email: dmateos@ewswwf.ae

5. Marine and Coastal Mapping

5.1. Coastal Habitat Mapping

Mapping of the most sensitive and productive coastal habitats, that is coral reefs, seagrass beds and mangroves, was first conducted on a global scale by UNEP WCMC following the development of a series of themed global atlases compiled by experts based on available information. This data is still relevant today (see Figure 2), particularly in countries in which gaps exist in coastal habitat maps. A search of more recent national scale marine and coastal habitat maps was conducted for ROPME member states which provided an overview of coverage available through published channels and the findings are illustrated in Figure 3.

In 2012, Saudi Aramco published the second edition of Marine Atlas of the Western Arabian Gulf (Qurban et al., 2012), in partnership with the Centre for Environment and Water Research at King Abdullah University of Petroleum and Minerals. The atlas provides mapping, photography and narrative of coastal habitats including mangroves and salt marshes, subtidal habitats, coastal and offshore island ecosystems, distribution maps for cetaceans and turtles, as well as human uses of the coastal zone including fisheries and conservation areas. Figure 5 provides a sample of the resolution and scale of habitat mapping contained in the atlas. The mapping contained in the atlas goes some way to filling the gap that exists along the Western Gulf but does not provide a systematic habitat map that is harmonized with the habitat classification system used in UAE, for example.

As described above, EWS-WWF have commissioned work to update existing marine and coastal habitat mapping conducted in Abu Dhabi in 2011, and to extend the coverage to include the Gulf coasts of Dubai, Ajman, Sharjah, Umm Al Quwain and Ras Al Khaimah (Figure 4).

Marine and coastal mapping in Qatar was first published by the Ministry of Environment in 2004 and focused on the eastern seaboard. More recent research (Warren et al., 2016[8]) conducted by the Ministry of Environment, Exxon Mobile Research Qatar and Nova Southern University (USA) has refined the methods for interpreting nearshore habitats in Qatar, and paves the way for a next generation habitat map in the coming years.

Bahrain has a long history of habitat mapping, and was one of the first ROPME member state to carryout marine and coastal habitat mapping (Vousden, 1988[9]), and recently published an updated map that has been extensively ground-truthed (Aljunein et al., 2017[10]).

Similarly, Kuwait has previously mapped its coastal habitats but is now in the early stages of updating these maps using modern techniques. Unfortunately, very little publicly available information for shallow water habitat mapping for Iraq and Iran could be identified; turbidity in Iraq limits the use of optical remote sensing in Iraqi waters. However, optical image analysis has been tested in Iran and shows promise. Finally, Oman has one of the longest coastlines in the RSA and its coast is a key resource for economic and social development yet there has been no recent effort to map coastal

[8] Warren, C., Dupont, J., Abdel-Moati, M., Hobeichi, S., Palandro, D. & Purkis, S. 2016. Remote sensing of Qatar nearshore habitats with perspectives for coastal management. Marine Pollution Bulletin 105: 641-653.
[9] Vousden D. H. (1988). A study of the marine habitats in Bahrain and their relationship to physical, chemical, biological and anthropogenic influences. Volume 1.& 2, Environmental Protection Technical Secretariat, Bahrain.
[10] Aljunein, S., Ghoneim, E., Abido, M., Alwedhai, K., Khadim, G., Mansoor, S., El Deen Mohd, W., Abd Hameed, N. 2017. Integrating remote sensing and field survey to map Shallow Water Benthic Habitat for the Kingdom of Bahrain. International Journal of Environmental Science and Engineering B6: 176 – 200.

habitats since the pioneering surveys conducted by IUCN in the late 1980s and early 1990s on which the country's coastal zone management plan was based.

5.2. Other Mapping in the Coastal and Marine Domain

Habitat mapping is critical for developing a strategy for ecological based management, and the scale of the mapping must match the scale of the strategy for it to add value. However, other ecological attributes can be mapped spatially that can contribute to the formulation of an EBM strategy. In this section we describe some ecological attributes for which spatial data exists in the RSA, many of which are data products that have been developed by stakeholders based outside of the region such as the World Conservation Monitoring Centre (WCMC based in Cambridge, UK), the US Geological Survey (based in Reston, Virginia, USA), and NOAA (based in Silver Spring, Maryland, USA).

5.2.1. Seabed Features

Seabed features (see Figure 6) are derived from bathymetric data that indicate a geomorphological structure or process which are often associated with biological processes or species such as river deltas or sediment fans e.g. associated with the outflow of the Shatt Al Arab or the Indus Rivers. The RSA contains a large portion of its area within 80 m of the sea surface (i.e. within the euphotic and photic zones) but also a large portion of seabed below 80m on the continental shelf or abyssal plain. As very little is known about deep sea habitats, ecology or ecological services these seabed features will serve as a proxy for deep sea habitats and biodiversity and should be taken into consideration when planning marine protected areas. The purpose of marine protected areas is now being extended more into the ocean realm where larger areas are required to be protected (from fishing and seabed mining, for example). Figure 6 shows how the diversity of seabed features increases in the middle and outer RSA where the continental shelf is located and where the shelf is traversed by canyons and forms terraces.

5.2.2. Marine Protected Areas

The distribution of marine protected areas in the RSA is illustrated in Figure 7 (based on World Parks Congress Data). This map includes protected areas that may be predominantly terrestrial, but which contain a small portion of their area at sea. This map shows that there are gaps in the spatial distribution of protected areas in the RSA region, but it fails to indicate the effectiveness of management in these parks to meet their objectives. Coverage of protected areas is an important indicator of progress with respect to both the 2030 Agenda (Sustainable Development Goals) as well as progress in achieving the objectives of the Aichi Targets of the Convention on Biological Diversity (CBD). However, the eligibility criteria for protected areas includes both legal status and management effectiveness and requires areas to be listed in the World Database on Protected Areas. It should also be noted that at the 14th Convention of the Parties for CBD held in Egypt in November 2018, the eligibility of protected areas was extended to include 'other effective area-based conservation measures[11]'. This agreement on the definition of areas that contribute to the Aichi Targets now requires an assessment of the implication for the region as such areas are not reflected in Figure 7.

5.2.3. Primary Productivity in RSA

Primary productivity in the marine environment is indicated by the presence of chlorophyll in surface waters over time as shown in Figure 8. Areas of highest annual productivity occur in upwelling areas of Oman, the Oman Sea section of the Iranian coast, the Gulf of Salwa and the northern Gulf.

[11] Defined as: 'a geographically defined area other than a protected area, which is governed and managed in ways that achieve positive and sustained long term outcomes for the in-situ conservation of biodiversity with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values.'

Chlorophyll is only measured in the top section of the water column so does not take into consideration productivity on the seabed from photosynthetic organisms such as seagrass and macroalgae. In some contexts of high marine productivity tends to indicate high fisheries productivity so can be used as a proxy for fisheries potential, although in some area environmental constraints may limit fisheries production in areas of high chlorophyll concentration such as high salinity in the shallow Gulf of Salwa. It should be noted that annual average chlorophyll masks a huge spatial and temporal variation associated with the dynamics of oceanographic processes and fails to adequately describe the risk of harmful algal blooms, for example, which are a major factor in the development of the Blue Economy in the region with respect to fisheries, aquaculture and industrial activities that depend on good seawater quality such as desalination.

5.3. Coral Bleaching

It has been predicted that coral communities in the inner RSA region will be rendered ecologically functionless by rising summer maximum temperatures caused by climate change. Figure 9 shows the heat dose ('bleaching hotspot'), measured in degree heating weeks, in July and September 2016. The September image (below of the figure) shows a strong bleaching hotspot had developed over the northwestern part of the inner RSA by this time. Data products relating to seawater temperatures, produced by a consortium of government agencies led by NOAA in USA, are valuable to monitor and archive the ecological impact of climate change but have greatest utility when combined with regular monitoring at a pre-determined monitoring network that uses standard methods for determining the condition and function of habitats and other key biological and ecological attributes that should include coral cover and condition amongst many indicators.

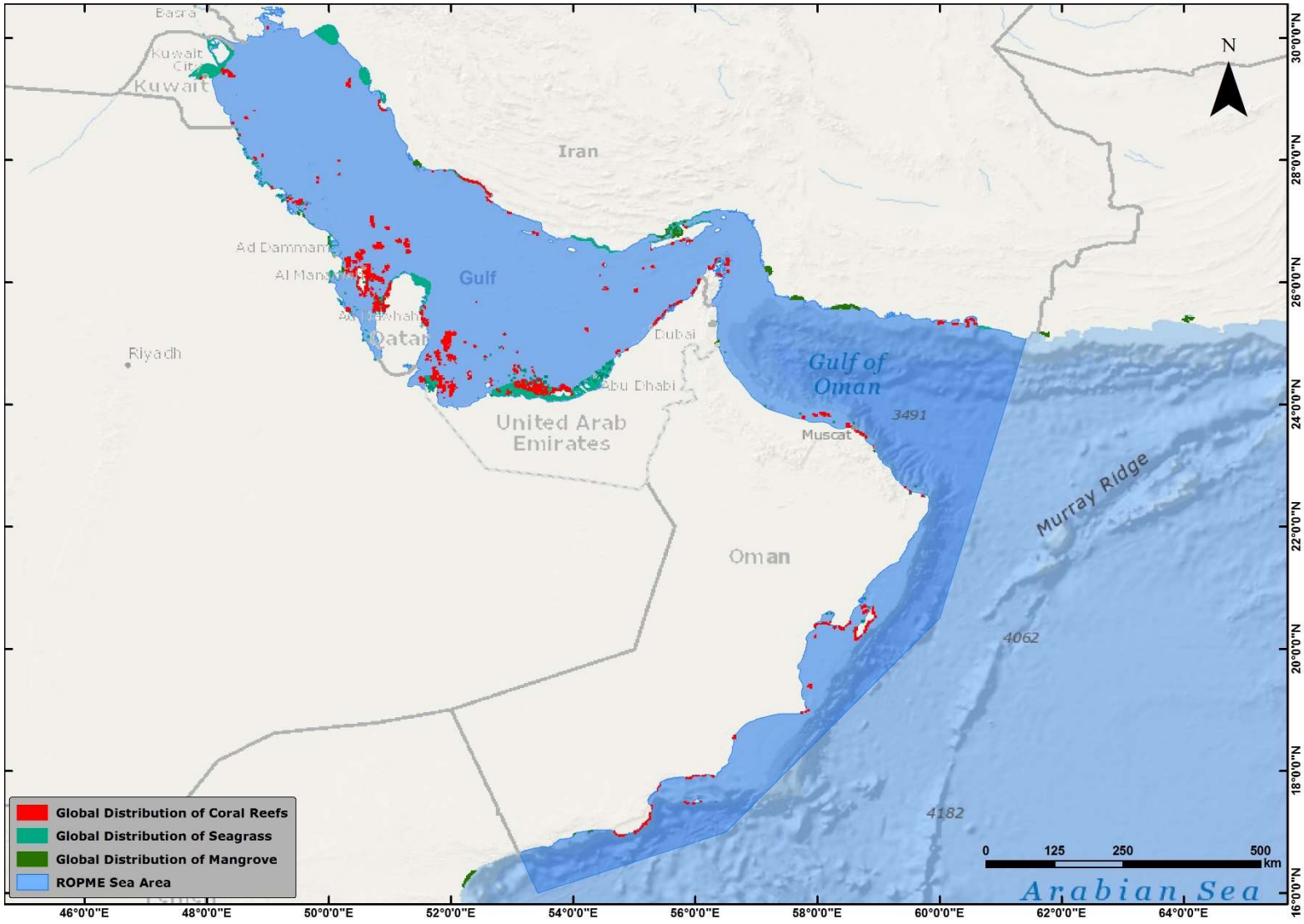

Figure 2. Extent of sensitive and productive coastal habitats in the RSA based on UNEP-WCMC data.

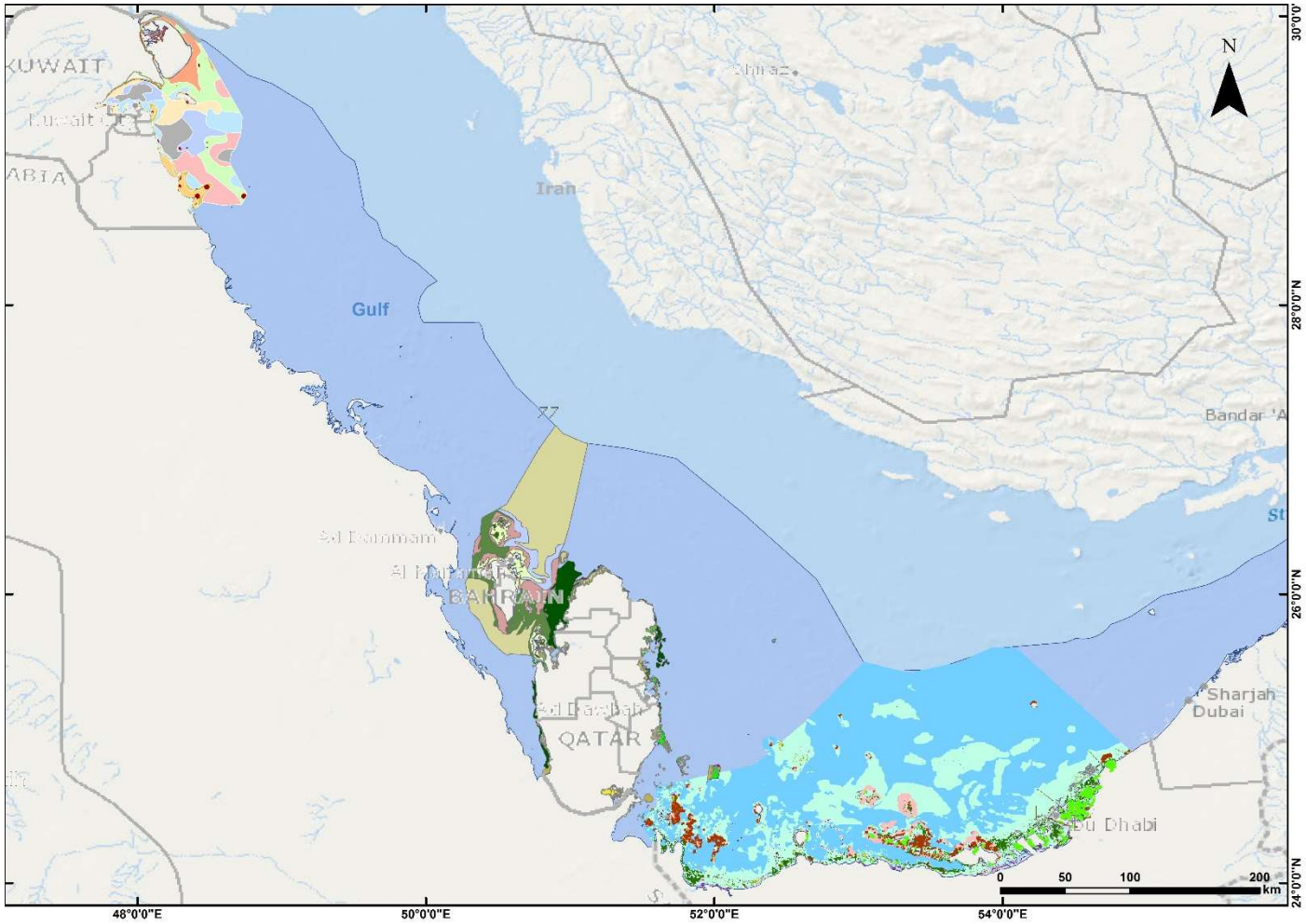

Figure 3. Extent of available GIS data from national scale marine and coastal habitat mapping in the RSA (as of April 2018)

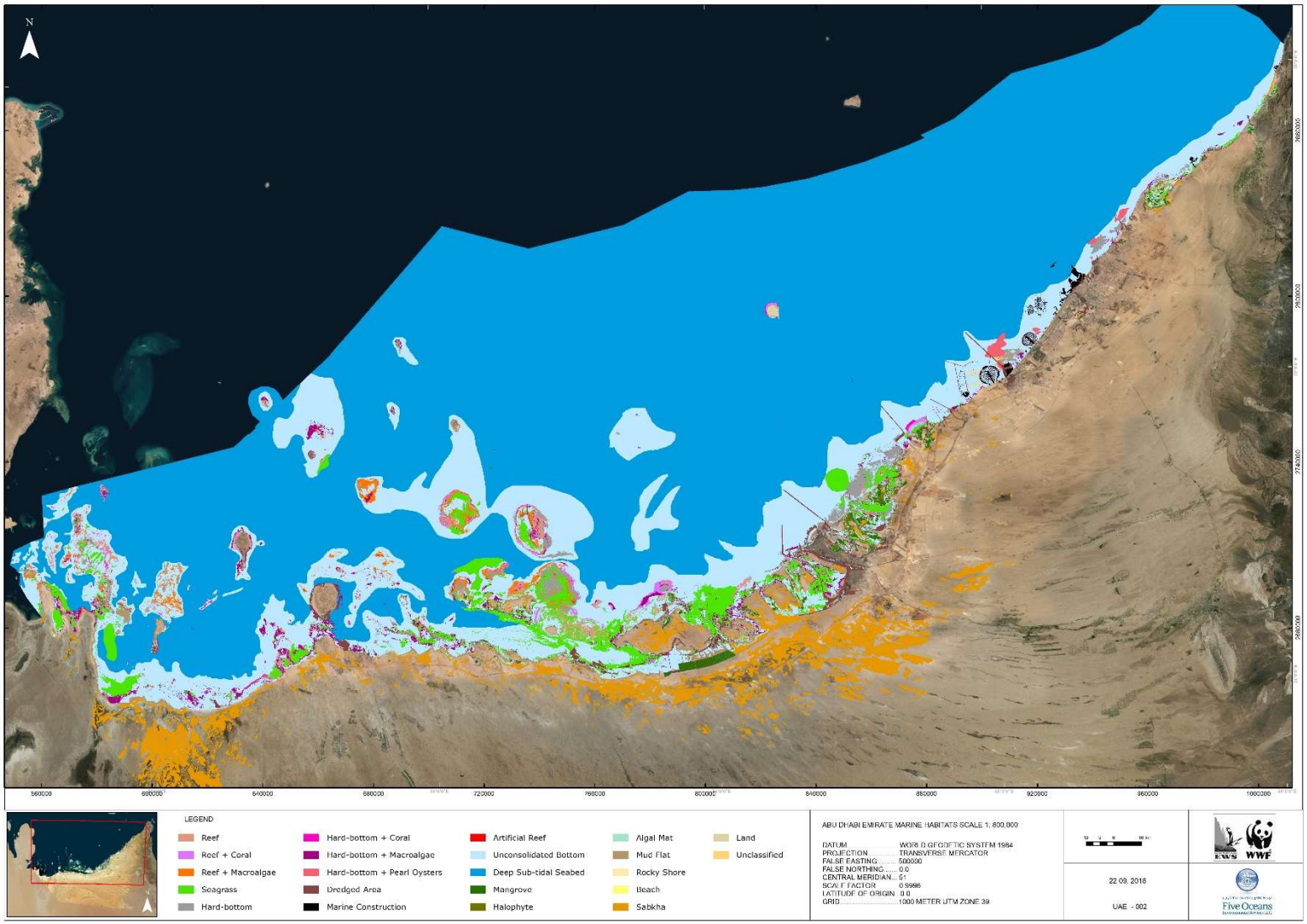

Figure 4. Extent of national scale marine and coastal habitat mapping in UAE (as of September 2018)

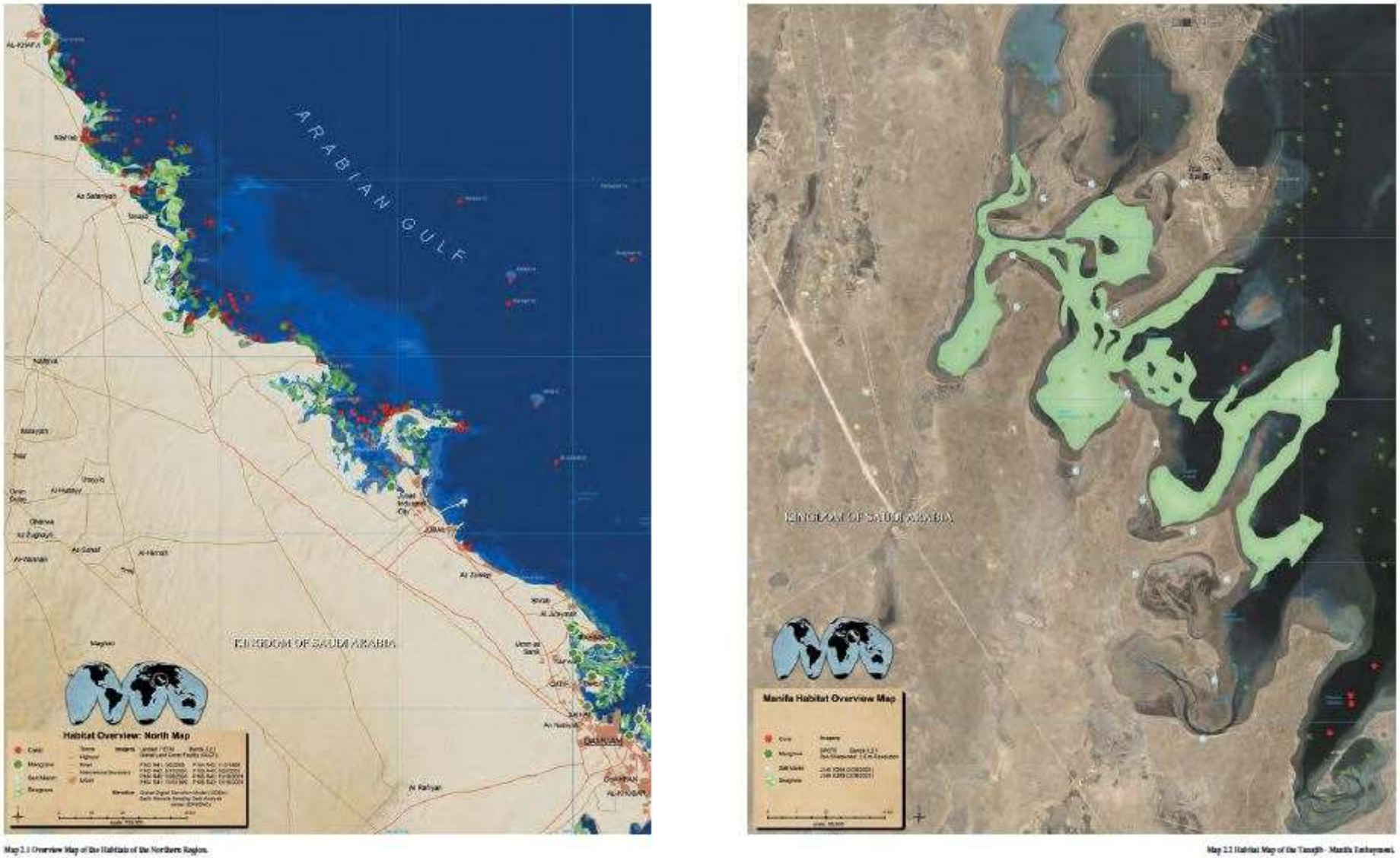

Figure 5. Example of coastal habitat mapping in the Saudi Arabian section of the Western Gulf (Qurban et al., 2012)

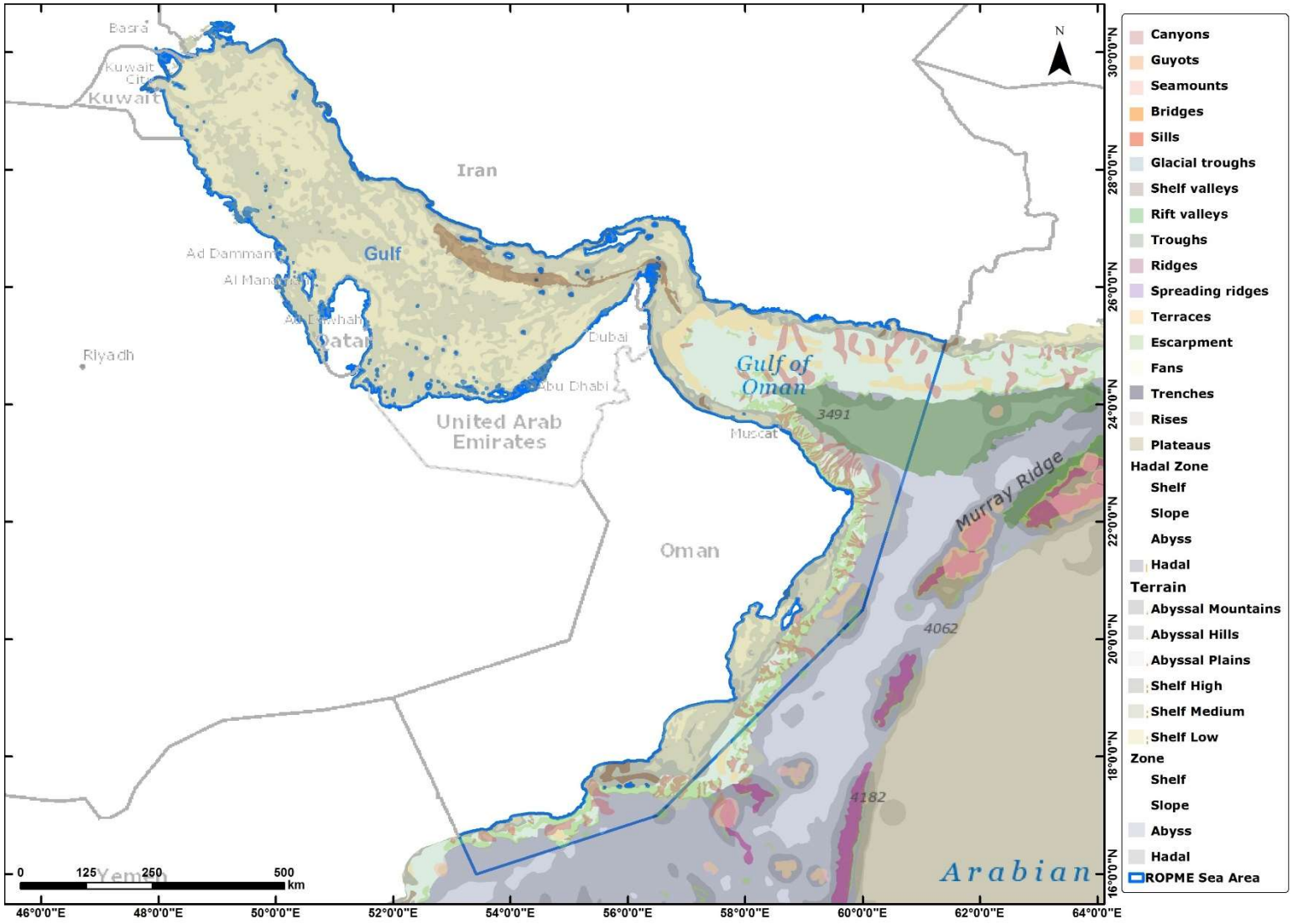

Figure 6. Seabed features map of RSA (US Geological Survey data) showing the diversity of features in deep water in Iran and Oman

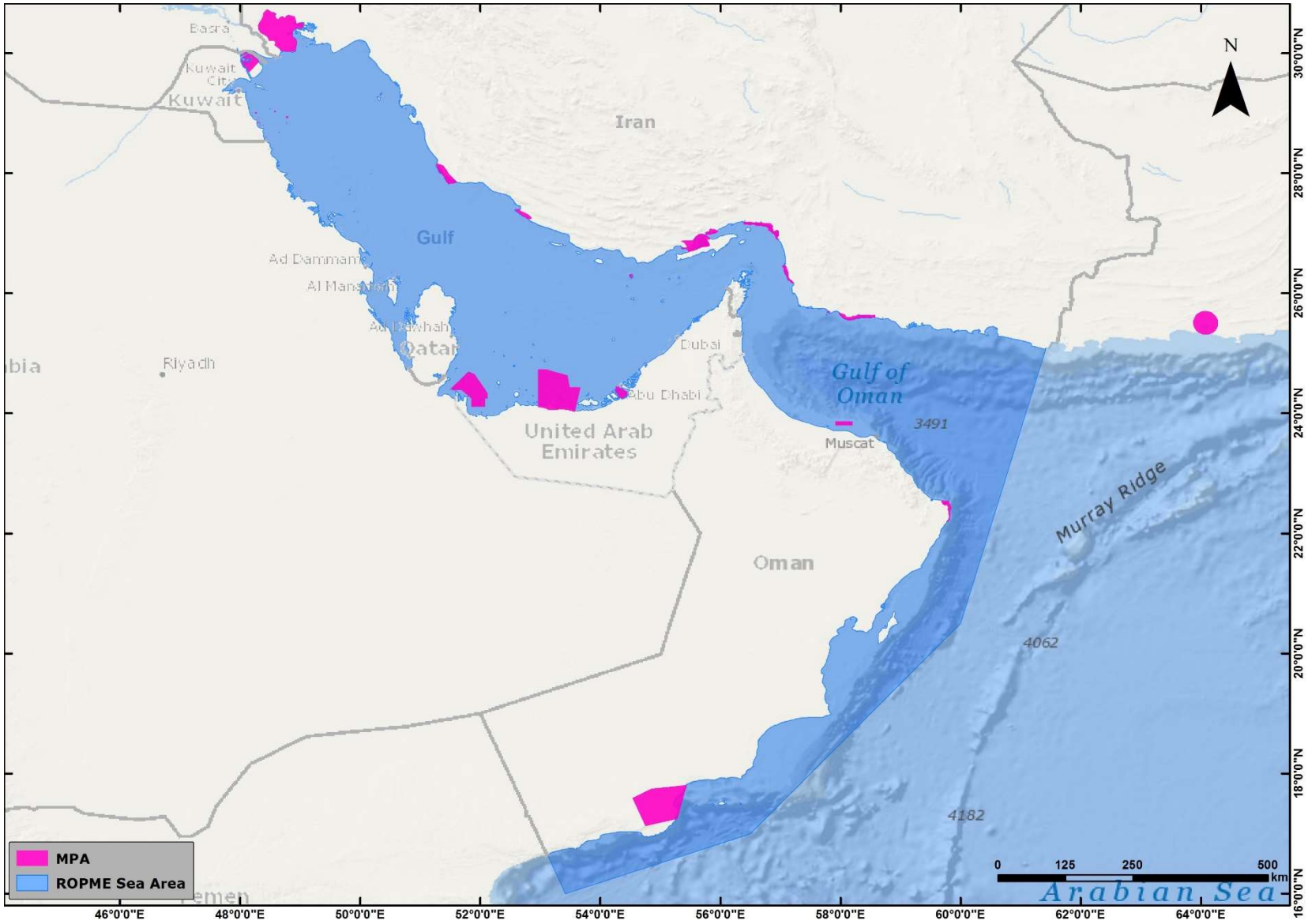

Figure 7. Marine protected areas (MPAs) in the RSA region (IUCN World Parks Congress/UNEP WCMC data)

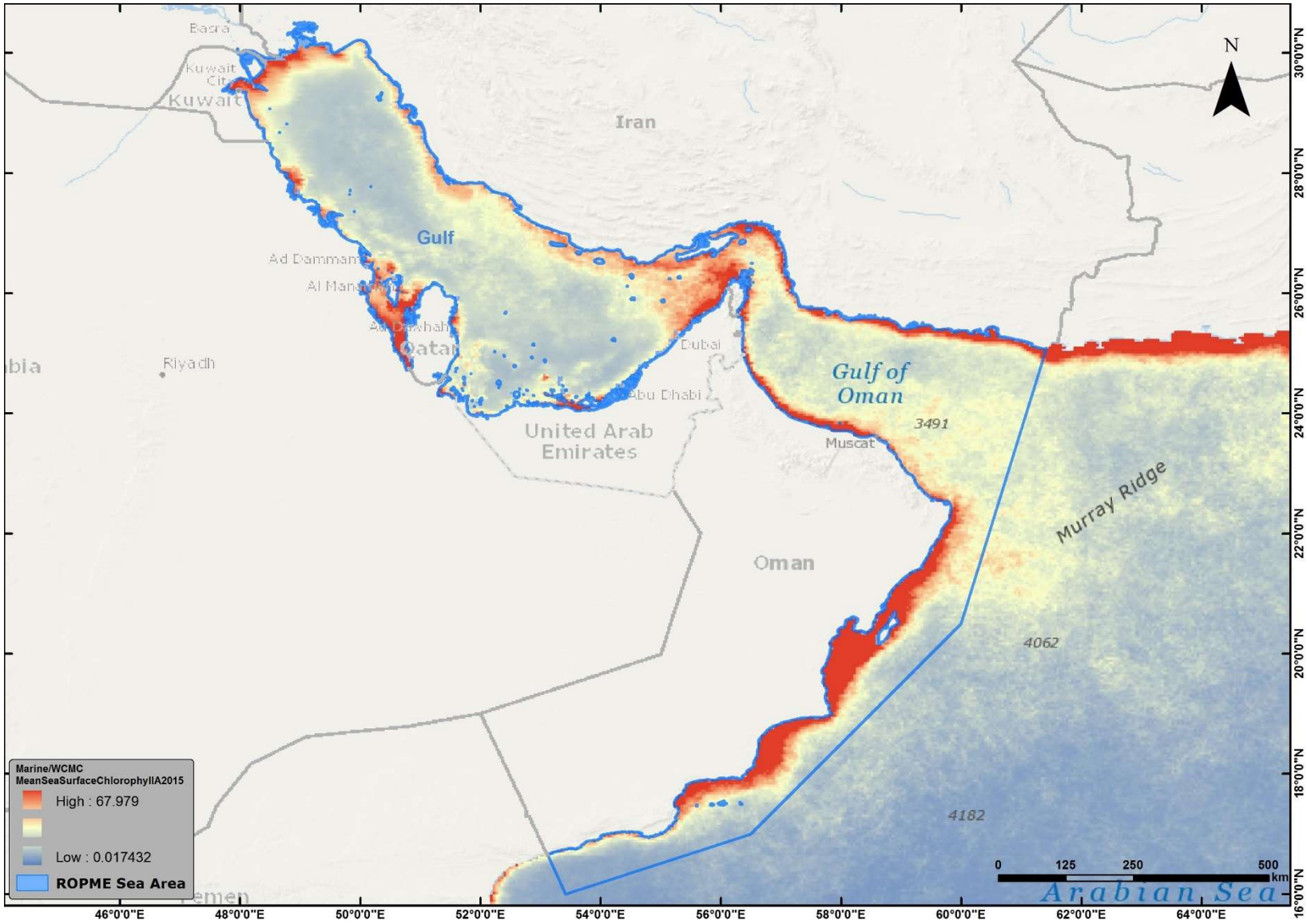

Figure 8. Annual average chlorophyll distribution in the RSA region (NASA data)

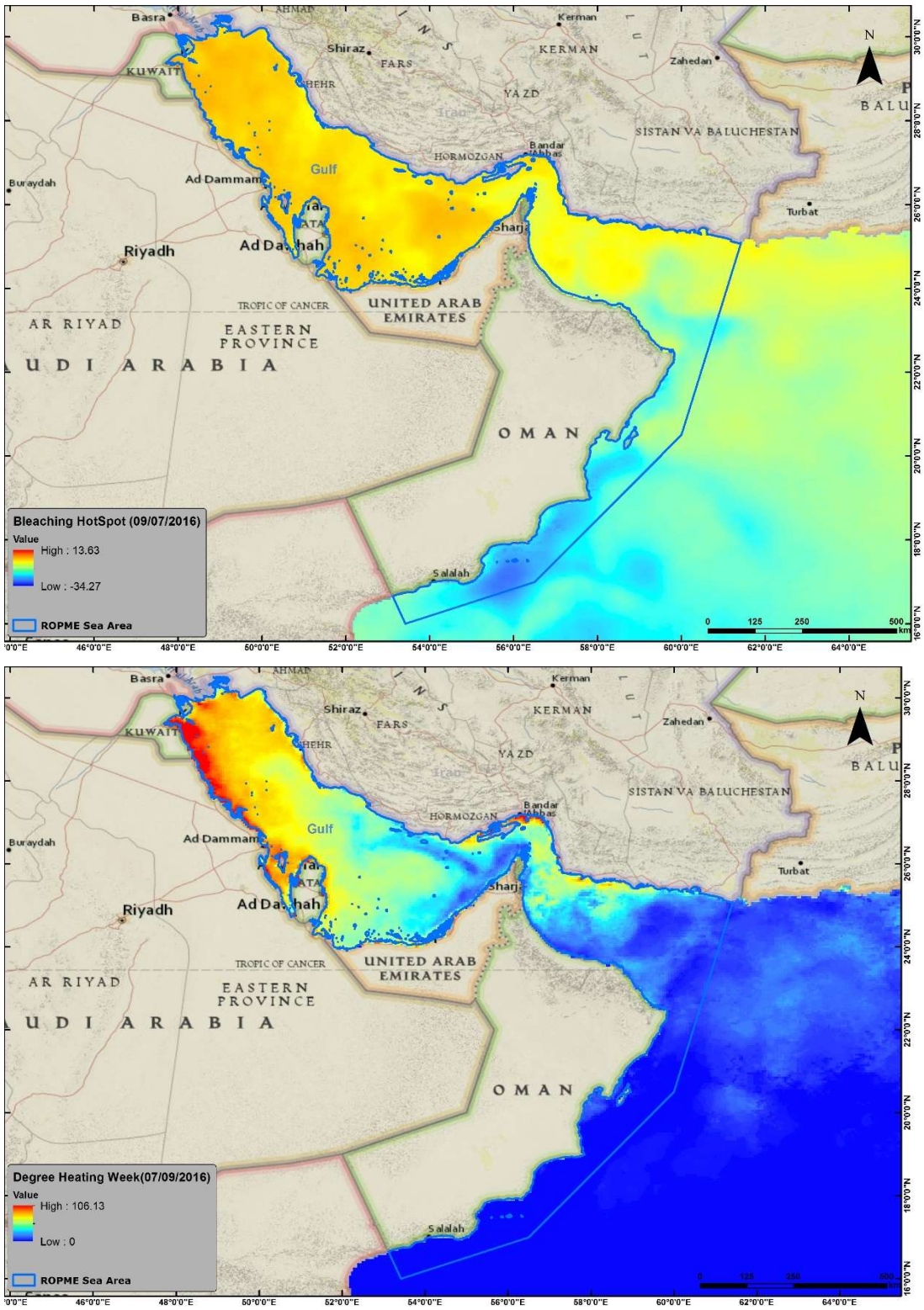

Figure 9. Degree Heating Weeks (the heating dose above long term summer maxima) that were received in the RSA region during the 2016 bleaching season (above: July and below: September. NOAA data available at www.coralreefwatch.noaa.gov).

6. Gap Analysis

A brief gap analysis has been conducted within the scope of this study, and the findings are briefly described in this section of the report.

6.1. Contacts within Stakeholder Organizations

The directory of stakeholders has been compiled according to the terms of reference issued by ROPME, that is, national organizations in government, non-governmental, public and in some cases private sector companies. Where they occur, international organizations located within the ROPME member states have been included. However, organizations located outside of the ROPME member states but which have an interest, hold data, or apply policies that influence resource use activities within the ROPME Sea Area are not listed. Such organizations include, but are not limited to, the following:

- World Conservation Monitoring Centre,
- Food and Agriculture Organisation of the UN,
- Indian Ocean Tuna Commission,
- United Nations University – Institute for Water, Environment and Health, and
- Various universities and institutions in third party countries that have or are conducting research in the RSA such as USA, Germany, Netherlands, United Kingdom, etc.

The next issue relates to the turn-over of staff within organizations and restructuring which contribute to the dynamic and ever changing nature of a directory of this sort. For example, between April and September 2018, a period of five months, of the 40 stakeholders, three points of contacts, three new organizations were added and three points of contact were updated due to staff changes. To provide some basis for recommending the frequency of updates, if this rate of change is extrapolated to the entire directory approximately 10% of the directory would become out of date every six months.

6.2. Data and Policies

Access to both formal policies and data holdings proved to be impossible during the timeframe of the project. Active policies have been inferred from formal government reports, announcements and legislation, and conditions of environmental permits, while data holdings were assumed based on the mandate of the organization concerned.

Policies tend to be contained in formally approved Government reports such as State of the Environment Reports, strategies and action plans, development programmes relating to one sector or another (e.g. aquaculture, agriculture) or masterplans (e.g. for tourism or transport). Such sources of information are sometimes publicly available but often are privileged government documents requiring an approval process in order to obtain. In many cases, therefore, the policies pertaining to a specific sector in a specific country may not have been identified, and a more detailed engagement process would be required to obtain the necessary information to validate the information presented in this report and to extend the policy landscape into all relevant areas.

Data holdings are similarly difficult to access without the appropriate level of government clearance, and even this is available experience has shown that some stakeholder organizations are reluctant to reveal their data holdings. The underlying reasons for this are not perfectly clear but may include i) the perception that data represents power (whereas in many cases data becomes more powerful when shared widely, so long as the data owner is properly acknowledged), ii) data may be poorly managed

and revealing, this is considered to be revealing a weakness, iii) all government data may be considered sensitive or confidential, iv) old data may not have been digitized into a form that is compatible with modern data management systems, v) combinations of all or some of the above.

There are therefore gaps in the coverage of both policies and data that can only be filled through a more complete engagement process at the correct level in the organizations concerned. However, the present document fulfills its objective in providing a starting point for more detailed planning to take place, which it is expected will result in updates and extensions of this directory of baseline information.

6.3. Mapping

Mapping of coastal habitats, like maintaining stakeholder directories, requires regular updating in order for them to remain up to date and valuable for planning purposes. Being an extreme environment, as the RSA is, has an ecological consequence in that some habitats that would be stable in more stable and benign environments in the tropics tend to be ephemeral in the sub-tropics. Examples of habitat types that are more stable in tropical environments but somewhat ephemeral in sub-tropical include seagrass beds and coral communities. Temporal variability also occurs at seasonal scales (e.g. algal beds, and to some degree seagrass beds) as well as inter-annual scales e.g. coral communities. Drivers for this variability include annual temperature changes as well as longer term effects such as climate change which has significantly affected the status and distribution of coral communities, for example. These processes produce inherent changes in the systems themselves, which has a bearing on how valuable habitat mapping is relative to its age.

The second source of variability is technique for generating habitat maps and the classification system used to describe habitat types that are useful for planning purposes. Currently there is no single, universally accepted system for habitat mapping in the RSA which results in some limitations on the inter-comparability of habitat mapping produced in different countries. More recent habitat maps tend to have greater value because they are more up to date, but also because remote sensing and image processing techniques are continually improving.

The identification of available habitat mapping has been limited to publicly available information. This produced results for Kuwait, Bahrain, Saudi Arabia, Qatar (partial), and UAE (partial). No publicly available national scale habitat map was identified for Oman, Iraq or Iran. UAE has recently updated the habitat mapping for Abu Dhabi and has extended its coverage into the Arabian Gulf side of the Northern Emirates. Saudi Aramco has recently published a Marine Atlas of the Saudi Gulf coast, which updates work published in the 1980's in Biotopes of the Arabian Gulf.

Gaps are known to exist in the coverage of coastal habitat maps of the RSA in Oman, and portions of the UAE coast line. Mapping for Qatar and Bahrain is not up to date, while no publicly available mapping was identified for Iran and Iraq. Kuwait is currently in process (September 2018) of tendering an extensive mapping and coastal data gathering exercise which will produce state of the art information over the next three years.

7. Recommendations and Conclusions

The following recommendations have been derived from the gap analysis described above as well as from the insights gained during the work period.

7.1. Recommendations

7.1.1. Stakeholders

- **Validate contents of this directory**. The directory of stakeholders has been prepared by national consultants and now requires that the contents be reviewed by a sample of stakeholders in each country to correct any errors or omissions that occur. Contact details should be checked to ensure numbers and email addresses are valid, and to establish contact with each stakeholder. The validation exercise at country level should also include a stakeholder analysis task to determine each players power/influence vs their interest and so reveal with greater clarity the priority stakeholders and the approach that the ROPME EBM planning team should interact with each one. On this basis a stakeholder engagement plan should be developed that will guide the planning team as to how communications with stakeholders should be structured.

- **Publish the directory**. The directory of stakeholders should be published on line, preferably with hyperlinks to relevant websites and points of contact, and a method for advertising its location, contents and use should be communicated to potential users. The directory is expected to be a valuable resource for many different applications and users beyond the planning of the EBM strategy. Resources (financial and human) should be made available to regularly update the directory at member state level, a process which should be conducted every 6-12 months to keep the resource current. Access to the directory should be free but monitored using an access form that captures users' details and their motives and interests in using the directory.

- **Include stakeholders located outside of the region**. An important gap in the stakeholder directory has been identified pertaining to stakeholders, often with important data holdings that are relevant to the region, that are located outside of the RSA region. The directory should be described in communications with such stakeholders, and the processes described above - validation, stakeholder analysis and updates – should be applied to this category.

7.1.2. Environmental Legislation

- **Validate the directory of applicable legislation.** As with the stakeholder directory, the directory of applicable legislation needs to be validated and a process established to maintain and update it, albeit over a longer maintenance cycle of 2-5 years.

- **Review and harmonize national legislation relevant to EBM**. Once the EBM strategy is formulated the applicable and validated national legislation in each RSA member state should be reviewed by a specialist in environmental institutional governance to analyze if national legislation is sufficient to support the specific objectives and tasks of the EBM programme. The analysis should firstly determine if legislative gaps exist at the member state level, and if there are contradictions or significant mismatches in legislation between member states. Where these exist, a plan should be formulated to fill such gaps and harmonize legislation where this poses a risk for the sustainable delivery of the EBM programme.

- **Widen the scope of the analysis of legislation.** The scope of this element of the EBM programme would add greater value if it included legal issues concerning governance, particularly the spectrum of options concerning delivery of EBM strategies. Consideration should be given to the role and importance of alternative sources of finance and non-governmental organizations (including international or national conservation NGOs but also including civil society groups, social enterprises and non-profit companies). To be feasible these options require a legal mandate that is based in laws that are currently outside the current scope of the legal review.

7.1.3. Policies, Data Holdings and EBM Case Studies

- **Encourage great transparency and specificity on national environmental policies**. In the RSA region in particular the style of government does not always require explicit policy statements to be formulated and published and this is true of policies pertaining to environmental management of natural resources. There seem to be two issues at the root of this problem: firstly, there tends to be a lack of transparent, strategic, systems type thinking amongst those government departments with the mandate for natural resource management that makes it difficult to freely obtain the overall policy framework within which specific policies should sit and work together to achieve a desired and stated outcome. Secondly, coastal and marine resources are multi-stakeholder domains having multiple government departments responsible for their rational development, and participating departments tends to have misaligned or conflicting objectives stemming from their various mandates. In this study policy is largely inferred from legislation and from plans developed by governments to manage a particular resource or user group, but typically without an over-riding strategic policy framework in place. In the absence of any explicit integrated policy framework, it is recommended to use the 2030 Agenda (Sustainable Development Goals) as the default strategic policy framework for the EBM programme.

- **Capacity building around data management and sharing**. There is a large spectrum of capacity and competence amongst government agencies with respect to data management in the region. For example, few countries have built hierarchical structures in which data flows from primary data collection, through quality assurance and standardization, through visualization to deriving digestible and valuable information products and then synthesis and integration at a higher level in government with other data streams. Even the use of standardized data formats is rare, and there are many cases where historical data has not been digitized for use in modern computer systems. This is an over-simplified description of data management issues facing governments of ROPME member states, but it is clear that building capacity is required in the region. The principle that data has greatest value when shared and integrated with other data sources must be expounded to encourage a mindset of greater transparency. Data sharing agreements and protocols for data owners to be recognized when their data is used and to retain control over how their data is used are tools that would also promote the wider and deeper use of available data.

- **Deeper Analysis of EBM Case Studies**. The profile of EBM case studies presented in this report reflects the rapid assessment approach adopted by this study. A deeper analysis of EBM designed to reveal the success or otherwise of each case study and to determine the factors driving the outcome would provide stakeholders with a distilled set of principles and lessons learnt for the practical implementation of EMB approaches that take societal, cultural and political factors of the region into account.

7.1.4. Mapping

- **Develop the Technical Framework for Coastal Habitat Mapping**. As the intergovernmental organisation for the management of this regional sea area, ROPME has the mandate for developing the technical framework for harmonized coastal habitat mapping and building capacity at the national level for delivering regional scale mapping of coastal and marine natural resources. There are several examples of early coastal mapping efforts dating back almost four decades (e.g. Bahrain, Saudi Arabia and Oman), but these were conducted at the national scale and seemingly the expansion of the principles to regional scale efforts was never achieved. It is imperative for the success of an EBM program that harmonized coastal habitat mapping is achieved. Without this resource, planning an EBM programme is severely hindered. A more complete assessment of coastal mapping that has been conducted (e.g. UAE) or which is planned (e.g. Kuwait) needs to be conducted which would provide the basis of a regional standard for coastal habitat mapping across the region.

- **Carry out habitat mapping for the RSA region** according to the technical framework. The exercise of coastal habitat mapping has greatest value, if it is based on imagery acquired within 12 months of each other in order to capture a representative snapshot of a discrete period. Ideally image analysis should be done using the same algorithms using the same software to minimize inconsistencies in the processing of the data. Ground-truthing should be designed at the national scale to allow sufficient data to be collected to generate a robust supervised classification and verification data at this scale so that national mapping is generated independently and then assembled into a regional whole.

- **Determine Ecologically and Biologically Significant Areas.** In addition to a map of coastal habitats important ecological and biological areas must be identified using standardized definitions across the RSA. The purpose of this feature class is to capture areas that contribute to the maintenance of biodiversity, particularly through (but not exclusively through) the lens of IUCN's Red List of Threatened Species and Birdlife International's database of Important Bird Areas. Sites such as: i) turtle nesting beaches, foraging grounds, migratory routes, ii) bird nesting, roosting and feeding areas, iii) marine mammal (i.e. cetacean and dugong) habitat (e.g. mating, calving, feeding grounds and migration routes) must be included in this task. If the primary data required to determine these features does not exist or is not available to the appropriate authority it must be collected through a combination of literature review, field surveys and observations, satellite tagging studies and expert opinion.

- **Map Areas of Critical Habitat.** Critical habitat is a tool used by the International Finance Corporation (IFC) to manage the impact of development (typically industrial or infrastructural developments) on biodiversity under IFC Performance Standard 6. The value of determining areas of critical habitat lies in decision making about where to locate new industrial facilities and major coastal infrastructure as this knowledge is essential during the planning phase to avoid such areas. Mapping of critical habitat can be derived from i) coastal habitat maps, and ii) ecologically and biologically significant areas, and would produce a map of sufficient resolution and scale to be fit for large scale spatial planning purposes and decision making. This would contribute towards both protecting biodiversity as well as improving the risk profile of large-scale investments in the region.

7.1.5. Formulation of an EMB Strategy for the RSA

Extending the recommendations made above for elements that are directly linked to the scope of the baseline data task (this report), below are more strategic recommendations more directly aimed at the formulation of the EBM strategy itself. The complexity and level of expertise required to deliver these

recommendations are pitched at a level that is could be feasibly delivered during a three-year programme[12].

- **Extend and strengthen the MPA network and management in the RSA**. The MPA network in the RSA is a significant tool by which the region's marine and coastal biodiversity is conserved and therefore should be extended, strengthened and maintained to ensure delivery of this major objective. Several aspects of the existing MPA network need to be assessed and if necessary improved:

    - Systematic assessment of the effectiveness of existing MPAs in the region using standardized assessment methods such as those developed by IUCN (available in Arabic). The results from the assessment would form the basis of a strategy to improve the effectiveness of management by removing bottlenecks, improving legislation or powers of rangers, developing capacity at all levels of the institutional framework responsible for the management of protected areas (rangers, park managers, executive managers in responsible Ministries including those coordinating international reporting on progress on meeting obligations under international conventions).

    - Once the coastal habitat mapping and ecologically and biologically significant areas are determined for the RSA, modelling software (e.g. MARXAN) should be used to design an optimized MPA network that meets agreed performance standards and takes into consideration distribution of conservation features and their connectivity. MARXAN is used widely by governments and international NGOs for planning both terrestrial and marine protected area networks and has been used in some RSA member states for conservation planning at national scales. It is recommended that MARXAN is used to generate multiple (say three) strategic scenarios with similar conservation outcomes, and each with an associated HR and financial commitments, for each member state for consideration by RSA member states and from which a single preferred design is selected. The preferred design will need to undergo refinement so as to be acceptable and approved by all member states before the detailed planning for implementation by member states is carried out.

- **Incorporate Alternative Conservation Areas in RSA.** The acceptance at the COP 14 in Egypt (November 2018) of 'other effective area-based conservation measures (OECMs)' as contributing to Aichi targets is a significant development in how an EBM programme may be framed. This new class of protected areas is eligible to contribute to national conservation targets and may contribute significantly to conservation efforts in the RSA's. An initial assessment should be made of OECM's potential contribution in the region should be made with particular emphasis on whether exclusion zones around offshore oil and gas facilities are currently eligible or may be made eligible with some intervention (such as implementation of a management and monitoring plan). The strategic advantage of this approach is that the costs may be shared with the sector that contributes most to the economic development of the region, namely the oil and gas sector. Once the assessment is made the roll-out of EBM management plans for such areas should be integrated into the EBM programme for the RSA. Other candidate classes of OECMs to be considered in the assessment include, but not be limited to, exclusion zones around military facilities. With the decision being made so recently, an assessment of this sort in the RSA would be pioneering and demonstrate valuable conservation and EBM leadership.

[12] The ROPME-JICA Partnership Programme has been extended from 3 year to 4 year, based on the Minutes of Meeting between ROPME and JICA, dated on 13th December 2018.

- **Develop ecological monitoring network throughout the RSA**. The purpose of an ecological monitoring network is to enable adaptive management to be implemented i.e. the effectiveness of a stated EBM objective should be measured using a sensitive key performance indicator allowing modifications in the action to be made to improve its effectiveness in meeting the stated objective. Without a monitoring network that uses standardized methods to collect information about the state of the environment, there are only unreliable qualitative indicators available to measure progress and effectiveness of actions. Not only would monitoring or this sort be essential for an EBM programme, but results would also contribute significantly to Government reporting obligations under many international conventions as well as 'State of the Environment' reports required by the United Nations. Indicators should be identified that not only measures the state of a resource, but also drivers, pressures, impact and response which are all central to the DPSIR[13] cycle that currently used as a framework for best practice in environmental monitoring and governance. Along with the network, data/information sharing mechanism (e.g. database, committee) should also be considered.

- **EBM Governance Aspects.** To develop a state of the art, relevant and meaningful EBM programme essential aspects of programme governance should be incorporated into the design of the programme. These include but are not limited to the following areas:

    - Benchmarking RSA EBM programme with EBM programme developed in other regional seas areas, including sharing knowledge and insight regarding factors driving success and failure of similar programs elsewhere;

    - Coordination and collaboration with other national and regional programs that have overlapping objectives;

    - Ensuring that the objectives of the EBM programme are commensurate with the resources (human, financial, project management capacity, etc.), available for programme delivery and are achievable within the constraints acting such as political will, time frame vs rate of progress, and institutional capacity in RSA member states.

    - Etc.

7.2. Conclusions

The development of a 'baseline report' that puts together highly relevant information for the first time will contribute significantly to the process of preparing a strategy for EBM in the RSA. That such a basic task as this is being conducted only now is also a clear indicator that the region is still some away from having sufficient organizational capacity to be able to organize, plan and execute a complex EBM programme, so it is recommended to ensure that any such programme is kept simple with achievable objectives.

However, delivering some fundamental objectives will improve the capacity of the RSA Region as a whole to meet its obligations towards environmental management and conservation under national and international commitments. Such fundamental objectives should include i) coastal habitat mapping, ii) identifying significant ecological areas, iii) planning and delivering a more comprehensive and systematic network of protected areas, iv) establishing a regional environmental monitoring network. Agreeing a strategic framework with explicit goals, objectives, indicators and assumptions within which

[13] DPSIR: Driver, Pressure, Status, Impact and Response

these fundamental objectives sit as well as potential future objectives will be a very significant achievement for RSA member states. The contribution of this report lies in providing some of the building blocks on which the coordination and development of a robust and integrated EBM program depends.

Appendix 3 Report of International Workshop 1

Report on the ROPME-JICA Seminar in Tokyo

(October 11th to 14th, 2016)

October, 2016

JICA Study Team

1. Outline of the seminar

The outline of the seminar is as follows:

Period: from 11th October 2016 to 14th October 2016.

Venue: The Prince Sakura Tower Tokyo

3-13-1 Takanawa, Minato-ku Tokyo, 108-8612 Japan

*Site visits in the vicinity of Tokyo were conducted.

Number of participants: 26

Participated countries: Kingdom of Bahrain, Islamic Republic of Iran, Republic of Iraq, State of Kuwait, Sultanate of Oman, State of Qatar, Kingdom of Saudi Arabia

Hosts: ROPME, JICA

Joint hosts: UNEP

2. Concept paper

Introduction, objective, expected outcomes, programme orientation are described in the concept paper, attached as Appendix 1.

3. Programme

The programme during the seminar is attached as Appendix 2.

4. Participants

The list of participants is attached as Appendix 3.

5. Major points to be noted

Major points, which were raised or discussed during the seminar, are summarized in Table 1.

Table 1 Major points to be noted

[Day1: Tuesday, 11 October 2016]

Programme	Major points
Keynote Address Conservation of enclosed seas in Japan and its contribution to ROPME Sea Area	・ The environmental history in Japan and the Japanese approach to enclosed sea conservation was introduced. ・ Importance of integrated management for land-based activities and marine utilizations in the ROPME Sea Area (RSA) was suggested. ・ It was stressed that Japanese experience

Programme	Major points
	can contribute to improve the ecological and economic value in RSA.
Presentation Introduction of UNEP ecosystem approach	・ Incremental steps towards EBM, considering SDG 14 was proposed. ・ The difference between ICM and EBM was discussed.
Presentation JICA's Cooperation Strategy in the Region	・ JICA's cooperation strategy in the ROPME region was introduced. ・ Technical cooperation by a cost-sharing basis was discussed.
Presentation ROPME-JICA Partnership Programme and findings from the activity	・ Based on the series of site visits to the ROPME region, challenges to be solved regarding marine environment, from the viewpoint of JICA Study Team, were introduced.
Discussion Common issues to be tackled in the region	・ Issues to be solved in each country were discussed (refer to Table 2). ・ Common issues in the region were to be discussed in the EBM Strategy W/G meeting.
Presentation Marine Environmental Policy and Water Pollution Control in Enclosed Sea in Japan	・ Pollution history in Japan and pollution control measures and technologies (formulation of laws/regulations/ standards, Total Pollutant Load Control System, inspection, water treatment system and so on) to overcome pollution were introduced. ・ Effective implementation of laws and water quality standard for fishery were discussed.

[Day2: Wednesday, 12 October 2016]

Programme	Major points
Site visit History of the preservation for Natural Protected Area and its Management in Yatsu Tidal Flat (Ramsar wetland)	・ The history of conservation of Yatsu Tidal Flat was introduced and the importance of public participation in wetland conservation was shared. ・ Management methodology of the tidal flat in reclaimed urban area was discussed (installation of water canal for connection of tidal flat and sea)

Programme	Major points
Presentation and Site visit Marine Environmental Research and Monitoring Technology of JAMSTEC	・ Monitoring and research activities, monitoring vessels and equipment were introduced in JAMSTEC. ・ Detail discussions on monitoring equipment were carried out. ・ The impact of Indian Ocean Dipole on coastal area and RSA was discussed.

[Day3: Thursday, 13 October 2016]

Programme	Major points
Presentation and Site visit Cross-boundary approach over Gray and Green Infrastructure	・ Recycling of wastewater sludge, guideline of restoration of natural habitat, conservation and improvement of seagrass bed were shared. ・ Technologies for artificial tidal flat creation and biosymbiotic seawall/breakwater were introduced and discussed ・ The intertidal flat experimental facility was introduced.
Presentation Coastal Environmental Monitoring and Integrated Database (Clearinghouse)	・ Marine monitoring (automated monitoring system) and integrated database system in Japan were introduced. ・ Challenges to create an integrated database system and the possibility to contribute to the ROPME Integrated Database System were discussed. (Development of database system is easy, but data sharing is difficult due to each country/organization's policy)
Presentation Fishery Resource Management and Ecosystem Preservation	・ Philosophy of fishery resource management and the role of fishermen's organization for successful co-management were introduced. ・ The necessity of fishermen's organization and value-added techniques on fishery products were discussed.
Introduction of Japanese technologies by private companies	・ Five private companies introduced their products and technologies on the marine environment; 1) Vacuum suction pump

Programme	Major points
	dredging method (Hayamizu Gumi Co.), 2) Oil collecting system (World Chemical Co.), 3) Ocean and river monitoring instruments (JFE Advantec Co.), 4) Coastal ecosystem-based disaster-environmental risk management (Yachiyo Engineering Co.), 5) Satellite based oil spill detection (Sky perfect JSAT Co.). ・ Among others, satellite-based oil slick monitoring attracted interest for utilization in the ROPME Sea Area.

[Day4: Friday, 14 October 2016]

Programme	Major points
Presentation Integrated Coastal Management and Ecological Network	・ The approach of integrated coastal management in Japan was introduced. ・ The importance of network of nature as well as network of people was emphasized and attracted much attention of the participants.
Presentation Integrated Coastal Management in coordination with government, fishermen and citizens; case study in Ago bay	・ The importance of participation of multiple stakeholders and the concept of “Sato-umi” (improvement of biological productivity and diversity through human interaction) was introduced. ・ The Sato-umi concept attracted much attention of the participants.
Presentation Technique of desalination and salt production process in Japan	・ Desalination and salt production process in Japan were introduced. ・ Possibility of salt production using brine (condensed sea water) in ROPME region was discussed.
Presentation Estimation of Coastal Habitat Distribution for EBSA Screening by Satellite Image Analysis	・ Technique of evaluation of marine ecosystem identification and distribution, using satellite images, was introduced.
Presentation Coastal Management by Inter-Sectoral Approach (Tokyo Bay Renaissance Project)	・ Experience of public-private cooperation to restore the water environment in Tokyo Bay was introduced. ・ The challenges and lessons learned of

Programme	Major points
	multi-sectoral participation were discussed.
Discussion Challenges of Marine Ecosystem Conservation of ROPME and Application of Japanese Experience	・ Application of Japanese experience was discussed. ・ Cooperation for the establishment of marine database, if necessary, was proposed by JICA.

6. Questionnaire survey

A questionnaire survey was carried out during the seminar to grasp present challenges in each country and to assess the possibility of future projects. The results are summarized in Table 2.

Major common issues raised were inadequate waste management, lack of baseline data/database and monitoring system, need for red tide early warning system, technique of efficient aquaculture and lack of environmental awareness.

Table 2 Summary of Questionnaire Survey

Country	Activity on the protection of marine environment	Challenges		Necessary technique/expertise
		Institutional	Technical	
Bahrain	The answer was not obtained			
Iran	Environmental Protection and Enhancement Act, 2005 Law on Establishing Facilities for Wastewater	Inconsistencies between the organizations Insufficient guidelines for marine and coastal management Insufficient standards for discharge to marine area	Destruction of habitats Weakness of waste management Weakness of HABs prevention Transboundary issues	Environmental friendly technologies Early warning system of red tide Rehabilitation of damaged ecosystem Aquaculture Waste management Desalination discharge
Iraq	Ecological studies Environmental monitoring Coral study	Illegal fishing River water reduction Agricultural waste Coastal erosion	Oil pollution Sewage	Study of fish nursery Aquaculture Environmental Awareness
Kuwait	Install of 15 monitoring buoys New Environmental Law, 2014 New research vessel	Guideline of the new law	Desalination plant Red tide Sewage Oil pollution	Conservation of marine ecosystem Environmental Awareness Marine litter Aquaculture On-site technology Countermeasure of red tide
Oman	National Biodiversity Strategy and Action Plan, 2016 National Wetland Strategy, 2016 National Strategy for Development of Fishery and Aquaculture National Management of Coral	Dredging guideline Environmental Laws	Beach erosion Red tide monitoring Wetland inventory Coral reef monitoring	Monitoring Fishery enhancement Environmental Awareness

Country	Activity on the protection of marine environment	Challenges		Necessary technique/expertise
		Institutional	Technical	
	Reef			
Qatar	Environmental monitoring	Technical training	Lack of scientific data (mangrove, seagrass, coral) Fish stock assessment Protection of coral reef Aquaculture	Aquaculture Red tide monitoring Bioprospecting
Saudi Arabia	General environmental law and its regulation Daily monitoring programme of coastline Designation of marine sanctuaries	Updating laws and regulations Cooperation with NGOs	Lack of historical data Control of land-based impact Control of dredging/land filling Regional action plan on HABs/invasive species	Development/conservation strategy and priority Integrated monitoring and assessment Public awareness
UAE	Absence			

7. Conclusion

(1) General overview

Through the series of presentations by Japanese experts, site visits and discussions, Japanese experience and technologies related to the Ecosystem Based Management (EBM) seemed to have impressed the participants and helped them to have ideas towards drafting the EBM Strategy.

They also required further continuous inputs from Japan's experience and technology towards completion of the EBM Strategy.

(2) Achievement of the Purpose of the seminar

The purpose of the seminar, to introduce the experience of Japan regarding EBM to the ROPME member countries and to share the challenges of each member country regarding marine environment, is considered as achieved.

(3) Challenges of the member countries

According to the answers to the questionnaire survey, each country pointed their challenges regarding conservation of the marine environment, while common issues in the region were also realized. The challenges in each country will be followed up by the JICA Study Team to retrieve their needs in details for future technical cooperation. The common issues in the region, such as establishment of database, monitoring system, aquaculture and environmental awareness will mainly be handled and discussed in the meeting of EBM Strategy Working Group, which might lead to the regional action plans.

Those policies mentioned above were explained and agreed in the wrap-up session at the end of the seminar.

In addition, technologies of private sector in Japan such as improvement of desalination process and oil discharge monitoring using satellite image were introduced and drew attention from the participants. As for the former technology (i.e. desalination), the further discussion was requested by a country, while the latter technology (i.e. oil discharge monitoring) is also being discussed on how to introduce to the RSA.

(4) Acknowledgements from the participants

Finally, it appeared that participants enjoyed learning Japanese experience and technologies and also staying in Japan and appreciated the Japanese experience of EBM approaches. Several e-mails were sent by the participants after they come back to their countries, expressing the acknowledgment of the hospitality of the seminar.

END

JICA Vision on JICA-ROPME Cooperation

~ The First ROPME-JICA Seminar ~

11 – 14 October 2016, Tokyo, Japan

1. Introduction

The coastal area of the ROPME Sea Area (RSA) has rich ecosystem, such as mangrove, tidal flat, coral reefs and seagrass bed. This ecosystem provides important habitats for birds, fish and sea mammals, leading to special natural resources and fisheries resource for human.

However, the area has been influenced by the human activities such as oil and gas development, intensive coastal reclamation, climate change, dust storm, over fishing and water pollution due to rapid economic growth.

In response to the concerns, the eight governments of the region (Kingdom of Bahrain, Islamic Republic of Iran, Republic of Iraq, State of Kuwait, Sultanate of Oman, State of Qatar, Kingdom of Saudi Arabia and United Arab Emirates) adopted the Kuwait Convention and Action Plan in 1978. The Regional Organization for the Protection of the Marine Environment (ROPME) was established in the following year. ROPME subsequently adopted four protocols, and ROPME and member countries has been addressing conservation of the marine environment based on the protocols. In addition, a protocol concerning the conservation of biological diversity and the establishment of protected areas has been concluded for the signing of the Member States.

Under these circumstances, the Memorandum of Undertaking (MOU) between ROPME and JICA was signed in 2014 to 1) enhance cooperation framework for environmental protection of the RSA, 2) implement high-quality technical cooperation for ROPME and the member states. Based on the MOU, ROPME and JICA carried out the detailed discussion for the cooperation activities in June 2015 and “A Three Year Partnership Programme (2015-2016)” has been started since November 2015. The Programme includes following activities; 1) gathering information of ROPME Member States, 2) holding international workshop in Japan, 3) holding regional workshops in ROPME Region, 4) needs finding for technical cooperation, 5) preparation on procedure for cost sharing scheme, 6) side event in the international convention.

Besides, ROPME and member countries have started to develop region-wide Ecosystem Based Management (EBM) strategy under the cooperation of United Nations Environment

Programme (UNEP)..

In response to these backgrounds, ROPME and JICA decided to hold the first ROPME-JICA Seminar, not only to share the Japanese experience but also contribute to the development of EBM strategy.

2. Objective

The objective of this seminar is to identify challenges of environmental protection in RSA, to introduce Japanese experiences and technologies for environmental protection, and to introduce an opportunity of matching between the needs of ROPME member states and Japanese technologies.

Furthermore, in April 2016 a workshop on EBM in RSA was held in Dubai, UAE, and established the framework to develop the EBM Strategy. This region-wide EBM Strategy will set a common vision and catalyze policy coherence based on ecosystem-based approaches across sectors in RSA.

In this context, the seminar aims to share Japanese experiences contributing to development of EBM Strategy in RSA as well.

3. Expected Outcomes

1) To identify challenges of environmental protection in RSA
2) To obtain Japanese experiences and technologies for environmental protection and development of the EBM Strategy in RSA
3) To develop Network between experts/officers in RSA and Japan
4) To promote further cooperation between ROPME member states and JICA

4. Programme Orientation

The programme is focusing on the following subjects. In addition to the series of the lectures and site visits, a session for discussion with private companies is planned to introduce advanced technologies for marine environment protection and monitoring.

1) Pollution History and Environmental Policy in Japan

After the World War II, Japan entered an age of rapid economic growth and faced severe environmental pollution. The pollution caused serious health damage such as Yokkaichi Asthma (caused by industrial air pollution), Itai-Itai Disease (caused by cadmium pollution), and Minamata Disease (caused by mercury pollution). Since the 1960s, the Japanese government has established several environmental control laws and addressed such environmental pollution. In the 1970s, the Water Pollution Control Law was enforced and

Total Pollutant Load Control System was introduced in enclosed sea areas. Through these efforts, environmental pollution has been overcome and water quality has been significantly improved.

The Japanese experience of how to control and monitor industrial pollution load may contribute RSA to set up environmental regulations/standard and to control marine water pollution.

2) Environmental Protection and Recovery

Tokyo bay is the semi-enclosed coastal sea, which has a large population integrated in the hinterland. Majority of coastal habitat such as tidal flat and seaweed bed in Tokyo bay has disappeared because of reclamations with the rapid economic growth in the period of the 1960s and 1970s. Tokyo bay faces several pollutions such as eutrophication, red tide, blue tide and marine litter as well.

In response to the concerns, local governments and several national governments, such as Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Ministry of the Environment (MOE), and Ministry of Agriculture, Forestry and Fisheries (MAFF), established the consociation and developed the Action Plan for Tokyo Bay Renaissance in 2002 and addressed reduction of pollution load from land, environment improvement in the sea, and monitoring in cooperation with private, academia and public.

Port and Airport Research Institute(PARI) developed the Intertidal Flat Experimental Facility (IFEF) and Laboratory of Coastal Ecotoxicology (LACE) to evaluate the function and substance circulation of tidal flat and seaweed/sea glass bed.

Yatsu tidal flat, registered as a Ramsar site in 1993, is one of the protected coastal habitats in urban areas in which several conservation activities are conducted in coordination with local government, local residents and NPOs.

Concept of inter-sectoral approach and public participation may become a good example for developing ROPME EBM Strategy.

3) Monitoring and Database

In the coastal area of Japan, several monitoring activities are being carried out by several organizations such as MOE, MAFF, MLIT, Japan Coast Guard (JCG), Japan Agency for Marine-Earth Science and Technology (JAMSTEC) and local governments for their own purposes. JCG conducts coastal monitoring for protection of the marine environment and safety navigation. JAMSTEC is one of the leading marine research organizations and they conduct marine monitoring for an integrated understanding of global environmental change and its forecast.

Identification of coastal habitat and extraction of Ecologically or Biologically Significant Area (EBSA) is the first step to address EBM. Satellite Image Analysis is very useful tool to carry out such activities in a broad ocean area. Remote Sensing Technology Center of Japan (RESTEC) has cutting edge technologies in the field of satellite image analysis.

The Marine Information Clearinghouse System was developed to integrate several monitoring data conducted several organizations and to disseminate the data to contribute marine research and industries.

Such monitoring and database system may contribute RSA to develop integrated monitoring and database system.

4) Integrated Coastal Management

Integrated Coastal Management (ICM) should be carried out by cross-sectoral approach, locally-owned approach and adaptive management. One of the good practice of ICM is Ago Bay recovery project in which local government, fishermen and citizens are working together to improve water quality and enhance fishery productivity. This approach is called “Sato-umi” activity. In Japanese, "SATO" means the area where people live, and "UMI" means the sea. Sato-umi is a coastal area where biological productivity and biodiversity has increased through human interaction.

The experience of cooperation between local government and fishermen may become a good practice to develop ROPME EBM Strategy.

Programme of the First ROPME-JICA Seminar

Schedule: Tuesday, 11 – Friday, 14 October 2016

Venue: The Prince Sakura Tower Tokyo, 3-13-1, Takanawa, Minato-ku, Tokyo, 108-8612, JAPAN
2nd Floor N-5 ~ N-9 (11 Oct.), N-6 ~ N-10 (13, 14, Oct.)

Programme:

[Day1: Tuesday, 11 October 2016]

Time	Programme	Speaker
9:00-9:30	***Registration***	-
9:30-9:50	**Opening Remark**	**Mr.Kenichi SHISHIDO,** Deputy Director General, Global Environment Dept. JICA **Dr. Hassan Mohammadi**, Coordinator, ROPME
9:50-10:50	**Keynote Address** Conservation of Enclosed Seas in Japan and its contribution to ROPME Sea Area	**Dr. Motoyuki Suzuki**, Professor Emeritus of Tokyo University
10:50-11:10	*Coffee Break*	
11:10-12:10	**Presentation** Introduction of UNEP ecosystem approach	**Ms. Kanako Hasegawa**, UNEP
12:10-13:30	*Lunch Break*	
13:30-14:00	**Presentation** JICA's Cooperation Strategy in the Region (Provisional)	**Mr. Akihiro Iwasaki**, Advisor, Middle East Division 2, Middle East and Europe Department (JICA)
14:00-14:20	**Presentation** ROPME-JICA Partnership Programme and findings from the activity	**Mr. Yoichi Harada**, JICA Study Team
14:20-14:50	**Discussion** Common issues to be tackled in the region	**ROPME & Member States**
14:50-15:20	*Coffee Break*	
15:20-16:20	**Presentation** Marine Environmental Policy and Water Pollution Control in Enclosed Sea in Japan	**Mr. Keizo Negi**, Ministry of the Environment (MOE)
18:30-20:00	**Welcome Reception hosted by JICA** (Venue: Room 'KOGYOKU', Ground Floor, International Convention Center PAMIR in the premises)	

[Day2: Wednesday, 12 October 2016]

Time	Programme	Speaker
7:30-9:00	*Travelling to the site (Narashino city, Chiba Prefecture)*	
9:00-11:00	**Site visit** History of the preservation for Natural Protected Area and its Management in Yatsu Tidal Flat (Ramsar wetland)	**Mr. Tatsuya Shibahara**, Yatsu Tidalflat Nature Observation Center
11:00-14:00	*Lunch and Travelling to the site (Yokosuka city, Kanagawa Prefecture)*	
14:00-16:00	**Presentation and Site visit** Marine Environmental Research and Monitoring Technology of JAMSTEC	**Dr. Takanori Horii**, Japan Agency for Marine Earth Science and Technology (JAMSTEC)

[Day3: Thursday, 13 October 2016]

Time	Programme	Speaker
8:00-10:00	*Travelling to the site (Yokosuka city, Kanagawa Prefecture)*	
10:00-11:30	**Presentation and Site visit** Cross-boundary approach over Gray and Green Infrastructure	**Dr. Tomohiro Kuwae**, Port and Airport Research Institute(PARI)
11:30-14:00	*Lunch and Returning to the venue (Shinagawa, Tokyo)*	
14:00-15:00	**Presentation** Coastal Environmental Monitoring and Integrated Database(Clearinghouse)	**Mr. Satoshi Yamao and Mr. Norio Baba**, Japan Coast Guard (JCG)
15:00-15:15	*Coffee Break*	
15:15-16:15	**Presentation** Fishery Resource Management and Ecosystem Preservation	**Dr. Takaomi Kaneko**, National Research Institute of Fisheries Science (NRFS)
16:15-16:30	*Coffee Break*	
16:30-18:30	**Introduction of Japanese technologies by private companies**	Dredging, Oil skimming, and Monitoring equipment companies etc.

[Day4: Friday, 14 October 2016]

Time	Programme	Speaker
9:30-10:45	**Presentation** Integrated Coastal Management and Ecological Network	**Dr. Keita Furukawa**, Ocean Policy Research Institute (OPRI)
10:45-11:15	*Coffee Break*	
11:15-12:30	**Presentation** Integrated Coastal Management in coordination with government, fishermen and citizens; case study in Ago bay	**Dr. Osamu Matsuda**, Professor Emeritus of Hiroshima University
12:30-14:00	*Lunch Break*	
14:00-15:00	**Presentation** Estimation of Coastal Habitat Distribution for EBSA Screening by Satellite Image Analysis	**Dr. Tatsuyuki Sagawa**, Remote Sensing Technology Center of Japan (RESTEC)
15:00-15:15	*Coffee Break*	
15:15-16:15	**Presentation** Coastal Management by Inter-Sectoral Approach (Tokyo Bay Renaissance Project)	**Mr.Takamichi Kondo** Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
16:15-16:30	*Coffee Break*	
16:30-17:30	**Discussion** Challenges of Marine Ecosystem Conservation of ROPME and Application of Japanese Experience	JICA Study Team/ ROPME/ M.S.
17:30	**Closure of the Seminar**	JICA, ROPME

[Saturday, 15 – Sunday, 16 October 2016]

Workshop toward the Development of a Regional Ecosystem Based Management Strategy for ROPME Sea Area

End

The First ROPME – JICA Seminar (11-14 Oct.2016)

The First EBM Working Group Meeting (15-16 Oct.2016)

List of Participants

(Omitted)

Appendix 4 Report of International Workshop 2

Report on the ROPME-JICA Workshop in Tokyo

(December 12th to 14th, 2018)

December 2018

JICA Expert Team

[Summary]

The second workshop of the ROPME-JICA Partnership Programme was held in Tokyo from 12th December to 14th December 2018, as a back-to-back event with the ROPME Meeting of the Regional Task Force on Marine Biodiversity Strategy for the ROPME Sea Area.

Through the series of presentations by Japanese experts, site visits and discussions, Japanese experience and technologies related to the conservation of biodiversity seemed to have impressed the participants and helped them to have ideas toward regional activities.

Further continuous inputs from Japan's experience and technology were positively desired.

Table of Contents

Summary

1. Outline of the workshop

The workshop was held as a back-to-back event with the ROPME Meeting of the Regional Task Force on Marine Biodiversity Strategy for the ROPME Sea Area.

The outline of the workshop is as follows:

Period: from 12th December to 14th December 2018

Venue: Intercontinental Tokyo Bay

1-16-2 Kaigan Minato-ku Tokyo, Japan

Number of participants: 26

Participated countries: Kingdom of Bahrain, Islamic Republic of Iran, Republic of Iraq, State of Kuwait, Sultanate of Oman, Kingdom of Saudi Arabia, United Arab Emirates

Hosts: ROPME, JICA

Cooperate Guest: UN Environment

2. Concept paper

Introduction, objective, expected outcomes, programme orientation are described in the concept paper, attached as Appendix 1.

3. Programme

The programme during the workshop is attached as Appendix 2.

4. Participants

The list of participants is attached as Appendix 3.

5. Major points to be noted

Major points, which were raised or discussed during the workshop, are summarized in Table 1.

Table 1 Major points to be noted

[Day1: Wednesday, 12 December 2018]

Programme	Major points
Field visit Gyotoku Bird Observatory Kasai Seaside Park	・ The history of development of Tokyo Bay and conservation of Gyotoku Bird Observatory and Kasai Seaside Park was introduced. ・ A lot of plants have been occurred and growing naturally (not artificially implanted) at the Gyotoku Bird Observatory, so,

Programme	Major points
	importance of habitat foundation was shared. ・ There are two beaches in the Kasai Seaside Park with different objectives, one is restoration and conservation of natural ecosystem, and the other is recreation for human beings. So, concept of the zoning was shared.

[Day2: Thursday, 13 December 2018]

Programme	Major points
Presentation ROPME-JICA Partnership Programme Overview of the programme *Mr. Yoichi HARADA / Team leader of JICA Expert Team*	・ The outline and the outcomes of the partnership program was introduced. ・ Further collaboration between JICA, ROPME and UN Environment for conservation of ROPME sea area was emphasized.
Presentation JICA's Efforts on the Marine Environment Conservation *Dr. Noriaki SAKAGUCHI / Senior Advisor, JICA*	・ It was explained that the over half of all the organic carbon stored in the world is blue carbon, and that the carbon storage in mangrove is much higher than that in terrestrial forests. ・ It was also introduced that JICA is funding to BlueCARES Project which conducts comprehensive assessment and develops conservation strategy of blue carbon ecosystem, and working for mangrove restoration and sustainable prawn aquaculture.
Presentation Session I: Restoration of Coastal Ecosystems - A turning-point of Japanese policies for the management of water environment - *Dr. Mitsumasa OKADA / Executive Vice-President, The Open University of Japan*	・ History of Japanese water pollution, counter measures, and policies were introduced. ・ Importance of not only water quality improvement but also restoration of coastal habitat was emphasized for healthy ecosystems. ・ Regulation on the industries by national and local government was discussed.
Presentation Session II: Implementation of Coastal Ecosystem and Blue Carbon Projects Session III: Our Coastal habitat project	・ Practices of Blue Carbon Projects in Abu Dhabi and Mikoko Pamoja in Kenya were shared. ・ A part of the carbon credit money was

Programme	Major points
manual and blue forest project *Mr. Takehiro NAKAMURA / Chief, Marine and Coastal Environment Unit, United Nations Environment Programme (UN Environment)*	provided to the local community.
Presentation Session IV: Current Activities on Blue Carbon in Japan *Mr. Daisuke UESAKO / Ocean and Environmental Policy Division Ports and Harbours Bureau, Ministry of Infrastructure, Land, Transportation and Tourism (MLIT)*	・ Activities on Blue Carbon by port sector in Japan was shared. ・ The examples using dredged soil for the tidal wetland creation and using industrial by-products for the seaweed beds creation were introduced.
[Practical Approaches and Restoration for Coastal Habitat Conservation] **Session I: Approaches on Restoration Program** **Presentation** Activities of Coastal Ecosystem Restoration in Port and Harbour Sectors in Japan *Prof. Yoshiyuki NAKAMURA, Director, Centre for Oceanic Studies and Integrated Education, Yokohama National University*	・ Characteristics of Japanese coast including historical perspective, water pollution and regulations & recovery measures, and new directions for restoration of natural environment were shared. ・ Case studies for restoration of coastal environment by tidal flat & seagrass beds and back-filling of sand borrow pits were introduced as the new directions. ・ Importance of continuity from hinterland to subtidal area and adaptive management was enhanced.
Presentation Introduction of Practical Handbooks of Coastal Habitat Restoration Projects *Mr. Kazuhiro YOSHIDA / JICA Expert Team*	・ Series of hand books for coastal restoration including tidal flat, seaweed/seagrass beds, and coral reef were introduced. ・ Preparation of a booklet of case studies and a handbook for ROPME sea area was suggested as supporting tools of a marine biodiversity strategy and EBM strategy. ・ Request of English translated version of the handbooks was raised from the participants.
Presentation Public-private Collaborative Efforts Towards Restoration of Coastal Environment and Ecological Habitat *Prof. Jun SASAKI / Estuarine & Coastal Environment, Coastal Engineering, Hydro-environmental Engineering, Coastal*	・ A new scheme of public-private cooperation contributing to over come vertically divided administrative functions, and lack of funding and social interest was shared. ・ As an incentive to promote public-private cooperative activities for environmental restoration, blue carbon was proposed.

Programme	Major points
Zone Management, The University of Tokyo	

[Day3: Friday, 14 December 2018]

Programme	Major points
Session II: Approaches in Fishery Sector **Presentation** Conservation of Coastal Marine Environment and Fishery Resources: SDG14, Marine Protected Area (MPA) and Ecosystem Services *Dr. Osamu MATSUDA / Professor Emeritus, Hiroshima University, Vice President, Centre for Environmental Management of Enclosed Coastal Seas*	・ The necessity of active conservation with human interaction for sustainable use of coastal resources was enhanced. ・ The practices of Satoumi to realize resilient coastal seas and to reconstruct better relationship between human and the sea were shared. ・ A lot of interests to Satoumi was raised from the participants.
Presentation Coral Reef Conservation *Dr. Shinichiro KAKUMA / Okinawa Deep Seawater Research Centre*	・ Status of coral reef deterioration and the practices of coral reef conservation in cooperation with fishermen (Satoumi) were shared. ・ Reasons of deterioration of coral reef was attracted by the participants and discussed.
Presentation Effort on Restoration of Tidal-flat and Seagrass Bed *Mr. Takehiro TANAKA / Director, Secretory General, NPO Satoumi Research Institute*	・ Restoration of tidal-flat and seagrass bed in cooperation with fishermen and ICM promotion in local city were introduced. ・ Importance of public participation not only fishermen but also small children for the environmental education was discussed.
Presentation Contribution of Local Community and the Effect of Environmental Education to the Restoration of Seagrass Bed *Ms. Izumi TSURITA, Associate Expert, Agricultural and Rural Development Department, JICA*	・ Social network of the eelgrass restoration activity in local government participated by a lot of stake holders such as local governments, fisheries cooperation agency, schools and NGOs etc was introduced. ・ The difficulty collaborating with fishermen and good practices were discussed.
Discussion	・ positive interest to the presentations of Japanese experts were expressed by the participants. ・ JST supported an idea of comprehensive approach under several strategies, such as

Programme	Major points
	EBM, Biodiversity, Climate Change, etc. ・ JST announced the plan of visit to each country for discussion for further collaboration.
Session III: Practical Technology **Presentation** Coastal Habitat Mapping *Dr. Tatsuyuki SAGAWA / Research Scientist, Remote Sensing Technology Centre of Japan (RESTEC)*	・ Coastal habitat monitoring technique using satellite remote sensing both domestic and international projects was introduced. ・ Also, cutting-edge technologies using AI and Cloud habitat mapping system were shared.
Presentation Technology to Improve Water Quality and Sediment Quality, Technology to Mitigate the Impact of Development on Marine Ecosystem, Technology to Conserve and Restore Organism Habitat such as Tidal Flats and Seaweed Beds *Ms. Yuko TANAKA / Manager, Water Consultation Room, TOA CORPORATION*	・ As mitigation technology, it was important to select an appropriate place and method considering of water and the annual change of water temperature for regenerating a seaweed bed and transplanting coral or mangrove etc. ・ The grab bucket was developed to remove such hazardous sediment as much as safely with 1) less hazardous water spreading and 2) less turbidity.
Presentation Zostera Bed Artificial Forming Technology *Mr. Tsuyoshi KANAZAWA / Technical Research Institute, Naruo / TOYO CONSTRUCTION CO., LTD*	・ The concept and a key point for developing a new Zostera bed artificial forming method. ・ The method of sandwiching seeds of Zostera marina in sheets, roll up it, transporting it, and spread at the seabed, was introduced. ・ Applicability to the region was concerned by the participants.
Presentation Oceanographic Instruments *Dr. Herminio FOLONI NETO / JFE Advantech Co., Ltd.*	・ The cutting-edge equipment for oceanographic monitoring was shared including automated monitoring system and yawing profiler. ・ A participant is interested in ADCP.
Presentation Idea for Utilization of a Sand and Dust Storm Forecast Simulation *Dr. Takahiro ENDO / JICA In-house Consultant, Global Environment Department, JICA/RESTEC*	・ Forecasting technology of sand dust distribution by Japanese simulation model (SPRINTARS) was introduced. ・ Idea for application to the region using GSMap(rain fall data), MATSIRO5 (soil moisture) and SPRINTARS (sand dust storm)

Programme	Major points
	was proposed.
Exchange meeting between regional demand and technology in Japan	・ Opinion exchange between regional demand and Japanese technologies were carried out.

6. Conclusion

(1) General overview

Through the series of presentations by Japanese experts, site visits and discussions, Japanese experience and technologies related to the conservation of biodiversity seemed to have impressed the participants and helped them to have ideas toward regional activities.

They also required further continuous inputs from Japan's experience and technology.

(2) Achievement of the Purpose of the workshop

The purpose of the workshop, to introduce the experience of Japan regarding conservation of biodiversity to the ROPME member countries and to share the challenges of each member country regarding marine environment, is considered as achieved.

(3) Challenges of the member countries

Although positive interest to the presentations of Japanese experts were expressed during the Q & A sessions and the wrap-up discussion, the participants do not seem to have concrete ideas about further activities regarding conservation of biodiversity especially coral reefs, seagrass beds and mangroves, because they are not decision makers. It is considered, therefore, that follow-up visit and discussion with not only the participants but also with their superiors in each country might be important.

While JICA and JICA Expert Team originally decided to support the activities of ROPME on formation of EBM Strategy at the beginning of the project, various ideas of strategy including biodiversity conservation, EBM, climate change, marine litter, etc. were risen by ROPME and those meetings were held. During the back-to-back meeting of this workshop, on the Regional Task Force on Marine Biodiversity Strategy for the ROPME Sea Area, broad approach focusing the conservation of marine environment based on the various strategies mentioned above were proposed by a participant. This policy was explained and agreed in the wrap-up session at the end of the workshop.

In addition, technologies of private sector in Japan such as rehabilitation and creation of tidal flat,

coral reef were introduced and drew attention from the participants.

(4) Way forward

Based on the agreement of the comprehensive approach for conservation of marine environment, JICA and JICA Expert Team have discussed about the basic policies of the Partnership Programme as follows.

- While cooperation with Un Environment on EBM Strategy will be a core aim of the program, other strategy of ROPME will also be considered and support their activities (mainly holding workshops) to clarify the vison of the next phase.
- Case studies of good practice on conservation of coastal ecosystem will be prepared by the programme and a reginal workshop will be held as a wrap-up of the programme. Visit to the countries for supplemental information might be considered.
- Holding EBM Strategy Working Groupe Meeting will also be recommended, if ROPME agrees.
- A network between the member countries will be established to enhance the discussion on technical approach of marine environment conservation.

(5) Acknowledgements from the participants

Finally, it appeared that participants enjoyed learning Japanese experience and technologies, and also staying in Japan. Several e-mails from the participants were received after they come back to their countries, expressing the acknowledgment of the hospitality of the workshop.

END

Concept Paper of the Second ROPME-JICA Workshop on Coastal Habitat Conservation and Restoration

12 – 14 December 2018, Tokyo, Japan

1. Background and Purpose

Under the ROPME-JICA Partnership Programme and United Nations Environment Programme (UN Environment)-ROPME Partnership, the first EBM (Ecosystem Based Management) Working Group Meeting and the first ROPME-JICA workshop were held in Tokyo in October 2016. Since then ROPME, UN Environment and JICA have cooperated in developing the Regional Strategy on EBM, but it will take more time to establish the strategy. Meanwhile, ROPME has the five important regional tasks consisting of EBM, Marine Biodiversity, Marine Climate Change, Eutrophication and HAB (Harmful Algal Bloom), and Sand and Dust Storm (SDS), all tasks except Marine Biodiversity have been addressed. For this reason, Marine Biodiversity became as a top priority for ROPME, and the regional task force meeting on Marine Biodiversity is decided as the one of two back-to-back workshops in the second ROPME-JICA Workshop in Tokyo. Even for JICA, the marine biodiversity is a welcome theme, since it has many common measures and technologies with EBM approach in the context of cooperation for EBM strategy development.

In the first ROPME-JICA Workshop, the purposes were to identify challenges of environmental protection in RSA, to introduce Japanese experiences and technologies for environmental protection, and to introduce an opportunity of matching between needs of ROPME member states and Japanese technologies.

In this second ROPME-JICA Workshop, '**practical** and **multi-beneficial**' are set as principle for organizing the programme on "Coastal Habitat Conservation and Restoration". It is expected that 'practical' techniques and know-how would contribute for development of action plans for marine biodiversity and ecosystems, and their implementation, and 'multi-beneficial' measures would enhance to address the coastal habitat conservation and restoration. For example, habitat conservation and restoration would contribute for environment sector (biodiversity, natural resources, etc.) and fishery sector (fishery resources, ecosystem services, etc.), and also for addressing SDG14 and Climate Change: blue carbon, etc.).

2. Programme Orientation

The programme of two-day workshop organized by JICA consists of four sessions, the plenary session on the policy and practice for habitat conservation and restoration, the session on coastal habitat restoration in the port and harbor sector, the session on coastal habitat restoration in the fishery sector, and the session on techniques for coastal habitat restoration in the private sector.

1) Plenary session on the policy and practice for habitat conservation and restoration

As the keynote speech, Dr. Mitsumasa OKADA will introduce the history and effects of policies and countermeasures on marine environment with the presentation on 'A turning-point of Japanese policies for the management of water'.

Next three presentations will focus on 'Blue Carbon' which is expected as a breakthrough for enhance the coastal habitat conservation with multi-benefits, such as addressing to the Climate Change (reduce/sink of carbon dioxide) and SDG14.

2) Session on coastal habitat restoration in the port and harbor sector

The development of coastal area by the port and harbor sector has affected the coastal habitats for long time in Japan. Because of the movement for environmental consideration, the port and harbor sector has also addressed to the coastal habitat conservation and restoration. Therefore, practical technologies have been developed, and actual restoration projects have been accumulated.

The history and characteristics of the approaches, handbooks on habitat restoration and a case of public-private approach to habitat conservation are introduced.

3) Session on coastal habitat restoration in the fishery sector

As the keynote of this session, Dr. Osamu MATSUDA will present 'SDG14, Marine Protected Area (MPA) and Ecosystem Services' for enhance the collaboration between fishery sector and environment sector.

Next three presentations are all related to human/community based conservation/restoration activities. Human/community involvement is one of key factors for sustainable coastal management. Case studies on the coral reef conservation/restoration activity, and the tidal-flat and seagrass bed restoration project from technical and human/community involvement aspects will be introduced.

4) Session on techniques for coastal habitat restoration in the private sector

In this session, remote sensing technologies for costal habitat mapping, integrated technologies for habitat conservation and restoration, a case expert on seagrass bed restoration project, and technologies/equipment for marine environment observation will be introduced.

(Special topic on SDS)

As a special topic, JICA will introduce 'Idea for utilization of a sand and dust storm (SDS) forecast simulation and would like to gather comments on it.

3. Points on Discussion and Wrap-up

1) Application to the Region
2) Future collaboration

JICA Workshop on Coastal Habitat Conservation and Restoration
Tokyo, Japan, 13-14 December 2018

PROVISIONAL PROGRAMME

Venue: "May Fair" on 5th floor, Intercontinental Tokyo Bay

Thursday, 13 December 2018

09:00-09:10	**Opening by JICA**
09:10-09:20	**Signing Ceremony on the Minutes of the Meeting for Extension of the Partnership Programme**
09:20-09:40	**ROPME-JICA Partnership Programme** • Overview of the programme • Future Framework
09:40-10:00	**JICA's Efforts on the Marine Environment Conservation** **Qs&As**
10:00-10:20	Coffee Break
10:20-10:50	**Plenary Session I: Restoration of Coastal Ecosystems** **--- A turning-point of Japanese policies for the management of water environment ---** *Dr. Mitsumasa OKADA, Executive Vice-President, The Open University of Japan* **Qs&As**
10:50-11:10	**Plenary Session II: Implementation of Coastal Ecosystem and Blue Carbon Projects** *Mr. Takehiro NAKAMURA, Chief, Marine and Coastal Environment Unit, United Nations Environment Programme (UN Environment)* **Qs&As**
11:10-11:30	**Plenary Session III: Our Coastal habitat project manual and blue forest project**

	Mr. Takehiro NAKAMURA, Chief, Marine and Coastal Environment Unit, United Nations Environment Programme (UN Environment) **Qs&As**
11:30-11:50	**Plenary Session IV: Current Activities on Blue Carbon in Japan** *Mr. Daisuke UESAKO, Ocean and Environmental Policy Division Ports and Harbours Bureau, Ministry of Infrastructure, Land, Transportation and Tourism (MLIT)* **Qs&As**
11:50-12:30	**Discussion**
12:30-14:00	Lunch (at "Atlantic" on 5th floor)
14:00-15:00	**Practical Approaches and Restoration for Coastal Habitat Conservation** **Session I: Approaches on Restoration Program** Activities of Coastal Ecosystem Restoration in Port and Harbour Sectors in Japan *Prof. Yoshiyuki NAKAMURA, Director, Centre for Oceanic Studies and Integrated Education, Yokohama National University* **Qs&As**
15:00-15:20	Coffee Break
15:20-16:00	1-1. Introduction of Practical Handbooks of Coastal Habitat Restoration Projects *Mr. Kazuhiro YOSHIDA, JICA Expert Team* **Qs&As**
16:20-16:40	1-2. Public-private Collaborative Efforts Towards Restoration of Coastal Environment and Ecological Habitat *Prof. Jun SASAKI, Estuarine & Coastal Environment, Coastal Engineering, Hydro-environmental Engineering, Coastal Zone Management, The University of Tokyo* **Qs&As**
16:40-17:00	**Discussion: Applying to the Region**

Friday, 14 December 2018

09:00-09:45	**Practical Approaches and Restoration for Coastal Habitat Conservation** **Session II: Approaches in Fishery Sector** 2-1. Conservation of Coastal Marine Environment and Fishery Resources: SDG14, Marine Protected Area (MPA) and Ecosystem Services *Dr. Osamu MATSUDA, Professor Emeritus, Hiroshima University/ Vice President, Centre for Environmental Management of Enclosed Coastal Seas,*
09:45-10:15	2-2. Coral Reef Conservation *Dr. Shinichiro KAKUMA, Okinawa Deep Seawater Research Centre* **Qs&As**
10:15-10:30	Coffee Break
10:30-11:00	2-3. Effort on Restoration of Tidal-flat and Seagrass Bed *Mr. Takehiro TANAKA, Director, Secretory General, NPO Satoumi Research Institute* **Qs&As**
11:00-11:30	2-4. Contribution of Local Community and the Effect of Environmental Education to the Restoration of Seagrass Bed *Ms. Izumi TSURITA, Associate Expert, Agricultural and Rural Development Department, JICA* **Qs&As**
11:30-12:00	**Discussion: Wrap up and Way forwards (Applying to the Region)**
12:00-13:30	Lunch (at "Atlantic" on 5th floor)
13:30-13:55	**Practical Approaches and Restoration for Coastal Habitat Conservation** **Session III: Practical Technology** 3-1. Technical Expertise by Private Sectors (1) Coastal Habitat Mapping *Dr. Tatsuyuki SAGAWA, Research Scientist, Remote Sensing*

	Technology Centrr of Japan (RESTEC)
13:55-14:20	(2) Technology to Improve Water Quality and Sediment Quality, Technology to Mitigate the Impact of Development on Marine Ecosystem, Technology to Conserve and Restore Organism Habitat such as Tidal Flats and Seaweed Beds *Ms. Yuko TANAKA, Manager, Water Consultation Room, TOA CORPORATION*
14:20-14:45	(3) Zostera Bed Artificial Forming Technology *Mr. Tsuyoshi KANAZAWA, Technical Research Institute, Naruo, TOYO CONSTRUCTION CO.,LTD.*
14:45-15:10	(4) Oceanographic Instruments *Dr. Herminio FOLONI NETO, JFE Advantech Co., Ltd.*
15:10-15:35	(5) Idea for Utilization of a Sand and Dust Storm Forecast Simulation *Dr. Takahiro ENDO, JICA In-house Consultant, Global Environment Department, JICA/RESTEC*
15:35-15:40	Move to room “Afrodite” on 4th floor
15:40-16:50	3-2. Exchange Meeting at “Afrodite” on 4th floor
16:50-17:00	**Closing**

End

The 2nd ROPME – JICA Workshop (10-14 Dec.2018)

List of Participants

(Omitted)