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ARAŞTIRMA MAKALESİ **RESEARCH PAPER**

Management of Fishing Ports on the Financial Performance of the Türkiye Fishery Sector; A Case of Fishing Ports in Hatay Province [*]

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Abstract: In this study, a comparative economic analysis was made on how financial performance can be measured and analyzed in four fishing ports (Çevlik, Konacık, İskenderun and Dörtyol) in Hatay, Turkey. To measure the financial performance, the data were obtained from the database of the Provincial Directorate of Agriculture and Forestry and the Property Directorate, through one-to-one interviews with the operators of the fishing ports in 2017. At the end of the study, it has been determined that there are differences between the legal regulations and regulations related to the practical activities of the fishing port enterprises. In these differences, it can be clearly said that the operation of the fishing ports by the fishery cooperatives in the region does not provide the expected benefit from the fishing ports. The results showed that Dörtyol fishing port was to be the best fishing port in terms of financial performance, location and diversity of boats using the port.

Keywords: Financal performace, fishing port management, Iskenderun Bay, Türkiye Fishery Sector.

Balıkçı Barınakları Yönetiminin Türkiye Balıkçılık Sektörü Finansal Performansına Etkileri; Hatay İli Balıkçı Barınakları Örneği

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Öz: Bu çalışmada Hatay' da bulunan 4 adet (Çevlik, Konacık, İskenderun ve Dörtyol) Balıkçı Limanı işletmelerinde finansal performansın nasıl ölçülebileceği ve analiz edilebileceği konusunda karşılaştırmalı ekonomik analiz yapılmıştır. Finansal performansın ölçülmesi için ihtiyaç duyulan veriler 2017 yılında balıkçı limanları işletmecilerinden birebir görüşülerek, aynı zamanda Tarım ve Orman İl Müdürlüğünden ve Mal Müdürlüğü'nden detaylı bir inceleme sonucu elde edilen sağlıklı bir veri tabanından elde edilmektedir. Çalışmanın sonunda balıkçı barınağı işletmelerinin pratik faaliyetleri ile ilgili yasal düzenlemeler arasında farklılıklar olduğu tespit edilmiştir. Bu farklılıklarda balıkçı barınaklarının bölgedeki su ürünleri kooperatifleri tarafından işletilmesinin balıkçı barınaklarından beklenen faydayı sağlamadığı açıkça söylenebilir. Elde edilen verilerin değerlendirilmesi doğrultusunda bahse konu olan balıkçı limanları arasında finansal performans açısından bulunduğu konum ve limanı kullanan teknelerin çeşitliliğinden dolayı en iyi durumda olan balıkçı limanı Dörtyol balıkçı limanı olduğu belirlenmiştir.

Anahtar kelimeler: Finansal performans, balıkçı barınakları yönetimi, İskenderun körfezi, Türkiye balıkçılık sektörü.

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INTRODUCTION

The increase and diversification of activities in the maritime fields are changing the port management approach day by day (Scheffczyk, 2009; Sciortino, 2010; Ng et al., 2013; Sharaan et al., 2017). In addition to providing one-to-one coordination, the ports are increasingly cooperating with commercial institutions and organizations. These relationships are effective in reducing environmental impact and increasing sensitivity towards the safety of life and property, as well as increasing commercial profits (Di Vaio et al., 2019). Especially, fishing ports are an important investment for both regional and country fisheries. Therefore, it is necessary to provide the expected benefits from fishing ports for sustainable fishing and other vital maritime activities such as tourism and the service sector. In order to provide these benefits, it is required to determine the expense conditions of fishing ports, compare the situations and measure the financial performance. In practice, fishing ports can serve not only fishing vessels but also vessels belonging to different sectors. Therefore, this service is not only a shelter, but also provide a region where basic requirements of these vessels were satisfied like maintenance and repairing.

Having a coastline of 8333 km, Turkey has 48 ports, 49 marinas, and 385 fishing ports (Can & Demirci, 2012; MAF, 2021; DTO, 2022) Fishing ports are important investments built in line with the needs of regional fishing vessels in Turkey and managed by the Turkish Ministry of Agriculture and Forestry and by fisheries cooperatives in settlements (Erdem et al., 2018). The fishing ports are operated by the Fisheries Cooperative in that region, and with the last law amendment of the law numbered 1380, aquaculture farms in that region can also be given shelter. (Law No. 1380, Amended paragraph: 6/11/2019-7191/3 art.). The operation and related inspections of these investments are carried out by the Ministry of Agriculture and Forestry. However, the activities of these enterprises are within the scope of the coastal structures operation circular. Fishing ports in our country should be in very conditions in terms of the port area, pier, dock, and protection against sea conditions (Belen, 2012; Akar et al., 2017). Because considering these situations, these shelters are serious investments for the country (Akar, 2017). These coastal structures have a special importance in fisheries management in terms of fisheries monitoring, control and supervision (Huntington et al., 2015).

Operators of fishing ports may demand a shelter fee from the ships to the extent notified by the Ministry of Agriculture and Forestry to provide for their service (TKB, 2008). Depending on the purpose of establishment, fishing ports should be evaluated financially by looking at their income and expense situations so that they can serve the purpose of aquaculture production, healthily maintain their existence and provide more benefits by constantly renewing themselves. In this study, clues are given about how financial performance analysis should be done in Çevlik, Konacık, İskenderun and Dörtyol fishing ports located on the shores of İskenderun Bay. It is thought that this study will contribute to the cooperative managers operating 385 fishermen's shelters located on the 8333 km coastline and will play an important role in providing the desired benefit from the shelters.

MATERIAL AND METHOD

In this study, the annual economic income and expense tables of the fishing ports were calculated and evaluated. However, it has been determined that there are some data gaps in these income and expense tables of port operators. There are some gaps between the practical applications of fishing port operators or legal regulations. Fees may be charged at the entrances of the vehicle to the ports, fuel tankers and crane. Although the entrance fees for this vehicle are generally accepted, due to the lack of legal infrastructure, a figure about its economic amount could not be obtained. Therefore, these data were not taken into account in the economic analysis. All calculations are presented as arithmetic mean and standard deviation. No statistical analysis has been made.

İskenderun Bay is an economically significant area on the Northeastern Mediterranean shores of Turkey concerning port operations, marine traffic, industrial facilities and fishing activities (Can et al., 2006; Gezmen et al., 2015; Mazlum et al., 2019; Yılmaz et al., 2019; Demirhan et al., 2020; Akar et al., 2021; Yılmaz et al., 2022). In the study, the data obtained from the records of the Provincial Directorate of the Ministry of Agriculture and Forestry and the Property Directorates from Dörtyol (I), Konacık (II), Çevlik (III) and İskenderun (IV) Fishing Ports cooperatives, which have an important place in the Iskenderun Bay, were also used. Information on the infrastructure and superstructure conditions and capacities of the Çevlik, Konacık, İskenderun and Dörtyol fishing ports located in the Iskenderun Bay are given in Table 1 (MTI, 2014).

The locations of these fishing ports in the Iskenderun Bay are given in Figure 1. Although the Madenli fishing port, which was built as a fishing port, served in this direction for a short time, it was revised as a marina by the regional authority without being transferred to any fishing cooperative.

In the study, the incomes and expenses of Çevlik, Konacık, İskenderun and Dörtyol Fishing Ports

cooperatives were determined. The personnel, electricity, water and maintenance expenses of the shelter were covered by the port operators. In the calculation of accommodation fees received by the port operator, an average value was calculated for different ships as a result of the ministry's tariff, the port operator's statement and the negotiations with the shipowners. In addition, the data regarding the pricing is determined by looking at the dimensions, characteristics and usage periods of the boats that will use the port from the Provincial Directorate of the Ministry of Agriculture and Forestry and the rental fee that the fishing port operator must pay to the state from the Property Directorate and were used.

Table 1. Technical Properties of the fishing ports in the Iskenderun Bay (I: Dörtyol, II: Konacık, III: Çevlik, IV: İskenderun)

Properties	Fishing Port			
	I	II	III	IV
Breakwater length (m)	1295	785	800	740
Berth length (m)	370	465	330	270
Protective water area (m^2)	13500	10500	9000	5500
Berth number	90	115	95	60
Number of fishing vessels	200	450	60	45
Number of other ships	4	91	7	5
Density (%)	68	251	43	33
Transport distance (km)	2	0	29	33
Operation of the building	-	+	+	-
Maintenance area	+	+	-	+
Electric	+	+	+	+
Water	+	+	+	+
Operators fishing cooperative	+	+	+	+

"+" available, "-" not available

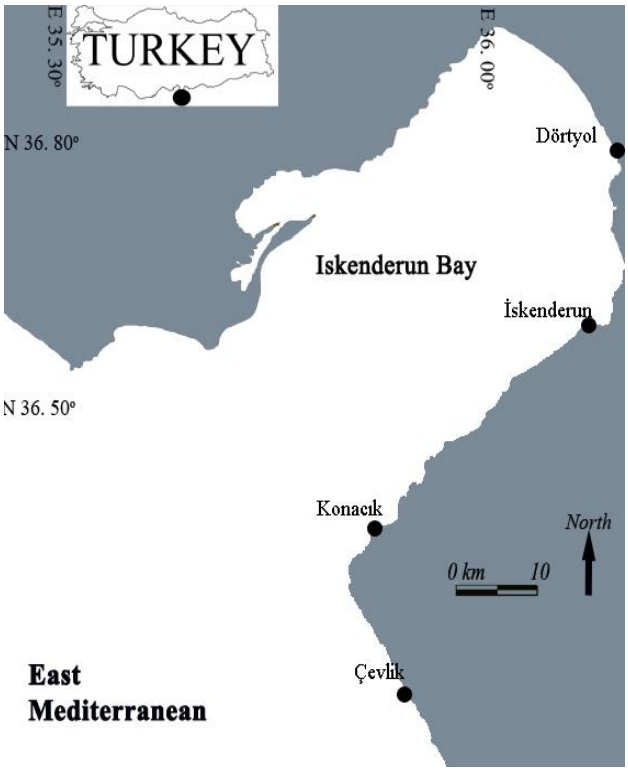

Figure 1. Study area.

RESULTS

There are four fishing ports on the coastline of Hatay Province. In the study, the types and numbers of ships sheltering in fishing ports are shown in Table 2. As can be seen from the table, no fishing port is used only by fishing vessels. Only 49 % of the vessels sheltering the ports are commercial fishing vessels. There are sea vehicles belonging to the tourism and maritime service sector in each port. The most crowded port is Port IV, which hosts 254 out of 546 vessels. Considering the ship densities, it is related to the number of fishermen settled in that region and the types of activities. The population density of the region directly affects the number of ships in the fishing port. In this study, income and expense tables of four fishermen's shelters currently used by fishermen in Iskenderun Bay were prepared and evaluated.

In the study, the quality and economic value of the income and expenses of the fishing ports were determined annually, and the information obtained is the data from 2017. The number of ships in the fishing ports during the economic evaluation period is shown in Table 2. This table is based on the ports where the ships stay permanently. Because a sea vehicle does not pay port fees to more than one port at the same time. In the fishing ports used for product extraction or supply, a fee is charged by the shelter operator according to the vehicle used at the port gate (automobile, pickup truck, fuel tanker, etc.).

Table 2. Number of ships permanently sheltered (located) in Iskenderun Bay Fishing Ports by ship type (I: Dörtyol, II: Konacık, III: Çevlik, IV: İskenderun).

Ship Type	Fishing Ports				Total
	I	II	III	IV	
Trawl	1	1	33	11	46
Purse Seine	1	1	6	3	11
Set Net	8	4	25	58	95
Long line	20	40	0	56	116
Recreational fishing	90	10	16	101	217
Yacht	3	3	10	6	22
Ship Service	6	-	-	6	12
Submersible and underwater Work vessel	3	1	-	4	8
Touring boat	-	-	4	8	12
Tug	4	-	-	-	4
Total	**136**	**60**	**96**	**254**	**546**

"-"No data available

The fee charges of the fishing ports of the Ministry of Agriculture and Forestry for the period of the research are given in table 3 for fishing vessels and table 4 for others.

The incomes of the fishing ports in the region within a year arising from the housing fees are presented in Table 5. According to Table 5, other sea vehicles have an important place in the revenues of the ports. Only 38.42% of the total revenue comes from commercial fishing vessels. Especially in Port I, this rate is very low with 6.48%, while in other ports it is 51.89%, 32.88% and 38.42%, respectively. Although the number of other

vessels using the fishing port is high due to recreational fishing vessels, the number of vessels belonging to other sectors is low. In this context, the economic dimension is higher in the general evaluation due to the high wages received from vehicles belonging to other marine sectors.

Table 3. Fishing ports accommodation fees (TRY) for Fishing Vessels (2017).

Ship Length (m)	Daily	Weekly	Monthly	Annually
0-5.99	7.5	29	44	367
6-8.99	10	44	67	509
9-11.99	13	59	79	730
12-15.99	16	73	93	940
16-20.99	19	87	108	1085
21-25.99	21	101	123	1460
26-31.99	24	116	139	1850
32-37.99	28	131	152	2315
38-44.99	30	152	166	2915
45+	33	165	178	4290

Table 4. Accommodation fees (TRY) for vessels other than fishing vessels (2017**).**

Ship type	Ship Length (m)	Daily	Weekly	Monthly
Yachts, Kotra and Speedboats	0-5.99	12	82	190
	6-8.99	15	89	215
	9-11.99	17	107	269
	12-14.99	20	100	285
	15-18.99	23	110	320
	19-22.99	26	114	345
	23-27.99	30	125	357
	28-32.99	32	130	390
	33-38.99	35	141	406
	39-44.99	37	153	384
	45+	44	163	429
Fuel Supply Ship	50	73	203	678
	60	106	340	860
Barge, Floating Crane, Strobe, Dredging, etc.	-	1.1*	1.6*	17*

per 1 m^2

Table 5. The average port fee paid annually in Iskenderun Bay fishing ports by ship type.

Ship type	Average wage (TRY)
Trawl	1902.2±232.3
Purse Seine	3066.5±712.5
Set Net	513.4±56.25
Long line	525.7±48.36
Recreational fishing boat	950.4±115.24
Yacht	2500
Ship Service	420.45±180.67
Submersible and underwater work vessel	9.000
Touring boat	4106.12±235.74
Tug	40000

One of the most important problems for the operators in fishing ports is the regular and insufficient payment of accommodation fees. The payment rates for each port in 2017 by ship types are presented in Table 6.

The service payment rates of the fishing ports of Hatay province according to the ship types are presented in Table 7. Results for the fourth port cannot be given in this table. Because the information in this direction could not be obtained from the port operator. In the interviews with the ship owners using the port, it was understood that a significant part of them did not pay the ship accommodation fee in 2017 for the yachts. When the payment rates in this table are examined, the overall payment rate is very low at 37.44%. When the payment rate is evaluated economically, this value becomes 59.83%. A significant portion of non-paying vessels is commercial fishing vessels. In addition, recreational fishing vessels do not pay their housing fees properly as they should commercial fishing vessels.

Table 6. Hatay fishing ports projected revenue sources and amount for 2017 (TRY) (I: Dörtyol, II: Konacık, III: Çevlik, IV: İskenderun).

Ship Type	Fishing Ports			
	I	II	III	IV
Trawl	1902	1902	62766	20.922
Purse Seine	3067	3067	18399	9.200
Set Net	4107	2054	12835	29.777
Long line	10514	21028	0	29.439
Recreational fishing boat	85536	9504	15.206	95.990
Yacht	7500	7500	25000	15.000
Ship Service	2523	-	-	2.523
Submersible and underwater work vessel	27000	9000	-	36.000
Touring boat	-	-	16.424	32.848
Tug	160000	-	-	-
Total	**302148**	**54054**	**150630**	**271699**

"-"No data available

Table 7. The percentages of service payment rates by ship types (I: Dörtyol, II: Konacık, III: Çevlik, IV: İskenderun),

Ship Type	Fishing Ports				Mean
	I	II	III	IV	
Trawl	100	100	51	-	76
Purse Seine	100	100	66	-	83
Set Net	-	25	5	-	15
Long line	30	25	-	-	28
Recreational fishing	33	70	31	-	45
Yacht	100	100	30	-	77
Ship Service	100	-	-	-	100
Submersible and underwater work vessel	100	100	-	-	100
Touring boat	-	-	100	-	100
Tug	100	-	100	-	100
Average Pay Rate (Number of Ships)	39.49	36.67	36.17	-	37.44
Average Payout Rate (Income, TRY)	77.23	54.05	48.75	-	59.83

"-"No data available

According to the data in Table 6 and 7, the annual income estimates of the shelters from the ship sheltering fees are ₺302148, ₺54054, ₺150630 and ₺271699, respectively. The expenses of the ports are comprised of the items presented in Table 8, primarily staff, rent and electricity. Due to the reasons stated earlier in this table, the data for the fourth port could not be obtained. The difference in the rental prices of the ports arises from the tender prices. It is seen in the official records that only the Port I payments from the ports are examined retrospectively. However, in this table, since the legal period of the payments to be made to the government for 2017 has not expired, it is considered fully paid. Electricity costs are directly related to port lighting costs. Since ships can be supplied with electricity at the Port I, they are higher than other expenses. Staff expenses are related to the number of employees. One staff member at the Port II, three staff at the Port III, and four staff at Port I. Port II and III do not pay water fees. Maintenance expenses are declared only in the first and third ports. Maintenance expenses consist of lighting, electrical installation, perimeter wires, eyebolts and maintenance of bollards. Only the First Port declared expenses on hospitality and accounting in addition to these.

Table 8. Expenditure amounts of fishing ports by type of outlay (TRY) (I: Dörtyol, II: Konacık, III: Çevlik, IV: İskenderun).

Outlay	Fishing Ports			
	I	II	III	IV
Rent	24000	12000	85000	-
Electric	25000	5400	6000	-
Water	18000	-	-	-
Staff salary	120000	29400	93600	-
Meal cost	36000	-	-	-
Maintenance-repair	20000	-	23000	-
Accounting and tax	4800	-	-	-
Total	**247800**	**46800**	**207600**	**-**

"-"No data available

Considering the income-expenditure tables and payment ratios of the fishing ports in the region, the income of the ports is less than their expenses. In general, the average cost coverage ratio for all ports is 63.99. When we analyse this ratio based on ports, a port is 94.17%, the second port is 62.42%, and the third port is 35.37%.

DISCUSSION

It has become important to make financial analyzes for businesses to grow healthily and to serve their purposes correctly and healthily (Akgüç, 1995). Fishing ports not only meet the vital needs of fishermen, but also serve all maritime sectors in general and especially in the region (Demirci & Karagüzel, 2018; Zaucha & Matczak, 2018; Menhat et al., 2021). This service both important for other sectors and makes the port management sustainable (Köseoğlu et al., 2015). Because the port operator can't meet the minimum expenses with the wages they receive only from commercial and recreational fishing vessels. This situation causes the fishing vessels to have low housing fees and not to make regular payments. It is evaluated that there are three basic factors in making regular payments. Reasons such as (1) the low economic income level of fishing vessels, (2) the port operators lack of sanction power against non-payment, and (3) the lack of transparency of the port management.

Fishing is based on the exploitation of living resources and there is a production based on fishing (Kent, 1997). However, this fishing in the sea depends on the quality of the vessel and fishing gear (Mutlu et al., 2018). While this quality brings a cost to the fishermen, it increases the fishing power and affects the limited living resources negatively. Capital increase in fisheries negatively affects fishery resources day by day and therefore reduces the total fishing income (Kale, 2019; 2020; Can et al., 2020; Demirci et al., 2020; Kaya & Can, 2022).

Although fishing ports are under the responsibility of the fisheries cooperative, there are legal gaps in terms of authority and control mechanism (Karademir & Arat, 2014). Fishing ports are seen by some fishermen in the region as a free service of the state, and therefore they consider it unfair that the operator demands a housing fee and only pays for the water and electricity they use. In this very wrong view of the fishermen, the port operator makes a correct sense, albeit to a limited extent, in a situation where the cooperative does not even pay the service quality and rental fees. The port operator can legally claim the unpaid accommodation fees, and attorney and enforcement costs incurred in practice pose a separate problem for the parties. In addition, the low level of ship sheltering service reduces the payment demand efficiency of the operator and encourages other non-paying ship owners. This situation is evident in all ports, but one of the regional ports has not been able to charge accommodation fees for fishing vessels for many years due to past conflicts.

According to the laws of our country, the operation of a fishing port is carried out by fisheries cooperatives formed by fishermen residing in that region (TKB, 2008). However, a fishery cooperative is established by sea fishermen who want the right to operate a fishing port to carry out their activities. Likewise, in our region, membership in the cooperative is established for port management rather than commercial fishing activities (Şahinler et al., 2005; Can et al., 2012; Demirci et al., 2015). Cooperative managements may consist of individuals who do not actively fish in the sea, trade only with fisheries, or even outside the fishing sector. The lack of sufficient economic control over port management leads to the failure to keep records. The port operator has legal responsibilities to the Ministry of Agriculture and Forestry and the Ministry of Transport and Infrastructure. Therefore, the operation of these regions should be stopped as the ports do not meet the minimum requirements (TKB, 2008). However, due to the negativities that will occur in the practice with the closure, the inspection is not taken into account. The Ministry of Agriculture and Forestry does not adequately monitor the obligations of the port operator as per the relevant legislation. No operator is qualified to provide these qualifications. Economic inadequacy and lack of legal control in ports cause different practices and ignorance in port management. There is no legal basis for charging fees for vehicle entry at port entrances. However, daily and annual fees are charged at the ports, depending on the size of the vehicle. In addition, additional fees are collected from fuel tankers and cranes entering the port. Perhaps the main income of a port is the vehicle entrance fees to this port, which has no legal basis.

The economic insufficiency of the regional fishing ports causes significant losses in life, property, work and environment (Akar, 2017). Regional municipalities, public institutions and some chambers of commerce take initiative due to the negative situations experienced in the ports. These initiatives are to increase

the income of the fishery cooperative, which is the ports operator by opening all or some of the fishing ports to the use of summary yachts (Akar et al., 2017). Despite a few positive examples, these practices have been tried and unsuccessful in different parts of our country (Ünal & Mercan, 2006; Doğan, 2017). It should be accepted that the main reason for this failure is the lack of port management knowledge of the port operator fisheries cooperatives. The lack of forward-looking management plans for evaluating the direction of service supply and demand in the operation and leasing of the regional ports is an important deficiency in a sustainable management approach.

Fishing ports cause significant losses not only for our region but also for the nation due to administrative deficiencies. Due to the demands from different maritime sectors regarding the use of the ports, the agenda regarding these ports continues. It is planned to build a shipyard in Dörtyol fishing port for ports in our region. There has been a constant discourse on the marina for the port of Iskenderun. However, the fact that fishing ports are primarily operated by fisheries cooperatives does not make these considerations possible. For this reason, which was issued for the improvement of the Economy of the Country, the responsibility of the fisherman port was taken from the Ministry of Agriculture and Forestry and the path was opened to the Ministry of Transport and Infrastructure (Fisheries Law Additional paragraph: 6/11/2019-7191/3). In this way, business administration has been opened to the use of many different individuals or institutions (Erüz & Erol, 2018). However, this legal change did not take place in practice.

The demand for ports in marine areas is driven by tourism, fishing, trade, transportation, etc. As it may come from different sectors, there may be different demands in the same sector. The service demands and port usages of a purse seine and a trawler of the same tonnage for the fishing industry are very different (Sciortino, 2010). While trawling requires mooring and simple replenishment, there is a significant berth occupation with the net maintenance of the purse seiner. The supply capacity is high depending on the amount of fish caught and the number of personnel. Similarly, there is a fishing vessel of the same size as a fishing vessel and a fishing vessel using a long line set. While the ship, which applied longline fishing, does not have a berth demand, the net maintenance of the extension net ship is possible with the berth occupation. Similar situations exist in other sectors. Private yacht demand is a comfortable living space and a social environment. Tourist cruise ships, on the other hand, require an environment that is easily accessible to the public. Apart from these sectors, there are sheltering problems of sea vehicles belonging to public institutions, agency and service boats, pontoons, sea vehicles belonging to aquaculture companies, and sea vehicles belonging to underwater and industrial services.

CONCLUSION

As a result of the research, it was concluded that the fishermen's shelters in Hatay region could not be utilized sufficiently. The reason for this is assumed to be due to the management strategy. Fisheries cooperatives are not qualified to provide even the minimum requirements in line with the Turkish Coastal Structures Management Circular on port management. In this context, the deficiency is not only regional but also covers the whole country. The institution responsible for the operation of fishing ports in Turkey is the Ministry of Agriculture and Forestry, and the institution responsible for inspection is the Port Authority under the Ministry of Transport and Infrastructure. The Ministry of Agriculture and Forestry does not have the necessary personnel for port management.

The Ministry of Agriculture and Forestry has made some changes in the operation of fishing ports in recent years, but there has been no significant change in operation. It is an important mistake to consider these coastal structures, whose number is approaching four hundred in our country, only as fishermen's shelters. It would be much more rational to operate these coastal structures if they offer port services to cover all maritime activities in the region, rather than just looking at them as fishermen's shelters. Moreover, this is how the practice works.

When the fishing ports in the Mediterranean countries are examined, it is seen that the management approach is different from ours. First of all, these marine shelters are not only limited to fishermen's shelters, but are also considered as ports serving all sea vehicles. All infrastructural possibilities in the region should be used in a way that includes the rational requirements of the present and the potential for the future. In this use, a management plan and arrangement should be made with the participation of all stakeholders. There may be legal changes in these regulations on a national basis.

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