


<b>FISHERY COUNTRY PROFILE</b>	<b>Food and Agriculture Organization of the United Nations</b>	<b>FID/CP/TUR</b>
<b>PROFIL DE LA PÊCHE PAR PAYS</b>	<b>Organisation des Nations Unies pour l'alimentation et l'agriculture</b>	
<b>RESUMEN INFORMATIVO SOBRE LA PESCA POR PAISES</b>	<b>Organización de las Naciones Unidas para la Agricultura y la Alimentación</b>	<b>March 2008</b>

## THE REPUBLIC OF TURKEY

### 3. Fishery sector structure

#### 3.1 Overall fishery sector

In 2006, total reported fisheries production, including aquaculture reached 661 991 tonnes, an increase of 117 218 tonnes from 2005 (24 percent increase year on year). Of this, 533 000 t came from capture fisheries (80%) and 129 000 t came from aquaculture (20%). Total fisheries production has remained stable over the last decade. However, aquaculture production has increased rapidly. Over the past 5 years the volume of aquaculture production has increased by 110 percent, reaching 129 000 t.

#### 3.2 Marine sub-sector

##### 3.2.1 Catch profile

Fishery production in 2006 consisted of marine fisheries (62%), aquaculture (20%) and inland fisheries (11%), with the balance (7%) being other marine products, such as crustaceans and molluscs. Turkey produces approximately 0.6 percent of total world fishery production.

Pelagic species dominate marine landings in Turkey, particularly anchovy, bonito, horse mackerel, sardines and bluefish. Around 60–70 percent of the total landings (by volume) are anchovy, so any change in the distribution and catches of anchovy in any one year or season has a significant impact on the total annual catch. Anchovy is by far the main catch, and even in a poor season, such as 2006, it dominates Turkish fisheries.

The Black Sea is by far the most important fishery in Turkey and shows the greatest variation in total catch. The proportion of anchovy that goes to fishmeal depends upon the total catch and their seasonal nature.

There are basically four kinds of fishing operations in the Mediterranean and Aegean Sea. By far the largest numbers of fishermen are employed in the small-scale fishery sector. A typical two-man operation uses an open boat (ca 8 m) with a 10–25 hp inboard diesel engine. Larger units may use 10 m boats with three fishermen. Some are equipped with depth recorders or fish finders. Most fishermen use basic gear: trammel nets and longlines. Table 1 summarizes the catch profile, with respect to fishing methods, regions and species.

**Table 1. Turkish fisheries by fishing method, region and species**

<b>Fishery</b>	<b>Region</b>	<b>Species</b>
Pelagic species	Eastern Black Sea	Anchovy, Horse mackerel, Bonito, Sprat
	Western Black Sea	Anchovy, Sprat, Bonito, Bluefish, Scad, Chub mackerel, Sardines, Dogfish
	Sea of Marmara	Anchovy, Bonito, Sprat, Scad, Blue fish, Sardines
	Mediterranean and Aegean Sea	Sardines, Chub mackerel
Trawl fisheries	1-Western Black Sea	Whiting, Red mullet, Turbot
	2- Aegean Sea	Mixed
	3- Mediterranean	Mixed
Highly migratory species	Mediterranean and Aegean Sea	Tuna, Swordfish
Artisanal fisheries (gillnet, trammel net, longline, traps)	Black Sea, Sea of Marmara, Mediterranean and Aegean Sea	Mixed (whiting, turbot, red mullet, grey mullet, shrimp, sparids, sole and dab, squids, octopus and cuttlefish, swordfish)
Sea snail fisheries (dredging)	Eastern Black Sea, Sea of Marmara	Sea snail
Clam fisheries (dredging)	Western Black Sea	Baby clams
Shrimp and prawn fisheries	Sea of Marmara, Aegean Sea and Mediterranean	Shrimp
Lagoon fisheries	Mediterranean, Aegean Sea and Sea of Marmara	Mixed (Seabass, seabream, eel, mullets)

### 3.2.2 Landing sites

The number and capacity of fishing ports throughout Turkey are shown in the Table 2. In total, there are 277 fish landing places in Turkey, comprising: 165 "large" fishing ports; 39 "small" fishing ports; and 73 locations with shore facilities. Of the total, 52 percent are located on the Black Sea, including all but one of those with shore facilities. Of the "large" fishing ports, 58 are on the Black Sea, with 43 on the Sea of Marmara, 45 on the Aegean and 17 on the Mediterranean. In addition, the Ministry of Agriculture and Rural Affairs has completed the construction of 30 fishing ports.

The common functions and duties of staff to be located at these ports during 2007, all of which were to be linked to the Fisheries Information System (FIS), were being finalized.

**Table 2. Distribution of port infrastructure**

Type	Black Sea	Sea of Marmara	Aegean Sea	Mediterranean	Freshwater	Total
Large fishing port	58	43	45	17	2	165
Small fishing port	15	9	11	4		39
Shore facility	72	1				73
Total	145	53	56	21	2	277

### 3.2.3 Fishing production means

There are 18 396 vessels in the Turkish marine fishing fleet licensed by the Ministry of Agriculture and Rural Affairs, and a further 3 000 in inland waters.

As much as 85 percent of the Turkish fleet are small boats under 10 m in length. Their combined fishing capacity is large, and bearing in mind that they focus on inshore waters, is likely to have a great impact on species that frequent inshore waters, e.g. mullet and goatfishes. These smaller boats are operated by a mixture of professional (full-time), subsistence (part-time) and recreational fishermen.

The characteristics of the various vessel and gear combinations in the coastal and near-coastal fisheries systems are summarized in Tables 3 and 4.

**Table 3. Fishing boats by operating type**

Type	East Black Sea	West Black Sea	Sea of Marmara	Aegean Sea	Mediterranean	Total
Trawler	64	148	190	84	202	688
Purse seiner	125	107	131	88	59	510
Trawler-purse seiner	90	175	123	35	20	443
Carrier vessels	78	123	40	33	21	295
Others	4 298	2 100	2 606	5 584	1 872	16 460
Total	4 655	2 653	3 090	5 824	2 174	18 396

**Table 4. Fishing boats by engine power**

Region	Nominal engine power (horsepower)						Total
	No Engine	01–09	10–19	20–49	50–99	>100	
Eastern Black Sea	25	1 745	1 326	747	290	522	4 655
Western Black Sea	0	454	686	514	326	673	2 653
Sea of Marmara	4	941	427	689	346	683	3 090
Aegean Sea	40	3 185	796	1 096	281	426	5 824
Mediterranean	0	724	535	390	154	371	2 174
Total	69	7 049	3 770	3 436	1 397	2 675	18 396

### 3.2.4 Main resources

The catch in 2006 basically reflected the main fishery resources of Turkey. In marine capture fisheries the main stocks were anchovy, pilchard, horse mackerel, scad, whiting, grey mullet, blue fish, sprat, bogue, European hake, chup mackerel, red mullet, twaite shad, picarel, striped red, little tunny, frigate mackerel, striped bream, sand smelt, common sole, seabream, thornback ray, turbot, blue fin tuna, mackerel, topeshark, leer fish, sauppe, red gurnard, annular bream, seabass, sword fish, waker, gar fish, saddled seabream, black scorpion fish, black seabream, saury, striped seabream, dentex, European barracuda, two banded bream, common seabream, gobies, dusky grouper, john dory, painted comber, blue spatled bream, albacore, brown meagre, greater amberjack, angelshark, corb, meagre, and shore rockling.

Striped venus, sea snail, bearded horse mussel, prawn, carpet shell, cuttle fish, octopus, common jelly fish, long finned squid, edible crab, crab, spiny lobster, common shore crab, swimming crabs, oyster, great scallop, common lobster, spider crab were also caught.

### 3.2.5 Management applied to main fisheries

Government policy towards the fisheries and aquaculture sector has traditionally focused on stimulating production and has included both fisheries and aquaculture management and development measures. These management measures have focused on the control of fishing effort via restrictions on gear and equipment and the enforcement of fishing seasons. Law No. 1380 of 1971, as amended by Laws 3288 of 1986 and 4950 of 2003, is

the framework law for all fisheries and aquaculture and related activities. The law provides the basis for the regulations and notifications, issued under the authority of the Minister, which are used to regulate the fisheries. Article 1 of the Law gives the scope of the Act – “protection, production and inspection of fishery products” – and Article 2 gives the definitions, including the fishery products, which are amplified by other regulations.

### **Technical measures**

The Turkish *Implementing Regulation on Fisheries*, 1995, is the fundamental regulatory instrument for marine and inland fisheries. The regulation covers:

- Fishing Licence Issue and Formats
- Provisions on Production Areas
- Prohibition on Explosives and Hazardous Substances
- Fishing Gear
- Prohibitions, Limitations and Liabilities
- Fishery Product Hygiene
- Inspection and Control

The main mechanism for the regulation of the fisheries is through the medium of Notifications, which are issued half-yearly after consultations. Notifications are published and announced in the Official Gazette. The Notifications set the rules and general principles for the technical measures to be taken. Technical measures by notifications include: gear restrictions and prohibitions; control measures for fishing areas; establishment and extent of protected areas; seasonal limitations; species size limits; and capture prohibitions for species.

### **Fisheries Information System**

A Fisheries Information System (FIS) has been developed for Turkey in order to create the applications and procedures needed to both comply with the EC fisheries *acquis* and improve fisheries management.

FIS is the system, that comprises a combination of resources organized to collect, process, transmit and disseminate fisheries-relevant data. The system is composed of modules interacting to introduce and extract data to and from a centralized database. This database allocates all of the information collected from the different information sources; the main property of this database is therefore its capacity to relate all of the data contained within the different programme modules.

Details of the different modules (components) of the FIS are summarized below.

#### *Catch Information*

The catch information is collected using the logbook and landing declaration document. The logbook includes the details of the catches (estimated by the skipper) by gear type and zone. The landing declaration contains landings and port arrival data and any information on transshipments.

#### *Sales Notes*

Only the data on the ‘first hand sale’ of fish has to be collected. An official document is used to identify the agents involved in the sale process, and the quantities and prices for each species sold at the authorized sales centres. Further information about the distribution and storage of the fish landed is also included in this module.

#### *Vessel*

The vessel registry is the most important part of the FIS because the vessel is the main unit of operation related to all of the different information sources. All vessels have to be registered to obtain a fishing licence. An initial census has been undertaken of the fleet,

following which all fleet entries and exits have to be controlled so as not to increase fishing capacity.

#### *Licensing*

Three types of licence are included in FIS – vessel, fisherman and first buyer.

- Vessel Licence: This licence authorizes a certain fishing activity to a certain fishing vessel included in the fleet registry. The licence number is the same as the external mark carried by the vessel. The validity period for this licence is two years.
- Fisherman Licence: Every fisherman working on a vessel must have an official registration authorized by Ministry of Agriculture and Rural Affairs. The validity period for this licence is five years.
- The First Buyer Licence: In order to be able to trade fish and fish products in the wholesale fish market, the first buyers are supposed to be registered in the FIS. The first buyer can be an individual person or a representative of a company. The validity period for this licence is two years.

#### **Vessel Monitoring System**

Alongside the establishment of the FIS, a Vessel Monitoring System (VMS) is also being established that transmits positional data from vessels to the land station and presents it on a map using a Geographical Information System (GIS).

#### **Fishery Port Offices**

Turkey has a large number of fishing ports and the Ministry of Agriculture and Rural Affairs has traditionally not had a presence (office) in any of these ports. The need to strengthen fisheries protection and control was identified as an important priority. For this purpose, Fishery Port Offices at 30 ports were established in 2006. All of them will also eventually be linked through the computer-based FIS to Provincial Offices and Headquarters of the Ministry of Agriculture and Rural Affairs in Ankara. The port offices have been operational since the beginning of 2007.

These offices are an important aspect of improved fisheries management in Turkey. They will serve to improve the collection, checking and use of information on the quantities and species of fish landed, and help improve compliance with national regulations related to the grading and marketing of fish and fishing vessel licensing. A permanent presence in these ports will also help the Ministry of Agriculture and Rural Affairs to investigate fishing offences and take the necessary and appropriate enforcement action. There will also be an additional benefit for the industry in facilitating easier communication with government officials, enabling more effective communication of industry concerns and needs.

#### **3.2.6 Input controls**

Input controls for management of the various fisheries is by vessel licensing. Various conservation management techniques are in use, including seasonal limitations, protected areas, fishing area, vessel size, fishing gear, mesh size and species regulations. The Ministry of Agriculture and Rural Affairs at first provided subsidies to the fishing sector, and the fleet underwent expansion. Consequent overcapacity has had a negative impact on fish stocks, and in 1991 a moratorium was placed on the issuing of fishing licences. Exceptionally, a limited number of additional licences were granted to fishing vessels in 1994, 1997 and 2001. No additional vessels have been issued licences since 2002.

#### **3.2.7 Output controls**

There is no quota management of stocks within the Turkish fisheries sector, except bluefin tuna.

### **3.2.8 Economic incentives:**

For fishermen-owners, boats smaller than 20 m have no taxes; others are taxed on their catch.

### **3.3 Fishermen communities**

Currently there are 516 fisheries cooperatives recognized under the Fisheries Cooperative Law No. 1163 of 1969, as amended by Law 3476 of 1988, with a total membership of 28 115; note that a co-op can be established as long as there are at least seven signatories to the memorandum of incorporation.

There are 13 regional unions of fisheries cooperatives within Turkey, comprising about 178 cooperatives and one central union in Ankara. According to 2006 data from the State Planning Organization (SPO), only 23 percent of fishers in Turkey are members of a cooperative.

In addition to fishery cooperatives, fishery cooperative associations, the Central Associations of Fishery Cooperatives (SUR-KOOP) and Central and Regional Fishery Advisory Committees also have an important role to play as representative stakeholder organizations.

### **3.4 Inland subsector**

The major commercial freshwater fisheries in Turkey are concentrated in inland lakes and the coastal lagoons. The freshwater sources developed for irrigation and energy production purposes are constantly increasing. Turkey is rich in terms of inland resources compared with many countries in Europe, and capture fisheries occur in all freshwater ecosystems. The catch from inland waters was 44 000 t in 2006, or 6.6 percent of total annual fishery production. Inland production has been between 5 and 8.5 percent of total production according to the last five years of fishery catch data. Three species (Tarek, common carp and sand smelt) dominate the catches (69 percent of total inland production in 2006). Tarek (*Alburnus tarichii*) are primarily caught from Lake Van (Eastern Anatolia Region), where there are soda lakes; common carp (*Cyprinus carpio*) and sand smelt (*Atherina boyeri*) are found in most inland waters.

The inland fish fauna of Turkey consists of 236 species and subspecies of 26 families. The *Cyprinidae* has 116 species (49 percent of the total fish fauna). In terms of protection status of fish fauna, 102 species are IUCN Red List listed species, 29 species are on the Berne List and 6 species are on both the Berne (for migratory species) and CITES lists (for endangered species).

### **3.5 Recreational subsector**

The numbers of sport fishermen and anglers who participate in recreational and non-commercial fishing activities is not known. While it is obligatory to obtain a licence to participate in a commercial fishery, it is not required for recreational fishing. Only an identification document is issued for recreational fishermen, by the Ministry of Agriculture and Rural Affairs, upon request. It is therefore difficult to estimate and control the total amount of catch by this user group.

### **3.6 Aquaculture sub-sector**

Aquaculture in Turkey is a relatively young industry; it started with rainbow trout culture (*Onchorhynchus mykiss*) in the early 1970s. The main developments took place during the 1990s. Over the past ten years, the volume of aquaculture production has increased

by a factor of 8, from 16 000 in 1996 to 129 000 t in 2006. The industry has developed to such an extent that Turkey is currently the third largest finfish aquaculture producer (i.e. excluding shellfish) in Europe, and the second largest producer of both seabass and seabream and of rainbow trout (after Norway), and in third place along with the top ten countries in the world in terms of average annual percentage of growth rate in aquaculture production for the two-year period 2002–2004.

The following species are mainly cultured commercially: Rainbow trout (*Oncorhynchus mykiss*), Seabass (*Dicentrarchus labrax*), Gilthead Seabream (*Sparus aurata*), Carp (*Cyprinus carpio*), Bluefin tuna (*Thunnus thynnus*) and Mediterranean mussel (*Mytilus galloprovincialis*).

Production from marine (including brackish water) aquaculture in 2006 totalled 72 249 t (56 percent of total aquaculture production) whilst inland (freshwater) aquaculture produced 56 694 t (44 percent). Today both freshwater and marine aquaculture play significant roles in Turkish fishery production, contributing 20 percent to total fisheries production. Currently, there are 1 470 fish farms, of which 1 159 are freshwater fish farms and 311 are marine fish farms.

In recent years, great efforts have been made for the commercial production of alternative fish species, including: common dentex (*Dentex dentex*), common seabream (*Pagrus pagrus*), common pandora (*Pagellus erythrinus*), sharpsnout seabream (*Puntazzo puntazzo*), white grouper (*Epinephelus aeneus*), corb (*Umbrina cirrosa*), striped seabream (*Lithognathus mormyrus*), meagre (*Argyrosomus regius*), greater amberjack (*Seriola dumerili*), brown meagre (*Sciaenops ocellatus*), white seabream (*Diplodus sargus*) and two-banded seabream (*Diplodus vulgaris*). Some trials have also been carried out for the commercial production of turbot (*Psetta maxima*), sturgeons (*Acipenser* spp.) and endemic anadromous trout (*Salmo trutta*) for the Black Sea region.

The bluefin tuna fattening business in Turkey started in 2001, and has grown significantly in recent years. There are currently thirteen companies with a total licensed production capacity of 9 460 t.

#### **4. Post-harvest use**

##### **4.1 Fish utilization**

Generally, Turkish consumers prefer whole fresh fish. In some areas, there is continuing consumer resistance to iced fish as it is taken to be a way of presenting old products or thawed frozen product. In turn, this may affect retailer willingness to ice fish properly. However, as the country changes with higher incomes and purchasing power, higher Labour Force Participation Rate (LFPR) by women and a greater value attached to leisure time, allied with the growth of supermarket shopping, it may be anticipated that the trend will move towards the consumption of fish fillets and added value products, even if supermarkets will retain their fresh fish counter.

In 2006, there were 160 fish processing establishments in Turkey. The processing of fresh fish for export has increased in recent years. The volume of chilled fish exports has also increased with the production of farmed seabass and seabream. The processed fishery products were mainly frozen products. There is a wide discrepancy in regional consumption patterns, with substantially higher consumption along the coast than inland, especially in continental metropolitan areas.

Fish meal and oil factories process pelagic fish (mainly anchovy) into fishmeal and fish oil, which are the main ingredients in feed production for aquaculture and poultry farms. In the early 1970s, investment took place along the Eastern and Middle Black Sea coast



to provide an alternative to fresh consumption or salting of the pelagic catch.

There are 23 feed plants nationwide and seven of them produce only fish feed. The majority produce extruded feed and have a total annual production capacity of 160 000 t.

#### **4.2 Fish markets**

A major market development challenge for the fish processing sector is to utilize all anchovy landings, which is main species caught, for human use either for domestic consumption or export. Trends in the domestic consumption and export of aquaculture products are changing. The domestic consumption of seabass and seabream is on the rise, whilst the export of trout is also increasing. During recent years, large companies (multiple retail outlets) have been putting more and more effort into the domestic market and some retailers have even set up their own fish market chains.

### **5. Fishery sector performance**

#### **5.1 Economic role of fisheries in the national economy**

Recent years have witnessed strong positive economic growth; there were increases of 8.9 percent in Gross Domestic Product (GDP) in 2004, 7.4 percent in 2005, and a budgeted increase of 5.8 percent in 2006. In 2006, per capita GDP was US\$ 5 477. Turkey is ranked as an upper middle income country and it maintains a medium status in the United Nations' Human Development Index. In 2006, agriculture accounted for 9.2 percent of GDP, with services (66.4%) and industry (24.6%) being the main economic sectors. The fisheries sector is not an important part of the economy; the whole sector (including processing and aquaculture and support industries) was estimated to contribute 0.4 percent of GDP in 2006.

#### **5.2 Demand**

In general, Turkish people have been consumers of red meat. In the case of fish, the preference is for whole fresh fish. The main fisheries are highly seasonal; for example the demand for fresh anchovy, which is the main catch, at the beginning of the season, will tend to increase market prices. With limited fish consumption in the country, primarily in the context of low incomes, there would appear to be a substantial hidden demand for low cost protein foods as represented by products such as frozen anchovy.

Demand for both human consumption and fish meal (as an input into the production of poultry feed and aqua-feeds) and utilization of marine catches are shown in Table 5.

**Table 5. Utilization of marine catch (data for 2006; tonne)**

	<b>Total Production</b>	<b>Meal and Oil</b>	<b>Co-op. Associations</b>	<b>Commission Agents Wholesale</b>	<b>Total Used</b>
East Black Sea	239 319	60 000	2 640	161 072	235 441
West Black Sea	101 031	-	-	45 059	93 357
Sea of Marmara	70 409	-	766	63 149	66 683
Aegean Sea	61 678	-	7 023	41 649	57 978
Mediterranean	16 529	-	48	12 890	15 772
<b>Total</b>	<b>488 966</b>	<b>60 000</b>	<b>10 477</b>	<b>323 819</b>	<b>469 231</b>

	Canning	Ranching	Consumer	Other	'Self' Consumption	Waste
East Black Sea	2 991	-	8 427	311	1 376	2 502
West Black Sea	31 030	406	16 645	217	801	6 873
Sea of Marmara	87	41	2 082	558	810	2 916
Aegean Sea	2 034	74	5 873	1 325	654	3 046
Mediterranean	139	134	1 724	837	251	506
Total	11 380	655	34 751	3 248	3 892	15 843

### 5.3 Supply

Annual per capita consumption of fish and fish products in Turkey has averaged around 7.0 kg over the past decade and is about 8.2 kg, with yearly variations according to the availability of small pelagic fish, mainly anchovy, from the Black Sea. In 2006, 13 percent of the total catch was used for fishmeal. Fish sold for human consumption realizes a higher price than that sold for fishmeal; human consumption is driven by the following factors:

- The quality and size of the catch (>10–12 cm is best for filleting, and oily fish before maturity—when oil is lost to gonad production—are preferred); and
- Customer appetites, as although the fresh anchovy market is buoyant at the beginning of the anchovy season, interest wanes as the season progresses.

If the catches are lower, then each of these factors may be less influential in depressing sales for human production.

### 5.4 Trade

In 2006, the value of aquatic products in international trade (export + import) was US\$ 317 million. Exports were 42 000 t, worth US\$ 233 million. Imports reached 54 000 t, with a value of US\$ 83 million.

In volume terms, there is a negative trade balance; however, in value terms there is a substantial positive trade balance, amounting to US\$ 233 million in 2006. This is as a result of the importance of high value seabass and seabream in the export statistics.

Nearly 50 percent of seabass and seabream and 33 percent of the rainbow trout production is exported to the EU; only a few years ago it was 80 percent of the seabass and seabream production and limited trout exports.

### 5.5 Food security

In 2006, the fisheries sector in Turkey provided about 35 000 t of marine products for direct human consumption, and 60 000 t for animal feed or feed in aquaculture. The quality of fresh fish throughout the marketing chain could also in many cases be improved simply by the increased use of ice.

### 5.6 Employment

In 2006, the livelihood of some 123 000 people in Turkey relied on fisheries. The extractive sector represents the greatest source of employment, with 110 230 licensed fishers in 2006 (102 560 working in the marine sector and 7 670 on inland waters). Fish

processing accounted for a further 6 775 jobs and is also the main source of female employment. Aquaculture provides direct employment for 5 939 jobs.

### **5.7 Rural development**

Besides marine capture, the catch from the inland waters is important, especially for rural areas, in terms of fish supply and employment. According to the data of the last 10 years, it comprises 7–10 percent of total production. This fishery currently is static in terms of output. The major catch is obtained from Lake Van (Eastern Anatolia Region), namely *Chalcalburnus tarichii*, which is the endemic species of the basic (sodic) waters of the lake. Production from inland waters is considerably below the rich inland water potentials.

Though the contribution of freshwater catch to total fishery production is relatively small, its contribution to the rural areas in terms of fish supply and employment is significant, and small-scale aquaculture provides added value for family-based enterprises in rural areas.

## **6. Fishery sector development**

### **6.1 Constraints**

In many respects, Turkey faces problems similar to those faced by the global fishery sector. Much reliance is placed on highly seasonal supplies of small pelagics (anchovy and horse mackerel), which are susceptible to environmental influences, and are shared with other Black Sea coastal states. Aquaculture competes with other economic activities—such as tourism development—for available sites, and there is clearly a limit on the number of suitable sites. The main targets are protection and control of natural environment, increase of output by the effective and continuous utilization of resources, improvement of farming and open sea fishery, completion of the infrastructure, efficient reorganization of the institutional structure, completion of international agreements and improvement of cold storage and freezing facilities in the marketing chain. In order to increase employment, this will be evaluated and exports will be encouraged.

### **6.2 Development prospects and strategies**

The development strategies for fisheries and aquaculture are included in the agriculture sector within the development plan and yearly programmes prepared by the State Planning Organization (SPO). Turkey's Long-Term Development Strategy 2001–2023 gives the fundamental objectives for national strategy.

At the same time, a fisheries and aquaculture sector study has been prepared through a technical assistance project entitled "Technical assistance to support the legal and institutional environment of fisheries sector to the EU *acquis*".

Development policy has consisted of indirect support measures for increased extraction, including the provision of incentives and subsidies, and especially cheap credit via the Turkish Agriculture Bank. The expansion and modernization of fishing fleets in the late 1970s and early 1980s is testimony to the effectiveness of these measures in stimulating production (and unfortunately leading to overexploitation) of the resource. Excess capacity of the fleet should now be regarded as a major policy problem, with significant structural adjustment implications. Development policy has been successful as regards the stimulation of aquaculture.

### **6.3 Research**

There are four research institutes of the Ministry of Agriculture and Rural Affairs that deal with fishery research. Two of them are in charge of marine fisheries, located in the Black Sea and Mediterranean regions, and two are in charge of inland fisheries, located in the central and eastern Anatolia regions. Under the Agricultural Research Project, starting from 1996, the infrastructure of these institutes has been improved. In addition, the Universities shown in Table 6 also carry out research on fisheries and aquaculture.

#### 6.4 Education

Nationally, there are 20 universities with a fisheries faculty or vocational school, or a fisheries department within an agriculture faculty, plus marine science institutes in a further three universities (see Table 6). All fisheries faculties and schools consist of three main departments: aquaculture, capture fisheries and processing, and science.

**Table 6. Academic institutions with fisheries or marine science faculties.**

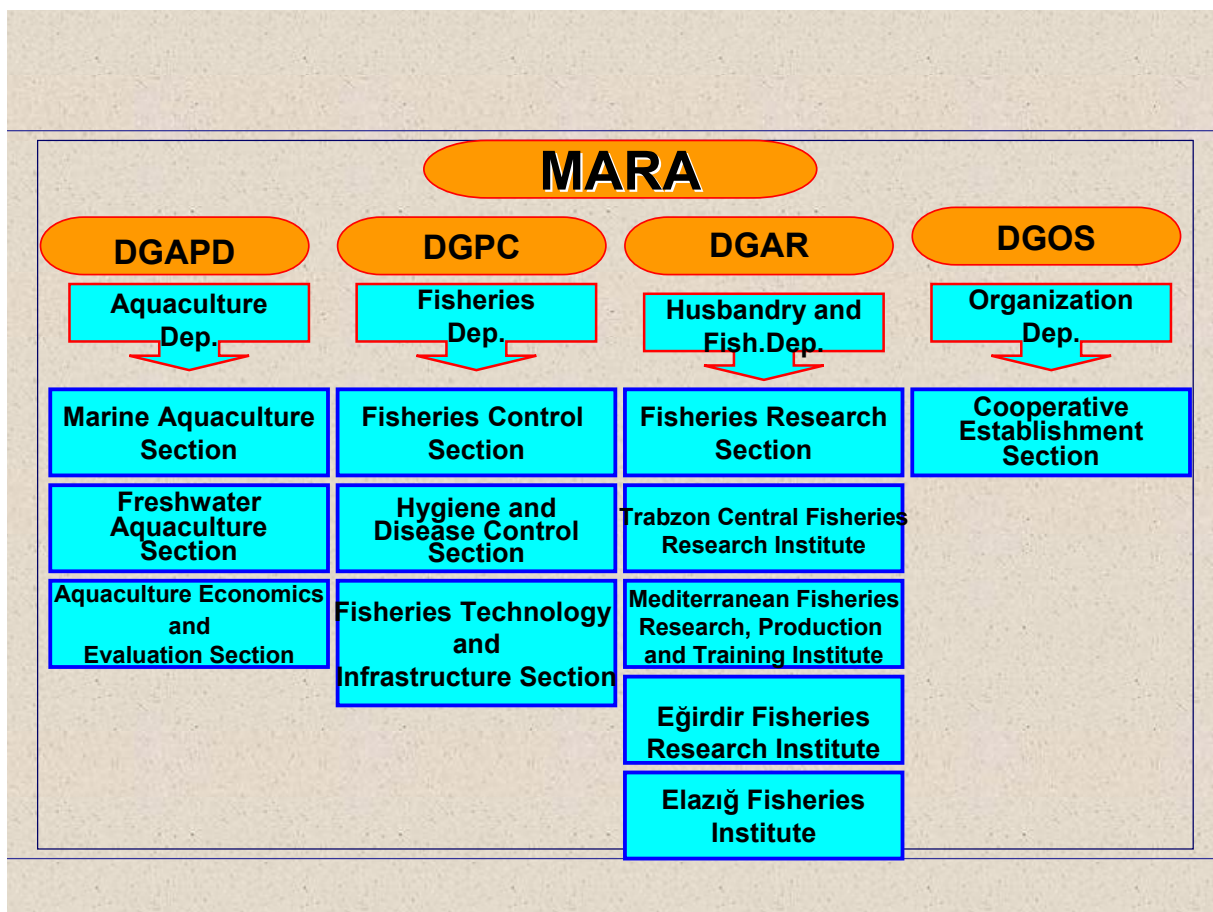
UNIVERSITY	FACULTY
Çukurova University	Fisheries Faculty
Ankara University	Agricultural Faculty (Fisheries Section)
Akdeniz University	Fisheries Faculty
Adnan Menderes University	Agricultural Faculty (Fisheries Section)
Çanakkale Onsekiz Mart University	Fisheries Faculty
Fırat University	Fisheries Faculty
Atatürk University	Agricultural Faculty (Fisheries Section)
Mustafa Kemal University	Fisheries Faculty
İstanbul University	Fisheries Faculty
Ege University	Fisheries Faculty
Kahramanmaraş University	Agricultural Faculty (Fisheries Section)
Rize University	Fisheries Faculty
Karadeniz Teknik University	Sürmene Marine Science Faculty
Mersin University	Fisheries Faculty
Muğla University	Fisheries Faculty
Ondokuz Mayıs University	Sinop Fisheries Faculty
Süleyman Demirel University	Eğirdir Fisheries Faculty
Tokat Gazi Osman Paşa University	Agricultural Faculty (Fisheries Section)
Yüzüncü Yıl University	Agricultural Faculty (Fisheries Section)
Kastamonu University	Fisheries Faculty
Middle East University	Erdemli Marine Science Institute
Dokuz Eylül University	Marine Science and Technology Institute
Istanbul University	Marine Science and Managing Institute

#### 6.5 Foreign aid

There is some support for fisheries and aquaculture from EU funds. In addition, some projects are conducted by the Ministry of Agriculture and Rural Affairs through JICA, etc.

#### 7. Fishery sector institutions

There are four General Directorates within the Ministry of Agriculture and Rural Affairs dealing with fisheries- and aquaculture-related management and administration, plus a number of other institutions, such as the Coastguard, State Statistical Institute and Provincial Directorates involved in the sector. The organigram of the Ministry of Agriculture and Rural Affairs is given below.



KEY: MARA = Ministry of Agriculture and Rural Affairs; GDAP = General Directorate of Agriculture and Production; GDPC = General Directorate of Protection and Control; GDAR = General Directorate of Agricultural Research; GDOS = General Directorate of Organization and Support.

## 8. General legal framework

All activities in fisheries and aquaculture are based on the Fisheries Law, No.1380 of 1971. With this law, and its related regulations, definitions were codified. Based on this law, regulations and notifications are prepared to regulate fisheries. Law No. 3288 of 1986 amended the Fisheries Law No.1380 of 1971. According to Laws 1380 and 3288, and Continental Waters Law No. 2674 of 1982, foreigners are not allowed to participate in commercial fishing activities.

The Ministry of Agriculture and Rural Affairs (MARA) is the main state organization responsible for fisheries (including aquaculture) administration, regulation, protection, promotion and technical assistance through four General Directorates.

There are also a number of other ministries and institutions with a role in fisheries and aquaculture development. Of particular importance amongst these are the Undersecretariat of Treasury and Foreign Trade of the Prime Ministry, which regulates fish imports and exports; State Planning Organization, which formulates policy and determines the development targets for the fisheries and aquaculture sector, and the context for development activities; and Turkish Agriculture Bank, through which fisheries and aquaculture credits are channelled.

In accordance with the Fisheries Law, every year commercial fisheries and sport fishing notifications are published in the Official Gazette, governing restrictions for stock control. In these notifications, species whose fishing are restricted, permitted mesh sizes, protected areas, species size and gear restrictions, fishing methods, and fishing seasons for species are all specified. Main laws and regulations related to fisheries and aquaculture and fishery products are:

- Law No. 1380 of 1971, as amended by Law No. 3288 of 1986, on Fisheries

- Law No. 2674 of 1982 on Continental Water
- Law No. 1163 on Cooperatives
- Law No. 3285 on Animal Health and Sanitation
- Law No. 2872 on Environment
- Law No. 5200 on Producer Unions
- Implementing Regulation on Fisheries, No. 22223
- Implementing Regulation on Aquaculture, No. 25507
- Decree Law No. 560 with the same effect as Law, concerning production, consumption and inspection of foodstuff.