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TURKISH FISHERY
POTENTIALS, DEVELOPMENT AND STRUCTURE

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Abstract

The physical potential and the extend of the Turkish aquatic resources are presented. Living resources are documented on the yield example obtained in 1984. Further a summary is given on the social and economic structure of the fishery sector including the trend in fishery fleet development utilizing the gross tonnage statistics. The utilization of fishery products, the mean sales prices within the country and export figures are added and a short description of education, research and resource conservation are appended.

1. INTRODUCTION

Turkey with its 50 million population and large marine and fresh water resources is associated to the EC (European Community) in avareness of its responsibilities for rational utilization and conservation of aquatic life for future generations.

In consensus of the above paragraph, present status and developments in the future will be briefly described below,

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but firstly the physical extend of Turkish aquatic resources is presented.

2. THE PHYSICAL POTENTIAL

The Turkey with its 767.000 square kilometre area is surrounded by three seas. Its marine and fresh water resources are summerized in Tables 1 and 2.

As seen from the Table 1 and 2, the physical extend of the Turkish aquatic resouces are large, compared to other countries in the Mediterranean region in particular and in the European region in general.

3. LIVING AQUATIC RESOURCES

In accordance with its physical potential and geography, the living aquatic resources of Turkey with respect to species abundance and diversity is relatively rich, as it could be seen from the list given below (Table 3).

3. 1. THE YIELDS

The yields of the last decade are given in Table 4.

As seen from this table the Turkish marine and fresh water catches have continiously increased. Accordingly, this will need carefulness in management.

4. SOCIAL AND ECONOMIC STRUCTURE

The social and economic structure can be best presented, by the number and educational level of the population working in the fishery sector. The educational part will briefly be described later.

In Turkey, 16.4 millions of people are engaged in the agriculture from which approximately 57 thousand are dealing with the fishery. In other words, 0.14 % of the population of the country, and 0.35% of the population engaged in the agriculture, are working in the fishery.

People employed in the fishery sector can be subdivided into the following activity fields (Table 5).

Population engaged in fishery is relatively young (under 50 years old) and approximately 2% of them are women. Among these 33% is employee, 2% is employer and 53% is family enterprise in which 11% is working without salary. The remaining 1% is unknown.

The family enterprise in fishery sector constitutes approximately 65% of the total, indicating the coastal characteristics of the Turkish fishery with small operation radius.

Although, the trend to invest in the fishery sector is less, when considering only the 2% employer, the fishermen could increase their own investment capacities by

6. SUPPLY AND DEMAND

While the fish supply was steadily increased in the last 5 years, the demand did not imitate the same trend, and was rather variable (Table 8).

The reasons for this variability may be several, but it seems that, this may be caused by an increase in fresh fish consumption of the population. Sales prices of the recent years (1980-1984) and the consumption objectives within the country in 1985-1989 are shown in Tables 9 and 10 respectively.

7. RATIONAL UTILIZATION AND STOCK CONSERVATION

Living aquatic resources are defined as the populations of animals and plants. In consensus of this definition, under the rational utilization and stock conservation, the optimal exploitation (avoidance of the distrupction of ecosystem equilibrium) is understood. Therefore, all possible measures suiting to the conditions of the country are taken to prevent the aquatic resources from ruthless exploitation and pollution.

Several government bodies are responsible for the prevention of ruinous exploitation. These are mainly constituted firstly in the Ministry for Agriculture, Forestry and Rural Affairs and secondly in the Primary Ministry.

constituting fishermen's cooperative. The number of fishermen's cooperatives in 1984 is known to be 304 (DPT, 1985).

Utilizing the resources of the cooperatives the fishermen were able to increase their fishing power by installing modern equipment such as fish finders, echo sounder sonar systems, radar and communication instruments etc.

5. FISHING FLEET AND ITS DEVELOPMENT

At present, with exceptions, all fishing boats and the other boats with varying sizes are able to be constructed in the ship yards. In comparison to expensive import, the construction of relatively cheap new fishing vessels resulted a steady increase in the fishing power as shown in Table 6.

Increase in the size and number of fishing boats, induced an increase in sizes and capacities of the fishery harbours. . Untill the end of 1985 nearly 120 fishery harbours of different sizes were in operation (DPT, 1985).

For the sake of completeness, a brief comparison of the fishing fleets with some Mediterranean countries is given in Table 7.

As seen from Table 7, Turkey has the second largest fleet after Italy and it will be appropriate to assume that the size of the fleet will increase further in the future.

In fishery sector, the managerial and regulatory measures are decided and controlled by the Ministry for Agriculture, Forestry and Rural Affairs. In inland and marine waters all the other regulatory measures are applied. There is no limitation on the sizes and the numbers of the vessels including fishery licences. Regulations on catch quotas for vessels are still lacking.

8. EDUCATION AND RESEARCH

In comparison to European and north American countries fishery research and education has a short tradition in Turkey. The first known serious attempt was started in 1952 in the University of Istanbul with the constitution of a Hydrobiological Institute under the Directorship of Prof. Dr. Curt Kosswig. Later, under the sponsorship of the Ministry of Commerce, a Fish and Flesh Office was formed. This office had its own Research and Development Unit which was cancelled later. In 1960's a new Hydrobiological Institut is established in the Ege University.

Until November 1981, Science, Agriculture, and Veterinary Medicine Faculties of different universities were found 21 Institutes and Departments. After the University law forced in 1981, many of them were reformed. The following institutions are active now:

Additionally, there is also a High School for Aquatic Resources which provides professional training.

Unfortunately, the fishermen population do not really pay attention to this opportunity. Most of them are therefore not well educated as seen from the Tables 11 and 12.

Middle East Technical University

- Institute of Marine Sciences
- Department of Environmental Engineering

Istanbul Technical University

- Faculty of Marine Sciences

Istanbul University

- Institute of Marine Sciences and Geography
- College for Aquatic Resources

Ege University

- College for Aquatic Resources
- Hydrobiological Research Centre

9 Eylul University

- Institute of Marine Sciences and Technology
- College for Maritime Management

Akdeniz University

- College for Aquatic Resources

Cukurova University

- College for Aquatic Resources

19 Mayıs University

- College for Aquatic Resources

Karadeniz Technical University

- College for Marine Sciences and Technology

Ankara University

- Department for Aquatic Resources

Firat University

- College for Aquatic Resources
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Table 1: Fresh water potential of Turkey (ACARA, 1981; DPT, 1985).

Type of the Resources	Number of the Resources	Length or Area of the resources
Rivers	33	117.714 Km
Lakes	200	203.500 ha*
Pools	679	8.640 ha
Dam Reservoirs	79	171.280 ha
Total		383.420 ha

*) Lagunes, a large Salt and Soda lake are not included.

Table 2: Lengths of coast utilized by the commercial fishery (DPT, 1985).

Coastal Region	Length (km)
Black Sea	1695
Marmara Sea and the Straits	1189
Aegean Sea	2805
Mediterranean Sea	1577
Islands	1067
Total	8333

Table 3: List of important commercial organisms (Produced from DIE, 1986).

Organisms	Production in 1984		

Pelagic Individuals			
Engraulis	Anchovy	330.967	Tons
Trachurus	Horse mackerel	17.240	"
Sardina	Sardine	13.758	"
Pomatomus	Blue fish	11.737	"
Sarda	Bonito	7.818	"
Mugil	Grey mullets	5.003	"
Scomber	Mackerel	3.450	"
Thynnus	Tuna	869	"
Alosa	Twaite shad	570	"
Belone	Gar-fish	489	"
Lichia	Leerfish	478	"
Atherina	Sand-smelt	262	"
Sphyræna	Barracuda	155	"
Xiphias	Sword fish	95	"

Sub-total		392.891	"

Demersal Individuals			
Gadus	Whiting	12.619	"
Squalus	Spur dog	5.235	"
Mullus	Red mullets	4.505	"
Scophthalmus	Turbot	2.920	"
Sparus	Breams	2.378	"
Maena	Picarel	2.156	"
Raja	Rays	1.360	"
Gobius	Goby	1.165	"
Boops	Bogue	947	"
Pagellus	Breams	560	"
Scorpaena	Scorpion fish	550	"
Solea+Platichthys	Flat fishes	463	"
Dicentrarchus	Seabass	317	"
Trigla	Gurnard	316	"
Umbrina	Shi drum	232	"
Serranus	Groupers	220	"
Salpa	Salema	177	"
Oblada	Saddled breams	163	"
Dentex	Dentex	153	"
Argyrosomus	Meagre	116	"
Saurida	Lizard fish	100	"

Sub-total		36.652	"

Table 3 continued

Other marine organisms

Penaeus	Shrimps	6.212	"
Mytilus	Mussels	1.980	"
Aurelia	Jelly fish	1.785	"
Sepia+Loligo	Squids	658	"
-	Crabs	467	"
Octopus	Octopus	229	"
Homarus	Lobster	95	"
Palinurus	Spiny lobster	24	"
-	Sponges	3	"
Sub-total		11.453	"

Fresh water fish

Cyprinus	Carp	18.655	"
Alburnus	Bleak	9.736	"
Astacus	Fresh water cray fish	7.937	"
Clarias	-	1.663	"
Lucioperca	Pike perch	1.525	"
Salmo	Trout	1.200	"
Helix	Snails	850	"
Esox	Pike	642	"
Anguilla	Eel	616	"
Silurus	Sheat fish	523	"
Scardinus	Rudd	254	"
Abramis	Bream	223	"
Leuciscus	Chub	189	"
Gobius	Fresh water goby	186	"
Sub-total		44.199	"
Others		69.805	"
TOTAL ANNUAL CATCH IN 1984		555.000	"

Table 4: Turkish yields in the years 1975-1984 (in tons, DPT, 1985, DIE, 1986).

Years	Fresh Water	Marine	Total
1975	18472	223628	242100
1976	18895	247105	266000
1977	18320	261685	294000
1978	21806	224227	246033
1979	23214	329268	352482
1980	33220	397321	430541
1981	32658	439206	471864
1982	33616	470171	503787
1983	33505	518595	551900
1984	46497	508669	555156

Table 5: Activity fields of the population in fishery sector (DIE, 1984b).

Occupation or activity field	% in fishery sector
Fishermen	81.3
Seamen	18.4
Ordinary seamen	0.3
Total	100.0

Table 6: Development in the fishing fleet (DIE, 1981a, b; 1984a; 1986).

Years	Gross Tonnage * 100						Total #
	1-4	5-9	10-49	50-99	100-499	500 <	
1976	375	574	2981	218	481	20	4599
1978	216	1473	3430	264	451	111	5945
1980	187	1543	4023	233	567	121	6764
1982	168	1175	4996	324	467	133	7263
1984	189	1461	4838	314	627	262	7691

Table 7: Comparison of the number of fishing boats with some Mediterranean countries (DPT, 1985).

Country	1978	1979	1980	1981	1982	1983
Greece	-	4020	4333	4747	5111	5430
Italy	22388	22604	22492	22981	20254	-
Spain	5477	-	5487	5571	5502	-
Turkey	5945	5707	6764	-	7263	7672

Table 8: Supply and demand within the country in processed fish (Values in 1000; DPT, 1985).

Items	1980	1981	1982	1983	1984	1985
Production						
Processed	5.8	6.7	7.4	10.3	11.0	10.4
Fish meal	29.3	21.0	21.9	23.7	25.0	18.3
Fish oil	8.8	6.3	6.6	7.1	7.4	3.6
Demand within the country						
Processed	1.6	1.7	1.2	3.1	1.8	2.6
Fish meal	29.3	21.0	21.9	23.6	24.1	15.7
Fish oil	8.8	6.3	5.7	4.6	2.5	2.2
Export						
Processed	4.2	5.0	6.2	7.4	9.2	7.9
Fish meal	-	-	-	0.1	0.9	3.1
Fish oil	-	-	0.9	2.3	5.1	6.6
Import						
Processed	-	-	-	-	-	0.1
Fish meal	-	-	-	-	-	0.5
Fish oil	-	-	-	-	0.2	0.2

Table 9: Sales prices of the recent years (TL/kg; DPT, 1987).

Items	1980	1981	1982	1983	1984	1985	1986
Production							
Processed	606	745	885	1260	1200	2448	3648
Fish meal	39	80	100	95	132	240	436
Fish oil	40	45	50	48	143	148	153
Demand within the country							
Processed	606	745	885	1260	1200	2448	3648
Fish meal	39	80	100	95	132	240	436
Fish oil	40	45	50	48	143	148	153
Export							
Processed	224	604	742	1098	2007	3966	5258
Fish meal	-	-	-	-	170	167	148
Fish oil	-	-	38	37	135	135	191
Import							
Processed	-	-	-	-	-	-	2050
Fish meal	-	-	-	-	-	-	280
Fish oil	-	-	-	-	-	-	960

Table 10: Consumption targets for the years 1985-1989 (DPT, 1987).

Years	Fresh (%)	Frozen (%)	Smoked (%)	Canned (%)	Fish meal and oil (%)	Others (%)
1985	72.1	3.4	0.3	1.6	22.3	0.3
1986	72.1	3.4	0.3	1.6	22.3	0.3
1987	72.1	3.4	0.3	1.6	22.3	0.3
1988	63.9	11.6	0.3	1.6	22.3	0.3
1989	63.9	11.6	0.3	1.6	22.3	0.3

Table 11: Professions in the fishery sector (DIE, 1984b).

Unqualified (ordinary) Worker	50.1 %
Qualified worker	28.8 %
Administrative clerk	21.1 %

Table 12: Education level of the personnel in fishery sector (DIE, 1984b).

Primary School	59.5%
High School	25.3%
College	7.0%
Without Primary School	8.2%
Total	100.0