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## Arab Sustainable Development Report

# Marine Resources in the Arab Region

UNEP

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# 1. Progress and trends relating to marine resources

The planet's oceans, seas and coastal areas provide goods and ecosystem services that are fundamental to human well-being, global food security and nutrition, international trade and economic development, climate regulation, storm protection, energy generation, waste absorption and recycling, recreation, and others. Coastal areas are home to a large percentage of the world's population and often depict above average rates of urbanization, economic development and population growth. Yet both globally and in the Arab region, these marine resources are at risk of irreversible damage to habitats, ecological functions, and biodiversity because of overfishing, climate change and ocean acidification, invasive species, pollution, unsustainable coastal area development and the unwanted impacts from the extraction of non-living ocean resources. Putting the uses of oceans and seas onto a sustainable path and adapting to climate change requires concerted and responsible actions across a wide range of actors and economic sectors. A regional approach to the sustainable use and conservation of marine resources is very much needed; what makes the issue more complex in the Arab region is the number of different marine eco-systems in the region. The region includes five main regional marine bodies of water, as highlighted in the Table 1. Each of these seas or oceans is guided by a regional conservation organization or programme, as well as a regional fisheries management arrangement[1].

Each marine area is tethered to its own set of challenges in relation to the misuse and/or degradation of marine resources; this differentiation stems from a diverse set of realities but ultimately leads to similar ends, in terms of adapting to and mitigating changes.

The **Mediterranean Sea** is a semi-enclosed body of water. It has a negative water budget, and is globally considered oligotrophic. It covers seven Arab countries yet faces problems that are shared amongst the entire basin of the Mediterranean. This sea faces a number of challenges, including the impacts of the more than 200 petrochemical and energy installations, chemical industries and chlorine plants are located along the Mediterranean coast[2]. Eutrophication is a challenge in such shallow waters near deltas such as the Nile in Egypt and major urban areas resulting from the diffuse agricultural and industrial discharges. Agricultural use of fertilizers is projected to increase by 70% in the east and 50% in the south of the Mediterranean basin between 2000 and 2025[3]. Mediterranean fisheries are managed at the regional level through the General Fisheries Commission for the Mediterranean (GFCM) and its various technical sub-committees and working groups. Fish production statistics indicate a relatively stable catch in the Mediterranean in recent years (see Figure 1), after a steady increase in production which ceased in the 1980s[4]. In terms of specific species, allhake (*Merlucciusmerluccius*) and red mullet (*Mullusbarbatus*) stocks are considered overfished, and it is likely the same for the main stocks of sole and most sea breams.[5] The main stocks of small pelagic fish (sardine and anchovy) have been assessed as fully fished. A newly identified threat is the increasing invasion of exotic Red Sea species through the Suez Canal (known as Lessepsian migration), which in some cases seem to be replacing native species, especially in the Eastern Mediterranean.

The **Red Sea and Gulf of Aden Region** (RESGA) is noted to be one of the world's most unique coastal and marine environments and has relatively unaffected marine resources in comparison to the neighboring Mediterranean. The region, however, is under direct threat of human activities such as dredging and filling operations, the disposal of domestic and industrial effluent, the non-sustainable use of non-living resources and the expansion of the tourism industry[6]. The narrow continental shelves and enclosed nature of the Red Sea create a unique fisheries situation and both the Red Sea and Gulf of Aden are considered Class 1 Highly Productive Ecosystems. Approximately 1 200 reef species are known to occur in the Red Sea, 10 to 17 percent

of which are endemic. This region does not as yet have a formal fisheries management arrangement, regional cooperation on fisheries is limited and no formal regional stock assessment has been conducted. Analysis of fish landings alone suggests that, with the exception of small pelagic resources, the status of various species should be assumed to be fully exploited[7].

**TABLE 1 KEY CHARACTERISTICS OF THE 5 REGIONAL SEAS AREAS OF THE ARAB REGION**

| Marine Area[8] | Coastal Countries | | | Organizations/Programmes responsible for use and management of resources | |
|---|---|---|---|---|---|
| | Total | Arab countries | | | |
| | | Name | Coastline (km) | Conservation | Fisheries Management |
| **Mediterranean** | 22 | Morocco<br>Algeria<br>Tunisia<br>Libya<br>Egypt<br>Palestine<br>Lebanon<br>Syria | 512<br>1,557<br>1,927<br>2,025<br>2,450<br>40<br>294<br>212 | Mediterranean Regional Seas Programme (Mediterranean Action Plan) | General Fisheries Commission for the Mediterranean |
| **Red Sea and Gulf of Aden** | 8 | Egypt<br>Sudan<br>Jordan<br>Saudi Arabia<br>Somalia<br>Yemen<br>Djibouti | 1,800<br>2,245<br>27<br>1,840<br>3,898<br>3,149<br>443 | Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) | In development |
| **Arabian/ Persian Gulf and Sea of Oman** | 8 | Iraq<br>Kuwait<br>UAE<br>Bahrain<br>Qatar<br>Oman<br>Saudi Arabia | 105<br>756<br>735<br>255<br>909<br>3,165<br>790 | Regional Organization for the Protection of the Marine Environment (ROPME) | Regional Commission for Fisheries (RECOFI) |
| **Southwest Indian Ocean** | 3 | Comoros<br>Somalia<br>Yemen* | 469<br>3,300<br>2,350 | Eastern Africa Regional Seas Programme | SouthWest Indian Ocean Fisheries Commission (SWIOFC) |
| **Eastern Central Atlantic Ocean** | 2 | Morocco<br>Mauritania | 3,000<br>1,268 | Western Africa Region Regional Seas Programme (WACAF) | Fishery Committee for the Eastern Central Atlantic (CECAF) |

*Yemen is a member country of SWIOFC, while possibly not strictly considered a coastal country

**Source:** World resource Institution. Earth trends: The Environmental Information Portal (2006)

The **Gulf and Oman Sea** area has seven coastal countries from the Arab region. The region is known to be under exponential stress due to the high concentration of fossil fuel related activities; large numbers of offshore installations, tanker loading terminals and exceptionally high oil tanker traffic[9]. Staggering estimations of two million barrels of oil are discharged into the sea from tanker ballast discharge, and the 800 gas and oil platforms[10]. Further overarching issues facing the region: introduction of pollutants, physical alteration and destruction of habitats, invasive species and over exploitation of marine resources[11]. In terms of fisheries resources, stock assessments of specific species are not easily obtained, however in 2011 FAO listed some species of concern including kingfish, groupers, and shrimp, and as well a list of 14 priority species were adopted by the Regional Commission for Fisheries (RECOFI), the commission responsible for sustainable fisheries management in this region.[12]This list was defined in 2008, and has been updated and revised to reflect changes in subsequent years. Tuna is also an important resource in this area. Almost 100 percent of the fisheries in this area are small-scale and provide an important source of livelihood for many.

Finally, the **Atlantic Ocean and the South West Indian Ocean** also border the Arab region. While there are only four coastal countries to these areas, their resources provide significant benefits for countries in the region, in terms of fisheries resources. For countries such as Mauritania, Morocco, Yemen, Somalia and Comoros, the fisheries sector is important for their economies and trade, as well as food security and the livelihoods of many people depending on this industry. Fisheries production in Somalia and Comoros seems to have stagnated over the past decades, however no assessments of stocks have been made. Mauritania and Morocco, as member countries of the Commission for Eastern Central Atlantic Fisheries (CECAF), have implemented fisheries management measures in accordance with recommendations of various stock assessments. Mauritania and Morocco are both two principal exporters of octopus globally, and fisheries is an important part of both economies, as well as an important source of livelihood for many; in Morocco alone it is estimated that over 1 million people are involved in the fisheries sector, including processing and marketing.

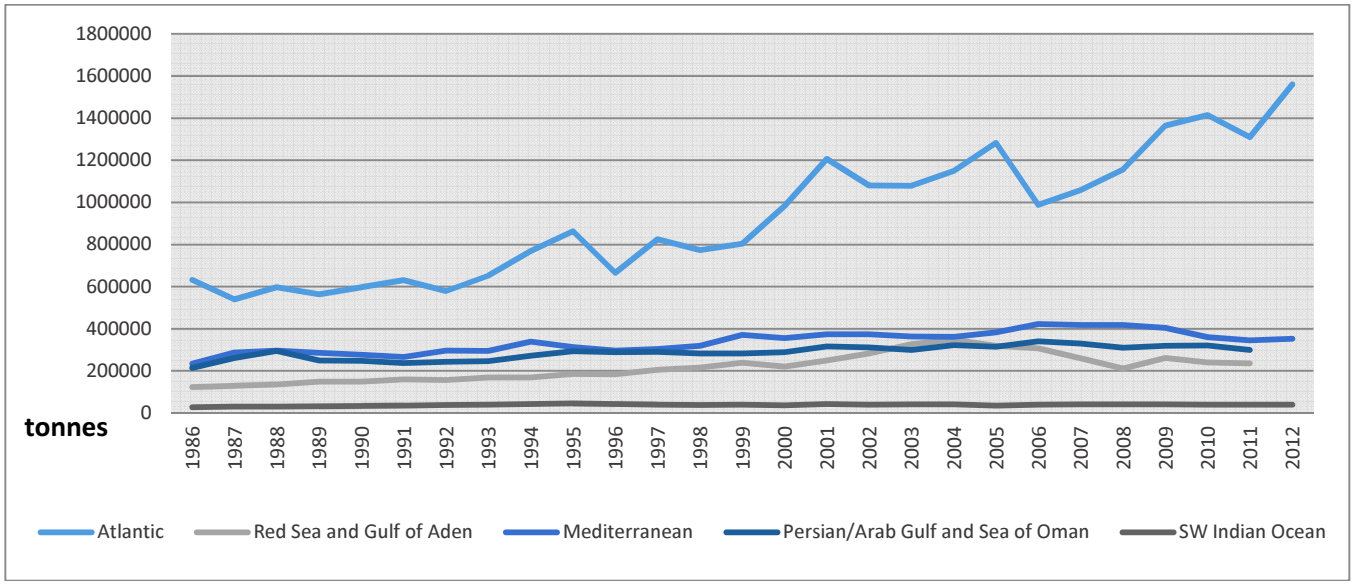


**FIGURE 1 CAPTURE FISHERIES PRODUCTION TRENDS OF COUNTRIES IN THE ARAB REGION, BY WATER BODY**

**Source:** Fishery and Aquaculture Statistics, FAO, 2014

TABLE 2 FISH PRODUCTION BY COUNTRY IN ARAB REGION (TONNES, 2011/2012 )

| Body of Water | Country | Demersal | Pelagic | Marine (non-specified) | Molluscs | Cephalods | Crustaceans |
|---|---|---|---|---|---|---|---|
| **Mediterranean** | Algeria | 11540 | 73587 | 16648 | 27 | 1444 | 2312 |
| | Egypt | 28360 | 16469 | 8705 | 4006 | 2421 | 9371 |
| | Lebanon | 1472 | 1962 | | | 50 | 57 |
| | Libya | 21857 | 10843 | | | 1780 | 520 |
| | Morocco | 4292 | 18632 | 3614 | | 273 | 673 |
| | Palestine | 117 | 804 | 679 | | 77 | 414 |
| | Syrian Arab Republic | 541 | 811 | 113 | 30 | | 55 |
| | Tunisia | 27872 | 56115 | 5618 | 764 | 12377 | 5855 |
| **Persian/Arabian Gulf and Sea of Oman** | Bahrain | 2328 | 241 | 337 | | 126 | 5581 |
| | Iraq | 1155 | 28 | 273 | | | 35 |
| | Kuwait | 1620 | 550 | 500 | | | 1720 |
| | Oman | 60691 | 87499 | 1596 | 149 | 7521 | 1110 |
| | Qatar | 7144 | 4989 | 707 | | 47 | 98 |
| | Saudi Arabia | 17940 | 7935 | 260 | | 1279 | 10006 |
| | UAE | 44123 | 26026 | 3465 | | 488 | 923 |
| **Red Sea and Gulf of Aden** | Djibouti | 542 | 916 | 191 | | - | 18 |
| | Egypt | 20713 | 18535 | 3685 | 38 | 548 | 981 |
| | Jordan | 25 | 120 | 5 | | | |
| | Saudi Arabia | 11395 | 13061 | 990 | | 602 | 965 |
| | Somalia | | | | | | |
| | Sudan | 79 | 34 | 4887 | | | |
| | Yemen | 24400 | 122422 | | 69 | 9194 | 1162 |
| **Atlantic** | Mauritania | 33643 | 342440 | 10493 | 1769 | 29618 | 4742 |
| | Morocco | 70650 | 957101 | 44815 | | 49391 | 9032 |
| **SW Indian Ocean** | Comoros | 19 | 8285 | 2020 | | | 28 |
| | Somalia | | | 28700 | | 500 | 600 |
| | | | | | | | |

**Source:** Fishery and Aquaculture Statistics, FAO, 2014

The countries of the Arab region boast vast extended coastal zones on the Mediterranean Sea, the Red Sea, the Gulf and the Atlantic Ocean where large percentages of the population live in a number of highly populated economic centers. A consistent trend of population and tourism growth is observed in the region; from the 1980s to the early 2000's, the population grew at an average rate of 2.6% per annum, with an increase in the total urban population from 44% to almost 54%. Furthermore and in part due to this growth, unplanned urban

development and industrialization have been observed in coastal centers, leading to increased pollution and at times deteriorating quality of life indicators in population centers[13].

The vastly different marine ecosystems that exist throughout the countries in the Arab region mean that both observed and predicted changes also vary widely. The Nile delta in Egypt and the Shatt Al-Arab both have dynamic relationships with their respective adjacent marine environment, in terms of the possible changes in water discharge due to both natural and human activities, as well as changes in the marine environment. The Shatt Al-Arab for example provides a nursery area for the hilsa shad and other species, which are normally resident in the Gulf. Furthermore the Nile Delta region and the cities of Alexandria, Rosetta and Port Said and their vicinity are undoubtedly the most vulnerable areas in the North African region[14] and the estimated 6 million people residing in this area face displacement under the threat of inundation, as well as the national importance of the area for agricultural, industrial and other economic activity. The Red Sea and Gulf of Aden is a particularly sensitive sea, having some of the highest temperatures and salinity levels in the world. Coral bleaching has already been observed in places, and further changes to sea surface temperature (SST) and acidification can produce changes that may be difficult to anticipate and mitigate. The importance of the upwelling system in the Arabian Sea for primary production makes this area vulnerable to changes in the monsoon season which affects the upwelling; already an increased mass of a type of plankton not normally seen has been observed.

The countries of the Gulf are also at high risk of sea level rise effects. Results of the Sea Level Rise Explorer (2009) showed that despite the relatively small coastline of Iraq the vulnerable low areas extend far in the country near Baghdad. Other countries of the region are also at a high risk with regards to SLR with a greater emphasis on large and small islands in the region; Bahrain for example is at a high risk in which a 50 cm rise in sea level will result in an 11% loss of land[15]. In the coastal areas of the Red Sea and the Gulf of Aden the major impacts are expected to include shoreline retreat; flooding and flood risk; direct exposure to coastal environment; and saline intrusion and seepage[16].

## 2. Analysis of Proposed SDG and Targets in the Arab region

In light of marine pollution and specifically land induced marine pollution being one of the major causes of marine and ocean degradation the target; By 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution, resonates greatly in the region, recognizing that marine resources are integral to the well being of socio-economic development, food security and environmental factors and are yet under extreme threat from a number of anthropogenic sources. The Global Programme of Action for the protection of the marine environment from land-based activities (GPA) is the only inter-governmental mechanism directly addressing this critical connectivity between terrestrial, freshwater, coastal and marine ecosystems through national programmes of action as well as regional processes led by the Regional Seas Programmes.

*By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans.* Through the aforementioned efforts and initiatives to establish protected areas throughout the region, this target focuses clearly on maintaining the valuable ecosystem functions that our coastal and marine resources provide.

Given the coastal nature of many urban population as well as industrial development in the region, the coastal zone has been historically put under immense pressure within the region. There is an active effort to promote Integrated Coastal Zone Management and the indicator to, *by 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on best available scientific information* will support this drive to preserve this important socio-economic zone.

Effective and sustainable fisheries management, enhancing livelihoods of fishers, reducing waste and loss in fisheries and aquaculture sectors and improving access to fish as a source of nutrition among communities are some of the ways in which the sector can both meet the needs of the growing population while ensuring the sustainable management of the marine resource. The Code of Conduct for Responsible Fisheries, the Ecosystem Approach to Fisheries and the Ecosystem Approach to Aquaculture are tools that can facilitate reaching the below fisheries targets, in combination with the use and strengthening of regional fisheries management bodies to combat illegal, unreported and unregulated (IUU) fishing. In particular, the following targets are in line with goals of regional fisheries bodies in the region, including RECOFI, GFFCM, SWIOC and CECAF:

- *By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.*
- *By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing, and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the WTO fisheries subsidies negotiation*
- *By 2030, increase the economic benefits to SIDS and LDCs from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism. Development of coastal and marine resources from within their jurisdictions.*

In order to reach the target *'Provide access of small-scale artisanal fishers to marine resources and markets.'*, the promotion and implementation of both the *Voluntary Guidelines for Securing Small-scale Sustainable Fisheries in the Context of Food Security and Poverty Eradication* as well as the *Voluntary Guidelines on Responsible Governance of Tenure of Land, Fisheries and Forestry in the Context of National Food Security* can be effective methods of addressing this target.

## 3. Major Success Stories

In partnership with governments various UN Agencies and international bodies have paved the way towards addressing the various issues affecting coastal, *ocean, seas and marine resources for sustainable development* induced by climate change.

### Tunisia: contributing to a sustainable Mediterranean (2005-2012)

The Tunisian government with the support of the world bank and GEF funding, initiated and put into practice a system to mitigate the loss of biodiversity in the Gulf of Gabes through integrated monitoring and participatory management. The gulf of Gabes is a shallow warm bay that up until the 1970 boasted diverse and rich marine biodiversity, complimented by vast beds of unique sea grass. Overfishing and poor fishing practices and

pollution have since caused the seagrass beds to shrink which in itself took a toll on the entire marine ecosystem. Integrated in nature the project further sought to obtain the collaboration of four Tunisian institutions to promote cross-sectoral cooperation through shared training and field experience. At the initial phase the project set out to gather information and key data on inventories of sea grass beds and assessments of marine species status and finally an assessment of invasive species in the gulf. Since the initiation on the project in 2005 much progress has been made in the scientific knowledge of the area's marine and coastal biodiversity. Four management plans covering four pilot sites were also completed, leading to higher awareness and ultimately one of the resulting in the Gabes Oasis being listed with UNESCO's world heritage indicative sites since 2008, while other sites were successfully designated as protected marine areas.

## Regional cooperation: Red Sea and Gulf of Aden Large Marine Ecosystem (1999-2005)

Known to host some of the world's best aquatic and terrestrial biodiversity and ecosystems boasting great natural beauty the red sea also provides vast economic value through its maritime waterways and fisheries of international prominence. However aggregating the various strains applied through urbanization, industrialization, wastewater and climate change reveals the serious threat the red sea ecosystem is under. Stemming from convention of 1982 concerned with the conservation of the red sea and Gulf of Aden environment in 1999 the countries in this maritime region in cooperation with the world bank, various UN agencies and regional conservation organizations were able to secure funding from GEF to prepare a Strategic Action Program for the Red Sea and the Gulf of Aden under the Convention's framework. The project developed a broad framework that identified curative and preventive measures that would be required. The World Bank supported two strategic action plan components: 1) to improve coastal and marine environments; 2) support adoption of an integrated coastal zone management.

Upon completion it was evident that the project resulted in a number of outcomes that reduced the risk of contamination in the red sea and Gulf of Aden summarized in the following:

- Increase in awareness of the importance of cooperation through maritime conventions, indicated by a 34 percent increase in ratification of International Maritime Organization Conventions across the region;
- "Development of two additional protocols to the Jeddah Convention relating to:
  - Marine protected areas and biodiversity conservation in the Red Sea and Gulf of Aden, and
  - Protection of the marine environment from land-based sources of pollution;
- Establishment of new Traffic Separation Schemes to reduce the risk of maritime accidents resulting from vessel collisions, 'near misses,' or groundings, particularly in the restricted shipping lanes north of the strait that separates the Yemen from Djibouti, a zone that sees transit of 85 million tons of oil per year;
- Adoption of enhanced port and shipping safety through reinforcement of Port State Control actions and development of risk assessment and decision-making tools to prevent and/or reduce unnecessary harm from urban and industrial development; and
- Development of recommendations for the improved use of coastal and marine resources in Djibouti, Sudan, and Yemen based on application of an ICZM model, granting decision makers in those countries new tools to prevent or reduce unnecessary harm from development."

## Regional cooperation on fisheries management

Fisheries management in the Mediterranean, Gulf area, Atlantic and SW Indian Ocean has benefitted from the establishment of regional fisheries management arrangements and the projects which result from these. The promotion of cooperation on data collection, management measures and discussion on how to address difficult issues has paved the way for improving the situation for the marine resources, mitigating negative impacts and for better understanding the dynamics between land and human impacts on the marine ecosystems.

## Marine and Coastal Protected Areas (MPAs)

A Marine Protected Area (MPA) is *"Any area of the intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment"* (IUCN, 1988)

In recognition of the problem at hand facing the three regions, one of the main efforts applied today is the establishment of protected areas under national regional and international guidelines. The initiation of protected areas also plays a great role in ensuring the sustainable use of resources, and develops capacities to manage the resources; thus ensuring the longevity of the resource and the prosperity of the communities depending on it. As detailed below the region is home to a number of protected marine areas, falling under different circumstances the MPAs also provide a knowledge and experience sharing opportunities that are vital to the sustainability of marine resources and health.

**TABLE 3 THE COASTAL AND MARINE AREAS PROTECTED IN THE ARAB COUNTRIES**

| Region | Arab Countries | Number Mar & Coast Protected Areas | *Protected Areas % of total land areas (2003) |
|---|---|---|---|
| MED Region | **Morocco** | 10 | 1.2 |
| | **Algeria** | 8 | 5.1 |
| | **Tunisia** | 7 | 1.5 |
| | **Libya** | X | 0.1 |
| | **Egypt** | 4 | (Med + RS) 9.42** |
| | **Lebanon** | 1 | 0.7 |
| | **Syria** | X | 1.9 |
| PERSGA Red Sea & Gulf of Aden Region | **Djibouti** | 2 | 0.5 |
| | **Egypt** | 7 | (Med + RS) 9.42** |
| | **Jordan** | 1 | 3.02** |
| | **Saudi Arabia** | 4 | (RS+RSA) 2.8 |
| | **Somalia** | 2 | 0.3 |
| | **Sudan** | 2 | 4.9 |
| | **Yemen** | X | X |
| ROPME Sea Area (GULF Region) | **Bahrain** | 1 | 1.3 |
| | **Iraq** | X | X |
| | **Kuwait** | 4 | 0.0 |
| | **Oman** | 2 | 13.74** |
| | **Qatar** | 4 | 1.1 |
| | **Saudi Arabia** | (RS+RSA) 4 | (RS+RSA) 2.8 |
| | **UAE** | 4 | 0.3 |

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## 5. Footnotes

[1]The Red Sea and Gulf of Aden currently does not have a regional fisheries management arrangement; this is currently being formulated.

[2]AFED, 2008.*Arab Environment: future Challenges.* –Mostafa K. Tolba and Najib W. Saab (Eds.). Report of the Arab Forum for Environment and Development, 2008

[3] ibid

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[16] ibid.