FISHERY AND AQUACULTURE COUNTRY PROFILES	Food and Agriculture Organization of the United Nations	FID/CP/EGY
PROFILS DES PÊCHES ET DE L'AQUACULTURE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	May 2010
PERFILES SOBRE LA PESCA Y LA ACUICULTURA POR PAÍSES	Organización de las Naciones Unidas para la Agricultura y la Alimentación	

Egypt

3. FISHERY SECTOR STRUCTURE

3.1 Overall fishery sector

Egypt occupies the northeast corner of the African continent. It borders the Mediterranean Sea, between Libya and the Gaza Strip, and it borders the Red Sea, north of Sudan. Egypt includes the Sinai Peninsula, with the Suez and Aqaba Gulfs. The Nile River, with its many irrigation canals, flows through the country. It feeds the lakes of Mariut, Edku and Manzala, the northern lagoons of Port Fouad and Bardawil, the lake Timsah, the Bitter Lakes with the closed lakes (Qarun, Wadi Al Raiyan (1 and 3)) and the great reservoir behind the Aswan High Dam (Lake Nasser). Recently, some small water bodies in the western desert have been redeveloped for fish production (Toshka and Natroun valley water bodies).

Capture fisheries in marine and fresh water has a long tradition in Egypt. However, during the last two decades aquaculture production has grown rapidly. In 2003 aquaculture production surpassed capture fishery production in terms of volume of fish produced.

Table 5 – Egypt – Quantities per fishery sub-sectors

	Thousand tonnes (2009)	Contribution (2009, in %)
Marine capture fisheries	127 821	11.70
Inland capture fisheries	259 577	23.75
Aquaculture	705 490	64.55
Total	**1 092 888**	**100.00**

3.2 Marine sub-sector

3.2.1 Catch profile

Marine fisheries produce a wide variety of species. The most important are: sardine (15.0 percent of landings in 2009), shrimp (8.9 percent), anchovy (5.8 percent), brushtooth lizardfish (4.7 percent), mullets (3.1percent), bogue (2.7 percent), and round scade (6.2percent).

Table 6 – Egypt - Main species caught

	Red Sea	Red Sea	Mediterranean	Mediterranean
	Tonnes	Percent	Tonnes	Percent
Sardine	7 295	5.7	11 917	9.3
Shrimp	799	0.6	10 632	8.3
Anchovy	4 230	3.3	3 167	2.5
Mullets	1 524	1.2	7 791	6.1
Bogue	728	0.6	2 711	2.1
Crabs	297	0.2	3 949	3.1
Round scade	7 932	6.2	0	0.0
Brushtooth lizard fish	4 381	3.4	1 600	1.3
Threadfin breams	4 135	3.2	0	0.0
Groupers	3 230	2.5	1 018	0.8
Blackspot emperors	2 157	1.7	0	0.0
Others	12 323	9.6	36 005	28.2

3.2.2 Landing sites

In 2009 landings in the Mediterranean Sea represented about 62 percent of the total marine catch. The main fishing ports along the Mediterranean are: Matrouh, Anfoshi, Madaaia, Rashied, Boruls, Damietta, Port Said and Aresh. There are many small landing sites that are used mainly by sail boats.

Landings from the Red Sea represent about 38 percent of the marine landings and the main fishing ports are: Attaka and Salakhana, which are located near Suez; Branies on the Red Sea, El-Tour in South Sinai, and some small landing sites along the Red Sea.

3.2.3 Fishing practices/systems

In 2008 the Egyptian fishing fleet consisted of 8 227 vessels, of which 4 809 were motorized, 1 725 had sails and 1 693 were recreational boats fishing mostly in the Red Sea. Most of the motorized fleet (41.4 percent) was small wooden craft of less than 10 m in length and powered by inboard or outboard engines of less than 50 hp.

Some 25.8 percent of the fleet were powered by engines between 50 and 100 hp, 18.6 percent ranged between 100 and 200 hp and 14.3 percent were powered by engines of 200 hp or more. About 2.5 percent were large steel vessels with engines of more than 500 hp. The marine sector employed 89 537 fishermen, of which more than 5 079 categorized in the recreational sector.

There were about 1 267 motorized longline vessels in 2008 (40.5 percent of the Mediterranean gears), while trawlers numbered about 1 095 (35.0 percent), vessels using trammel nets numbered 529 (16.9 percent) and purse seine vessels 238 (7.6 percent). The Red Sea fleet included 542 longline vessels (about 32.3 percent of the Red Sea vessels), 846 vessels using trammel nets and other gears (about 50.39 percent), 178 trawlers (about 10.6 percent) and 113 purse seine vessels (about 6.7 percent). The average number of crew on a trawler is from 6 to 27, on a purse seiner the crew numbers 5 to 45, while other boats operate with a crew of 5-15 depending on the engine power.

In the Mediterranean the fleet of sail boats consisted of 869 small boats ("grade 3 boats"), about 63 percent of the sail boats operating in the Mediterranean, and 483 "grade 2 boats", about 35 percent. In the Red Sea fishermen use "grade 3 sail boats" which numbered 344. "Grade 3 sail boats" are less than 4 meters long, have a crew of not more than 4 and fish mostly during daylight.

Table 7 – Egypt - Mediterranean and Red Sea fishing vessels in hp in 2009

Engine hp	Trawling	Purse Seine	Long line	Trammel	Others
10>	-	-	61	144	4
10 < 20	-	-	80	81	16
20 < 30	-	-	170	353	46
30 < 50	-	-	587	259	148
50 < 100	67	23	1 026	103	12
100< 200	669	149	35	5	1
200< 300	278	74	3	-	-
300< 500	130	76	-	-	-
500<	84	24	-	-	-
Total	**1 273**	**351**	**1 809**	**847**	**529**

3.2.4 Main resources

Most Egyptian vessels fish in the Mediterranean Sea. Fishermen fish the continental shelf off the Nile Delta and venture to the eastern side of Port Said but rarely west of Alexandria. The continental shelf is at its widest off the central Delta region. The seabed is flat, mostly muddy to sandy, off the middle and eastern coast. Limited grounds for trawling are available on the western coast. Artisanal fishermen exploit inshore areas.

In the Red Sea a long-standing traditional (artisanal) fishery exploits coral reefs spread along the Coast and in the Gulf of Aqaba. Fishing grounds are relatively shallow (maximum 70 m depth). The flat sandy bottoms in the Gulf of Suez are the

only area suitable for trawling, while the narrow, reef-rich continental shelf is suitable for artisanal fishing with hook and line or set nets used close to shore.

The Mediterranean fisheries contribute about 60 percent of the marine capture production, while Red Sea fisheries contribute about 40 percent. The Gulf of Suez contributes 14.4 percent of these landings, while the Gulf of Aqaba catch is less than 2.1 percent of the Red Sea catches. Only 3.1 percent of marine landings are obtained outside Egyptian territorial waters.

3.2.5 Management applied to main fisheries

The General Authority for Fish Resources Development GAFRD strives to achieve responsible fishing by:

- Controlling the fishing effort. This in turn is achieved by (i) reducing the number of vessels (ii) not issuing any new fishing licences, and (iii) preventing vessels from changing their habitual fishing area;
- Vessels are: (i) not permitted to change type of gear used; and (ii) not allowed to increase the engine power. In addition, GAFRD promotes the use of modern tools and equipment in order to improve the ability of fishing vessels to go off shore and fish in deep waters ;
- Controlling that the mesh size used corresponds to regional agreements.
- Updating the marine law, based on studies undertaken by the National Institute of Marine sciences in the Mediterranean, and by establishing closed seasons for the protection of spawning areas in the Red Sea;
- Identifying, jointly with neighboring countries, new fishing areas; and,
- Producing accurate statistical data.

3.2.6 Fishing communities

All fishermen participate in a Co-operative Union through membership in one of the 82 fisheries cooperatives or 11 aquaculture cooperatives. The Co-operative Union runs an insurance scheme through which fishermen are sheltered from economic loss in case of accidents or loss of vessels. The Union also helps fishermen to meet their essential needs during closed seasons. The Co-operative Union represents fishermen in parliament and is a member of the GAFRD administrative board.
Fishermen live mostly in small villages. Most members of the fisherman family are involved in some aspect of fisheries or in transporting, processing and selling the fish.

3.3 Inland sub-sector

Egypt has more than 10 relatively large lakes, the great reservoir behind the Aswan High Dam (Lake Nasser) and some small water bodies in the western part of the country. Two of the ten lakes (Qarun and Wadi Al Raiyan) have no outlet. These two lakes have brackish water and contain mostly marine species. Fishing in the ten lakes yields about two thirds of the inland catch, while landings from fishing in the Nile River represent about one third.

3.3.1 Catch profile

Inland fisheries yield 14 main species. The four most important species represent about two thirds of the total landings from inland fisheries. They are: tilapia (105 041 tonnes, 40 percent), catfish (40 103 tonnes, 15 percent), grass carp (26 071 tonnes, 10 percent) and mullets (16 575 tonnes, 6 percent)*.

*Figures in parenthesis are the quantity caught in 2008 and the percentage this quantity represents of the total inland capture production.

3.3.2 Landing sites

There is a large number of small boats, about 21 300, being used in inland fisheries. As these boats do not travel far, there is also a large number of landing sites. Along the River Nile there are 695 registered landing sites as well as countless unregistered sites.

3.3.3 Fishing practices/systems

On the river Nile there are about 11 750 small wooden boats “grade 3”, 4–6 m in length, and about 20 boats “grade 2”, 6 to 8 m in length, and 3 boats “grade 1”, longer than 8 m. In the lakes fisheries the corresponding numbers are: 9 581 boats “grade 3”, 61 boats “grade 2” and 547 boats “grade 1”.

Table 8 – Egypt - Number of un-motorized fishing boats in inland water, 2008

Fishing grounds	Grade 1 over 8 meters	Grade 2 6-8 meters	Grade 3 4 – 6 meters
Mariut			1 086
Edko			867
Burols	8	41	2 049
Manzala			2 509
Bardawel			1 235
Mora&Temsah		20	748
Qariun	539		110
Naser			2 930
River Nile	3	20	11 750

3.3.4 Main resources

Restocking programmes are carried out to support inland fisheries. Since 1932, grey mullets (*Mugil* spp.), sea bream (*Sparus aurata*), seabass (*Dicentrarchus labrax*), sole (*Solea vulgaris*) and shrimps (*Metapenaeus* and *Penaeus* spp.) have been transplanted into the two closed lakes: Qarun and Wadi al Raiyan. Since 1996, other freshwater lakes have also been stocked with fingerlings of freshwater species, e.g. Nile tilapia (*Oreochromis niloticus*) and carp (*Cyprinus carpio*) produced in public sector hatcheries.

3.4 Aquaculture sub-sector

The Egyptian Government initiated aquaculture in 1978 at publicly managed farms in Zawia, Barsiqu and Manzala. These farms were meant to encourage the private sector to invest in aquaculture. Subsequently the government constructed and operated three hatcheries in order to supply fry and fingerlings to the growing sector. Now there are some 600 hatcheries in operation. Also, the government encouraged aquaculture by providing about 140 000 feddans (one feddan = 4 200 m^2) of land, generally close to the lakes, for development of aquaculture. This land was portioned out to support the aquaculture sector for a payment of about 3 USD per feddan.

There are eleven aquaculture cooperatives with about 1 669 members (GAFRD Annual Stat Report, 2009). Cooperatives provide a variety of services to their members. These can be in the form of technical advice, or of offering credits for farm operations or of representing the interests of the cooperative members in dealings with third parties.

In 2009 aquaculture accounted for 65 percent of all fish produced in Egypt, or 705 000 tonnes, with an estimated value of USD 1.25 billion. Of these about 85 percent (597 811 tonnes) were obtained from semi-intensive culture technology employed in brackish water. About 10 percent (68 049 tonnes) came from cage culture in fresh water and about 5 percent (37 700 tonnes) from rice-fish culture. The contribution of intensive fish farms to production is low. In 2008 it reached less than one percent, at 1 860 tonnes. Aquaculture in brackish water, which contributed 85 percent to the total production in 2009, is far more important than freshwater aquaculture. In comparison with their freshwater counterparts, aquaculture of marine species is still in an early stage of development.

Tilapia is the dominant species. It accounts for more than half of all fish produced through aquaculture. In 2009 about 390 300 tonnes were produced. Tilapia is followed in importance by mullets and together these two species contributed 85.1 percent of total aquaculture production. Other important species, or species groups, include carps (Cyprinids, mainly common carp and grass carp, 10.5 percent) and catfishes (*Clarias* spp., 2.5 percent).

The European sea bass and gilthead seabream have been the principal species used in marine aquaculture starting in the 1990s. The production of these two species peaked at 18 900 tonnes in 2000. Since then production has declined substantially. However, production recovered in 2009 to reach 10 700 tonnes. In 2008 a remarkable development occurred as the culture of meagre (*Argyrosomus regius*), took off and reached 2 000 tonnes. With the exception of Penaeus shrimp, crustaceans are not cultured in Egypt. Farming of *Penaeus* shrimp was started in the new millennium but the production has been unstable. It reached 3 300 tonnes in 2005, but declined dramatically to 131 tonnes in 2008.

Table 9 - Egypt - Cultured species 2009

Species	Thousand tonnes	% of total
Tilapia	390	55
Mullets	210	30
Carps	74	10
Catfish	18	3
Other	13	2
TOTAL	**705**	**100**

Egypt is the eleventh largest aquaculture producer in the world by quantity in 2008, and the largest in Africa, accounting for 73.8 percent of aquaculture in Africa by volume and for 64.2 percent by value. In 2008, Egypt produced 13.8 percent of the world's cultured tilapias. In addition, Egypt is the world's top producer of cultured mullets. The recent development of meagre culture in Egypt has meant that the global output of cultured meagre increased from less than 1 000 tonnes in 2007 to 3 800 tonnes in 2008.

Annual production from aquaculture increased by more than 10 times between 1990 and 2008, at an average annual growth rate of 14.4 percent. A high level of average annual growth rate of 18.4 percent was observed from 1990 to 1999, but the annual growth rate has declined to 9.3 percent between 2000 and 2008.

3.5 Recreational sub-sector

The Marine Inspection Department is authorized to issue permits for recreational fishing in the Red Sea. In 2008 close to 1 700 motorized recreational boats had such permits. On the average these boats go to sea more than 280 days/year. The tourists who fish from them use only longlines. There are no accurate data about recreational fishing in the Mediterranean.

4. POST-HARVEST USE

4.1 Fish utilization

Virtually all fish produced in Egypt becomes human food. Local fishmeal production is negligible. It appears that the demand for fish as food in fact keeps prices at quay-side above what local fishmeal manufacturers can afford to pay. Most fish is consumed fresh, but also chilled and frozen fish is common in retail markets.

4.2 Fish Markets

There are four main wholesale markets in Egypt: the Obour “in Cairo governorate”, October “in October governorate”, Tanta “in Gharbia governorate” and Suez in “Suez governorate”. They function as centers for distributing fish to retail markets, supermarkets, fish stores and local markets, in every town and village that does not have direct access to a fish landing centre.

5. SOCIO-ECONOMIC CONTRIBUTION OF THE FISHERY SECTOR

5.1 Economic role of fisheries in the national economy

In 2002 agriculture production was valued to USD 18.6 billion. Of this amount plant production totaled USD 10.7 billion, animal production USD 6.5 billion and fish production represented about USD 1.4 billion. (GAFRD annual stat report 2004).

Table 10 - Egypt - Value of agriculture and fish production in Egypt in 2002

	USD billion	percent	Value added USD billion	percent
Plants	10.7	58	9.2	69
Animals	6.5	35	2.9	22
Fish	1.4	7	1.2	9
Total	**18.6**	**100**	**13.3**	**100**

Source: Economic sector, Ministry of Agriculture and Land Reclaim.
1 USD= 4.52 LEG (in 2002)

5.2 Supply and demand

Demand
Demand for fish per person and year approximately doubled from 1988 to 2008. Although the fishing industry has only a relatively minor role in the Egyptian economy, domestic fish production makes a valuable contribution to the national food supply in addition to facilitating a traditional way of life, in which consumption of fish plays an important part. Capture fisheries is also a significant supplier of food to the tourist industry. In some cases, fishermen (especially in the Red Sea) sell fresh fish directly to restaurants or hotels.

Supply
By 2008 the rapid increase in aquaculture production has made it possible for Egyptians to eat about double the amount of seafood they ate 20 years earlier. During the same period imports fluctuated, while exports were insignificant in terms of quantities.
This means that during the period local supplies occupied a growing share of local consumption, increasing from about 75 percent in 1988-1991 to slightly over 80 percent in the 2000s.

Canned sardines are produced and sold locally. Tilapias and mullets are more readily accepted in the market than carps. Domestic supplies are supplemented by substantial imports (136 800 tonnes, 2008) of fish frozen whole or in fillets. Salted and smoked products are also imported.

5.3 Trade
In 1997 the combined value of internationally traded fish reached the equivalent of about 135.37 million USD; in 2008 this increased to about 378.73 million USD.

Table 11 – Egypt - Value and volume of fish imports and exports from 1988 to 2008

year	Production		Import		Export	
	Tonnes[1)]	1000 USD	Tonnes[2)]	1000 USD	Tonnes[2)]	1000 USD
1988	284 327	N/A	121 877	64 249	1 034	3 506
1991	346 046	N/A	105 482	74 610	2 363	11 050
1994	368 203	N/A	159 359	91 818	1 657	4 120
1997	457 036	924 825	166 658	102 672	1 923	2 734
2000	724 407	1 536 755	261 144	170 902	988	1 211
2003	875 990	1 122 078	177 747	110 119	3 133	3 052
2006	970 924	1 618 336	259 584	167 432	4 370	3 448
2008	1 008 007	1 955 579	218 067	377 783	6 947	10 719

1) Live equivalent weight
2) Product weight

5.4 Food security
Fish is a traditional and important component of the Egyptian diet. People prefer fish to poultry and red meat, which are more expensive. Fish is the main source of cheap animal protein for a growing population. Most of the catch is consumed fresh, sold through retail markets. Fresh fish is distinctly preferred by consumers over frozen fish. However, the cold storage infrastructure is improving and a large section of the

imported fish is frozen. This has meant that frozen fish is increasingly being accepted by the Egyptian consumer. Salted fish is traditionally eaten during certain holidays. However, it is expected that the quantity of salted fish will decline as internal transport and marketing improves. At present, salted fish is common in locations distant from landing sites. Sardines and mullets are commonly supplied in salted form in these areas.

5.5 Employment

There about 250 thousand fishermen working in capture fisheries. In aquaculture there are about 750 thousand individuals, including men, women and children, directly employed. A further 12 thousand labors are engaged during harvesting and other periods of intensive activities.
In addition the sector generates employment in fish processing, transport, retailing, boat and net manufacturing.

5.6 Rural development

Fishermen communities dot the long Mediterranean and Red Sea coasts, as well as the shores of the river Nile and the major inland lakes. Fisheries provide livelihoods for fishermen and their families. Most of their children help in transport, processing and selling of the fish. Those who live in communities where aquaculture is practiced help during the harvest season.

6. TRENDS, ISSUES AND DEVELOPMENT

6.1 Constraints and opportunities

Most fishers are artisanal, and operate gillnets, trammel nets and longlines from boat that are smaller than 12 m LOA. They fish the coastal shelf and catch a wide variety of demersal species. Larger vessels of medium size (12-24 m LOA) and larger (>24 m LOA) use bottom trawls and purse seines.

The Government's ability to manage these fisheries suffers because there is relatively little knowledge both about the fisheries themselves and about the status of fish and shellfish resources. Fisheries data is regularly collected but it varies much in terms of coverage, nature, and quality. Thus the catch (landings) statistics are sometimes unreliable as are the data on fleet characteristics. There are almost no statistical data on fishing effort. Detailed socio-economic data are virtually non-existent.

Fisheries management is difficult also because the institutional framework is weak. The legal framework and the means for implementing adequate monitoring, control and surveillance need to be improved, which, in turn, may lead to a more effective industry participation in management. In addition, the Fisheries Department has too few well-trained staff. Many of the fishery officers need to be trained or re-trained in specific fields of fishery science, including socio-economics. In the field, staff employed in collecting landings data need to improve their ability to correctly identify species.

The lack of practical international cooperation in fishery research and management makes it difficult to carry out joint efforts effectively and to organize information exchange at both the scientific and management levels. There is no established network of fishery experts in the sub-region.

GAFRD's strategy is to reach an Egyptian production of about 1.2 million ton a year from capture fisheries and aquaculture by 2017. It is recognized that for this to be possible the following must happen:

- Conditions for the inland fisheries must be improved. This means a stop to draining the Egyptian lakes, a reduction of pollution, prevention of illegal fishing and removal of the wild plants from the lakes. (GAFRD own about 33 different types of cranes and diggers used to remove the wild plants and clear the water-ways). Furthermore, closed seasons (meant to ensure successful reproduction, spawning and survival of fry and fingerlings of important species) need to be respected. In addition, closed lakes must be stocked yearly with fingerlings of tilapia and mullets. Besides, fishermen must be made to understand the importance of practising fishing methods that keep the lakes healthy. Since the fisheries in the Mediterranean lost the advantage of the flooding of the River Nile (following the construction of the Aswan dam), GAFRD stopped issuing new fishing licences, limited the recreational and sport fishing seasons and closed the fisheries for 2 months every year.
- The private sector must invest in aquaculture, in particular in hatcheries, and create facilities for marine aquaculture and intensive fish culture systems on land.
- Expand the fishing zone for the Egyptian fishing fleet through agreements with neighboring countries.

6.2 Government and non-government sector policies and development strategies

The GAFRD has prepared a strategy for the development of fisheries for the period 1997 to 2017. The strategy has three main objectives:

- To increase fish production, mainly from aquaculture, in order to raise per capita consumption to 16.5 kg/year in 2017 for an estimated population of 90 millions.
- To raise the quality of fish and fish products to reach an international standard and to conquer new markets for Egyptian fish exports.
- To optimize the use of natural and human resources.

6.3 Research

Research related to Egyptian fisheries and aquaculture is carried out in research institutes, universities and other organizations working in support of economic development. The Central Laboratory for Aquaculture Research at Abbassa developed a five-year research plan (2007/2008 – 2012/2013). It includes a wide array of aquaculture topics but enhancing productivity in farms and hatcheries is a core element of the plan. The research plan of the National Institute for Oceanography and Fisheries (NIOF) focuses on enhancing farm productivity and reducing production costs. The plan covers a wide spectrum of environments from fresh water to marine water (NIOF, 2008). A Research center located in Lake Nasser (The Aswan dam), the Suez Canal University and fisheries departments in various universities also have their research agendas involving fisheries and aquaculture. The research and training departments of GAFRD are starting to implement a plan that ends in 2017. The plan focuses on increasing the aquaculture production, particularly by opening new marine farms, and on maintaining a clean environment in the seas bordering Egypt, in the lakes and in the river Nile.

Some research is undertaken by the Ministry of Agriculture, General Authority for Fish Resources Development (GAFRD). However, most fisheries research in Egypt is carried out by the National Institute of Oceanography and Fisheries (NIOF), which has some 1 500 staff, of which 400 are researchers and/or research assistants. Its research covers living resources (fish biology, stock monitoring and assessment, fish technology, aquaculture, fishery statistics and economics, and pollution monitoring and control), limnology and physical oceanography. NIOF, with headquarters in Cairo (http://www.niof.sci.eg/), has a number of stations located at different Egyptian water bodies. It also carries out ecological and fisheries surveys along the country's Mediterranean and Red Sea coasts and in different inland water bodies. It is undertaking a programme of resource evaluation, in particular an evaluation of the pelagic stocks, using echo-sounder techniques. Research is carried out by boats using mid-water trawls as a gear for catching pelagic species.

Some basic fisheries and aquaculture research is undertaken in a few university departments, *inter alia* at: (i) the Oceanography Department, University of Alexandria; (ii) the Marine Biology Department, Suez Canal University; (iii) the Oceanography Department, Al Azhar University; and (iv) the Arab Academy for Science, Technology and Maritime Transport (AASTMT), Alexandria.

6.4 Education and training

A large number of secondary agriculture schools, institutes, faculties and universities spread throughout Egypt have curricula that include fisheries and aquaculture. Courses lead to diploma and master's degrees.

GAFRD offers training courses in aquaculture development. Seminars and workshops on a variety of topics are provided throughout the year. Specialized training programmes are also provided. In support of its educational programme GAFRD yearly prepares and distributes free of charge brochures providing salient facts about fisheries and aquaculture. GFARD also sponsors the attendance of officers and technicians in foreign capture fisheries and aquaculture training courses, seminars and workshops.

6.5 Foreign aid

USAID has contributed funds for fisheries development with a focus on increasing fish production. The first project – Food Production from Freshwater Ecosystem – was carried out in the Wadi Al Raiyan Lakes. A second project, centered on the South Eastern Mediterranean Sea, studied trophic level dynamics.

JICA has helped to modernize and develop the fishing harbor at Maddea and also supported development of the fisheries in Lake Nasser. UNDP has funded environmental projects active in Manzala and in the Burollus Lakes.

PERSGA (The Regional Organization for the Conservation of the Environment of the Red Sea and the Gulf of Aden) helps to promote sustainable use of the living marine resources of the Red Sea.

7. INSTITUTIONAL FRAMEWORK

In the Ministry of Agriculture, the General Authority for Fish Resources Development (GAFRD) is the only branch of government that may draft fisheries and aquaculture legislation, renew or issue new: (i) licences for fishing vessels (ii) licences for fishing, and (iii) leases for land holding aquaculture farms. It monitors and regulates

transportation of fry and fingerlings between hatcheries and aquaculture farms. It signs international treaties dealing with capture fisheries and aquaculture.

The Authority undertakes its tasks from its headquarters, working through 7 regional offices.
The Co-operative Union of Aquatic Resources deals with fishers´ and aquaculturists´ social and economic conditions. The National Institute for Oceanography and Fisheries (NIOF) is the leading research institution for the study of marine ecology, hydrology, biology, fishing effort and fish stocks.

In addition, the Egyptian Coast Guard and the Ministry of the Environment deal with fishery issues.

8. LEGAL FRAMEWORK

The General Authority for Fish Resources Development (GAFRD) was established by the presidential decree 190/1983 as a part of the Ministry of Agriculture and Land Reclamation. With the exception of Lake Nasser, GAFRD is responsible for the development and management of fishery resources including aquaculture as designated by law 124 of 1983 with the responsibility of issuing fishing licences, supervising fishery cooperatives, collecting fry from collecting stations, re-distributing them in inland lakes (like Qarun and Rayaan), produce statistical information on fish production, consumption and trade. In addition, it provides technical support to private farms whenever needed and manages fisheries and aquaculture in accordance with Law 124 of 1983.

The legal regime gives GAFRD a strong mandate to support aquaculture development. The Authority has the right to lease out lands that are within 200 meters of sea and lakeshores for the purpose of creating fish farms. GAFRD operates several fish hatcheries and feed mills that support the national aquaculture development. It encourages investments in aquaculture, especially marine aquaculture.

The main articles related to aquaculture in law 124 are those specifying the type of water and land to be used. Hatcheries are the only aquaculture units that are allowed to be first users of fresh water. Fish farms can use only non-agriculture land and brackish water. The Law prohibits gathering, transferring or possessing fish fry from any water body without the written consent of GAFRD. The Law also specifies the licensing procedures for constructing aquaculture enterprises. An approval is required from the Ministry of Water Resources and Irrigation. This approval defines the volume and source of water and the method of drainage. An approval from the Shores Protection Authority, Ministry of Tourism, and Ministry of Environmental Affairs is required for the construction and operation of marine fish farms.

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