



# COASTAL AREA MANAGEMENT IN TURKEY



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## Note

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## PREFACE

The sea and the coast represent an exceptional fortune. In the Mediterranean, the greatest civilisations flourished in the coastal areas, considered since ancient times as ideal environment for living, activities and development, as a space that enables the man to fulfil most of his needs. Throughout the history, these areas were managed, exploited, disputed by the populations that inhabited them.

Faced by the advantages brought by economic development over the past centuries, the human wisdom and consciousness have too often and too easily been set aside, leaving the man to abuse the natural resources of this fragile environment. Fortunately, with the passing of time, he has realised that it was imperative to harness the negative impacts of his activities, reverse the processes leading to degradation of coastal areas, and act with moderation and good sense in order to save this heritage for the generations to come.

One of the forums created with this objective is the Mediterranean Action Plan (MAP) which brings together the coastal states in the effort to protect and improve the Mediterranean environment, both marine and coastal. One of the principal concerns of MAP, and particularly its Priority Actions Programme Regional Activity Centre (PAP/RAC), is integrated coastal area management (ICAM) which has, over the past decades, become one of the pillars of environmental action in the Mediterranean region.

Which results have been achieved by the efforts made by MAP and PAP/RAC to introduce into the Mediterranean region the principles of such management leading to the integration of environment and development? What are the effects of the documents adopted at the conferences in Barcelona, Genoa, Rio, Tunis, Johannesburg? How have the states benefited from the methodological, institutional, juridical... innovations offered to them by competent organisations to improve the state of their coastal areas? These are the questions to which we shall be able to answer owing to a series of reports made by the coastal states on the recent practice and developments in the field of planning and

management of this unique and precious part of their national territories.

The present report, prepared for Turkey, has the objective of presenting the characteristics of its coastal areas, the pressures to which they are exposed, the activities that the country is undertaking in order to combat the impacts resulting from those pressures, and, finally, the possibilities of an efficient ICAM.

A country with marine orientation, Turkey has set up a coastal area management system based on the implementation of advanced tools and instruments, and involvement of all relevant national and international actors, in view of achieving a coherent management policy and protection of its coastal areas. This has enabled the country to fulfil more efficiently the commitments taken both at the national level and within the framework of various international agreements aimed at strengthening the Mediterranean solidarity and co-operation in order to make the Mediterranean a region of sustainable development.



# 1. COASTAL AREAS: OPPORTUNITIES AND CHALLENGES

## 1.1 INTRODUCTION

### 1.1.1 The purpose of this report

The Priority Actions Programme Regional Activity Centre of the Mediterranean Action Plan (PAP/RAC/MAP) periodically publishes country reviews on integrated coastal area management (ICAM), prepared by national experts. This report on Turkey, forms part of this series.

The place of Turkey in Mediterranean coastal area management is perhaps unique due to the following:

- a. Turkey has the longest Mediterranean coastline when its islands are not taken into consideration (the third longest when the islands are included).
- b. The present economic and social development of Turkey is not too far removed from the average of the 21 Mediterranean countries. Consequently, the present system of ICAM in the country has several features that can also be found in other Mediterranean countries that are at higher or lower levels of development.
- c. Turkey's position with regard to membership of the European Union is rather special, and presently different from that of all other Mediterranean countries.
- d. The history of ICAM efforts in the country is a relatively long one, and dating back to the 1970s and early 1980s.
- e. In addition to the Mediterranean (including the Aegean Sea), Turkey has very important coastal areas along the inland Sea of Marmara and the Black Sea, and is a partner of the Black Sea Strategic Action Plan (BSAP) in addition to MAP.

In the compilation of the present report, several relatively recent publications issued by governmental and intergovernmental agencies, like the "National Environmental Action Plan" (1998) of the State Planning Organisation, the "Environmental Performance Reviews - Turkey" (1999) of Organisation for Economic Cooperation and Development (OECD), "National Report on Sustainable Development" (2002), a report prepared by the Ministry of Environment for the Johannesburg Summit, were reviewed.

These publications obviously provided a wealth of information that was useful for the present appraisal on coastal management. Additionally, information posted in the web pages of the relevant ministries and state agencies were utilised together with many other publications and papers. Finally, the personal experience of the author, the result of his previous work on coastal management in Turkey and in the Mediterranean has been reflected in the discussions of the present report.

The report consists of four distinct parts which follow on from the introductory sections 1.1.1 and 1.1.2. The first part (Section 1.2) presents the characteristics of Turkey's coastal areas together with an in-depth discussion both of important natural and cultural resources. The second part (Sections 1.3 & 1.4) deals with significant economic activities that take place in the coastal areas (Section 1.3) and the adverse impacts of these (Section 1.4). The third part (Sections 2.1, 2.2 & 2.3) provides the details of the present system of coastal area management in Turkey. In this part, the characteristics of the institutional systems and a review of the existing legislation are presented (Sections 2.1). The present system of coastal management is discussed (Section 2.2), introducing the implementation of policies and plans, the tools and instruments used, the actors involved, the relevant education and information sources, and the means and examples of international cooperation. Finally in the third part, two examples of coastal management projects that were carried out in early and late 1990s are summarised. In the last part of the report (2.4), a synthesis is attempted with a discussion on the future of coastal management in Turkey.

### 1.1.2 The ICAM tradition in Turkey

Turkey is a country well endowed with a wealth of coastal areas and an abundance of their coastal resources. The Anatolian Peninsula, together with the Thrace Peninsula in the northwest, constitutes the land of Turkey. The Turkish land borders the Black Sea in the north, the Aegean in the west and the Mediterranean in the south. In addition to these three seas, Turkish land encloses

an extremely important inland sea, the Sea of Marmara.

Human activities in the coastal regions however, with the exception of those on the Black Sea coast, only intensified during the second half of the 20th century, especially after the 1970s. There are several reasons why Turkey's coastal areas have been historically neglected. Among these, low levels of industrialisation and urbanisation within the country, very modest demands from tourism and for recreational activities, the weakness of the private sector, limited private ownership of coastal lands, and the geomorphologic characteristics of the coastal areas are the most significant ones.

A substantial part of the coastal areas of Turkey, including almost all forests and woodlands, are still state owned in the year 2003. This state ownership has caused several problems for the development of coastal areas. For example, the illegal occupation of state-owned coastal lands (and forests) by villagers and the use of these lands for agriculture and farming is a long-lasting issue that still needs to be solved. This problem gained a new dimension when the inhabitants of large cities flooded the coastal areas in large numbers starting in the 1980s, in search of an attractive new home after their retirement. In 2003, the Turkish Government passed a law regulating the selling of ex-forest areas that have lost their forest character (e.g. land which had been subject to deforestation) to the occupiers of these lands. However, this law could not be implemented since it was overruled by the Constitutional Court. The Turkish Government has indicated its intention to raise this issue once again and find a way of bypassing the present constitutional obstacle.

The problem of state-ownership of the coastal lands and its discouragement of private sector investment has been resolved by the long-term leasing of these lands to the developers at very modest rental fees. Several examples of coastal industry and marine facilities exist that have been developed on public land following a leasing agreement with the State. A significant total of the tourism facilities (hotels, holiday villages, marinas, restaurants, etc.) that have been erected after the mid 1980s have also utilised lands leased by the state for a period of 50 years, as it was envisaged by the Tourism Incentives Law enacted in 1983. The rapid growth of Turkish tourism, which has multiplied fifteen fold in terms of the number of incoming tourists over a period of eighteen years (1985 to 2003), has been paralleled by the very rapid urbanization of coastal resorts such as Antalya and its environs in the Mediterranean, and Kusadasi, Marmaris, Fethiye and Bodrum in the Aegean.

Following to the intensification of human development and activities in the coastal zone after the 1980s, Turkey has gained considerable experience in the planning and management of coastal activities and developments in several sectors. For example marine transportation, fisheries (especially in the Black Sea), urbanization, and conservation of natural and cultural heritage are the traditional sectors that have been dealt with in the coastal zone for a long time. Over the last two decades, several new sectors such as tourism and recreation, mariculture facilities, technical agriculture (including greenhouse farming/horticulture/intensive farming) have gained in importance. To date, however, the management of coastal development in Turkey has been strongly central and clearly sectoral, although there have been several efforts since the late 1980s (discussed later in the report) to bring in "integrated" management and to decentralise the planning and implementation authority by transferring responsibilities to local administrations (municipalities and provincial governorates).

## 1.2 THE COASTAL ENVIRONMENT

The total length of the Turkish coastline including the islands is 8,333 kilometres, of which 1,067 kilometres are island shores. The distribution of this total according to the four seas are the Black Sea: 1,701 kilometres (20.4%), the Sea of Marmara: 1,441 kilometres (17.3%), the Aegean Sea: 3,484 kilometres (41.8%), and the Mediterranean: 1,707 kilometres (20.5%) (Gunay, 1987). These four coastal regions show distinct geographical features. Mountain ranges run parallel to the coast along the Black Sea coast, especially in the eastern part, limiting the size of the coastal area to extreme minimums on one hand and bringing a marked influence on the climatology of the region on the other. As the winds over the Black Sea prevail dominantly from the northern sectors, the Turkish coast is often the down-wind side. The humidity brought by the marine winds consolidates over the mountainous slopes and fall as precipitation, making the Black Sea coast (especially the eastern part) the most humid region of Turkey. The western Mediterranean coast has geological features similar to the eastern Black Sea coast, e.g. high mountain ranges running in close proximity to the shoreline. However, the climatology of this coast, which is basically Mediterranean, is far different. Along the eastern Black Sea and the western Mediterranean coast, the width of the coastal area is very narrow (in the order of a few hundred meters), thus rendering the area unsuitable for many coastal uses including urbanization. Along the Aegean coast, the mountains run perpendicular to the coast, thus allowing the rivers like Buyuk Menderes to form



Figure 1.2.1  
The twenty-nine coastal provinces of Turkey

fertile alluvial plains and productive deltas. Due to the perpendicular orientation of the mountains, the Turkish Aegean shoreline is highly indented, housing numerous bays and coves that have been inhabited by humans since historic times. This makes the Aegean coast extremely important with respect to the presence of invaluable cultural sites and resources, and thus a prime area for tourism and recreation, and other coastal uses that are also supported by numerous coastal features and natural attractions.

Other alluvial plains are located along the western Black Sea coast (like those of Kizilirmak and Yesilirmak) and the middle to eastern Mediterranean coast (like the plains of Goksu, Seyhan, Ceyhan and Asi). The coastal area along these alluvial and deltaic shores widens significantly from a handful of kilometres to a few tens of kilometres, presenting agricultural land of the highest productivity.

The coastal area around the Sea of Marmara is generally suitable for human development. The terrain is not as rugged as the eastern Black Sea and the western Mediterranean coast. The proximity to the City of Istanbul and to Europe has contributed to the potential development value of the Marmara coast, which is relatively more developed and densely populated.

Currently, no accepted definition exists of the “coastal area” in practise in Turkey. The country is divided to seven “geographic regions” and four of these are named after the sea that they border. The Black Sea (Karadeniz) Region is often referred to in two parts: the eastern and the western Black Sea regions. These “geographic regions” are very large areas. At a lower level, are the provinces that are basically political (administrative) units. The

provinces of Turkey that have a coastline along at least one of the four seas are shown in Figure (1.2.1). The four coastal geographic regions and their coastal provinces are:

- The Black Sea Region: Artvin, Rize, Trabzon, Giresun, Ordu, Samsun, Sinop, Kastamonu, Bartın, Zonguldak, Duzce and Sakarya;
- The Marmara Region: Istanbul, Kırklareli, Tekirdag, Edirne, Canakkale, Balıkesir, Bursa, Yalova, and Kocaeli;
- The Aegean Region: Balıkesir, Izmir, Aydın and Muğla;
- The Mediterranean Region: Antalya, Icel, Adana and Hatay.

The boundaries of the provinces have been drawn based on administrative features. The coastal provinces in all cases occupy both coastal and inland land areas. A further administrative division exists within provinces (districts – “ilçe” in Turkish). The boundaries of coastal districts would correlate better with the accepted coastal area definitions. However, most of the information that is important for coastal management is available at the provincial level. Therefore, the use of the coastal district boundaries in discussing coastal management in Turkey, although preferable due to its closer correspondence to the “coastal area” definition, is unfortunately impractical.

As will be discussed in Section 2.1.1, the Turkish “Shore Law” defines “shore” and a “shore strip”. These definitions are too limited in terms of the width of the area that they refer to when considered in accordance with the overall interest of coastal management, and thus have limited use.

In this report, one will find the information presented and the subsequent discussion at

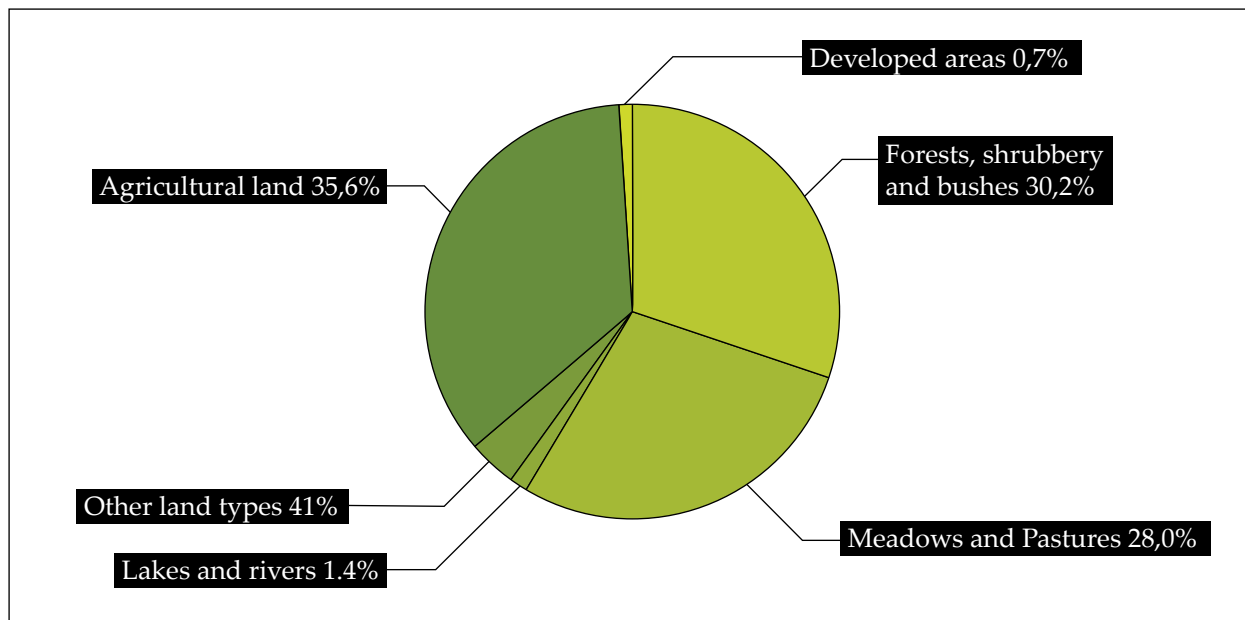


Figure 12.2  
Overall land use in Turkey (Sonmez, 1992)

three levels: the country, the coastal regions, the coastal provinces and the “shore and the shore strip” as defined by the Shore Law. For example, resources like soil, forests and alike, are first briefly presented at the country level, and then they are discussed at coastal region and provincial levels. Similar approach is followed for discussing coastal developments like tourism and urbanisation. Whenever appropriate, discussion is narrowed down to the land area that is defined as “shore” and “shore strip” by the Shore Law.

## 1.2.1 Coastal resources - natural

### 1.2.1.1 Soil resources

Turkey occupies, to a large extent a high and rough terrain with extensive plateaus and mountainous regions. The mean altitude is close to 1,130 m. Approximately half of the terrain has a slope steeper than 40% (Ministry of Forestry, 2002). For these reasons, Turkey is not rich in quality agricultural land despite its large surface area.

Land use type	Area (Ha)	%
Agricultural land	27,699,004	35.6
Pastures and meadows	21,745,690	28.0
Forest, shrubbery & bushes	23,468,463	30.2
Developed areas	569,400	0.7
Other land types	3,212,175	4.1
Water areas	1,102,396	1.4
<b>TOTAL</b>	<b>77,797,127</b>	<b>100.0</b>

Table 1.2.1  
Distribution of land resources in Turkey and their uses (Sonmez, 1992)

The percentages of land types and uses are given in Table 1.2.1 and shown in Figure 1.2.2. The land used for agriculture constitutes only about one-third of the total area (35.6%). A large percentage of agricultural land (81.7) is used for non-irrigated agriculture. Of the remaining percentage, 10.8% is used for irrigated agriculture, 3.8% for orchards and vegetables, and 3.7%, and special crops (SPO, 2001b).

Other land types in the above table include reeds and swamps, riverbeds, dunes and barren and rocky mountainous areas.

Acidic soils are concentrated in the Black Sea and Marmara regions. The pH value of 75.6% of the soil is between 7.0-7.9. Alkalinity problems are observed in the Mediterranean region. The percentage of soils that have a pH value in excess of 8 is 4.7%. High carbonate concentrations are found in the Mediterranean and Southeast Anatolia regions. The percentage of soil in Turkey with a carbonate concentration in excess of 25% is 11.9 (SPO, 2001c).

The organic content of soil is generally low. Soil with organic content – more than 4% constitutes only 3% of all soils. Sixty-nine percent of soils have organic components lower than 2% (SPO, 2001c).

The geographic distribution of quality agricultural land is unbalanced (Table 1.2.2): Thirty percent is in the Marmara and central-north regions where population density and non-agricultural activities (such as urbanization and industry) are comparatively much more intensive. The shares of cultivable land (Classes I, II, III) in these two regions are 43% and 29% respectively (SPO, 1998).

Regions	Land Classes by Agricultural Region (%)							
	I	II	III	IV	V	VI	VII	VIII
1) Central-North	6.62	10.19	12.12	10.94	0.14	15.01	42.37	2.62
2) Aegean	6.28	8.38	7.36	5.81	0.12	14.74	53.50	3.82
3) Marmara	6.52	22.25	17.38	11.27	0.25	14.37	25.99	1.97
4) Mediterranean	7.75	6.78	5.69	5.03	0.42	8.72	57.53	8.07
5) East-North	3.81	7.12	9.02	14.02	0.07	17.29	43.00	5.67
6) East-South	8.35	9.13	9.23	8.38	0.19	11.97	48.50	4.24
7) Black Sea	2.96	3.13	5.95	9.55	0.02	13.06	61.50	3.84
8) Central-East	4.90	6.31	10.12	8.90	0.08	12.40	54.09	3.20
9) Central-South	9.61	10.21	13.71	11.20	0.61	12.86	37.17	6.64

Table 1.2.2

Distribution of soil classes as percentages of the total agricultural land in different regions. (TOPRAKSU, 1978)

The inappropriate use of quality agricultural land, such as the deltas and alluvial planes occupying several coastal stretches, has been a significant issue for several decades. Nearly 172,000 ha of agricultural land falling into 1-4 soil classes have been lost to urbanization, tourism, commercial and industrial development. Over the past 20 years, the rate of loss has accelerated considerably (Ministry of Environment, 2002).

### 1.2.1.2 Forests

About 27% (20,763,248 ha) of the land area of Turkey is officially registered as forestland (Ministry of Environment, 2002). A significant part of these lands are located in the coastal zones of all four Turkish seas (Figure 1.2.3). The distribution of forestland by Turkish geographic region is indicated in Figure 1.2.4 and 1.2.5. It is observed that 76% of all forestland happens to be in four coastal regions (Black Sea, Mediterranean, Aegean, and Marmara, in decreasing percentage order). 99% of forests in Turkey are owned by the State (Ministry of Environment, 1996).



Figure 1.2.3

Forest cover in Turkey (<http://www.orman.gov.tr/>)

Turkish forests are notably rich in biodiversity, as well as structural characteristics and types of forest

trees. Five pine species, four fir species, two species each of beech, hazelnut, elm, hornbeam and ash, about twenty oak species, ten maple species, five birch species, and numerous subspecies grow naturally in these forests (Ministry of Environment, 2002).

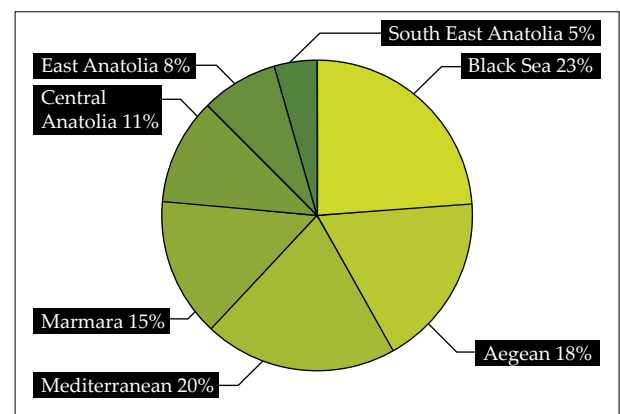


Figure 1.2.4

Distribution of forestland by Turkish geographic region (Konukcu, 2001)

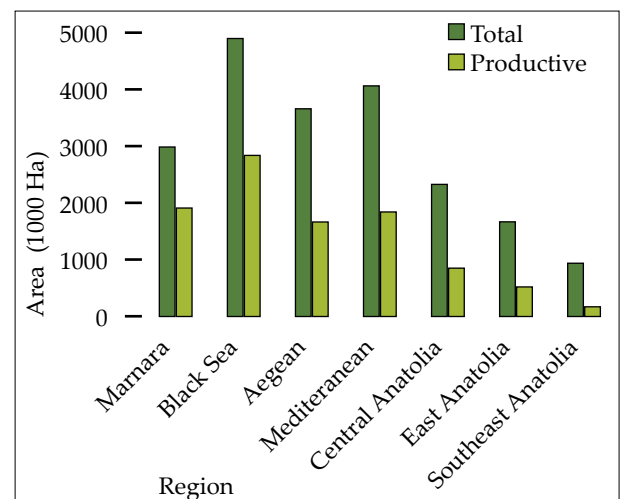


Figure 1.2.5 - Forestland size by Turkish geographic region (Konukcu, 1998)

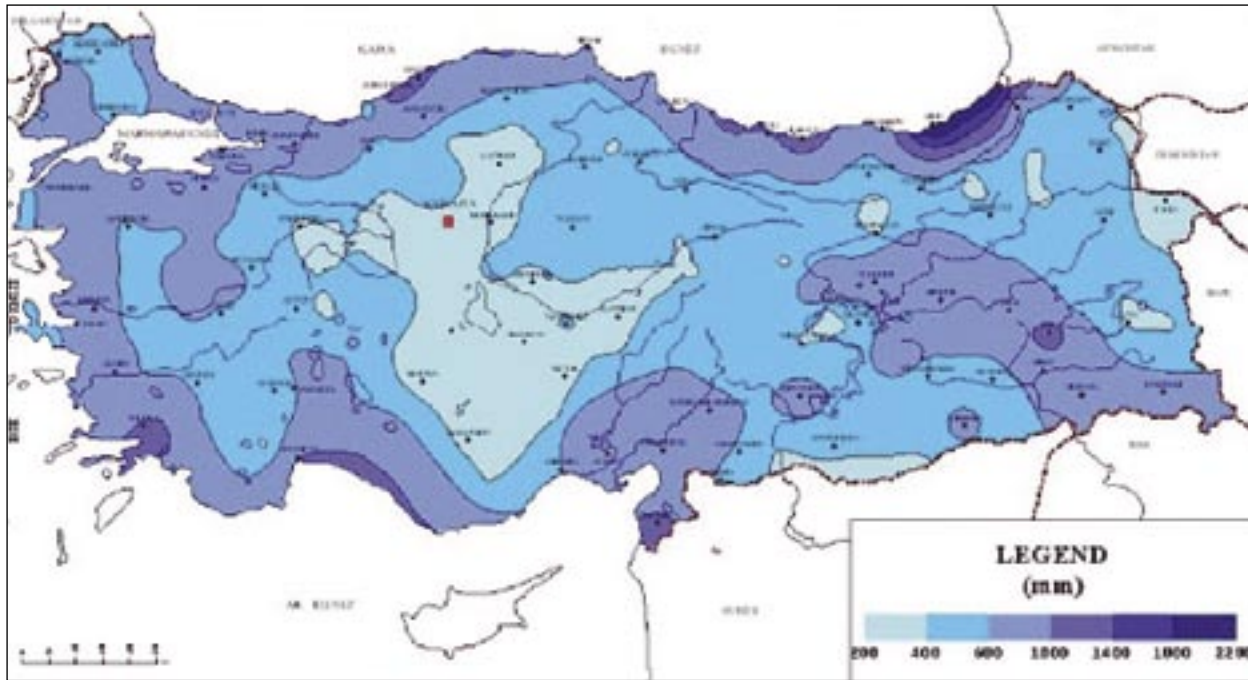


Figure 1.2.7  
Mean annual precipitation in Turkey (<http://www.meteor.gov.tr/>)

Because of the convergence of vegetation from three distinct floristic zones, Turkey has a highly diverse variety of forests. These are:

- Forests of the Euro-Siberian Floristic region (in the Black Sea and Marmara Regions);
- Forest ecosystems of the Mediterranean Floristic region (MFR) (in the Aegean and Mediterranean Region);
- Forest ecosystems of the Irano-Turanian (in Inner-, Eastern- and South-Western Anatolia) phytogeographical region (ITFR) (Kaya and Raynal, 2001).

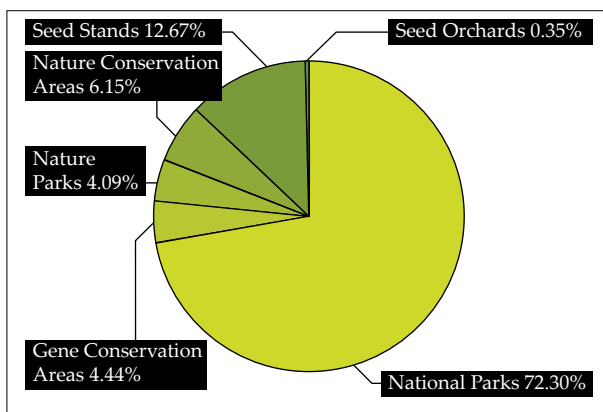


Figure 1.2.6  
Forest areas protected under various schemes

Selected forest areas are protected under various designations as shown in Figure (1.2.6). (Konukcu, 1998). National Park is the category containing the largest area (72.30% of all protected forest areas). The other protection categories in the order of decreasing size are: Seed Stands (forest areas conserved for seed production) (12.67%),

Nature Conservation Areas (6.15%), Nature Parks (4.09%), Gene Conservation Forests (4.44%), and Seed Orchards (0.35%).

### 1.2.1.3 Water resources

Overall, Turkey is well endowed with freshwater resources. The annual mean precipitation is 642.6 mm, amounting to 501 billion m<sup>3</sup> of freshwater (<http://www.dsi.gov.tr/>). Of this amount, 186 billion m<sup>3</sup> transforms into surface run-off while 41 billion m<sup>3</sup> infiltrates to feed the groundwater reserves. There are 48 natural lakes in Turkey with surface areas in excess of 5 km<sup>2</sup>, totalling an area of over 8,900 km<sup>2</sup>. The length of the rivers and streams exceed 30,000 km. The dam lakes cover an area over 32,500 km<sup>2</sup>. An estimated 95 billion m<sup>3</sup> of the annual average surface flow of 186 billion m<sup>3</sup> and 12 billion m<sup>3</sup> of groundwater reserves of 41 billion m<sup>3</sup> are economically and technically exploitable (SPO, 1998).

Although Turkey as a whole possesses a good level of freshwater potential, the geographic and temporal distributions are both highly uneven. The geographic distribution of the mean annual precipitation is shown in Figure 1.2.7. It is observed that the mean annual precipitation in the coastal area is in general greater than the country average of 642.6 mm. Coastal areas with less precipitation (between 400 – 600 mm) are the Gelibolu and Cesme Peninsulas of the Aegean coast, and the mid-section of the northern Marmara coast. The eastern Black Sea coast is the most humid part of the country with a mean annual precipitation in the range of 1000 – 2200 mm.

The significant temporal variability of precipitation along the Aegean and the Mediterranean coast decreases the usability ratio of the fresh water received annually. The mountainous nature of lengthy segments of the coastal area and the geology of the strata (limestone) further decrease this usability. Along the Aegean and the Mediterranean coast, almost the total annual precipitation is received during the period of November to April. Sporadic dense showers are common during this winter period. The region receives almost no rainfall for the rest of the year. Short periods of precipitation, the steep slopes of the land surfaces and the limestone formations do not favour the retention of precipitation in ground water reservoirs. A great percentage of fresh water flows into the sea either in the form of surface run-off or karstic springs.

The total renewable fresh water potential of Turkey is 234 billion cubic meters per year (SPO, 2001d). Currently, 45% of this renewable freshwater resource is classified as “exploitable”. Of this potentially exploitable capacity, about 35% is actually exploited (Ministry of Environment, 1996). Of 186 billion cubic meter of the annual mean surface run-off, 33.3 billion cubic meters is presently utilised. The annual safe yield of groundwater reservoirs is 12.3 billion cubic meters. Out of this maximum capacity, nearly half (6 billion cubic meters) is actually extracted (<http://www.dsi.gov.tr/>). The State Hydraulic Works is the authorised institution for issuing permits to extract water from groundwater reservoirs. The permits already allocated add up to 9.65 billion cubic meters (SPO, 2001d).

Groundwater resources are used for the freshwater needs of several tourism centres along the Aegean and the Mediterranean coast. The water extraction rates and the conditions of the aquifers are not properly monitored. As the result of overexploitation, there are already cases of significant stalinization of the groundwater reservoirs (such as in the Cesme Peninsula).

#### 1.2.1.4 Landscape and natural values

The coastal areas of Turkey are host to varying types of sea and landscapes. Steep slopes leading to the Taurus mountain ranges, covered by indigenous Mediterranean maki and pine forest dominate the western Mediterranean coast, whereas old alluvial planes and deltaic features are commonly observed in the east. The mountain ranges cut the Aegean coast in normal orientations, resulting in a highly indented coastline and numerous coastal features including peninsulas and bays, sand beaches of various lengths cut by stretches of steep carbonate slopes, river mouths, wetlands and lagoons.

Turkey is one of the richest countries in terms of wetlands in Europe. The wetlands cover an area of 1,851,000 ha in Turkey including the artificial lakes. Some 58 out of a total of 250 wetlands of Turkey are labelled as “internationally important”, and 18 of these are acknowledged as “Class A” wetlands. Seventy-six wetlands having a total area of 1,240,000 ha are identified as important bird sanctuaries (Ministry of Environment, 2002). Out of nine wetlands (having a total area of 159,300 ha) that are included in the Ramsar List, four are located in the coastal zone (Goksu Delta, Gediz Delta, Akyatan Lagoon, and Kizilirmak Delta) (Ministry of Environment, 2001). Locations of the Ramsar sites are shown in Figure (1.2.8).



Figure 1.2.8  
The locations of nine Ramsar sites and other wetlands of international importance (<http://www.cevre.gov.tr/>)

Turkey has 72 lagoons of various sizes, distributed along her long coastline. The Aegean coast is the richest in terms of the number of lagoons, total lagoon area (about 20,000 ha) and fish production (about 562 tons per year). Two lagoons – Bafa and Koycegiz – account for 60% of the total area. The lagoons along Turkey’s Black Sea and Mediterranean coast are found mainly as parts of the deltaic systems. Lagoons of the Kizilirmak Delta in the western Black Sea coast and those of the Goksu, Seyhan and Ceyhan Deltas in the eastern Mediterranean coast are among the important pristine nature preservation areas (Deniz, 2002b).

The main activity in most of the lagoons is traditional fishing. Various categories of protection for nature and wildlife apply with regard to a significant number of lagoons.

The length of the Turkish coastline with sand dunes is about 845 km. Until recently, coastal dunes were significantly damaged by road construction, plantations, sand extraction, secondary houses and tourism projects (SPO, 2001d).

Protected Areas	Responsible Ministry	No of Sites	Total Area (hectares)
National Parks	Ministry of Forestry	33	686,631
Nature Parks	Ministry of Forestry	16	69,137
Nature Conservation Areas	Ministry of Forestry	35	84,229
Natural Monuments	Ministry of Forestry	59	462
Wildlife Conservation Areas	Ministry of Forestry	107	1,671,199
Breeding Stations	Ministry of Forestry	41	5,491
Conservation Forests	Ministry of Forestry	53	365,884
Gene Conservation Forests	Ministry of Forestry	163	
Seed Stands	Ministry of Forestry	344	46,348
Type A Recreation Areas in Forests	Ministry of Forestry	52	2,208
Type B Recreation Areas in Forests	Ministry of Forestry	198	8,245
Specially Protected Areas (SPA)	Ministry of Environment	13	1,069,000
Ramsar Sites	Ministry of Environment, Ministry of Forestry	9	
Natural Preservation Sites	Ministry of Culture	750	-
Natural Endowments	Ministry of Culture	2370	-
<b>TOTAL</b>		<b>4243</b>	

Table 1.2.3  
Types of protected areas, their numbers and sizes  
(Ministry of Environment, 2002)

The limestone cliffs that make up a significant percentage of the mountainous coastline give way to the formation of numerous sea caves. It is estimated that there are about 30,000- 35,000 sea caves along the Turkish coast (Ministry of Environment, 2002). Some of these caves along the Aegean and the western Mediterranean coast are extremely important since they provide the breeding habitat to the most endangered marine mammal, the Mediterranean Monk Seal.

In a report prepared for the OECD, it is stated that the protected areas are equivalent to 3.9% of the total land area of the country (OECD, 1999). Another reference however declares that protected areas account for 4.83% (Yurdakul, 2000).

There are different types of protected areas in Turkey managed by three different ministries. These types, their numbers and total areas are indicated in Table 1.2.3.

The specially protected areas (SPA) that were declared in 1988, 1990 and 2002 were initiated by the international agreement in the framework of the Mediterranean Action Plan. There are 13 SPAs, of which nine are coastal SPAs (Figure 1.2.9). The coastal SPAs cover sizable stretches of the coastline along the southern Aegean, as well as the western Mediterranean. One SPA aims at the protection of an important sea area for the Mediterranean Monk Seal, and 4 SPAs contain important marine turtle nesting beaches. The management of SPAs is carried out by the Authority for Specially Protected Areas, under the Ministry of Environment.

In the year 2003, there are four coastal national parks, out of the total number of 33, as shown

in Figure (1.2.9) (Olympus-Bey Daglari, Dilek Peninsula, Gelibolu, and Marmaris) and various nature protection areas and nature reserves.

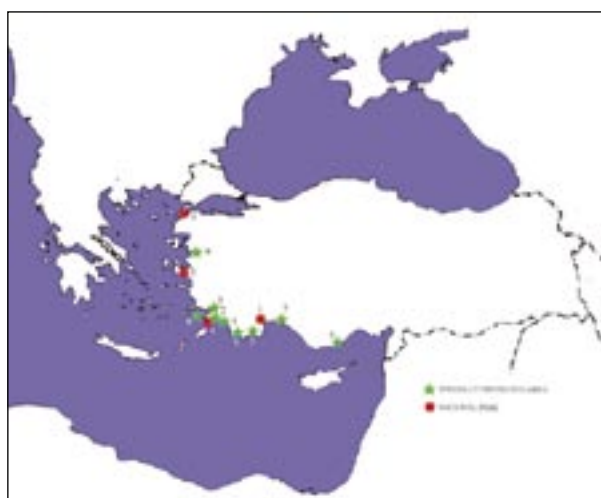


Figure 1.2.9  
Coastal national parks and specially protected areas  
(National parks: 1- Olympus/Beydaglari, 2- Dilek Peninsula, 3- Gelibolu, 4- Marmaris.  
Specially Protected Areas: 1- Fethiye/Gocek, 2- Koycegiz/Dalyan, 3- Gokova Bay, 4- Goksu Delta, 5- Kekova, 6- Patara, 7-Belek, 8- Datca Peninsula, 9- Foca.)

#### 1.2.1.5 Fisheries

Fisheries are one of the major economic activities along the Turkish coast. According to the fisheries statistics published by Food and Agricultural Organization (FAO), Turkey was the leading country in terms of fish catches out of all

Mediterranean and Black Sea countries during 1993-95. Turkey produced about 30 percent of the total catch in the Mediterranean and the Black Sea, through the activities of fishing boats flying the flags of 29 countries –including Japan and Panama (Martincic, 1988).

Among nearly 500 marine species of fish that exist in the seas surrounding Turkey, only 50 to 60 are economically lucrative (SPO, 1998). The Eastern Black Sea is by far the most productive in terms of fisheries in comparison with other Turkish seas. The geographic breakdown of the total catch in 1998 is shown in Figure 1.2.10 (SPO, 2001a). It is observed that the Eastern Black Sea alone constitutes almost half of the total catch, followed by the Aegean (17%), the Western Black Sea and the Sea of Marmara (15% each), and the Mediterranean (only 5%, despite the fact that it counts for about 25% of the Turkish coastline). The whole of the Black Sea adds up to 63% of the total catch in 1998. The contribution of the Black Sea to the total fish catch by the Turkish fleet was even higher in earlier years (84% in 1990, (Atay, 1990); 77% in 1996, (SIS, 1996)) (SPO, 1998).

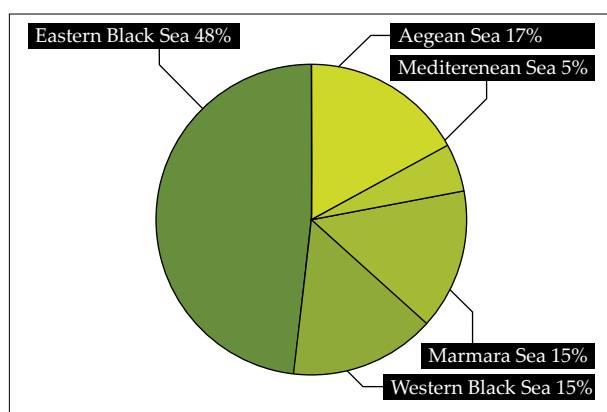


Figure 1.2.10  
Geographic breakdown of the marine fish catch by the Turkish fleet in 1998  
(SIS, 1999)

The fish yield per hectare is 5-10 kg in the Mediterranean, 25-30 kg in the Sea of Marmara and the Aegean, and about 80 kg in the Black Sea (150 kg. in the eastern part) (SPO, 1998).

Anchovy and a few other species dominate the composition of the total marine fish catch by the Turkish fleet. In 2000, anchovy alone constituted 63.4% of the total marine fish catch (not including shellfish, crustacean, molluscs, etc. - 61% if the above-mentioned species are included in the total fish catch), followed by grey mullet (6.1%), Atlantic horse mackerel (5.0%), pilchard (3.7%) and Atlantic bonito (2.7%) (SIS, 2002a).

Since the '90s, fresh water and marine cultured fish production has been a growing economic activity in Turkish coastal areas. In 2000, cultured fish production comprised nearly one-seventh of the total fish marketed (582,376 tons including the fresh water fish catches) (Figure 1.2.11) (SIS, 2002a).

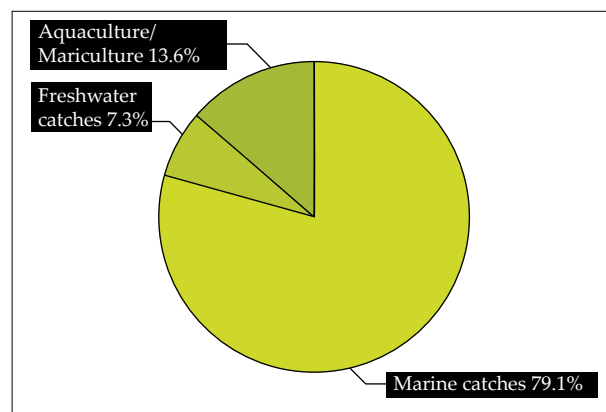


Figure 1.2.11  
Percentages of marine and freshwater fish catches and cultured fish production in the year 2000  
(SIS, 2002a)

The change of total fresh water and marine catches during 1982 - 2000 is given in Table 1.2.4 together with the growth of aquaculture and mariculture. The yearly freshwater fish catches are seen to be more or less stable in the range of 40,000 – 50,000 tons in the '90s. In the marine catches however, a significant decline is observed starting with 1989 when a decrease of nearly 35% occurred. This decline (mainly due to a decrease in anchovy catches) is primarily attributed to the outbreak of comb jellyfish (*Mnemiopsis leidyi*) in the Black Sea, an alien species introduced by ballast water. However, it is envisaged that uncontrolled over-fishing also has a role in the observed decline. The yearly marine fish catch is seen to have recovered over a period of six years, increasing in 1995 to a figure close to levels witnessed prior to the decline. In the following years however the yearly fish catch is seen to have stabilised at the lower levels (400,000 – 500,000 tons).

Grey mullet, common carp, crayfish, pikeperch and snail are among the important freshwater species caught. Trout, sea bass and bream are the main species cultured; small amount of carp, mussel and shrimp are also farmed (Deniz, 2002a).

It is evident from Table 1.2.4 that cultured fish production (aquaculture & mariculture) has been steadily increasing. The total culture production in 2000 (79,031 tonnes) amounts to 13.6% of the total production, and nearly one fifth of the marine catch. Main species cultured are rainbow trout, sea bass, sea bream and to lesser extent,

Year Areas	Freshwater	Marine (incl. shellfish crustacean, molluscs)	Aquaculture/ Mariculture	Total
1982	33,616	470,171	N/A	503,787
1988	44,535	627,369	4,100	676,004
1989	42,833	409,959	4,354	457,116
1990	37,315	342,017	5,782	385,114
1991	39,401	317,425	7,835	364,661
1992	40,370	404,766	9,210	454,346
1993	41,575	502,031	12,438	556,044
1994	42,328	542,328	15,998	601,104
1995	44,983	582,610	21,607	649,200
1996	42,202	474,243	33,201	549,646
1997	50,460	404,350	45,450	500,260
1998	54,500	432,700	56,700	544,900
1999	50,190	523,634	63,000	636,824
2000	42,824	460,521	79,031	582,376

Table 1.2.4  
Freshwater and marine annual fish catches  
and cultured fish production between 1982-2000 (Tons)  
(SIS, 1999; SIS, 2002a)

Species	Years						
	1986	1995	1996	1997	1998	1999	2000
Common carp	2,050	424	780	800	950	900	813
Rainbow trout (ponds and cages)	990	12,689	17,180	26,500	32,340	36,870	42,572
Trout (marine & cages)	-	N/A	1,330	2,000	2,290	1,700	1,961
Atlantic salmon	-	654	193	50	40	0	0
Sea bass	-	4,847	5,210	6,300	8,660	12,000	17,877
Sea bream	34	2,773	6,320	7,500	10,150	11,000	15,460
Mussels	-	180	1,918	2,000	2,000	500	321
Shrimp	-	40	270	300	270	30	27
Others	1	0	0	0	0	0	0
Total	3,075	21,607	33,201	45,450	56,700	63,000	79,031

Table 1.2.5  
Growth of cultured production of freshwater and  
marine species between 1986-2000 (Tons)  
(SIS, 2002a)

marine trout, Atlantic salmon, mussel and shrimp. Rainbow trout is the most cultured fish in the country, representing 53.9% of total cultured fish production (Deniz, 2002a). The growths of cultured production of various freshwater and marine species are given in Table 1.2.5.

The coastal zone of the Aegean Sea is the leading region for cultured production of both freshwater and marine species, providing 43% of the total production in 1998. The other regions in decreasing importance are Marmara, Central Anatolia, the Eastern Black Sea, the Western Black Sea and Eastern Anatolia. In 1998, mariculture facilities accounted for 41 percent of the total production (SPO, 2001a). Sea bream and sea bass mariculture facilities are located along the southern Aegean coast. These are almost always located in sheltered sites and use simple floating net cages. In 2000, 94% of the total sea bass and sea bream production

was from the Aegean fish farms (Deniz, 2002a). There are already one or two blue fin tuna farms along the Turkish Mediterranean and the Aegean coast.

Mariculture facilities located along the Aegean shores have often constituted a case of use conflict with recreation, tourism and urban development sectors as well as nature conservation. Relatively recent tuna farms have also been a controversial development disputed by conservationists through various media.

It is estimated that about 60 000 people are directly engaged in fisheries in Turkey (Ministry of Environment, 2002).

### 1.2.1.6 Biodiversity

In terms of biodiversity, Turkey is one of the richest countries in Europe and the Middle East, and ranks the ninth on the European Continent in this respect. There are a number of different ecological regions each with its own endemic species and natural ecosystems. The richness of biodiversity in Turkey is expressed in its 120 mammals, more than 400 bird species, 130 reptiles, and nearly 500 fish species. The diversity of the geographic formations of Turkey and its location at the intersection of two important Vavilovian gene centres (the Mediterranean and the Near Eastern) are the reasons for high endemism and genetic diversity (Ministry of Environment, 2002).

Turkey is home to 75% of the plant species that exist on the European continent, and one third of these species are endemic plants. The rich flora of Turkey includes more than 9,000 plant species and more than 500 bulbous plants. This flora, with a high endemism ratio, is also rich in medicinal and aromatic plants (Ministry of Environment, 2002). Most of the endemic plant species are found in the Taurus Mountains, the Nur Mountains and the Eastern Black Sea Coast (Ministry of Environment, 2001).

Located on the migration routes of many birds, Turkey is a key country for many bird species. 454 bird species have been sited. Several of its species are globally under threat (Ministry of Environment, 2002). Turkish wetlands are of crucial importance for many breeding species of birds. For example, the Dalmatian pelican (*Pelecanus crispus*), which is a globally threatened bird, breeds in Manyas (Kus) Lake, Gediz and Buyuk Menderes Deltas. Purple gallinule (*Porphyro porphyro*), a species of bird, which has a declining population, has also been breeding in Turkey exclusively in Goksu Delta (Ministry of Environment, 2001).

The deltas formed by the Meric, Gediz, Buyuk Menderes and Kucuk Menderes rivers that discharge into the Aegean Sea, and the Goksu, Seyhan, Ceyhan Deltas along the Mediterranean are suitable habitats for a large number and variety of waterfowl (Ministry of Environment, 2001). Islands have important biological diversities. Many migratory species use islands during their journeys. For example: Audouin's gull (*Larus audouinii*), which is a globally threatened bird species, lives and breeds on Aegean Islands (Ministry of Environment, 2001).

There are 472 fish species in Turkey and 50 of these are at risk of extinction. Some 192 freshwater fish species belonging to 26 different families have been identified (Ministry of Environment, 2002).

Approximately 3,000 plant and animal species have been identified in Turkey's seas (Ministry of Environment, 2001). There are about 20 species of mammals including the Mediterranean monk seal, whales and dolphins with mostly decreasing populations.

The Turkish Straits and the Sea of Marmara form a special ecosystem (an ecotone) between the Mediterranean and the Black Sea. The Aegean Sea is especially important for the endangered Mediterranean monk seal (*Monachus monachus*), which is considered to be one of the 12 most endangered species in the world. Less than 50 specimens inhabit the coasts of Turkey (Ministry of Environment, 2001). The Aegean Sea and its islands contain numerous microhabitats (*Posidonia oceanica* and *Cystoseira* species) that play an important role in the sustainability of the ecosystem (Ministry of Environment, 2002).

The pristine coastal dunes and beaches on the Mediterranean coast of Turkey are of great importance as the breeding grounds of the two endangered marine turtle species: the loggerhead (*Caretta c. caretta*) and the green (*Chelonia mydas*) (Ministry of Environment, 2001). In a monitoring study carried out in 1989, 17 beaches along the southern Aegean and the Mediterranean coast have been identified as important nesting grounds for marine turtles (Figure 1.2.12). The Eastern Mediterranean coast of Turkey is the most important breeding grounds for the critically endangered Mediterranean population of the green turtle (*Chelonia mydas*) in the whole of the Mediterranean. The southern Aegean and the western Mediterranean beaches are, together with several beaches in Greece, among the most important breeding habitats of the loggerhead turtle (*Caretta c. caretta*), which is classified as endangered on the International Union for the Conservation of Nature's (IUCN) Red List.

Turkey has accepted the Action Plan (1989 and 1999) for the conservation of Mediterranean marine turtles within the framework of the Barcelona Convention. Several breeding habitats of marine turtles, including Dalyan, Fethiye, Patara, Goksu Delta, and Belek, were declared as Specially Protected Areas in 1988 and 1990. The Ministry of Environment established the Marine Turtles National Commission and the Marine Turtles Scientific Commission for the coordination of activities towards the protection of the two species. Turkey also accepted the action plan for the conservation of the Mediterranean monk seal, again developed in the framework of the Barcelona Convention (Ministry of Environment, 2002).

During field investigations of the Mediterranean Seal Research Group (AFAG) of the Underwater

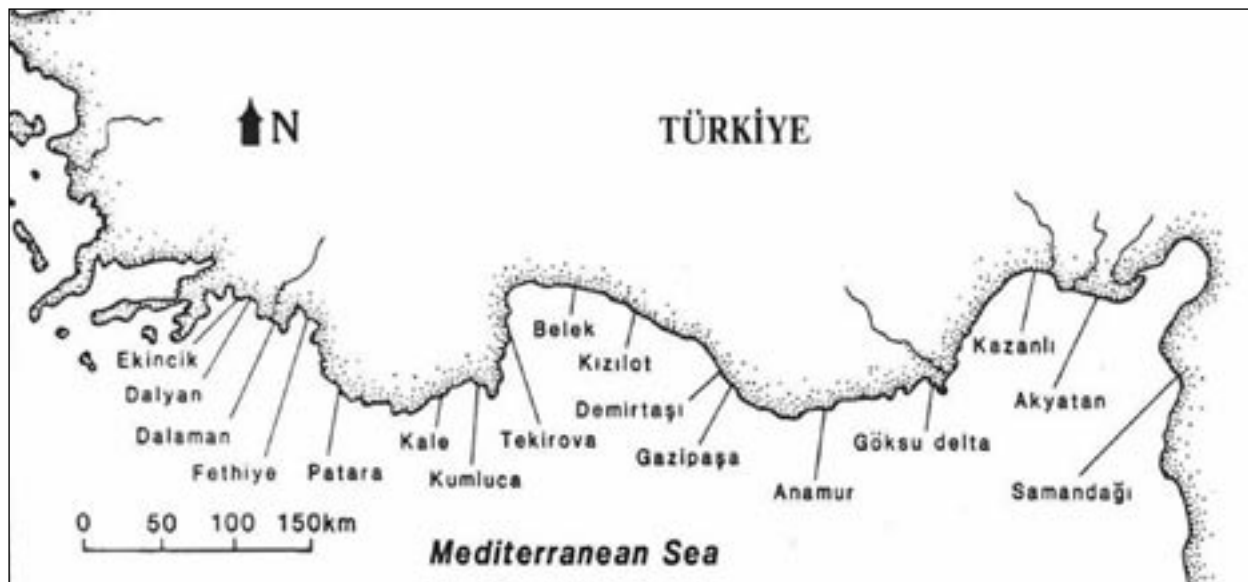


Figure 1.2.12  
Important marine turtle nesting grounds  
(Baran and Kasparek, 1989)

Research Society (SAD), 31 to 44 Mediterranean monk seal individuals have been sited. It is estimated that at least 50 seals live along the Marmara, the Aegean and the Mediterranean coasts of Turkey (Figure 1.2.13). Unfortunately, the Black Sea population is now believed to have completely disappeared (<http://www.afag.org>).



Figure 1.2.13  
Important monk seal habitats along the Turkish coast  
(<http://www.afag.org>)

Although the Black Sea is far more productive in terms of fisheries, the Mediterranean coast of Turkey has more profound biological diversity. The continental shelf of the Black Sea is very narrow, thus limiting the abundance and species variability of benthos.

The breeding grounds of anchovy, which is economically the most important fish species of the Black Sea, have shifted from the northwestern shelf (due to very high level of pollution brought by

the Danube), to the southeast shores. The dolphin population has also been affected by the ecosystem changes and is decreasing rapidly (Ministry of Environment, 2001).

## 1.2.2 Coastal resources - cultural

### 1.2.2.1 Cultural heritage and landscapes

Turkey occupies one of the most ancient settlement areas of the world. The Anatolian Peninsula has been at the crossroads of many ancient civilizations including the Hittites (who founded the first centrally administered state in Anatolia as early as 1950 BC), the Frigs (1200 – 700 BC), early Anatolian states such as the coastal states of Caria, Lycia, Lydia, Phamphilia, etc. (Figure 1.2.14), the Persians, the Greeks (BC 333-30), the Romans (30 BC – 395 AD), and the Byzantium civilisation (395-1453).

Turks settled in Anatolia starting from the beginning of the XI Century during the period of the Great Seljuk Empire and set up the Anatolian Seljuk state (1075-1318). The Ottoman Turks founded a state in 1299 that would later become one of the largest and most durable empires of the world. During its peak period, the borders of the empire extended from the inner parts of Iran to Central Europe and from the Crimea to Northern Africa. The Ottoman Empire exported its own culture to the annexed lands while assimilating new, quality elements from these lands. In this way, a rich culture mosaic was established. As from the XVIII Century, the impact of the Western Europeans on the Ottoman culture and way of life could be observed ([www.turizm.gov.tr](http://www.turizm.gov.tr)).



Figure 1.2.14  
Political map showing the early Anatolian states

Following the War of Turkish Independence War waged under the leadership of Mustafa Kemal Atatürk, the Republic of Turkey was founded on 29 October 1923. The Republic of Turkey inherited an exceedingly rich cultural heritage from the Ottoman Empire.

As the geographical setting for numerous civilizations and a mosaic of cultures, Turkey is one of the leading countries in terms of its rich cultural background and eclectic influences. The Anatolian Peninsula is referred to as an open-air museum. The Arthemis Temple (Ephesus) and the Mausoleum (Halikarnasus - Bodrum), which are counted among the Seven Wonders of the World, were once in Anatolia. Significant efforts have been taken to preserve the remains and works of ancient cultures from all periods.

### 1.2.2.2 Coastal archaeological and historic sites

Earlier Turkish legislation aiming at the protection of archaeological remains, ancient cultural sites and artefacts, was entitled the “Law of Antiquities” and was enacted in 1973. Over the following decade, the concept of protecting, conserving and preserving these sites and artefacts evolved and expanded. In 1983, the Ministry of Culture passed

a more comprehensive piece of legislation, the Law for the Conservation of Natural and Cultural Assets.

By 2003, nearly 6 400 sites had been identified by the Ministry of Culture as warranting protection under the 1983 law (Table 1.2.6).

Site type	Number
Archaeological Site	4,920
Natural Site	787
Urban Archaeological Site	182
Historical Site	121
Other Sites	371
Total Number	6,381

Table 1.2.6  
Totals of different types of sites already earmarked for protection

The Supreme Board for the Protection of Cultural and Natural Assets, in their decision dated 05.11.1999 (number: 659) provided for the above site categories, the definitions described in the following paragraphs.

Natural sites are defined as the “areas above and below ground and water that belong to historical, pre-historical and geological periods and possess

Archaeological Site	Province	Region
Ephesus	Aydin	Aegean
Bodrum: the Ancient Halicarnassus	Mugla	Aegean
Oren and Ceramus	Mugla	Aegean
Cedrae	Mugla	Aegean
Cnidos	Mugla	Aegean
Physicus: the Ancient Marmaris	Mugla	Aegean
Caunos	Mugla	Aegean
Telmessus: Ancient Fethiye	Mugla	Mediterranean
Gemiler Island	Mugla	Mediterranean
Kalekoy and Simena	Antalya	Mediterranean
Patara: the winter oracle of Apollo	Antalya	Mediterranean
Xanthos	Antalya	Mediterranean
Antiphellus: the Ancient Kas	Antalya	Mediterranean
Letoon and Kekova	Antalya	Mediterranean
Myra	Antalya	Mediterranean
Olympus and the Chimarea	Antalya	Mediterranean
Phaselis	Antalya	Mediterranean
Attaleia: the Ancient Antalya	Antalya	Mediterranean
Side	Antalya	Mediterranean
Korakesion: the Ancient Alanya	Antalya	Mediterranean

Table 1.2.7

Some popular archaeological sites along the coast from Ephesus to Alanya

significant values and attractions". These sites are categorized in three groups with respect to the level of protection that is needed. These are:

- 1st Degree Natural Sites: These are the areas that call for absolute protection and preservation for public interest due to their scientific values, interesting features and attractions, and rare characteristics. Human activities that may damage the geological characteristics, vegetation cover and general landscape of such sites are prohibited;
- 2nd Degree Natural Sites: These are areas that may accommodate limited public interest use, providing such usage protects and enhances their natural structure. Buildings on such sites, other than those that support the development of tourism are prohibited;
- 3rd Degree Natural Sites: These are areas where residential development may be permitted in the light of the use patterns and the potentials of the region, providing it simultaneously protects and enhances the natural structure.
- 1st Degree Archaeological Sites: The sites that will be preserved as they are. Only scientific studies aimed at conservation are allowed;
- 2nd Degree Archaeological Sites: The sites that deserve preservation as they are whilst supporting scientific studies aimed at conservation. Protection councils define the conditions of their use and conservation;
- 3rd Degree Archaeological Sites: The sites where new arrangements can be made in the light of the use and conservation principles as they are articulated by protection councils.

Urban Archaeological Sites are defined as the "areas within archaeological sites where immobile cultural assets depicting the town fabric are present". The most popular archaeological sites located along the southern Aegean and western Mediterranean coast of Turkey are listed in Table 1.2.7.

### 1.2.2.3 Marine archaeology

Archaeological sites are defined as the "areas and settlements that feature all kinds of cultural assets depicting cultural, economic and social characteristics of past civilizations and their outputs above and below ground and water".

Archaeological sites are also classified in three groups with respect to the characteristics and values that they carry. These are:

Similar to on-land archaeological sites described in the previous section, there are many sites along the Turkish coastline where ancient shipwrecks or sunken archaeological ruins of ancient settlements are located. The identified shipwrecks date back as early as the Phoenician period. Most of the wrecks that lie at shallow depths (e.g. less than 40 metres) have already been looted by sponge divers and scuba-diving foreign tourists in the 1960s and '70s.

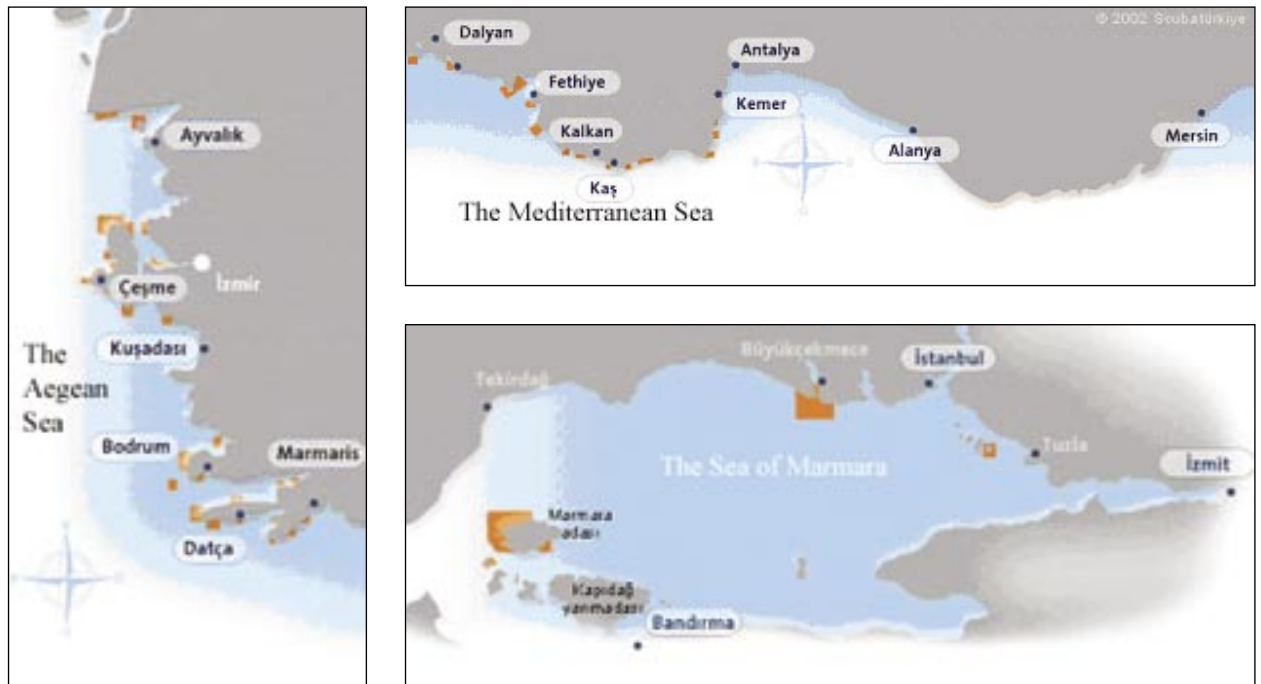


Figure 1.2.15  
The marine sites (marked in red) where diving is prohibited

Following an appeal by the Ministry of Culture (now the Ministry of Culture and Tourism) dated 17/8/1988, a Cabinet Decree (no: 88/13259, dated 26/8/1988) was passed in the framework of the Law for the Protection of Natural and Cultural Wealth (1983) to safeguard these sites by closing several regions to diving. These protected marine areas where recreational and special purpose diving is prohibited, were specified by their latitudes and longitudes in the afore-mentioned decree. The sites where diving is prohibited due to the presence of underwater cultural artefacts are shown for the Sea of Marmara, Aegean and the Mediterranean in Figure (1.2.15). The Decree no: 88/13259 states that since identification of the marine sites where diving would be prohibited could not be completed along the Black Sea coast and along the segment of the Mediterranean coast from Alanya eastward up to the Syrian border, diving is not permitted along these coasts in front of the coastal sites where the remains of ancient settlements exist.

One of these marine archaeological sites along the coast west of the Bay of Antalya (Kekova) was declared a specially protected area in 1990, and has been managed by the Ministry of Environment since then.

A very important marine archaeological museum (the Bodrum Underwater Archaeological Museum) is located in the tourist resort town of Bodrum on the premises of a 14th century castle built by the Knights of St. John. This unique museum displays the cultural artefacts from underwater

excavations at shipwreck sites, which were initiated in the 1960s and have been led by the famed marine archaeologist Prof. George Bass (Professor Emeritus, Texas A & M University, Institute of Nautical Archaeology, INA). The investigations and excavations along the Aegean and the Mediterranean coasts of Turkey that were supported by INA include the Byzantine wreck at Cape Gelidonya, Seytan Creek, Yassiada; the late Roman and Ottoman wrecks at Yassiada, the Hellenistic and Byzantine (glass) wrecks at Serce Harbour, the Byzantine wrecks at Uluburun, Selimiye, the Classical wreck at Tekta Cape, and the Archaic wreck at Pabuc Cape, as from June 2002.

Besides the excavations, INA also supports underwater archaeological surveys and the "Shipwrecks of Anatolia Project" that aims to create a database with information on all identified wrecks along the Turkish coast.

Underwater investigations yielding significant findings have also been carried out in the Marmara Sea. The Marmara Sea has always been the nautical passageway between the countries of the Mediterranean and Black Sea and thus has numerous archaeological remains. Thirteen shipwrecks have been identified around the islands of the Marmara Sea since 1993. Among these, the CAMALTI BURNU I Wreck, dated AD 13th century, has been excavated.

### 1.3 DEVELOPMENTAL PRESSURES

#### 1.3.1 Coastal area populations

According to the 2000 census, the population of Turkey stands at 67,803,927, of which 64.9% (44,006,274) occupy urban centres, and the remaining 35.1% (23,797,653) live in rural areas (SIS, 2002b). Turkey has a young population compared to other European countries. Approximately one third of the population is below 15 years of age. This percentage however decreased to 29.3% in 2000 from the 1996 figure of 32.8% (Ministry of Environment, 2002).

The growth of the Turkish population since 1935 is shown in Figure (1.3.1). A steady decline in the rate of the annual population increase is apparent. While this rate was 24.9% between 1980-1985, it dropped to 21.7% between 1985-1990, and to 18.3% between 1990-2000. Although the population growth rate has been declining, the average population growth rate is still high compared to industrialized countries (SIS, 2002b).

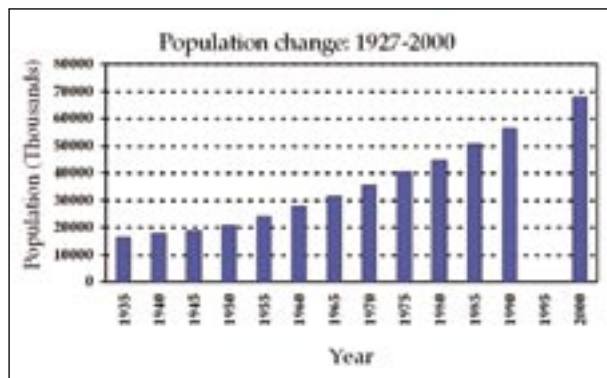


Figure 1.3.1  
The Turkish population increase (1935 – 2000)  
(SIS, 2002b)

Population increase rates and population densities of coastal provinces in four coastal regions are shown in Table 1.3.1. During the 1990-2000 period, populations of all four coastal regions (Black Sea, Sea of Marmara, Aegean Sea, and the Mediterranean) are seen to increase but with significantly different rates. The lowest rate of increase (which is below the country average) is seen in the Black Sea Region, where in fact five provinces have experienced a decrease in population. The population of the Marmara Region has grown fastest during 1990-2000 with several provinces (Istanbul, Bursa, Tekirdag, Kocaeli) with mean annual rates of around 30%. The reason for this rapid population increase is the migration of people from other parts of the country. The attraction in the metropolitan cities is urbanization, as is the case with Istanbul and Bursa, industrial facilities (Kocaeli, Bursa, Istanbul), tourism and

secondary (holiday) housing developments (Tekirdag). The highest rate of population increase at the provincial level (41.79%) is observed in Antalya, which has become the most important coastal tourism centre of Turkey.

The provinces that have the highest population densities are Istanbul, Yalova, Kocaeli and Izmir. Another interesting observation from Table 1.3.1 is the relatively low population density of the provinces, places such as Antalya and Mugla, which are especially important to coastal tourism. This shows that tourism development in these provinces has mushroomed in a few resorts at high concentration levels (which is typically the case with mass tourism).

As part of a trend that accelerated in the 1970s, there has been a steady migration towards more socio-economically developed parts of the country, such as the Marmara, the Mediterranean and the Aegean Regions. The vulnerability of 81 provinces of Turkey to migration fluxes is indicated in Figure (1.3.2). The provinces that have attracted the largest fluxes of migrants are Istanbul, Kocaeli, Antalya, Ankara, Izmir, Bursa, Adana and Gaziantep (SPO, 1997). With the exception of provinces in the Black Sea Region, the remaining coastal regions are pressured by people migrating from the central, eastern and southeastern parts of the country. The general trend in several provinces of the eastern Black Sea Region is also towards migration to the other three coastal regions.

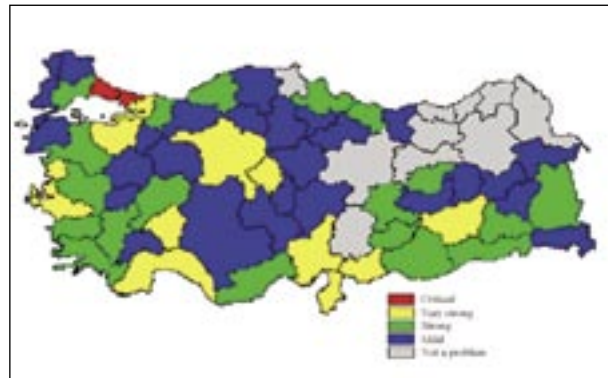


Figure 1.3.2  
Provincial vulnerability to influxes of migration according to a composite index based on population increase, population density and changes in population density (SPO, 1998)

#### 1.3.2 Economic characteristics

The growth of the gross national product (GNP) of Turkey in US dollars during the period between 1992 and 2002 is shown in Figure (1.3.3). Two sharp falls during 1994 and 2001 are due to production decreases and the devaluation of the Turkish Lira

	Area (km <sup>2</sup> )	Population 1990	Population 2000	Mean annual rate of increase, %	Population Density (person/km <sup>2</sup> )
<b>BLACK SEA</b>					
Sakarya	4,817	683,281	756,168	10.13	157
Duzce	3,641	273,679	314,266	13.82	86
Zonguldak	4,420	653,739	615,599	- 6.01	139
Bartın	2,120	205,834	184,178	-11.11	87
Kastamonu	13,108	423,206	375,476	-11.96	29
Sinop	5,862	265,153	225,574	-16.16	38
Samsun	9,579	1,161,207	1,209,137	4.04	126
Ordu	6,001	826,886	887,765	7.10	148
Giresun	6,934	499,617	523,819	4.73	76
Trabzon	6,685	795,849	975,137	20.31	146
Rize	3,920	348,776	365,938	4.80	93
Artvin	7,436	212,833	191,934	-10.33	26
<b>TOTAL</b>	<b>74,523</b>	<b>6,350,060</b>	<b>6,624,991</b>		<b>89</b>
<b>MARMARA</b>					
Kirklareli	6,550	309,512	328,461	5.94	50
Edirne	6,279	404,599	402,606	-0.49	64
Tekirdag	6,218	468,842	623,591	28.52	100
Istanbul	5,712	7,195,773	10,018,735	33.09	1754
Yalova	212	135,121	168,593	22.13	795
Bursa	11,043	1,596,161	2,125,140	28.62	192
Kocaeli	3,626	920,255	1,206,085	27.04	333
Canakkale	9,838	432,263	464,975	7.29	47
<b>TOTAL</b>	<b>49,478</b>	<b>11,462,526</b>	<b>15,338,186</b>		<b>310</b>
<b>AEGEAN</b>					
Balikesir	14,292	974,274	1,076,347	9.96	75
Izmir	11,973	2,694,770	3,370,866	22.38	282
Aydin	8,007	824,816	950,757	14.21	119
Mugla	13,338	562,809	715,328	23.97	54
<b>TOTAL</b>	<b>47,610</b>	<b>5,056,669</b>	<b>6,113,298</b>		<b>128</b>
<b>MEDITERRANEAN</b>					
Antalya	20,591	1,132,211	1,719,751	41.79	84
Icel	15,853	1,267,253	1,651,400	26.47	104
Adana	14,030	1,549,233	1,849,478	17.71	132
Hatay	5,403	1,109,754	1,253,726	12.19	232
<b>TOTAL</b>	<b>55,877</b>	<b>5,058,451</b>	<b>6,474,355</b>		<b>116</b>
<b>All Coastal Provinces</b>	<b>227,448</b>	<b>27,927,706</b>	<b>34,550,830</b>		<b>152</b>

Table 1.3.1  
Population increase rates and population  
densities of coastal provinces and regions.  
(<http://www.icisleri.gov.tr/>; SIS, 2002b)

coinciding with the two major economic crises of recent times. The breakdown of the GNP by sector (agriculture, industry, construction, services, and other) is indicated in Figure (1.3.4). It is observed that between the period of 1995 and 2002, the shares of industry and services in the GNP gradually increased. In the year 2002, they together constitute about 80% of the GNP. During the same period, the share of other sectors has decreased, whereas the percentages of agriculture and construction have remained more or less constant. The changing GNP per capita between 1993 and

2002 is shown in Figure (1.3.5). The figure is seen to change in the range of US \$ 2,200 to 3,200. Due to high inflation rates during this period, the Turkish Lira has continuously been losing value against the major foreign currencies, including the US dollar. The sharp decreases from US \$ 3,000 to US \$ 2,200 are observed in the years of major economic crises (e.g. 1994 & 2001)

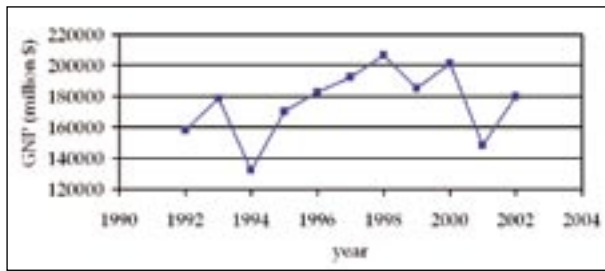


Figure 1.3.3  
The growth of the GNP of Turkey from 1992 to 2000  
(<http://www.die.gov.tr>)

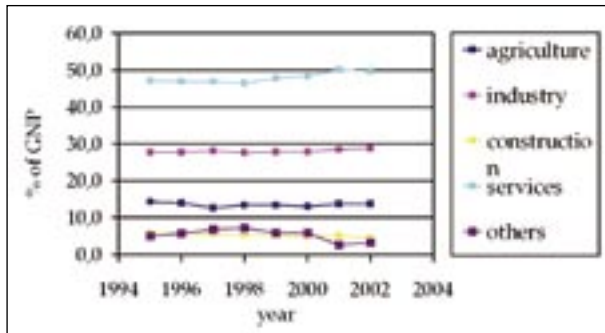


Figure 1.3.4  
Breakdown of the GNP by sector  
(<http://www.die.gov.tr>)

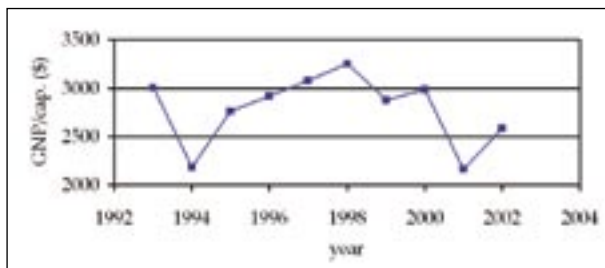


Figure 1.3.5  
The changing GNP per capita in Turkey between 1992 and 2002. (<http://www.die.gov.tr>)

The provincial average values of GNP per capita of 81 provinces in the year of 2001, and their rankings (from the highest to the lowest) are given in Table 1.3.2. The coastal provinces in this table are shaded in grey. The average GNP per capita in Turkey during this year of economic crisis (the most critical in the history of the Republic of Turkey) was only slightly below US \$ 2,200. It is seen that seven of the ten provinces having the highest GNP per capita (and fourteen of the highest twenty provinces) border on one of the four Turkish seas. The sum of coastal provinces with a per capita GNP lower than the national average in 2001 (US \$ 2,200) is ten (out of twenty-eight). Besides Hatay, which is located on the easternmost Mediterranean coast, adjacent to Syria, the remaining nine coastal provinces are all located along the Black Sea coast.

The per capita GNP of the coastal provinces is indicated in five classes in Figure (1.3.6) with the different colours demonstrating the regional disparity in development levels, assuming that it correlates with this data. Several provinces around the Sea of Marmara (Kocaeli, Istanbul, Yalova and Bursa), Kizilirmak and Zonguldak of the Black Sea, and the Aegean provinces of Izmir and Mugla are clearly at the highest levels of economic development. On the other hand, the Black Sea provinces of Duzce, Sinop, Ordu and Giresun are within the lowest category with GNP per capita figures of less than US \$ 1,500.

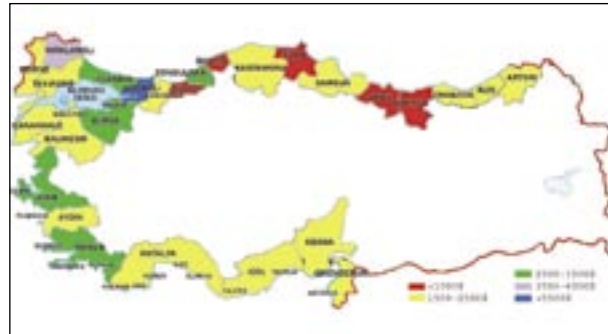


Figure 1.3.6  
The average GNP per capita in the coastal provinces in 2001 (<http://www.die.gov.tr>)

### 1.3.3 Social issues

The socio-economic development rankings of twenty-eight coastal provinces in 1996 and 2003 within the eighty-one provinces of Turkey in 2003 (there were 76 provinces in 1996) are shown in Table 1.3.3. The number "1" indicates the most developed province according to the socio-economic development index used. This evaluation is done on the basis of the whole province (e.g. all the districts within the province and not only the coastal ones). It is observed that Istanbul has been the socio-economically most developed province both in 1996 and in 2003. Eight of the ten most developed provinces of Turkey in 1996 (seven in 2003) are coastal provinces of the Marmara, Aegean and Mediterranean regions. The least developed provinces (Ordu, Sinop, Bartin, Artvin, Giresun, Duzce, Kastamonu, Rize, Samsun and Trabzon), ranking below 30th place, are located along the Black Sea coast. Besides the provinces of Icel (Mersin) in the Mediterranean region and Aydin in the Aegean region, the rankings of the first twenty provinces did not change significantly from 1996 and 2003. Icel (Mersin) and Aydin however have been relegated by seven and ten levels respectively. It is interesting to note from Table 1.3.3, that over the last seven years (i.e. between 1996 and 2003), there was no improvement in the socio-economic development rankings of the coastal provinces. The least

Rank	Province	GNP in US \$	Rank	Province	GNP in US \$
1	Kocaeli	6,165	42	Tunceli	1,584
2	Bolu	4,216	43	Konya	1,554
3	Kirklareli	3,590	44	Isparta	1,510
4	Yalova	3,463	45	Trabzon	1,506
5	Mugla	3,308	46	Kirsehir	1,488
6	Izmir	3,215	47	Sinop	1,459
7	Istanbul	3,063	48	Giresun	1,443
8	Zonguldak	2,969	49	Amasya	1,439
9	Ankara	2,752	50	Usak	1,436
10	Kirikkale	2,725	51	Malatya	1,417
11	Bilecik	2,584	52	Sivas	1,399
12	Eskisehir	2,513	53	Tokat	1,370
13	Bursa	2,507	54	Diyarbakir	1,313
14	Tekirdag	2,498	55	Afyon	1,263
15	Manisa	2,459	56	Batman	1,216
16	Icel	2,452	57	Erzincan	1,158
17	Edirne	2,403	58	Osmaniye	1,157
18	Adana	2,339	59	Duzce	1,142
19	Canakkale	2,335	60	Cankiri	1,136
20	Antalya	2,193	61	Siirt	1,111
21	Artvin	2,137	62	Gumushane	1,075
22	Denizli	2,133	63	Ordu	1,064
23	Nevsehir	2,117	64	Erzurum	1,061
24	Sakarya	2,108	65	Bartın	1,061
25	Aydin	2,017	66	Bayburt	1,017
26	Karaman	2,012	67	Sanliurfa	1,008
27	Balikesir	2,005	68	Mardin	983
28	Burdur	1,951	69	Aksaray	966
29	Rize	1,897	70	Adiyaman	918
30	Kilis	1,817	71	Kars	886
31	Kayseri	1,806	72	Van	859
32	Kutahya	1,805	73	Igdir	855
33	Kastamonu	1,781	74	Yozgat	852
34	Nigde	1,781	75	Ardahan	842
35	Hatay	1,757	76	Hakkari	836
36	Elazig	1,704	77	Bingol	795
37	Samsun	1,680	78	Bitlis	646
38	Corum	1,654	79	Sirnak	638
39	Gaziantep	1,593	80	Mus	578
40	Karabuk	1,587	81	Agri	568
41	Kahramanmaras	1,584			

Table 1.3.2

The ranked provincial average GNP per capita in 2001.

(<http://www.die.gov.tr>)

developed coastal province (the whole province, not solely the coastal part) of Turkey appears to be Ordu, which ranked 55th in 1996 (out of 76) and 62nd in 2003 (out of 81). Even this province is socio-economically better developed than roughly twenty inland provinces.

The composite socio-economic development index utilized in the above study carried out by the State Planning Organization (SPO) is based on a wide range of indicators from various sectors. These include demographic indicators (such as percentage of urban population, birth rate, internal migration rate), employment

indicators (such as percentage employed in various sectors, ratio of paid women employees to total employed), education indicators (such as literacy percentage and literate women, as well as percentage with a university education), health indicators (such as infant mortality, the availability of doctors, dentists, hospitals, etc.), industrialization indicators (such as the number of industrial production establishments, number of units in organized industrial complexes, industrial electricity consumption per capita), agricultural indicators (such as agricultural production per capita in rural areas, percentage of agricultural production in the country), construction industry

indicators (such as number of dwelling units, dwelling area per capita), financial indicators (such as percentage contribution to GNP, GNP per capita, number of banks, bank savings per capita and value of exports per capita), infrastructural indicators (such as percentage of the population with access to adequate drinking water supplies, percent of asphalt paved motorways, and other wealth and development indicators (such as number of cars per 10,000 people, electricity consumption per capita and the use of telephones per capita).

Province	Socio-economic development rank (1996 - 2003)
Istanbul	1 - 1
Izmir	3 - 3
Kocaeli	4 - 4
Bursa	5 - 5
Antalya	7 - 10
Tekirdag	8 - 7
Adana	9 - 8
Icel	10 - 17
Mugla	11 - 13
Aydin	12 - 22
Balikesir	13 - 15
Kirklareli	14 - 11
Edirne	18 - 16
Zonguldak	19 - 21
Canakkale	20 - 24
Hatay	26 - 29
Sakarya	27 - 23
Trabzon	34 - 38
Samsun	35 - 32
Rize	37 - 37
Kastamonu	43 - 51
Giresun	45 - 50
Artvin	46 - 43
Bartın	51 - 55
Sinop	54 - 57
Ordu	55 - 62
Yalova	X - 9
Duzce	X - 45

Table 1.3.3

The socio-economic development ranks of coastal provinces in 1996 and 2003 ([www.dpt.gov.tr](http://www.dpt.gov.tr))

The scores of the socio-economic development index for all districts within all provinces are available at ([www.dpt.org.tr](http://www.dpt.org.tr)). The scores are integers from 1 to 5, with 1 indicating well developed and 5 very poorly developed. The scores of coastal districts alone of the coastal provinces (not of the land-locked inland districts) are averaged to find the mean socio-economic development scores of the coastal parts of the coastal provinces. These are shown in Figure (1.3.7). The most highly developed group of provinces achieve scores ranging from 1.5 to 2.5,

and with the exception of Artvin at the easternmost end of the Black Sea and Antalya along the western Mediterranean coast, these provinces are located along the Sea of Marmara and the Aegean. The next group of provinces, with scores between 2.5 to 3.5 are located along the Eastern Mediterranean and the Black Sea coast, and in the Thrace (Edirne and Kirklareli). The least developed provinces (Kastamonu and Sinop), with scores higher than 3.5, occupy the central Black Sea region.

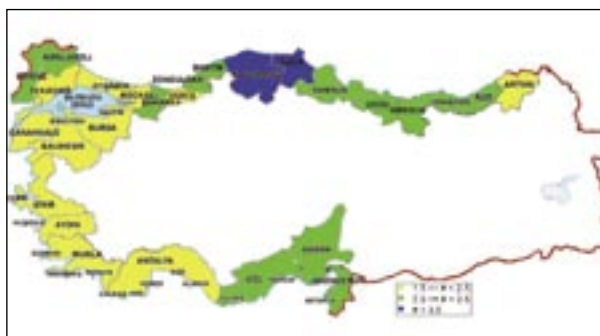


Figure 1.3.7

Score averages of coastal districts within coastal provinces ([www.dpt.org.tr](http://www.dpt.org.tr))

### 1.3.4 Urban development

In the 1950s, 75 per cent of the Turkish population lived in rural areas. Since then, urbanisation has been a steady phenomenon that accelerated in the 1980s due to the development of services in already-urbanised centres, and that of industry and tourism activities (Figure 1.3.8). At the start of the present century, the picture is more or less reversed, the urban population constituting about 70 per cent of the total population.

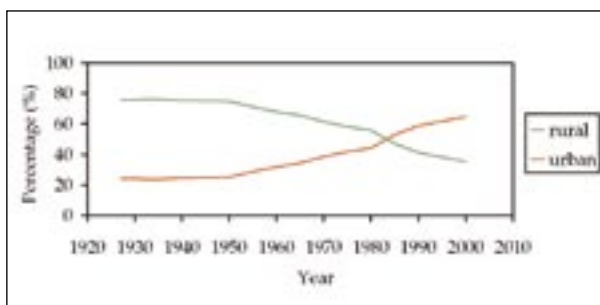


Figure 1.3.8

The decline of the rural population and the growth of the urban population in Turkey since the 1950s (SIS, 2002a)

Urbanisation in Turkey's coastal zones accelerated in the 1980s in line with the national trend. Employment opportunities in the service sector and in manufacturing industries in and around large cities like Istanbul, Izmir and Kocaeli, in

the tourism industry in Antalya and its environs, Aegean resorts such as Kusadasi, Bodrum, Marmaris and Fethiye, and in a variety of sectors in Adana and Icel have triggered migration from rural areas to these urban centres, and thus contributed positively to the process of urbanisation.

Coastal cities and towns are shown in Figure (1.3.9). Two of the three largest metropolitan cities of Turkey (Istanbul with a population of 8,803,468 – the largest city) and Izmir with a population of 2,232,265 (the third-largest city according to the 2000 census) are located in the coastal zone. The next largest coastal cities are Adana and Antalya along the Mediterranean Sea.



Figure 1.3.9  
Turkish coastal city populations

Figure (1.3.9) shows that densest urbanisation is seen along the eastern Black Sea and the southeastern Sea of Marmara coasts. There are numerous small-to-medium sized urban centres that follow on, one after the other, along the eastern Black Sea coast due to the extremely limited coastal area which is a result of the mountain ranges running parallel to the coast. The southeastern coast of the Sea of Marmara is highly urbanised since the coastal area here is the heartland of the country's manufacturing industry.

Rapid urbanization in Turkey, particularly along the coastal zone, has resulted in several significant problems. Illegal and shabby private residential developments on public lands (called "gecekondu" in Turkish) on the periphery of the legal urban borders have become a common feature of large cities. These squatter districts, often lacking in adequate infrastructure and sanitation facilities, have become one of the most important challenges to the municipal administrations. In recent years, these developments have been periodically legalised through amnesty declarations. This unplanned urbanisation that resulted from massive migrations from rural areas, has brought a host of social problems to the urban life agenda. These include increases in crime (mainly theft and bag snatching, personal safety issues, the distribution of narcotics and other organised crime).

### 1.3.5 Agriculture and forestry

The land of Turkey is divided into nine agricultural regions ([www.tarim.gov.tr](http://www.tarim.gov.tr)). Four coastal regions contain about 40% of the total agricultural land (27,100,000 hectares), with the Aegean region: 13%, the Mediterranean region: 12%, the Marmara region: 8% and the Black Sea region: 7% (SPO, 2000a). The cultivated areas correspond to about 35% of the total land area of the country.

Agriculture has been a declining economic activity throughout Turkey, especially in the coastal regions. The share of agriculture in total national income was 26% in 1980, and only 14.8% in 2000. According to the VIIIth Five-Year Development Plan, this ratio is expected to drop to 13.9% by the end of 2005 (Ministry of Environment, 1996). The share of agricultural products in Turkish exports showed even more drastic drops (from 57% in 1980 to 10.3% in 1997). The distribution of agricultural production by sub sector is crops, fruit and vegetables 57%, animal products 34%, fisheries 3%, and forestry products 6%.

Despite the relatively small contribution of agricultural produce to national income, the percentage of the population employed in the agricultural sector remains very high (about 44% in 1995). This indicates a low level of production per employed person, which is partly due to the small sizes of the majority of agricultural establishments (mostly run as traditional family business). For example, 43.08% of the agricultural establishments in the Aegean region and 44.17 in the Mediterranean region utilize lands with areas of less than 1.9 hectares (SPO, 2000a). The fragmentation of the agricultural establishments, which has mainly been due to the division of land among the inheritors, is a continuing problem.

Agriculture in the coastal regions is most important over the alluvial deposits of the major rivers such as Yesilirmak and Kizilirmak (Black Sea), Gediz, Buyuk Menderes and Dalaman (Aegean), Goksu, Seyhan and Ceyhan (Mediterranean). The products are usually varieties with high market values, including cotton, tobacco, tea, citrus and other fruits, olives and grapes. Since the 1980s, the agricultural sector has been consistently losing to tourism development and services invariably in the tourism centres along the Aegean and the Mediterranean, and to industry and urbanization around the Sea of Marmara.

Agricultural production receives support from the State in various ways. These include subsidies for chemical fertilizers, base price purchases for several products (decreased to nine crops in 1996 from the earlier twenty-seven crops), and low-interest rate loans from the Agricultural Bank, which is a

public institution. The use of fertilizers has grown significantly since the 1960s (83 fold between 1960 and 1987 (Ministry of Environment, 2002), and the total area of energy-subsidized agriculture expanded threefold between 1970 and 1975, from 6 million hectares to 18 million hectares (SPO, 1998).

Organic (ecological) agriculture was introduced to Turkey (the Aegean coast) by European companies in the mid 1980s with two crops, figs and raisins. In 1990, only eight types of agricultural products were ecologically produced on 1,037 ha of land. The figures expanded to 168,306 tons of 92 products over 46,523 hectares of land by 12,275 producers in 1999 (Ministry of Environment, 2002).

As was discussed in Section 1.2.1.2, about 27% (20,763,248 hectares) of the total land area of Turkey is registered as forestland, and a good part of these lands are located in the coastal regions. Fine quality productive forests constitute roughly half of the total forest cover. Forestry activities provide the employment equivalent of 55 to 70 million labour days per year. The annual average wood production of Turkish forests is approximately 29 million m<sup>3</sup>/year. About two-thirds of this amount is used for fuel. Since 1985, Turkey has been importing increasing quantities of wood each year.

There are more than 8 million villagers living in 17,797 forest villages in Turkey. Between 1937-1995, 200,000 ha of forestland (close to 1% of total forests) was cleared and converted into farmland, illegally in most cases. A further 27,000 ha of forestland was converted into settlement areas (Ministry of Environment, 2002).

The agricultural and woodcutting/gathering practices of forest villagers that have been traditionally carried out are unsustainable. These practices contribute to deforestation and soil erosion in the forest areas. The consumption of wood as fuel in Turkey was 12.2 million tons in 1990. Only 5.5 million tons of this total however was legally cut. The ministry responsible for conservation and management of forests suffers from shortages of personnel and equipment. Only 72% of forestlands have been registered on cadastre maps. Ownership rights are still unsettled for the remaining part. Overgrazing, allowing goats to enter forestlands, atmospheric pollution, alien species, climate change, unregulated gathering of plant and animal species, hunting, damage caused by pests, and forest fires are among the threats that endanger and damage the structure of forest ecosystems and their biodiversity (Ministry of Environment, 2002).

About 10 000-20 000 hectares of forest are damaged annually by forest fires (OECD, 1999), and about 99% of forest fires in Turkey are caused by human

beings. The total area damaged annually by forest fires during 1963 – 1997 is shown in Figure (1.3.10). The area damaged by fires in 1991 was 1,398,198 ha (Mean forest loss per fire was 28 ha) (Ministry of Environment, 2002). Due to various measures implemented over the last decade, this figure has been reduced almost tenfold. From the start of 2001 until September 11 of that year, 6 200 ha of forest was damaged by 1878 forest fires (3.3 ha per fire) (<http://www.orman.gov.tr/>). Areas that are relatively more sensitive to forest fires are shown in Figure (1.3.11) in darker shades. It is observed that the Aegean and the Mediterranean coastal forests where recreational and tourism activities are at high levels over the summer months are among the vulnerable areas.

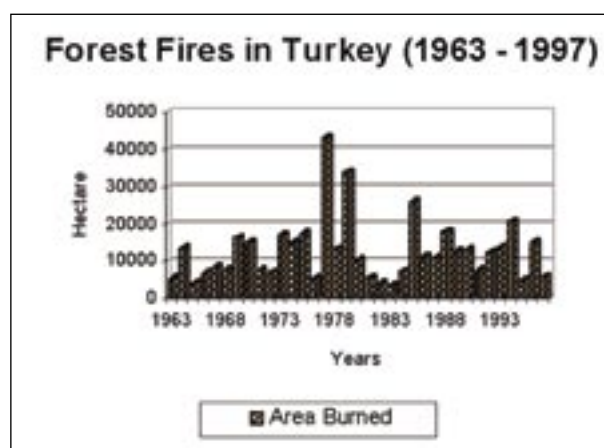


Figure 1.3.10  
Total forest area burned annually from 1963 to 1997  
(<http://www.orman.gov.tr/>)

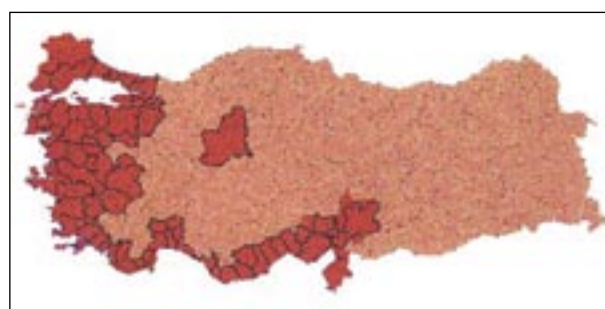


Figure 1.3.11  
Areas relatively more sensitive to forest fires indicated in darker shades (<http://www.orman.gov.tr/>)

### 1.3.6 Industry and mining

Significant disparities exist between the seven geographic regions of Turkey as to the level of industrial development (Figure 1.3.12). The Marmara Region is by far the most industrialized part of Turkey, housing nearly half of the total number of industrial establishments. The provinces of Istanbul, Kocaeli, Bursa and Tekirdag of the

Marmara Region are among the top ten provinces with respect of the level of industrial production (SPO, 2000b). These top ten provinces, which produce more than 75% of the total industrial production, are indicated in Table 1.3.4 together with the percentage of production that they contribute to the total output. It is observed that Istanbul and Kocaeli are the most industrialized provinces.



Figure 1.3.12  
Major industrial facilities located in coastal provinces

It is hardly surprising to notice from Table 1.3.4 that with the exception of the province of Ankara, where the Turkish capital is located, and Kirikkale (which was a part of the province of Ankara in the past), the remaining eight of the top ten industrialized provinces border at least one of the four Turkish seas. The Aegean Region housing 18.9% percent of the industrial establishments (SPO, 2000b) is the second most industrialized part of the country. The Mediterranean Region follows the Central Anatolian Region and ranks fourth in terms of industrial activity.

	1980	1985	1992	1996	1997
1. Istanbul	27.60	29.62	28.03	25.46	24.80
2. Kocaeli	14.44	15.48	14.70	12.67	15.27
3. Izmir	10.94	11.29	12.16	13.91	12.07
4. Bursa	3.50	5.66	7.03	6.39	6.40
5. Ankara	3.78	4.51	3.45	3.74	4.07
6. Tekirdag	1.42	1.32	2.39	3.17	3.32
7. Icel	6.51	4.83	3.30	3.85	3.26
8. Adana	5.39	4.38	4.00	2.77	2.93
9. Zonguldak	4.28	2.91	1.62	1.55	2.38
10. Kirikkale	0.00	0.00	1.63	2.47	2.31
Others	22.15	20.00	21.69	24.00	23.20
Turkey	100.00	100.00	100.00	100.00	100.00

Table 1.3.4  
The leading ten provinces in terms of industrial production in 1997 (Figures indicate industrial production of the provinces as a percentage of the total production) (SPO, 2000b)

The yearly flux in overall industrial production in Turkey and the percentage of its contribution to the GNP is shown in Figure (1.3.13) for the period of 1995 to 2002. A steady increase is observed in

industrial production from 1995 to 1998, which is followed by a two-year-long stagnation period. The significant drop in industrial production from the level of 56.1 billion US dollars in 2000 to 42.2 billion US \$ in 2001 was due to the country's worst ever economic crisis. In the following year (2001), a reasonable recovery was achieved as production increased to 51.9 billion US dollars. It is interesting to note that the percentage contribution of industry to the GNP increased during the years of economic difficulties (2001 and 2002) from 27.8 in 2000 to 28.8 in 2002, indicating that other sectors were more critically affected by the crises.

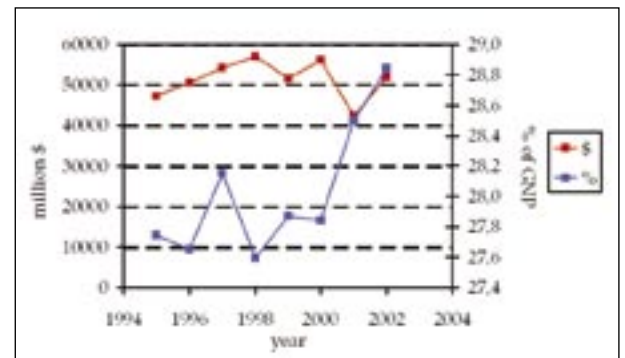


Figure 1.3.13  
Yearly fluxes in the overall industrial production in Turkey and its percentage of the GNP  
(<http://www.die.gov.tr>)

In the 1960s and '70s, a number of early industrial facilities were located along the shores of relatively sheltered sea area such as the northern Marmara coast, Izmit Bay, Izmir, Aliaga and Nemrut Bays, and Iskenderun Bay (Figure 1.3.14). These areas are now among the major "hot spots" due to the environmental pressures of the industrial establishments (Ozhan, 1996).

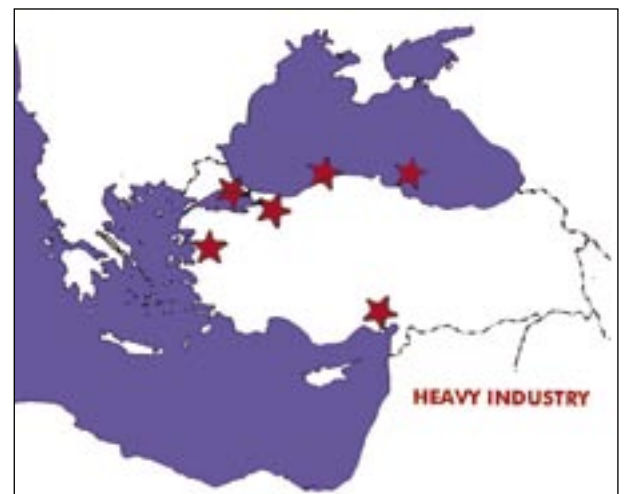


Figure 1.3.14  
Geographic information on heavy industry locations along the coast

The Marmara Region, housing almost half of the industrial activity, is an earthquake zone. The strong earthquake that occurred in the summer and autumn of 1999 resulted in a decrease in industrial production in four provinces (Kocaeli, Yalova, Sakarya and Bolu) dropping to 51% of the pre-earthquake capacity figure of 87%.

Turkey as a whole, including its coastal regions possesses several important minerals. The mining activities in certain areas and the related processing industry have been among the most important economic activities. Some important minerals and the number of beds in the coastal regions of Turkey are shown in Table 1.3.5.

Coastal region	Important minerals (number of beds in the region)
Black Sea	Quartz sand (7), Clay (3), Coal (4), Lignite (1), Marble (1), Quartz (1), Mercury (1), Manganese (2), Copper (1), Kaolin (1), Bentonite (1)
Marmara	Marble (3), Dolomite (2), Quartz (2)
Aegean	Marble (1), Perlite (2), Dolomite (1), Graphite (1), Mercury (1), Kaolin (1), Chromium (2)
Mediterranean	Barium (1)

Table 1.3.5

Important minerals in the coastal regions of Turkey and the known number of beds  
(<http://www.mta.gov.tr/>)

Oil and gas production in the coastal regions of Turkey is not significant at present. However, there have been continuing exploration efforts for both oil and gas by consortiums of the Turkish Petroleum Company (TPAO) and by several foreign companies both offshore and on land. Particular attention has been paid to the bays of Iskenderun and Mersin in the eastern Mediterranean, and to several locations in the western and eastern Black Sea. Furthermore, efforts to find gas are ongoing in the Thrace (Gocerler, Beyazkoy), and the coastal areas of Adana and Hatay in the eastern Mediterranean.

### 1.3.7 Infrastructure

Despite the fact that the environmental infrastructures of several Turkish cities have improved significantly since the 1980s, the overall status quo is far from perfect. The early efforts at managing domestic wastewater from coastal cities were invariably directed towards discharging raw sewage into the sea-by-sea outfalls after physical treatment (screening and settling of floating debris and solid constituents). In the 1970s, the design

of sea outfalls was contracted to two universities by Iller Bankasi (the Provincial Bank) for a few already-established tourist resorts along the Sea of Marmara and the Black Sea (Erdek, Amasra), and a number of growing resorts along the southern Aegean (such as Marmaris and Fethiye). These outfalls and the primary treatment facilities were constructed in the 1980s.

A project initially called “ The Southern Anatolian Environmental Project” and later named “The Mediterranean-Aegean Tourism Infrastructure Coastal Management Project” (the Turkish acronym is the “ATAK Project”) was launched in November 1989 by the Ministry of Tourism in collaboration with the World Bank by utilising the technical aid credit (about 4.5 Million US \$) provided by the government of Japan. The scope of this project was to facilitate the planning, and the design and construction of the environmental infrastructure (drinking water, wastewater collection, treatment and sea outfall and solid waste management) for the target year of 2020 in areas where tourism activities were concentrated, and to create a new institutional body (a management organisation) involving local administrations. The scope of the project included the settlements located along the coast in the Aegean and the Mediterranean coastal provinces of Balıkesir, Izmir, Aydin, Mugla and Antalya. An appraisal of the existing situation carried out by the ATAK Project in 1990 and 1991 (Yurteri and Bozkurt, 2001), revealed that:

- 60% of the settlements had fresh water distribution systems, the remaining 40% equipped with insufficient systems.
- 76% did not have sewage collection systems and the existing systems of 13% of the settlements were dated and inadequate. Only 11% had new sewage collection systems with sea outfalls after primary treatment. Package sewage treatment facilities were present in a number of tourism facilities. Biological sewage treatment plants had been constructed by the Ministry of Tourism in Edremit (Balıkesir), Bodrum and environs, Sarigerme (Mugla), Kalkan, Kas Southern Antalya, Belek, and Side/Manavgat (Antalya).
- The only solid waste management facility that conformed to technical standards was the Kemer compost facility. Waste dumping sites of 43% of the total were in bad condition and hazardous, 52% were in an average condition and only 5% were in a proper and good condition. Almost all of the municipalities located in the project area did not have sufficient vehicles and machinery for the collection and disposal of solid wastes.

The funds provided by the Japanese government for the ATAK Project were exhausted by the end of 1998. In the scope of the project, over 100 settlements were examined in 25 regional units designated according to “optimum service area” considerations. The investigations outlining the existing situation and the master plan work were carried out for all 25 regional units. Feasibility studies were carried out for 10 priority regions, and pre-feasibility studies for the other 15 regions.

Due to the large cost of project implementation, the ATAK Project has to date remained largely as an assessment and planning study, and has achieved modest improvements in the environmental infrastructure, especially with regard to wastewater and solid waste management. Only a very few projects (such as Cesme-Alacati, Koycegiz-Dalyan) have really been implemented.

Sewage from the largest and the third largest cities of Turkey (Istanbul and Izmir) flowed into the sea without proper treatment and discharge facilities until recently, constituting the most significant source of marine pollution. The sewage collection, treatment and outfall systems for the city of Istanbul have been partially operational approximately since the start of the new millennium. Izmir was slightly behind Istanbul. The discharge of untreated sewage into the Bay of Izmir was completely halted in the summer of 2002. The planning work for the domestic wastewater management infrastructure for both cities dates back to the early 1970s. It took about thirty years for the metropolitan municipalities to complete these projects due to financial setbacks.

The solid waste management facilities in several coastal cities of all sizes (small, medium and large) are still far from satisfactory. Solid waste management is a very acute problem especially for the towns along the eastern Black Sea coast due to the problem of finding suitable landfill sites since the coastal area along this part of the Black Sea is extremely narrow as a result of topographical features.

Site selection in coastal areas for two types of infrastructural facilities: sewage treatment plants and roads and highways, has often been the subject of discussion and dispute. One of these is the sewage treatment plants, and the other is roads and highways. There are several examples of such facilities destroying prime coastal sites such as beaches and dunes, and pristine natural landscapes. The Black Sea coastal highway, which is a four-lane highway occupying much of the very narrow coastal area available (and built over reclaimed land in several segments), is probably the worst of these examples.

### 1.3.8 Tourism

In 2001, Turkey hosted 11.6 million foreign tourists and earned US\$ 8 billion in revenues (Ministry of Environment, 2002). The number increased in 2002 by 14% to the level of 13.25 million (<http://www.turizm.gov.tr/>). Turkey is ranked 20th in the world in terms of the numbers of its tourists and the 14th with respect to tourism revenues generated. In the year 2000, the share of these revenues in total exports was 27.8% and in the national income 3.8%. The tourism sector employs about 1 million people. The volume of domestic tourism is estimated to be around 20 million persons per year. While the volume of world tourism has grown by 4% over the last decade, tourism in Turkey has grown by an annual rate of 10% (Ministry of Environment, 2002).

With the exception of the Metropolitan City of Istanbul, the majority of tourism activities that presently exist in Turkey are of the “mass tourism” type, utilizing the facilities located along the coastal areas of the Aegean and the Black Sea. These facilities are concentrated in a number of locations. Antalya and its environs is by far the most important region for coastal tourism. Along the Aegean coast, Kusadasi, the Bodrum Peninsula, Marmaris and Fethiye are the main tourism centres attracting foreign tourists.

The regional distribution of foreign tourists in 2002 as derived from the location of the port of entry, is shown in Table 1.3.6. It is observed that the most preferred region is the Mediterranean (Antalya and Environs) attracting 37.98% of the total number of tourists. The Marmara Region (mainly due to visits to Istanbul) follows the Mediterranean with 33.58% and the Aegean with 21.08%. The share of inland tourism (Central, Eastern and South Eastern Anatolia) is merely 5.98%.

	Number of Foreign Tourists	Share (%)
Marmara Region	4,448,725	33.58
Aegean Region	2,792,660	21.08
Mediterranean Region	5,031,208	37.98
Black Sea Region	183,285	1.38
Central Anatolian Region	222,107	1.68
Eastern Anatolian Region	338,465	2.56
South Eastern Anatolian Region	230,425	1.74
TOTAL	13,246,875	100.0

Table 1.3.6  
Regional distribution of foreign tourists in 2002 according to the location of the entry port (<http://www.turizm.gov.tr/>)

In Table 1.3.7, geographic distributions of both foreign and domestic tourists are shown for the year of 2001. Importantly, the volume of domestic tourism is seen to be about 50% higher than that of foreign tourism. The regional concentration of foreign tourists is similar to the percentages given for 2002, with the exception of the Marmara Region (for which the figure of 26.38% is noticeably lower). This could be due to the impact of the intensive earthquakes that occurred in the region close to the City of Istanbul in August and November 1999. The most popular region for domestic tourists is seen to be the Aegean (27.11%), followed by the Marmara (22.11%) and the Mediterranean (13.86%). The Black Sea Region with 12.17% appears to be a far more popular destination for domestic rather than foreign tourists. Furthermore, the three inland regions (especially Central Anatolia) attract far higher numbers of domestic tourists.

The growth of foreign tourism in Turkey is indicated in Figure (1.3.15) by the significant increase of the annual number of foreign tourists as from 1984. This take off was triggered by the Tourism Incentives Law, enacted in 1982, which provided numerous, very attractive incentives to the private sector for tourism investments. Between 1984 and 2003, there was a tenfold increase in the number of foreign tourists visiting Turkey. The steady growth in the number of tourists was temporarily halted in 1993 by the Gulf War and in 1999 by the two devastating earthquakes in the Marmara Region in locations not far away from the City of Istanbul (especially the August 1999 earthquake).

Based on the annual increase rate of 5% that has been evident since the 1990s, it is estimated that the share of Turkish tourism in the world market will increase to the level of 2.2% in 2005. The present Turkish share within the European tourism market is 3%. The target figures for the year of 2006 are 20 million foreign visitors and 15 billion US dollars in revenue (SPO, 2001e).

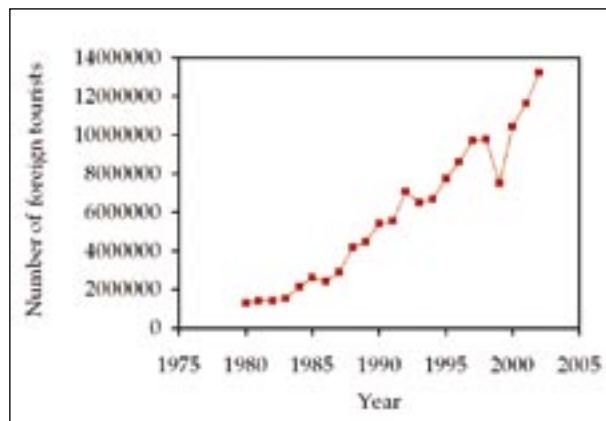


Figure 1.3.15  
Annual number of foreign tourists visiting Turkey  
between 1980 and 2002 (Ministry of Tourism, 2002a)

The monthly distribution of foreign tourist arrivals over three successive years is shown in Figure 1.3.16. The peak tourist season is clearly seen as being between May and October. A concentration over the summer months (the seasonality problem) is a well-known feature of coastal mass tourism. The Ministry of Tourism has initiated several special projects aimed at decreasing the intensity of the seasonality problem by diversifying the types of tourism offered in Turkey. The promoted tourism types include winter sports, thermal (health), cultural, religious and eco-tourism. However, the present level of activities in all of these alternative tourism forms remains very low, with very little impact on the seasonal distribution of tourist arrivals.

Yachting tourism is an important specialty tourism type for Turkey with great potential as well as a number of possible hazards. There has been a remarkable growth in the boating and yacht tourism sector over the last two decades, and the foreign currency earnings brought in by this sector rose to 2.5 Billion US dollars in 1997/98.

Region	Number of Domestic Tourists	Share (%)	Number of Foreign Tourists	Share (%)
Marmara	3,627,993	22.11	2,881,030	26.38
Aegean	4,451,442	27.13	2,612,118	23.91
Mediterranean	2,273,621	13.86	4,317,114	39.52
Black Sea	1,996,569	12.17	170,809	1.56
Central Anatolia	2,340,150	14.26	812,221	7.44
Eastern Anatolia	967,453	5.9	72,659	0.67
South Eastern Anatolia	747,982	4.56	56,820	0.52
TOTAL	16,405,210	100.0	10,922,771	100.0

Table 1.3.7  
Distribution of domestic and foreign tourists  
by Turkish geographic region in 2001  
(Ministry of Tourism, 2002b; Ministry of Tourism, 2002c)

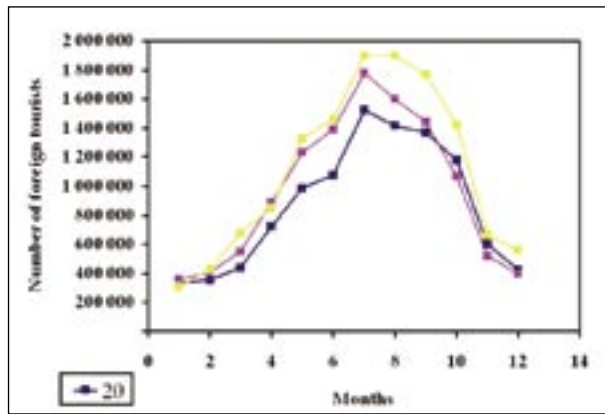


Figure 1.3.16  
Distribution of foreign tourists arriving in Turkey, by month (<http://www.turizm.gov.tr/>)

The attractive and renowned coast of the southern Aegean from Bodrum to Fethiye has garnered fame as the location of prime boating and yachting holidays in the Mediterranean, especially after the designation of these areas as specially protected areas in 1998 and 1990. The boating and yachting activities in these areas intensified (Figure 1.18) in the wake of the positive publicity brought by the SPA designation. The towns of Bodrum, Marmaris and Gocek have been established as important yachting centres. Clusters of modern marinas have been built in several locations from Kusadasi in the Aegean to Alanya in the Mediterranean. The number of berths that are available in marinas along the coastal stretch from Bodrum to Antalya has increased to 3,000 (out of a national total of about 10,000 berths) (SPO, 2001e). The trend of yachting tourism in Turkey points towards further expansion. There is a great deal of interest among large companies and consortiums in investment in new marinas.

Cruise holidays are a mode of tourism that has enjoyed a rise in popularity on a global scale. This type of tourism has also been developing throughout the Mediterranean. Turkey does not own and operate cruise liners, but a few Turkish ports (such as Kusadasi and Istanbul) have been included in some cruiser itineraries. Due to their relatively high purchasing power, tourists brought in by cruisers are significant contributors to the local tourist economy, especially of relatively small towns like Kusadasi (SPO, 2001e).

### 1.3.9 Energy

A substantial percentage of electrical energy production in Turkey uses fossil fuels and hydraulic energy potential. The total electrical energy production capacity of Turkey (as of the end of 1999) is 26,116.8 Mega Watts. Of this capacity, 15,555.9 MW (% 59.6) is thermal, 10,537.2



Figure 1.3.17  
Yachting holidays (Photo: E. Ozhan)



Figure 1.3.18  
The change of the scale of boating along the Dalyan canals (Upper: Early 1980s, Lower: 1989) (Photos: E. Ozhan)

MW (% 40.3) is hydraulic, and the remaining 23.7 MW (% 0.1) is geothermal and from wind power plants (SPO, 2001f).

The lignite coal powered plants provide 24.3% of the total electricity production capacity. Several of these (such as Yatagan- 630 MW, Yenikoy – 420 MW and Kemerkooy – 630 MW in the Province of Mugla) are located in or near the coastal zone (SPO, 2001f). The Kemerkooy Power Plant lies in the heart of the Gokova Specially Protected Area. This project, which was started in the early 1980s, attracted one of the first examples of significant public protest against a development project on environmental grounds. The second largest share (23.5%) of the total capacity is credited to natural-gas-fuelled thermal power plants. Ambarli with a capacity of 1200 MW is located on the northern shore of the Marmara Sea, not far from the city of Istanbul. The share of the thermal power plants using other types of fuels (such as fuel oil, diesel, LPG) is 5.9% (SPO, 2001f).

The installed capacity of operational hydroelectric power plants is 10,537.2 MW. The overall hydroelectric potential of Turkey is estimated at 433 billion kWh, whereas the technically feasible potential is 216 billion kWh (SPO, 2001d).

There has been a level of interest in Turkey over the last decade in the use of renewable energy resources, such as solar, geothermal and wind energies. According to information available, the regions of Marmara, Aegean and Southeast Anatolia are rich in wind energy, the Southeast Anatolia, the Aegean and the Mediterranean regions are rich in solar energy, the Aegean and Marmara regions are rich in geothermal energy and the Eastern Black Sea region is rich in mini to micro hydro energy potential. Among renewable energy resources, wind energy is regarded as having the highest potential in Turkey. In 2000, the installed wind energy capacity in Turkey stood at the mere symbolic figure of 18.9 MW (0.07% of the total production), produced by three operating plants. According to the publication entitled “The Wind Atlas of Turkey”, published in June 2002, the coastal regions with the highest potential for wind energy are the Aegean, the Marmara, and the Eastern Mediterranean regions. The overall wind energy potential of Turkey is estimated as 88,000 MW, and the economic potential as 10,000 MW (Ministry of Environment, 2002).

Solar energy also has great potential for use in Turkey. Today, solar energy is mainly used for the production of hot water and the heating of housing units. The solar energy produced in 2000 was 262,000 TOE. The solar energy is not yet used for electricity production. The total solar energy

production is less than 1% of the national total figure. According to Ministry of Energy forecasts, the production of solar energy will increase to 602 KTOE in 2010 and 1,119 KTOE in 2020 (Ministry of Environment, 2002).

The solar energy potential and duration of sunny periods within seven Turkish geographic regions are shown in Table 1.3.8. The Southeast Anatolian region is seen to have the largest solar energy potential. The potentials for the Mediterranean, Eastern Anatolian, Central Anatolian and the Aegean regions are similar. The coastal regions of Marmara and the Black Sea have the smallest solar energy potential.

Region	Total solar energy potential (kWh/m <sup>2</sup> -year)	Sunny periods (Hours/Year)
Southeast Anatolia	1,460	2,993
Mediterranean	1,390	2,956
East Anatolia	1,365	2,664
Central Anatolia	1,314	2,628
Aegean	1,304	2,738
Marmara	1,168	2,409
Black Sea	1,120	1,971

Table 1.3.8

Solar energy potential and duration of sunny periods by Turkish geographic region (General Directorate of Electrical Power Resources Survey and Development Administration) (<http://www.eie.gov.tr/>)

The first geothermal energy plant (15 MW capacity) located in Kizildere in the province of Denizli has been in operation since 1984 (SPO, 2001f).

A number of solid waste and biogas power plant projects are at the development stage. These are BOT (build-operate-transfer) type projects, and include Adana (45 MW capacity), Mamak/Ankara (10 MW), Izmit -Hazardous Industrial Waste (5.4 MW), Ankara (3.2 MW), Mersin (18.8 MW) and Tarsus (12.5 MW) solid waste power plants (SPO, 2001f).

There is been a rather long history (dating back to 1967) of nuclear power plant development initiatives in Turkey. Two sites (Akkuyu along the Mediterranean coast and Sinop along the Black Sea coast) were extensively studied for this purpose. A good part of the infrastructure (including marine terminal facilities) for the nuclear power plant was built in Akkuyu in the late 1980s. There were a number of international bids for the Akkuyu power plant in the second half of the 1990s, but none of them proved decisive. The project was finally suspended by the Government in 2000 for a variety of reasons (SPO, 2001f).

## 1.4 ENVIRONMENTAL AND SPATIAL IMPACTS

### 1.4.1 Marine pollution

Marine pollution along the Turkish shoreline is mainly due to major land-based sources such as untreated wastewater from domestic and industrial settlements, pollutants brought from inland areas by rivers, coastal agricultural practices, tourism activities, extensive concentrations of secondary, holiday homes, port and marina establishments, and to some extent, mariculture facilities. Additionally, trans-boundary pollution sources from neighbouring countries (such the pollutants brought by the Danube River; the litter brought in by sea currents from the eastern Mediterranean countries), maritime transport and yachting are also important marine sources of pollution.

A number of early industrial facilities that were developed in the 1960s and '70s along the shores of relatively sheltered sea areas such as the northern Marmara coast, Izmit Bay, Izmir, Aliaga and Nemrut Bays, and Iskenderun Bay (Figure 1.3.14), are responsible for the major coastal "hot spots". These areas still suffer from the impacts of water pollution from industries (Figure 1.4.1), firstly due to the relatively enclosed nature of these basins, and secondly due to the difficulties involved in enforcing a later law (the Environmental Law that was enacted in 1983) on the existing facilities (Ozhan, 1996).

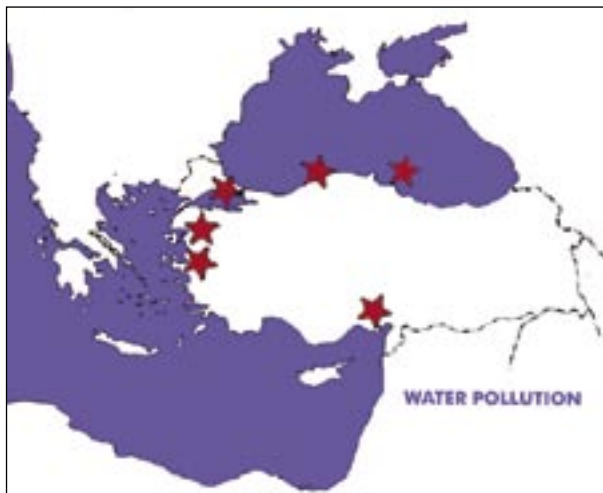


Figure 1.4.1  
Geographic information on coastal water pollution

According to 1998 estimates, 994,940,000 m<sup>3</sup> of domestic wastewater of which 28.8% is treated, enters coastal waters annually. The change of the estimated yearly wastewater discharge from domestic sources is shown in Figure (1.4.2). Also reflected in this figure is the proportion of wastewater that receives treatment (physical to biological) before discharge. A major increase in the yearly wastewater discharge rate is observed

from Figure (1.4.2) between 1997 and 1998. The reason for this significant jump is not known. It is also seen that the amount of treated wastewater has been steadily increasing between 1996 and 98. However, the percentage of treated wastewater in 1998 (28.8%) is still very low.

The development of the type of treatment that is utilised before the discharge of domestic wastewater into the marine environment is shown in Figure (1.4.3). It is apparent that only about one quarter of the treated wastewater received biological treatment in 1998, and the rest is subject to physical treatment, which implies the removal of the solid particles via the process of settling and of the floating debris by screening. The information provided in Figure (1.4.2) and (1.4.3) clearly shows that the discharge of domestic wastewater could be a major contributor to marine pollution along the Turkish coast. The completion of the wastewater treatment systems of large metropolitan cities like Istanbul, Izmir and Antalya (representing a sizeable part of the total coastal population!) in the early 2000s, has doubtlessly contributed significantly to limiting the discharge of untreated sewage into the marine environment.

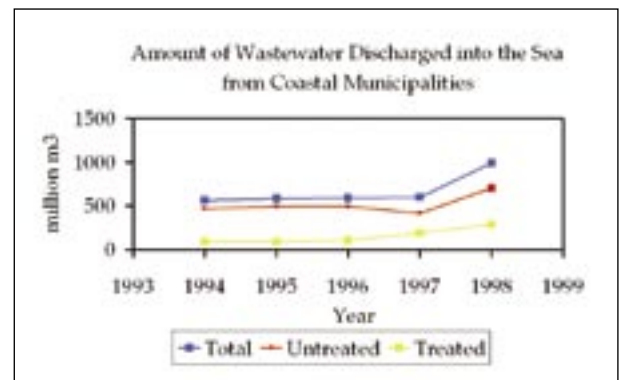


Figure 1.4.2  
Estimates of annual wastewater discharge from coastal municipalities (SIS, 2003)

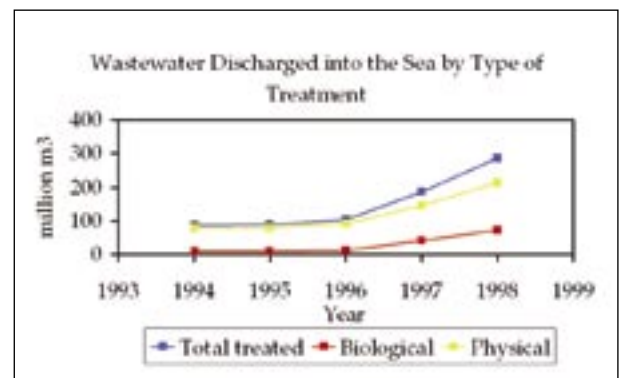


Figure 1.4.3  
The type of treatment utilised for domestic wastewater before its discharge into the marine environment (SIS, 2003)

The estimate of the total wastewater discharge from manufacturing coastal industries was 467,155,000 m<sup>3</sup>/year in 1997 (SIS, 2003). Of this figure, about 11.22% received some kind of treatment as shown in Figure (1.4.4). This figure indicates that the annual discharge of industrial wastewater into the marine environment does not show significant variations in the period between 1994 and 1997.

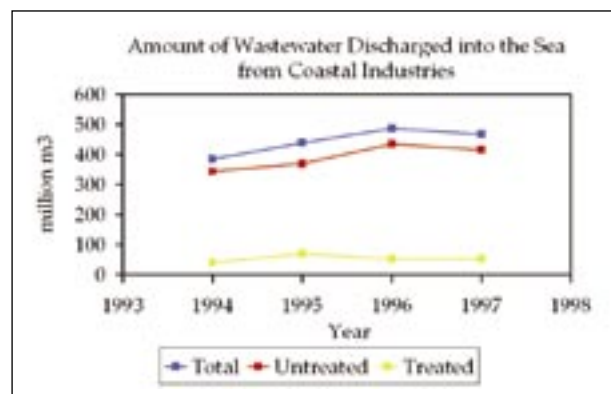


Figure 1.4.4  
Pollution generated by coastal industries (SIS, 2003)

Along the Mediterranean coast, the mean annual discharge of rivers and canals amounts to 36.3 billion m<sup>3</sup> (SPO, 1998). Although industrial wastewater constitutes a very small percentage of the total discharge, it contains highly toxic substances such as mercury, lead, chromium, and zinc (EFT, 1995). Agricultural activities constitute the most significant source of pollutants carried to the sea by rivers and streams. In Turkey, 90% of the tobacco and sunflower seed production, 80% of the cotton and corn cultivation output and 70% of rice cultivation take place in the coastal provinces (OECD, 1992).

Wastewater discharges enter the Aegean from nearly 50 major locations along the coast (seven rivers, at least 40 tourism and secondary holiday home developments, one industrial zone, and the input from the Black Sea through the Dardanelles) as well as from a number of domestic sewage outfalls. The total pollution load from these sources is estimated to be equivalent to a population of 20 million, whereas roughly half of this figure corresponds to the Black Sea discharges. When an additional pollution load equivalent to a population of 7.5 million is added to account for the adjacent Greek settlements and industries, the total pollution load entering the Aegean Sea is estimated to be equivalent to wastewater discharges of 27.5 million individuals. Localized pollution problems include high levels of suspended solids, dissolved/dispersed petroleum hydrocarbons, mercury, and cadmium. BOD, nitrogen and phosphorus from sewage discharges in the northern Aegean Sea are expected to nearly double from 1990-2010 (SPO, 1998).

In the Black Sea, the pollution that is brought from several countries (including Turkey) by large rivers is the most dominant source. Wastes from 16 countries flow into the Black Sea and 160 million people live in its catchment basin. The Danube River alone discharges 60 tons of mercury, 1,000 tons of chromium, 4,500 tons of lead and 50,000 tons of oil annually (EFT, 1995). Pollutants brought by the Danube also affect the Sea of Marmara and even the Aegean Sea. The sewage born bacteria can survive longer in the Black Sea, when compared to the other three seas of Turkey, due to relatively lower solar radiation, water temperature and salinity. The sea is rich in plankton and in fish biomass.

Turkey has been an active partner of the MEDPOL project of the Mediterranean Action Plan (MAP) of UNEP from its start in the late '70s. MEDPOL, which aims at the monitoring concentration of various pollutants and pollution parameters over the Mediterranean, was the most important MAP programme in MAP's early years. Sampling for pollutants in MEDPOL has usually been carried out at a distance from the shoreline, as it has been undertaken from relatively large research vessels. An established programme for the regular monitoring of the water quality of coastal waters does not yet exist in Turkey. The only available effort is the surveillance of the water quality at several of the recreational/tourist beaches in the context of the Blue Flag scheme operated by the European Environmental Education Foundation (EEEE). 140 public beaches qualified for the Blue Flag in 2003, thus complying with the recreational water quality criteria of the EC (<http://www.turcev.org/mavibayrak/2003.htm>).

Maritime transport is an additional source of marine pollution originating from accidents in areas with heavy traffic, particularly involving petroleum transports, and the improper disposal of ballast and bilge waters and solid waste. In 1996, about 140 cargo vessels and 1,000-1,500 passenger boats navigated through the Strait of Bosphorus and the Sea of Marmara each day, transporting an annual average of 42 million tons of cargo (SPO, 1998). 35% of the vessels were tankers and 38% of their total cargo was petroleum. From 1970 to 1991, there were 3 to 35 oil spills per year releasing 50,000-700,000 tons of oil. In Istanbul alone, 94 ferries make about 750 roundtrips a day and carry 125 million passengers a year. Sea accidents have declined in number, dropping from 43 incidents in 1990 to 12 in 1994 and only 2 in 1996 (SPO, 1998). On one hand however, maritime traffic through the Straits and the Sea of Marmara will be much heavier when connections are made between the Danube and the Rhine, and the ports of Rotterdam (the Netherlands) and Constanza (Romania) (SPO, 1998). While on the other hand, the increase in

the volume of Caspian oil loaded from Russian terminals will also impact significantly on the congestion of tanker traffic through the Straits.

#### 1.4.2 Air and soil pollution

Air pollution has been an environmental issue along the Turkish coastal zone in industrial regions, in major cities and in association with the electricity generating power plants. In the 1980s, it was one of the most pressing human concerns, especially in metropolitan cities.

The “Air Pollution Control By-Law” which was passed in 1986 as an extension to the Environmental Law of 1983 aims to regulate atmospheric emissions and thus curb air pollution. Several measures which have been implemented since the early 1990s have resulted in a significant reduction in air pollution, especially in the larger cities. Probably, the most significant contribution was due to the governmental and municipal policy of switching from coal and fuel oil to natural gas for the heating of residential and industrial buildings. Together with this change, the use of low quality lignite that typically contains high sulphur concentrations was prohibited and the transport of this type of coal into big cities banned. Consequently, the residential buildings were forced to change their heating systems to use either fuel oil or natural gas, and a great majority chose the later due to economic incentives. In 2001, the portion of natural gas in the total energy consumption rose to 16.2% (Ministry of Environment, 2002).

Information on air quality is limited, because particulate matter and SO<sub>2</sub> are usually the only parameters that are monitored on a regular basis. The change of these two air quality parameters (total particulate matter and sulphur dioxide) in four major coastal cities is shown in Table 1.4.1. It is observed that with the exception of Izmir, significant improvements have been achieved in the air quality of the remaining three cities in a period of 5 years (from the winter of 1990/91 to 1995/96).

In parallel with the reductions in atmospheric emissions from the heating of buildings, air pollution emanating from motor vehicles was reduced due to the introduction of LPG as the motor fuel and to more extensive use of unleaded petrol. In this period, new regulations were imposed relating to the quality of fuel that can be used for heating and transportation. For example, the permitted sulphur content of diesel fuel was to be lowered to 0.05% by 2004 from the value of 0.7% in 1997 (Ministry of Environment, 2002). It is envisaged that by the end of 2004, all vehicles will run on unleaded petrol.

A significant factor in air pollution is the low efficiency of energy use both in the home and in industry. The average household energy requirement in Turkey is 195 kWh/m<sup>2</sup>. In industrialized countries, this figure is already below 100 kWh/m<sup>2</sup> and efforts are underway to reduce it 50 kWh/m<sup>2</sup> (SPO, 1998). On the other hand, Turkey emits 8.8 kg. of SO<sub>2</sub> for a US\$1,000 contribution to the gross domestic product (GDP) each year. The OECD average is only 2.9 kg. for the same economic output (OECD, 1994). Overall, Turkey produced 1.8 \$ units of GDP per kilogram of oil equivalent (kgoe) consumed in 1994. Although this figure is better than the average value of \$1.0 per kgoe in lower middle-income countries, it is almost half when compared with the high-income countries (World Bank, 1997).

A contributor to the improvement of air quality in coastal towns over the last decade is the increased use of solar energy. For the time being, however, this is largely limited to hot water production. When solar energy is eventually used to heat residential units as well, it will play a major role in the further improvement of metropolitan air quality.

One of the two main factors behind soil pollution in Turkey is the use of synthetic compounds and chemicals in so-called “modern” agriculture, and the wastes produced by these practices. Chemical fertilisers, herbicides and insecticides, hormones used for nourishment, heavy metals and hydrocarbons that remain in the soil after

City	Particulate matter (ave. µg/m <sup>3</sup> )			Sulphur dioxide (ave. µg/m <sup>3</sup> )		
	1990/91	1995/96	% Change	1990/91	1995/96	% Change
Antalya	136	75	- 45	79	55	- 30
Istanbul	151	97	- 36	315	135	- 57
Izmir	82	102	24	112	104	- 7
Samsun	89	33	- 63	187	93	- 50

Table 1.4.1  
Change of two air quality parameters in  
four major coastal cities (SPO, 1998)

Basin	River	Pollution type	Sources of pollution
Meric	1) Ergene River	1) BOD, suspended matter, alkalis, heat	1) Textile & foodstuff industries, domestic waste
	2) Meric River	2) BOD, ammonia, orthophosphate	2) Industries, domestic waste from Edirne
Susurluk	3) Nilufer Stream	3) DO, BOD, ammonia, COD, orthophosphate	3) Industrial & domestic waste from Bursa
	4) Simav Creek	4) BOD, ammonia, orthophosphate	4) Industrial & domestic waste from Balikesir & Susurluk
Gediz	5) Gediz River	5) BOD, COD, heavy metals	5) Industrial & domestic waste, irrigation run-off
	6) Nif Creek	6) BOD, COD, nitrogen, phosphorus	6) Metal, textile, chemical, leather & other industries
Sakarya	7) Porsuk Creek	7) DO, BOD, ammonia, nitrate, phosphate	7) Kutahya sewage, industries, power plant
	8) Ankara Stream	8) DO, BOD, ammonia, nitrate, phosphate	8) Domestic & industrial wastes from Ankara
	9) Cark Stream	9) DO, BOD, nitrogen, phosphate heavy metal	9) Industrial & domestic waste from Adapazari

Table 1.4.2  
Some rivers subjected to pollution,  
pollution types and sources (EFT, 1995)

agricultural production, lead to significant incidences of pollution, especially in the case of irrigated agriculture, which threaten human and animal health. The use of such agrochemicals has accelerated rapidly and often in an uncontrolled manner over the last 25 years (Ministry of Environment, 1996).

The second important factor behind soil pollution is the domestic and industrial wastewater discharge over wastelands and the improper dumping of solid wastes. In many cases in Turkey, human settlements and industrial establishments have been located in regions where productive soil resources are in abundance. These soils suffer from systematic wastewater discharges over a land area, which is more or less the standard practice of administrations (municipalities) of coastal towns that do not have any alternative wastewater management scheme. Soil pollution caused by acid rains that are produced by the waste gas emissions of certain industrial establishments, such as the lignite burning power plants, is also critical.

Another cause of soil pollution arose from the use of salt (sodium based and other) rich ground water resources for agricultural purposes (in producing salt tolerant crops such as cotton) as observed in certain areas in the Aegean region. The use of water from polluted rivers (such as Susurluk, Ergene, Gediz, Buyuk Menderes and the Seyhan rivers) for irrigation has also contributed to soil pollution (SPO, 2001d).

### 1.4.3 Water pollution

Despite the existence of rules and regulations prohibiting the discharge of pollutants into rivers and lakes, the pollution of fresh water resources is a significant environmental issue in Turkey. Rivers and creeks that pass through large settlements invariably suffer from human-induced pollution. Occasional massive fish mortality due to intolerable levels of toxic pollutant concentrations and/or low dissolved oxygen contents resulting from excessive organic pollutant intake is observed.

The rivers that suffer significantly from pollution are indicated in Table 1.4.2. For all the rivers listed in Table 1.4.2, the main sources of pollution are domestic and industrial. BOD, COD, suspended matter; ammonia, nutrients, heavy metals and heat are the typical pollutants that are present.

Run-off from agricultural lands is also a significant factor causing pollution of river and lake waters. BOD, COD and nutrients (nitrogen and phosphorous) are the typical constituents brought in by the excess irrigation waters in the summer season, and the overland flows after the heavy rains in winter.

Lakes that are subjected to human-induced pollution are listed in Table 1.4.3. Again industrial and domestic wastewater discharges, and the run-off from farms and lands used for agriculture constitute the main sources of pollution. It is interesting to note that the existing geological formations have caused the natural salt enrichment of several lakes in Turkey. Important examples are

Water Body	Characteristics and uses	Risk Factors and pollutant sources
Marmara Region		
1) Sapanca Lake	1) Drinking water for Adapazari, fishery, recreation	1) Domestic, agricultural & industrial run-off
2) Lake Manyas		2) Wastewater from 34 settlements & 40+ industries, farm run-off
3) Lake Apolyont	2) RAMSAR wetland of international importance	3) Phosphorus from fertilizers, animal waste, households; sedimentation; eutrophication
	3) Irrigation, crayfish production	
Lakes Region		
1) Lake Eber	1) Aquatic ecosystem	1) Afyon sewage, sugar & alkaloid factories, other industries
2) Lake Karamik	2) Aquatic ecosystem	2) Paper factory wastewater
Western Anatolia (Aegean)		
1) Koycegiz Lake	1) Aquatic ecosystem	1) Run-off from nearby farmland, forests & canals
2) Golcuk	2) Fishery	2) Agricultural run-off
Tuz Lake	Salt production, saline ecosystem	Potential domestic & industrial waste from Konya discharge canal
Lake Van	1) World's largest soda lake	1) Lake level rise threatens shoreline settlements & pastures
	2) World's fourth largest closed lake ecosystem	2) Sewage discharge, industrial wastewater, agricultural run-off, sediment from surface waters

Table 1.4.3

Lakes subjected to the risk of pollution and its sources (EFT, 1995)

Lake Van in eastern Anatolia, Tuz Lake in central Anatolia and Aci Gol in the Aegean region.

Although relatively little information is available on the quality of groundwater resources, there is enough evidence to point out the following pollution issues: (a) sewage infiltration from poorly maintained septic tanks and sewerage pipe networks, (b) leakage from solid waste dump sites; (c) percolation of toxic industrial chemicals such as cyanide observed in the groundwater of Kemalpasa Valley; (d) contamination from pesticides and fertilizers from agricultural uses as seen in the groundwater of Cukurova, Bursa and the Bornova Valleys; (e) salt enrichment due to the over-extraction of groundwater in the Lakes Region, the Iskenderun-Ulupinar-Arsuz Plain and Corum, where groundwater passes through brine, mineral waters or geological formations with high salt and sulphite content, and (f) sea water intrusion due to excessive ground water extraction for tourist facilities and residential units (e.g. around Cesme, Marmaris and Bodrum) (SPO, 1998).

#### 1.4.4 Landscape degradation

In some cases, the incentives provided by the Turkish State according to the Tourism Incentives Law of 1982 for supporting the development of tourism facilities were misused by the entrepreneurs and in others, insufficient planning

and control by the State, resulted in facility development over aesthetically prime areas, at or near the sites of significant ecological or cultural importance. Adverse impacts of coastal tourism development are observed primarily along the Aegean and the Mediterranean coasts, from Ayvalik to Alanya (Figure 1.4.5). In the 1990s, the Ministry of Tourism discontinued the provision of several incentives provided by the Law.

The Settlements Law that provides the rules and regulations for land use especially in and around urban centres has been highly misused in the last two – three decades for improper developments by secondary housing cooperatives especially along the Aegean and the Mediterranean coast. Art. 7/c of the Law states that, “in the case of existing plans being insufficient for the population or for facilitating urgent opening of new settlement areas for use, implementation is carried out according to local settlement plans prepared by municipalities or by provincial governors”. Furthermore, Art. 8/b states that “the plans to be prepared outside the limits of municipalities and annexed areas, are prepared or ordered by the municipal governor’s office or by those concerned” (e.g. the developers). These provisions have been the legal basis for many secondary housing cooperatives to build identical looking houses in rows (named as “the marching soldiers” during the field study trip of the MEDCOAST Institute 94) at considerable distances from the existing towns or villages (Figure 1.4.6). In many instances, these residential



Figure 1.4.5  
Locations of concentrated adverse impacts of coastal tourism



Figure 1.4.6  
The “marching soldiers”: the secondary holiday housing cooperatives dominating the landscape along most of the Bodrum Peninsula (Photo: E. Ozhan)

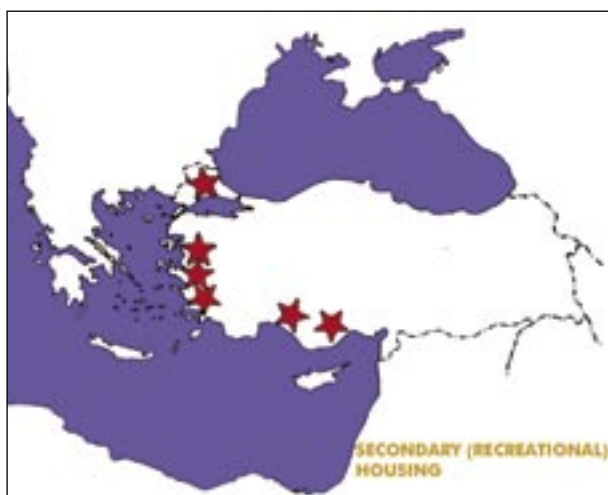


Figure 1.4.7  
Locations of extensive secondary holiday housing developments along the coast

complexes do not have sufficient infrastructural facilities for wastewater and litter management although these are by law necessary for obtaining residential permits. Such improper secondary housing developments proliferate along the northern Marmara coast, the Aegean coast from Ayvalik to Bodrum, and the Mediterranean coast from Antalya to Mersin (Figure 1.4.7).

#### 1.4.5 Biodiversity losses

Policies and anthropogenic developments and activities in Turkey that contribute to pressures on biodiversity are as follows (SPO, 1998):

- The pressure from rapid population growth, urbanization, industrialization, and tourism development on the land resources and ecosystems.
- Illegal forest clearing, overgrazing, the ploughing of pastureland, and the unsustainable harvesting of threatened plant species.
- The construction of dams, wetland drainage, re-routing of surface waters, poor irrigation practices and civil unrest in the east and southeast.
- Ineffective governmental policies regulating land use (especially of pasturelands and forests) and ineffective natural resource management (fisheries, hunting and the gathering of wild animals, birds, plants, and fish).
- Pricing policies that place pressures on biodiversity through excessive irrigation and fertilizer use.
- Rapid (and sometimes uncontrolled) tourism development and associated coastal habitat degradation caused by land speculation (especially along the Mediterranean, Aegean and Marmara coasts).
- The introduction of alien crops, cultivators and livestock.

All of the above factors are important in the coastal zone.

Several commercial fish species that were once caught in abundance in the 1960s and '70s were re-classified as threatened in the 1990s due to various factors including over and illegal fishing, the presence of alien species, water pollution and habitat loss. The rapid expansion of tourism facilities and activities along the coast has resulted in serious conflicts with the integrity of marine ecosystems. Tourism activities in vital habitats of marine turtles and monk seals (such as their breeding beaches and caves) have caused damage to these animals (Figure 1.4.8, left), and imposed considerable pressures that undermine the well-being of these species. A number of turtle



Figure 1.4.8  
Examples of damage to marine biodiversity caused by tourism activities (upper: a *Caretta c. caretta* juvenile smashed in the head by a speed boat; lower: Condensation of deposited solids from pollutant discharges on *posidonia* leaves) (Photos: E. Ozhan)



Figure 1.4.9  
The Sarigerme Beach is a sea turtle nesting beach surrounded by hotels and their beach facilities (Photo: E. Ozhan)

nesting beaches are already partly occupied by hotel facilities developed in the framework of the governmental tourism development plans of the 1970s and the 1980s in the Sarigerme Beach area (Figure 1.4.9). Additionally, coastal tourism activities, especially yachting, have negatively impacted upon *posidonia* meadows in sheltered bays due to increased water pollution and direct damage by anchor operations (Figure 1.4.8, right).

Turkey signed the Convention on Biological Diversity (CBD) in Rio, and thus committed itself to carrying full responsibility for the conservation of the biodiversity of plants, animals and microbiological life within the limits of its national jurisdiction, to using biological resources in a sustainable manner, and to looking for ways to equitably share the benefits arising from the utilisation of biodiversity (Ministry of Environment, 2002).

#### 1.4.6 Damage to natural and cultural resources

Significant negative impacts and damages to natural and cultural resources have occurred in the coastal zone due to anthropogenic development, mainly as a result of urbanisation and tourism. There are examples of towns and tourism facilities developed in the prime coastal areas, destroying important coastal units like wetlands (Izmir) and beaches and dunes (Belek, Antalya). This type of destructive development has either taken place before the present Shore Law was put into force in 1990, or in its wake, due to defects in the proper implementation of this legislation. The Belek Tourism Development Project (eastern coast of Antalya) is an important example. This project is one of the two key tourism development projects (the other being the Southwest Antalya Tourism Development Project) that have been planned by central government. The development has taken place in coastal areas (basically over dunes that were stabilised by the plantation of pine trees nearly 100 years ago and the beach area in front of them) that were owned by the State (e.g. the land was leased to the developers for a period of 50 years) under the supervision of the Ministry of Tourism. A section of the land use plan for the Belek Tourism Development Project is shown in Figure (1.4.10). The planted forest area is seen behind the tourism facilities. A view of the tourism facilities developed is shown in Figure (1.4.11). It is also interesting to note that the beach in front of the tourism facilities is one of the most important nesting grounds for sea turtles (both species of the green turtle and the loggerhead).

Similar damages have also been imposed upon cultural resources by improper urban and tourism development. Important coastal resorts (such as

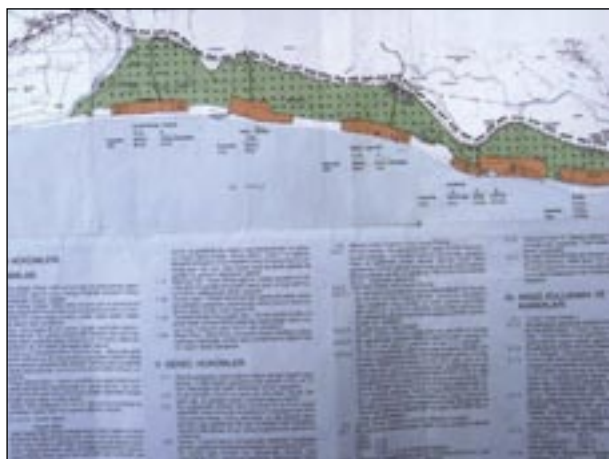


Figure 1.4.10  
A part of the land use plan for the Belek Tourism Development Project



Figure 1.4.11  
A view of the tourism facilities developed to replace the dunes (Photo: E. Ozhan)



Figure 1.4.12  
Amphorae from an ancient shipwreck off the Aegean coast (Photo: Z. Kizilkaya)

Bodrum, Fethiye and Side) have grown upon and around very important historical settlements. It is common to find an ancient amphitheatre in a central part of town, surrounded by houses and tourism facilities such as hotels, restaurants, shops, etc. (e.g. Fethiye and Side). A remarkable example is the presence of a cumulus (an artificial hill – earth mound that was made usually to hide graves of nobel people and their valuables), from an ancient settlement (Physilys) within the boundaries of a coastal area that is leased to a hotel developer in Sarigerme, the southernmost Aegean coast). This cumulus is located just behind the hotel complex shown in Figure (1.4.9).

As was mentioned in Section 1.2.2, the remains of numerous shipwrecks are located along the Turkish coast Figure (1.4.12). Some of these, especially the ones located at sports diving depths (e.g. less than - 25 to - 30 meters) have been raided and damaged by recreational and commercial (sponge) divers especially before 1988, when these sites were awarded protection by a Cabinet decree. The significant increases in the density of yacht traffic over the last decade, especially along the southern Aegean coast, have posed yet another threat to the cultural remains present on the seabed.

#### 1.4.7 Waste

Solid waste is an environmental management issue in Turkey, which has grown significantly in importance since the 1970s due to increases in urbanization, industry and tourism activities. It is estimated that household solid waste generation per capita is 0.6 kg/day and that the average municipal solid waste per capita is approximately 1 kg/day. Thus, the average municipal solid waste generated from residential sources is 68,000 tons per day and 24.8 million tons per year. The most important problem regarding solid waste is that the bulk of municipal solid waste is dumped in uncontrolled rubbish dumps that are insufficiently regulated. While the number of sanitary landfills is increasing in number, especially with the new sites operating in certain large cities and in some tourist regions, the percent of sanitary landfills is still less than 25%. According to 1998 statistics provided by the SIS, landfills are the final disposal method for 21% of the 24.8 million tons of municipal solid waste in Turkey (Ministry of Environment, 2002).

As a response to the advantages of large-scale environmental infrastructures, The Ministry of Tourism has been pushing some neighbouring coastal municipalities to form “infrastructure unions” for the building of and operating of common facilities. This has been one of the goals of the ATAK Projects (See Section 1.3.7). Examples

of these unions are Kemer (Antalya) and the neighbouring municipalities, Cesme & Alacati (Izmir) and Koycegiz, Ortaca and Dalyan (Mugla).

Significant progress has been made in the recovery of solid waste and in recycling in Turkey since the 1990s. The efforts of local governments and of non-governmental organizations (NGOs) have been instrumental in raising public awareness on this issue. A number of projects have been initiated to separately collect paper, plastics and metal and glass components of domestic rubbish. Moreover, recycling plants employing high-level technologies, have been built for all types of recyclable municipal solid waste (Ministry of Environment, 2002).

The manufacturing industry in Turkey generates over 13 million tons of industrial waste annually. Approximately 57% of this amount is not recycled. Approximately 30% of the disposed wastes are taken to municipal dumping grounds and the remainder is disposed of in an uncontrolled and unregulated manner. In this way, close to 5 million tons of industrial waste is discharged into the environment each year.

An estimated 300,000 tons of hazardous waste (corresponding to 1.6 kg. per \$1,000 of GDP) is produced annually. This figure is nearly 10 times less than the OECD average of 15.8 kg generated per \$1,000 of GDP. The management of hazardous wastes (collection, treatment and disposal facilities) is within the remit of metropolitan municipalities. However, only two licensed facilities exist to date: the Harmandali landfill of the Izmir Metropolitan Municipality and the recent incineration facility of the Izmit Metropolitan Municipality. The Harmandali landfill facility has a separate section for medical wastes, but it does not meet regulatory requirements (SPO, 1998).

#### 1.4.8 Noise

Noise is primarily an urban problem. Road traffic is the main source of noise pollution, followed by construction, industries, air and rail traffic and tourism activities. The level of noise that stems from traffic in Istanbul is between 75-80 dBA, a figure which is 10-25 dBA higher than the limits in some countries (SPO, 1998). The so-called "noise walls" erected along highways, with the intention of reducing the noise pollution caused by transportation, are not yet widely used in Turkey.

The Regulations on Noise Control, which define the means for preventing noise at its source and/or in its environment and introduces limits, were enacted in December 1986 in the framework of the Environmental Law. Two other laws, which were

issued in 1990 and 1992, on the other hand, specify the permitted noise levels of new city vehicles as they are registered. (Ministry of Environment, 2002).

The main issues for the management of noise pollution in Turkey are (SPO, 1998):

- Problems with the enforcement of regulations for controlling vehicle noise;
- Scant public awareness of the harmful effects of excessive noise;
- The insufficient capacity of local authorities for identifying and addressing noise pollution problems;
- Poorly planned traffic flows that generate high levels of noise.



## 2. POLICY RESPONSES AND PRACTICES

### 2.1 THE INSTITUTIONAL FRAMEWORK

#### 2.1.1 Coastal legislation

A comprehensive framework law for integrated coastal management is not available in Turkey at the time of writing of this report. Several pieces of legislation in existence, however (laws and by-laws) do address various issues of coastal zone management. The basic features of these legislative documents are described below. The discussion closely follows the material presented in Ozhan (1996). The information is updated to include changes that took place in recent years.

##### Turkish Constitution (9.11.1982)

Article 43 of the Turkish Constitution is devoted to shores and shore strips. This article states: "Shores are under the jurisdiction and responsibility of the State. In benefiting from the sea, lake and river shores, and from shore strips bordering sea and lakeshores, benefit to the public is primarily sought. The widths of shores and shore strips, in relation to purposes of use, possibilities and conditions for people to benefit from these places, are established by law".

##### Shore Law (4.4.1990. Amendment 1.7.1992)

The purpose of this Law is stated (Art 1) as "to set out the principles for protection of the sea, natural and artificial lakes, and river shores, and the shore strips, which are extensions of these places and are under their influence, by paying attention to their natural and cultural characteristics, and for their utilisation towards the public interest, and access for the benefit of society". As it is understood from this statement, the Shore Law is not a comprehensive coastal management law.

The Law gives definitions of the "shoreline" and the "shore". The "shoreline" is defined as: "the line along which water touches the land at the shores of seas, natural or artificial lakes, and rivers, excluding the inundation periods". The "shore" is the area between the shoreline and the "shore edge line", which is defined as "the natural limit of the sand beach, gravel beach, rock, boulder, marsh, wetland and similar areas, which are created by water motions in the direction of land

starting from the shoreline". It is observed that, although the location of the shore edge line is very important for managing development at the shore, its definition is far from clear and precise. The "shore strip" is set to have a minimum of 100 m width horizontally, starting from the "shore edge line", according to the amendment-dated 1.7.1992. These definitions are further described in Figure (2.1.1).

Shore is "open to benefit of all, equally and freely" (Art. 6). It is illegal "to excavate the shore, and to mine sand, gravel etc. at scales which may cause changes at the shore". It is forbidden to dump excavated soil, furnace ballast, debris, or wastes along the shore and the shore strip.

On the shore, subject to a land use planning permit; a) infrastructural and other facilities such as pier, port, harbour, berthing structure, quay, breakwater, bridge, seawall, lighthouse, boat lift, dry berthing and storage facility, salt production plant, fishery installations, treatment plant and pumping station, which aim either shore protection or utilisation of the shore for the public interest; b) buildings and facilities like shipyards, ship dismantling plants, fish farming -mariculture- facilities which can not be located inland due to the nature of the activity; can be built.

Along the first 50 m width of the shore strip (Zone A in Figure (2.1.1)), apart from those which can also be built on the shore as described above, no building of any kind is allowed. This area can only be planned and used "for pedestrian access, walking, relaxing, sightseeing and recreational purposes". On the remaining part of the shore strip (at least 50 m wide), roads, recreational and tourism facilities (other than those which offer boarding) open to public use, and public waste treatment plants can be built, subject to land use planning permit.

Across the shore and the shore strip, building of barriers that hinder free access, such as walls, fences (wooden or wire), ditches, piles, or similar, is prohibited.

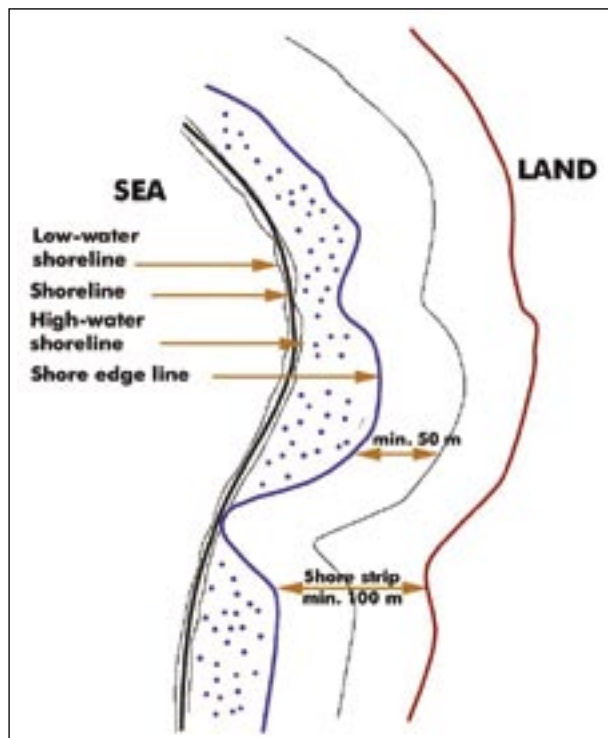


Figure 2.1.1

A sketch depicting a shoreline, a shore edge line, a shore, and a shore strip

The Law describes the procedure for determining the shore edge line for a specific location. Fixing of the shore edge line is a necessary requirement prior to any kind of planning and development along the shore.

The Shore Law outlines the rules and regulations for gaining land through reclamation and drainage. It rules that these activities, subject to a land use planning permit, can be carried out along sea, lake and river shores only in cases where the public interest is served, and under the proviso that sufficient attention and care are given to ecological characteristics. On land areas gained through reclamation and drainage, in addition to the facilities which may be located on the shore as described earlier, technical and social infrastructural facilities such as roads, open car parks, recreational parks, and children's playgrounds can be built.

Responsibility for the enforcement of the Shore Law is given to municipalities within their borders and in their annexed areas, and to the provincial governors in all other localities. The rights of the related ministries relating to the control and enforcement of shore and shore strip areas are to be respected (Art. 13). The final authority for planning in these areas is generally the Ministry of Public Works and Settlements. In coastal areas declared as tourism centres by the Council of Minister's decrees, this authority is transferred to the Ministry of Tourism.

#### Harbours Law (14.4.1923)

Management, cleaning, deepening, enlargement, dredging, placement of buoys, and protection, and all related harbour works are the responsibility of the Government. The government agency, which carries out this responsibility, is the Ministry of Transport.

"Without obtaining an official permit from the harbour master, pier, quay, lift, boat shelter, repair shop, factory, recreational facility, warehouse, shop and public sea baths (this term is probably used to indicate public beaches) cannot be constructed on sea shores; debris, excavation material, ballast, wastes and similar substances can not be dumped in places which are prohibited by the harbour master" (Art. 4). The relevant articles of the Environmental Law superseded this article.

"At places in harbours, specified and restricted by the Government, it is forbidden to drill piles at the sea shore; to occupy sea area by reclamation; to build restaurants, boarding houses, or similar facilities; and to restrict the size of the harbour in any way" (Art. 5).

Diving activities in coastal waters are subject to permits from the harbour master (Art. 6).

Other items covered by the Harbour Law include:

- Removal of shipwrecks and other objects that disrupt the safety of navigation in harbour areas;
- Regulations on ship sheltering and loading and unloading in harbours.

#### The Environmental Law

(9.8.1983, amendments 4.6.1986 and 3.3.1988)

This Law administered by the Ministry of Environment (renamed the Ministry of Environment and Forestry in 2003) covers environmental issues generally. Some of the articles however, have strong implications for the coastal zone. Several by-laws that have been passed under the Environmental Law deal with issues such as air pollution, noise, water quality, solid waste management and environmental impact assessment (EIA), and provide the rules and regulations for environmental management

Art. 8, entitled the "prohibition of pollution", refers to by laws that cover various issues related to pollution of coastal waters. The By laws on "Water Pollution Control" classify lake waters according to their quality (Art. 9), and coastal and seawaters according to their dominant use (Art. 14).

The By laws provide water quality criteria for lake (Art. 10), and seawater (Art. 15). Pollution control measures for lakes (Art. 21) and seas (Art. 23) are outlined. The discharge of oil and oil products, including ballast water, into bodies of water is banned (Art. 24). Obligations and remedial measures to be taken at the time of an accidental oil spill are described. Rules and regulations concerning wastewater discharge into coastal waters are given in Art. 26 & 27. Quality standards for wastewater from municipalities (Art. 32) and from various industries (Art. 31) that can be discharged into water bodies are provided. Procedures and criteria for discharging sewage into sea environment by sea outfalls are outlined in detail (Art. 33-42). The authority issuing permits for sea outfalls is named as the metropolitan municipalities within their borders, and the most senior local governors elsewhere. For the issue of such permits, the opinion of the Provincial Bank (the Ministry of Public Works and Settlements), and the approval of the Ministry of Environment must be sought. The Ministry of Environment is authorised to implement the necessary controls in enforcing the rules and regulations on water quality. Local governors, the Ministry of Health and Social Security, metropolitan municipalities and municipalities, and harbour masters are acknowledged to have the authority for carrying out controls on their part, as they are authorised by earlier legislation.

For the purpose of establishing the necessary set up for securing the transfer the natural beauty of areas which have ecological significance at national and international levels and which are sensitive to degradation, to future generations, the Council of Ministers is authorised to identify and declare "Specially Protected Areas", to determine the principles of protection and utilisation within these areas, and to decide which ministry is going to prepare and implement the plans and projects (Art. 9).

"Organisations, companies and establishments that may cause environmental problems through activities which they plan to carry out, are required to prepare an environmental impact assessment report" (Art. 10). The EIA By laws (passed on 7.2.1993 for the first time, and revised twice on 23.6.1997 and 6.6.2002) provide the list of projects for which environmental impact assessment reports are required, outline the contents of the report, and describe the authority and procedure for their approval.

The Environmental Law sets fines for ships that violate anti-pollution regulations (Art. 22). The metropolitan municipalities are authorised to collect these fines within their borders (in seas, lakes and rivers). They keep 20% of the fines for

themselves, and transfer 80% to the Anti-pollution Fund, which is administered by the Ministry of Environment. In sea areas beyond the borders of the metropolitan municipalities, the commander of the Coastal Security boat is authorised to issue and collect fines from ships which cause pollution. The authority of local governors to issue fines to those polluting seas, harbours, lakes and rivers in areas outside the borders of the metropolitan municipalities, is reserved.

#### The Fisheries Law

(22.3.1971, Amendments 15.5.1986)

The scope of this law is the "protection, exploitation, production and control of living resources" (Art. 1). The responsible government unit is the Ministry of Agriculture & Rural Affairs.

The Law provides detailed rules and regulations on the exploitation of living resources and the establishment of fisheries and mariculture facilities. It endeavours to protect production and exploitation areas by specifying that the opinion of the Ministry of Agriculture & Rural Affairs is sought as a prerequisite before any kind of activity is executed which may have a negative impact on the production and exploitation of living resources in certain areas.

The Law states (Art. 13) that production ponds for commercial mariculture can be operated in sea areas (rented from the Ministry of Finance for up to 30 years) subject to the approval of the project by The Ministry of Agriculture & Rural Affairs. The issuing of the permit is based on considerations of health, economy and navigation, as well as the technical and scientific aspects of the project. The opinion of The Ministry of Transport needs to be sought concerning the impact of the project on navigation.

The Law prohibits the dumping of substances into inland waters and into the production areas in seas and their neighbouring areas, which may cause harm to living resources, or to people who catch or consume them, or to the vehicles, gears and tools that are used to catch them. The list of substances prohibited from being dumped is given in the By laws, which also provides comprehensive and rather strict water quality criteria for areas, which are important during the life cycles of living resources.

Bottom trawling is prohibited in inland waters, in the Sea of Marmara, and along the Bosphorous and Dardanelle Straits. It is allowed in territorial waters, subject to rules and regulations outlined in the By laws (Art. 24).

### National Parks Law (9.8.1983)

The purpose of this Law is specified as the “identification of areas which possess values of national and international importance, as national park, nature park, nature monument, and nature protection area, and the protection, enhancement and management of these areas without degrading their values and characteristics” (Art. 1).

National parks are declared by a decree of the Council of Ministers, following a proposal of the Ministry of Forestry (renamed the Ministry of Environment and Forestry in 2003), which is supported by earlier reports from the Ministries of National Defence, Public Works and Settlements, Culture, and Tourism, and other ministries if deemed necessary (Art. 3).

The Ministry of Environment and Forestry is responsible for the management of the areas covered by this Law. If these areas are included within the borders of a “tourism region, area or centre”, also declared by a decree of the Council of Ministers according to the Tourism Incentives Law, planning decisions for tourism investments are finalised after obtaining the consent of the Ministry of Environment and Forestry (Art. 4). Furthermore, in historical and archaeological sites included in areas covered by this Law, excavation, restoration and scientific investigation activities require a permit from the Ministry of Tourism and Culture.

The Law specifies forestry wardens as the people responsible for protection services in areas covered by this Law and for addressing violations (Art. 16).

### Law on the Protection of Cultural and Natural Wealth (21.7.1983)

The purpose of this Law is described as “to establish definitions for mobile and immobile cultural and natural wealth which needs protection, to regulate processes and activities to be carried out, to identify the institution and its duties, which will decide on principles and practices needed in this respect” (Art. 1).

Cultural wealth is defined as “all mobile and immobile wealth, on land, below land or water, which reflects science, culture, religion and fine arts of historical periods”. On the other hand the natural wealth is defined as “values on land, below land or water, which belong to geological, prehistoric or historical periods, and which need to be protected because of their scarcity or their values and attractions”.

Finally, “site”, is defined as “being products of the civilisations from prehistoric periods to the present, city and city ruins which reflect social,

economic, architectural and other characteristics of their periods; places where important historical activities were staged; and areas which need to be protected on the basis of their established nature characteristics” (Art. 3). Furthermore, “historical caves, rock shelters, special trees and forests, and the like” are mentioned as examples of immobile natural wealth (Art. 6).

The Law authorises “regional councils”, which are set up through appointment by the Ministry of Culture (renamed the Ministry of Tourism and Culture in 2003), to identify the areas to be protected, and to decide whether it is permissible to build in these areas or not. The By laws outline the principles to be followed in these respects (Art. 8 and 57). The authority for the enforcement of this Law is the Ministry of Tourism and Culture (Art. 10).

This Law places more emphasis on cultural sites and wealth. The definitions of natural sites and wealth are unclear and incomplete. Some coastal areas have been designated as “natural sites” according to this Law, and many areas as “historical sites”. These areas are identified on maps, and restrictions for development are enforced.

### Council of Ministers’ Decree for the Establishment of an Agency for Specially Protected Areas (19.10.1989)

This Decree aims to set up an Agency for Specially Protected Areas, which has duties and responsibilities “in specially protected areas already declared or yet to be declared, to take all kinds of measures to solve environmental problems and to protect environmental wealth, to establish principles of protection and utilisation in these areas, to prepare land use plans, to revise and approve plans of all scales and planning decisions” (Art. 1). The Agency was initially set up under the Prime Minister’s Office. It was transferred to the auspices of the Ministry of Environment (renamed the Ministry of Environment and Forestry in 2003) after its formation in August 1991.

The central organisation of the Agency, which is located in Ankara, has two major departments. These are the Department of Planning and Project Implementation, and The Department of Environmental Protection, Research and Investigation (Art. 11). The Agency can establish field offices (Art. 5). To date, two such offices have been set up, the first in Koycegiz and the second in Silifke.

Currently, thirteen specially protected areas exist, nine of which are located in the coastal zone (Figure 1.2.9). The first three SPAs (Fethiye-Göcek, Koycegiz, and Gökova) were declared in July

1988. These were followed by Goksu, Kekova, and Patara in March 1990, and by Belek, the Datca Peninsula, and Foca in November 1990. Some of these SPAs are significantly large areas including a number of settlements and municipalities within their borders.

#### The Bosphorous Law (18.11.1983)

This is a type of “Special Area Management Law” which aims: “by considering public benefit, to protect and enhance the natural beauty, cultural and historical wealth of the Bosphorous area of Istanbul, and to identify and enforce settlement rules and regulations in order to limit constructions which increase population density in this area” (Art. 1).

The Law is a rather comprehensive management effort for the coastal zone and background areas of the Bosphorous. The Law covers; planning and control of land use, regulations on buildings and constructions, the restoration of cultural and natural sites, the exclusion of industrial settlements, the protection of forests and green areas, etc. (Art. 3). Some other important coastal zone management issues, however, that are specific to the Bosphorous area such as navigation, fisheries, water pollution and waste management in general are not addressed. The Law employs the multiple zoning principle of management (Figure 2.1.2).

The Law establishes an institutional set up for integrated management as far as the issues addressed by the Law are concerned. However, the system has not really been used since it was demolished soon after it was set up, by an amendment made to the Bosphorous Law, which was included in the Settlement Law, accepted on 3.5.1985.

In the institutional system of the original law, there is an interministerial council, named as the “Bosphorous Supreme C-ordination Council for Land Use and Development”. This Council, which is chaired by the Prime Minister, or by a representing State Minister or the Deputy Prime Minister, includes the Ministers of Public Works & Settlement, National Defence, Finance, Domestic Affairs, Health & Social Security, Transportation, Forestry, Agriculture & Rural Affairs, Culture, Tourism, Industry, and Energy & Natural Resources. The Supreme Coordination Council meets at least twice a year. The Secretariat of the Council is handled by The Ministry of Public Works & Settlements (Art. 7).

“The Bosphorous Executive Council for Land Use and Development”, chaired by the Governor of Istanbul, has 12 members including the Mayor of Metropolitan Istanbul, and heads of various

governmental departments in Istanbul. The Executive Council is required to meet at least twice a month.

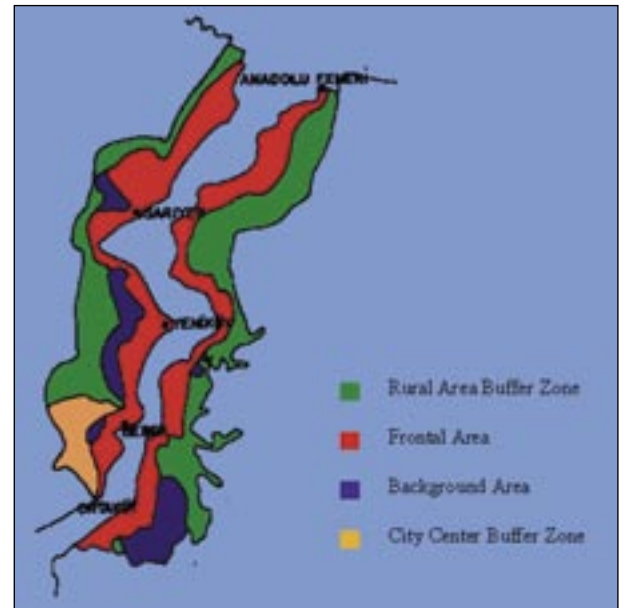


Figure 2.1.2  
Multiple zoning of the area covered by the Bosphorous Law

The Department of Bosphorous Land Use and Development was created within the Metropolitan Municipality of Istanbul. The planning, implementation, control and protection duties are carried out by this department.

According to the amendment included in the Settlement Law (Art. 46), both of the above councils were demolished. The implementation of the Bosphorous Law in the Bosphorous coastal strip was given to the authority of the Mayor of the Metropolitan City of Istanbul, and that in the peripheral areas was left to the respective district municipalities. This has proved a most unfortunate mistake, since the management of the Bosphorous areas as foreseen by the Bosphorous Law could have provided a wealth of experience in the integrated management of the other coastal areas as well.

#### The Coastal Security Force Law (9.7.1982)

This Law establishes a specialised unit in the framework of the armed forces, responsible to the Ministry of Domestic Affairs, for the handling of various matters of coastal security and protection. These include border patrol, measures against smuggling in general and the smuggling of cultural and historical wealth, the enforcement of the Fisheries Law, the safety of navigation and sea operations, the supervision of diving activities, and the pollution caused by marine and air artefacts and by sea facilities, etc. (Art. 4).

### The Settlements Law (3.5.1985)

The Settlements Law outlines the rules and regulations pertaining to the development of urban areas, as well as new settlements, and residential development in rural and urban areas. The Law defines several levels of planning, including the “environmental profile plan” on the scale of 1/25000, framework land-use plan on the usual scale of 1/5000, and the detail (application) land use plan on the scale of 1/1000. The Law describes the process of development of these plans and their approval procedure. The law is not specific to the coastal zone, but has a general application. It is administered by Ministry of Reconstruction and Settlements. Further information about the land use plans described by the law is provided in Section 2.2.1.

### The Tourism Incentives Law (12.3.1982)

This law was enacted to promote, guide and regulate the development of the tourism sector in Turkey, which has proliferated along the coastal areas. According to the Law, “tourism regions”, “tourism areas”, and “tourism centres” are declared by a decree of the Council of Ministers. Tourism areas are defined as, “areas inside or outside the tourism regions, where cultural and natural wealth is concentrated, the location and boundaries are decided and declared by a decree of the Council of Ministers, following the proposal of the Ministry” (of Tourism) (Art. 3).

In tourism areas and centres, land and forests belonging to the State (to the Treasury) are put at the disposal of The Ministry of Tourism (renamed the Ministry of Tourism and Culture in 2003). Privately owned land in these areas can be taken over by the Ministry through expropriation (Art. 8). No appeal may be brought to the court against such a decision. The Ministry allocates and leases these areas to potential developers of tourism facilities (Art. 8).

In addition to the planning, guiding, and controlling of tourism development, the Law outlines rules and regulations governing foreign-flag yachts, navigation in Turkish coastal waters and wintering in Turkey (Art. 28).

This Law provided numerous significant incentives to developers including the lease of land for 49 years, low interest loans, tax exemptions, provision of the infrastructural facilities, etc. It resulted in a boom in investments in tourism development projects (mainly in the coastal zone) during the mid and second half of the 1980s.

### The Forestry Law

(31.8.1956; Amendments, 23.9.1983)

This Law, under the title of “National Parks”, enforces the establishment of protected areas, through the article: “Forests and areas which are classified in the forest regime may be declared, developed, and managed as national parks, nature parks, nature monuments, nature protection areas, and forest recreational areas for the purposes of promoting scientific uses, protecting the nature, contributing to the natural beauty of the country, satisfying the sport and recreational needs of the public, and supporting tourism” (Art. 25, Amend. 23.9.1983). Furthermore, the management of coastal forests is carried out by the Ministry of Forestry (renamed the Ministry of Environment and Forestry in 2003), according to rules and regulations set forth by this Law, in the same way as the inland forests.

### Summary of coast-related legislation

Table 2.1.1 summarises the Turkish legislation that contributes to the legal framework for coastal management and the public authorities that are responsible for the enforcement of each pieces of legislation. The sectoral nature of the existing governance system is apparent from the information given in this table. In 2003, no legal arrangements exist for horizontal or vertical integration in the decision making process.

### **2.1.2 Existing strategies and policies for ICAM**

In this section, various developments which took place in the late ‘80s and in the ‘90s for improving coastal zone management practices in Turkey and for introducing the “integrated” approach are discussed.

#### a. Academic work and CZM projects

A relatively early effort in Turkey relating to coastal zone management is a report sponsored by the Priority Actions Programme (PAP) of UNEP-MAP (Gunay, 1985). A follow-up report on the same theme was presented at the 14th session of the United Nations Economic Commission for Europe in Portugal (Gunay, 1987). In the period between 1988-89, Izmir Bay was studied by UNEP-MAP PAP Regional Activity Centre (Split, Croatia) as one of the four country pilot projects (Jeftic, 1993). The emphasis of this effort was on the pollution and water quality management of Izmir Bay. The Sixth Ordinary Meeting of the MAP Contracting Parties (October 1989) decided to continue the four country pilot projects from a broader perspective of coastal management, and renamed the Priority Actions Programme as the

Main public authority in charge	Related legislation
Ministry of Reconstruction and Settlements	Shore Law Settlements Law
The Prime Minister's Office, Under Secretariat for Maritime Affairs	Harbours Law
Ministry of Transportation	Harbours Law
Ministry of Environment (Ministry of Environment and Forestry)	Environment Law The Ministerial Decree for SPAs
Ministry of Agriculture	Fisheries Law
Ministry of Forestry (Ministry of Environment and Forestry)	National Parks Law Forest Law
Ministry of Domestic Affairs	Coastal Security Force Law Municipal Law
Ministry of Culture (Ministry of Tourism and Culture)	Law for the Conservation of Cultural and Natural Wealth
Municipalities	Municipal Law
Ministry of Tourism (Ministry of Tourism and Culture)	Tourism Incentives Law

Table 2.1.1

Main public authorities and legislation related to coastal zone management

Coastal Areas Management Programme (CAMP). The study, entitled "Integrated Management Study for the Area of Izmir" was carried out by a team of Turkish and UNEP-MAP PAP experts during 1991-1993, and was largely concluded by the presentation and discussion of the draft report to an invited audience in September 1993 (UNEP, 1994). A brief description of this project is provided in Section 2.3.2

About the same time as the start of the second phase of the Izmir Bay study, a conference was held in April 1991 at Cesme (Izmir), through USIS sponsorship, on the theme of "Coastal Zone Management in Turkey". The meeting was very well attended by the representatives of relevant state departments, academia, private sector, NGOs, and prominent conservationists. In 1990, another internationally funded project, with the same title (Coastal Zone Management in Turkey), was launched by a grant from the World Bank's METAP Programme to the Turkish Government (The Under Secretariat of the Environment). A report was published in May 1991 (Marzin et.al, 1991), and the recommendations of this report were discussed by a group of invited participants in a workshop held in Kalkan (Antalya) during 5-7 July 1991 (Anonymous, 1991).

In the course of this period, OECD was also involved in a country review of a number of environmental issues in Turkey, including coastal zone management. Their approach included: a) the preparation of a "background report" by the Turkish authorities (under the coordination of the Ministry of State for the Environment), b) a fact-finding mission by OECD experts to Turkey, and c) the preparation and publication of the report by the OECD (OECD, 1992).

All of these studies were conducted more or less independently of each other, although the Under Secretariat for the Environment (the Ministry of State for the Environment) was involved in all of them as the government agency responsible. Unfortunately, neither a specific demonstration pilot project nor a noticeable change in the management approach followed any of the above studies. However, they partially contributed to an enhanced awareness of the government agencies working on present coastal problems and to the understanding of the integrated management approach. Consequently, they contributed to various follow-up developments. Some of these, which are judged to be significant, are described in the following part of the present section.

Two more recent examples of the CZM studies are: 1) the "Bodrum Peninsula Coastal Zone Management Project" KAY, 1995), carried out by the Middle East Technical University with the support of two local environmental NGOs and with contributions from two speciality NGOs from Ankara (under the umbrella of Turkish National Committee on Coastal Zone Management), through a grant of the GEF NGO Small-Grants Programme; and 2) "Mersin Coastal Zone Integrated Planning Project", which was conducted by a private company through a contract by the Ministry of Environment which uses a World Bank METAP grant for this study (Kentkur, 1966).

#### b. The Turkish National Committee on Coastal Zone Management (KAY)

The National Committee, which is a national network with international connections, is legally set up under the framework of the Higher Education Law. The efforts for establishing it were



Figure 2.1.3

Proceedings of the 1st and 2nd National Conferences on the Coastal and Marine Areas of Turkey

started in the second half of 1990, and concluded on 18 January 1993.

The Committee is administered from the Middle East Technical University (METU, Ankara). The Committee's Executive Board initially comprised 11 members. These were distributed among the following parties: Middle East Technical University (1), ministries and other state agencies (5), coastal province municipalities (1), universities (1), the private sector (1), non governmental organisations (1), and individuals (1). The President of the Committee and the Chairman of the Executive Board is the representative of the Middle East Technical University. In 2003, the by-laws of the national committee were amended and the composition of the Executive Board was changed to 7 members without any allocation apart from the representation of the METU where the secretariat of the national committee is located.

The goals of the National Committee are stated in its by-laws as follows:

- To support the efforts towards the conservation of and benefits from the nation's coastal areas by balancing the needs of the various uses.
- To provide a medium for information exchange and cooperation between public agencies, universities, municipalities, NGOs, and the private sector, operating in or conducting research on the coastal zone.
- To contribute to the development of scientific

research projects aiming towards the rational use of the coastal areas and their conservation; to sponsor and participate in these projects, to organise scientific meetings and to publish related topics.

- To establish a centre to store data and information useful for coastal zone management, with an emphasis on national needs, and to provide these to users under certain arrangements.
- To define, investigate and monitor the problems of coastal uses that are present in the country now, or that will appear in the future; to contribute to the efforts towards solution of these problems, and to support and sponsor these efforts.
- To follow developments in other countries concerning guidelines, rules, laws, and strategies on the management of coastal areas, to inform related public agencies about these developments; to develop and propose rules and regulations for coastal zone management in the country and to contribute to the development of legislation and institutional arrangements, and of coastal planning decisions in accordance with international norms and standards.
- To cooperate with international organisations (such as MEDCOAST, EUCC, EUROCOAST, ICO, UNEP-MAP, PIANC, IUCN, WWF, etc.) which are established with similar objectives; to ensure a member from Turkey, and to represent Turkey in these organisations; to participate in

- programmes and projects carried out by these organisations and to represent them in Turkey.
- h. To contribute to the development of national short-term or long-term educational programmes on coastal zone management.
  - i. To ensure and disseminate research and pilot projects, and educational programmes on the sustainable use of coastal areas; to provide student exchange programmes.
  - j. To conduct and sponsor programmes nurturing environmental education and awareness in children, youth and the public in general, on the protection of and rational use of coastal zones.

The Turkish National Committee on Coastal Zone Management (KAY) has contributed to the development of coastal policies in Turkey, by providing expert opinions on various coast-related developments, by publishing a newsletter, and by organising a national conference series entitled "The National Conference on Coastal and Marine Areas of Turkey – The Turkish Coast". This conference has already been organised four times, in 1997, 1998, 2001 and 2002. Apart from regularly bringing together the stakeholders for coastal management in Turkey, the "Turkish Coast" conference series has produced proceedings that provide the most extensive source of information on coastal and marine issues, science and engineering and coastal management efforts in Turkey (Figure 2.1.3). The next conference is scheduled for May 2004. It is intended to continue with the national conference series bi-annually in the future, in even years alternating with the international MEDCOAST conference series.

Furthermore, the national committee has been a lead organisation in the international MEDCOAST initiative, by acting as a co-organiser of the First International Conference on the Mediterranean Coastal Environment, MEDCOAST 93, 2-5 November 1993, Antalya, Turkey; and by being a member of the EU Med-Campus programme network (Network MEDCOAST) since its initiation, which offers training programmes on various coastal zone management issues specific to Mediterranean and Black Sea conditions.

#### c. National monk seal and sea turtle committees

An ad hoc committee was formed in January 1991 under the leadership of the Ministry of Environment for the purpose of coordinating national efforts for protection of the highly endangered mammal, the Mediterranean Monk Seal. Another committee for the sea turtles followed soon after. These committees include state departments (Ministries), universities, environmental NGOs, and expert individuals. The composition of the National Monk Sea Committee is given in Table 2.1.2.

<ul style="list-style-type: none"> <li>• Ministry of Environment, The Authority for the Specially Protected Areas</li> <li>• Ministry of Environment, EIA and Planning Department</li> <li>• Ministry of Environment, Department of Nature Conservation</li> <li>• Prime Minister Under Secretariat for Planning</li> <li>• Prime Minister Under Secretariat for Navigation (General Directorate of Marine Transportation)</li> <li>• Ministry of Agriculture and Rural Affairs (General Directorate of Protection Control)</li> <li>• Ministry of Agriculture and Rural Affairs</li> <li>• Ministry of Forestry (General Directorate for Natural Parks and Hunting and Wildlife)</li> <li>• Ministry of Reconstruction and Resettlement (General Directorate of Technical Research and Application)</li> <li>• Ministry of Tourism</li> <li>• Ministry of Culture</li> <li>• Ministry of Finance</li> <li>• Ministry of Transportation</li> <li>• Turkish Navy, Department of Navigation, Hydrography and Oceanography</li> </ul>
<ul style="list-style-type: none"> <li>• Governorate of Izmir Province</li> <li>• Governorate of Mugla Province</li> <li>• Governorate of Icel Province</li> </ul>
<ul style="list-style-type: none"> <li>» Foca Municipality</li> <li>» Yalikavak Municipality</li> </ul>
<ul style="list-style-type: none"> <li>&gt; Istanbul University, Faculty of Fisheries</li> <li>&gt; Ege University, Faculty of Fisheries</li> <li>&gt; Dokuz Eylul University, Institute of Marine Sciences and Technology</li> <li>&gt; Middle East Technical University, Institute of Marine Sciences</li> <li>&gt; Bodrum Fisheries Research Institute</li> </ul>
<ul style="list-style-type: none"> <li>- Turkish National Community on Coastal Zone Management</li> <li>- Fishermen's Representative</li> <li>- The Turkish Association for the Conservation of Nature</li> <li>- Association for the Conservation of Wildlife</li> <li>- The Administrator of the WWF Foca Pilot Project</li> <li>- The Underwater Research Association</li> </ul>

Table 2.1.2

Representatives on the Mediterranean Monk Seal National Committee

The committees neither have a legal basis nor any enforcement powers. Their decisions serve only as advisory guidelines. The most important achievement of the committee has been the banning of recreational diving activities around monk seal caves, through an agreement by The Ministry of Agriculture & Rural Affairs to include this prohibition in the Fisheries Circular since 1991.



Figure 2.1.4  
The eighty-one provinces of Turkey in 2003

#### d. The ad hoc council and the working group set up by the Prime Minister's Office

For integration of coastal zone management efforts, two ad hoc bodies were formed by the Prime Minister's Office in the mid '90s. The first of these was an Inter-ministerial Executive Council, headed by a Senior Adviser to the Prime Minister. When it was set up on 11/7/1994, the members of the council were named as the deputy undersecretaries (or higher ranking officials) representing the Ministries of National Defence, Domestic Affairs, Foreign Affairs, Health, Tourism, and Environment, and the Under Secretariat of Customs. By a decree dated 15/3/1995, the Council was expanded to include the representatives of the Ministries of Public Works & Settlements, and Agriculture & Rural Affairs. In addition to the Executive Council, an Advisory Council, including 10 individuals, some well known for their seamanship and others representing marine industry and trade, was set up. The goal of the Council was indicated as the "coordination of the efforts by the state agencies and the Prime Ministry, on investigation, research and human capacity building, in the fields of coastal and sea pollution, sea related problems in general and their solutions, yacht tourism, problems of marinas, custom regulations at sea ports, and sea related issues of the armed forces". The office of the Senior Adviser was located in the Prime Minister's Office.

The second was a Working Group, set up under the Prime Minister's Office by a decree dated 23/1/1995, that included six members representing the Prime Minister's Office (an adviser who chairs the group), Ministries of Public Works & Settlements, Culture, Tourism, and the Environment. The last member was a freelance planner. The main remit of the Group was mentioned as "to do work

concerning the implementation of the Nation's Shore Law and the Settlements Law".

Both committees were unfortunately short-lived and dissolved in the wake of governmental changes in that period without producing any significant results and a tradition for "integrated coastal management".

#### **2.1.3. Existing institutions and responsibilities**

The Republic of Turkey, since her establishment in 1923, has had a strong central government. The governance of the country has been through several ministries (22 in total in 2003 – seven State Ministries and 15 special function ministries - not counting the Prime Minister's Office), each having a number of General Directorates (see <http://www.basbakanlik.gov.tr/>). These are all located in the capital City of Ankara, some also having offices in the provincial capital cities. In addition to the State Planning Organisation and the Prime Minister's Office, the Turkish ministries, which are strongly involved with activities in the coastal zone, are the Ministries of Public Works & Settlements, Tourism, Agriculture & Rural Affairs, the Environment, Industry, Transportation, Forestry, Finance, National Defence, and Domestic Affairs.

The Turkish economy has been of a mixed type (private and state), the state sector traditionally embracing industries such as iron & steel, sugar, cement, alcohol and products, mining, dairy products, meat & fish processing, glassware, etc.; and services including education, health, mail and telecommunication, transport, and banking. This situation has been changing since several state-owned industrial establishments have been (or will be) privatised since the late 1980s.



Figure 2.1.5  
Flow chart describing the institutional set-up in  
Turkey for coastal management

The country is divided into provinces (81 in 2003, Figure 2.1.4) and each province is administered by a “Governor” (Vali) who is appointed by the central government, and sits in the provincial capital. There are offices of several ministries in the provincial capitals, and smaller representations in other towns of the provinces. All of these offices in a province, which function as extensions of the central government to locally serve the area (the provinces) report to the governor. Other somewhat bigger towns in a province may have a sub-governor (Kaymakam) who serves as the supreme authority within the borders of that town on behalf of the central government, reporting to the governor of the province.

Each town in Turkey with a population of over 2,000 people may have a municipal structure, including a mayor, a municipal council, and various offices. The municipal authority is empowered to carry out a number of functions that are highly significant for coastal zone management. These include detailed town planning, infrastructural works and waste management, and water quality control. It is important to point out that the top municipal officers (mayor and the members of the municipal council) are all elected by the residents of the towns, and not appointed by the central

government, although the central government (through The Ministry of Domestic Affairs) acts as the supervisory authority ensuring that municipal practices abide by national laws.

The institutional system in Turkey is described in the flow chart given in Figure (2.1.5).

Discussions aiming towards a major overhaul in the structure of public administration (referred to as a “reform”), aiming at significant decentralisation, are in progress. A draft law (called “Public Administration Law”) has been prepared following a lengthy preparation process extending over three to four years. The new law leaves a good part of governance that has traditionally been practised by the central government in Ankara to local administrations (administrative areas and municipalities). This decentralisation will no doubt prove a milestone in the improvement of coastal management in Turkey. The draft law brings in a new institution called the “Regional Development Agency”. The nationwide public service policies, planning and implementation, defence, justice, national security, intelligence, foreign relations, finance, treasury, communications and transportation, social security, religious services, school curricula and energy continue to be under the responsibility of

central government. All activities in the remaining sectors are transferred to the local administrations. Various means and mechanisms are brought in to provide funding for the activities and programmes of local administrations.

#### 2.1.4 Planning institutions and instruments

The planning efforts at the national level for economic development, including the sectors that are significant in the utilisation of the coastal area such as fisheries, tourism, transportation and navigation, agriculture, forestry and environment, date back to 1965. Since that year, the development policies, strategies and target growth levels for the studied period in the various economic sectors have been reviewed and updated for a period of five years. The practice of five-year development plans, which is moderated by the Prime Minister's Office, is the State Planning Organisation with the support and involvement of almost all relevant governmental departments, representatives of academic and professional communities, developers and NGOs, has experienced a deterioration in its quality, strength and effectiveness in recent years. Eight planning periods and two one-year programmes, the annual economic growth rates targeted by the development plan for each period (and year), and the actual growth rates are given in Table 2.1.3. The types of plans (land use and other) used in Turkey are described in Figure (2.1.6). In addition to the 5-year National Development Plan just outlined, the higher level plans include regional and sub-regional development plans and nationwide sectoral development plans (described in Section 2.2.2). The Environmental Profile Plan and two basic land use plans are described in Section 2.2.1.

The types of plans are given also in Table 2.1.4 together with their legal basis and the responsible institution, which clearly shows the fragmentation of the planning efforts in the country.

The land use plans involve the Ministries of Reconstruction and Settlements and of Tourism together with the local administrations (municipalities and governorates). In the specially protected areas that include human settlements, the Ministry of Environment (the Agency for the Specially Protected Areas) is the planning authority. The South-Eastern Anatolia Project (SAP) Regional Development Administration is responsible for planning in the SAP Region. The Ministry of Culture has control over land use plans for settlements next to the sites protected due to their cultural and historical significance.

In addition to the land use plans, various other types of planning activities exist in Turkey. These include the management plans of the Ministry of Forestry in national parks and in other forest areas, and of the Ministry of Environment (Agency for SPAs) in specially protected areas. Furthermore, the nationwide planning of major infrastructures, such as highways, railways, airports, harbours, dams and irrigation canals, power transmission lines etc is carried out by the relevant authorities under the auspices of several different ministries. Sectoral developments plans are another significant planning effort in Turkey. Important examples of this type of planning include tourism, ports (maritime transportation), marinas and fisheries (Section 2.2.2)

5-YEAR PLANS	Annual growth rate targeted	Actual annual growth rate	Actual/target (%)
1. Plan (1963-67)	7.0	6.6	94.2
2. Plan (1968-72)	7.0	6.3	90.0
3. Plan (1973-77)	7.9	5.2	65.8
1978 Programme	6.1	1.2	19.7
4. Plan (1979-83)	8.0	1.7	21.3
1984 Programme	6.1	7.1	116.4
5. Plan (1985-89)	6.3	4.7	74.6
6. Plan (1990-94)	7.0	3.5	50.0
1995 Programme	4.4	8.0	181.8
7. Plan (1996-2000)	5.5-7.1	3.8	69.1*
8. Plan (2001-2005)	6.5	1.8**	27.7
* The target rate of 5.5% is used.			
** The growth rate for 2003 and 2004 is held to be 5% and the average value is calculated over four years.			

Table 2.1.3  
Five-year development plans

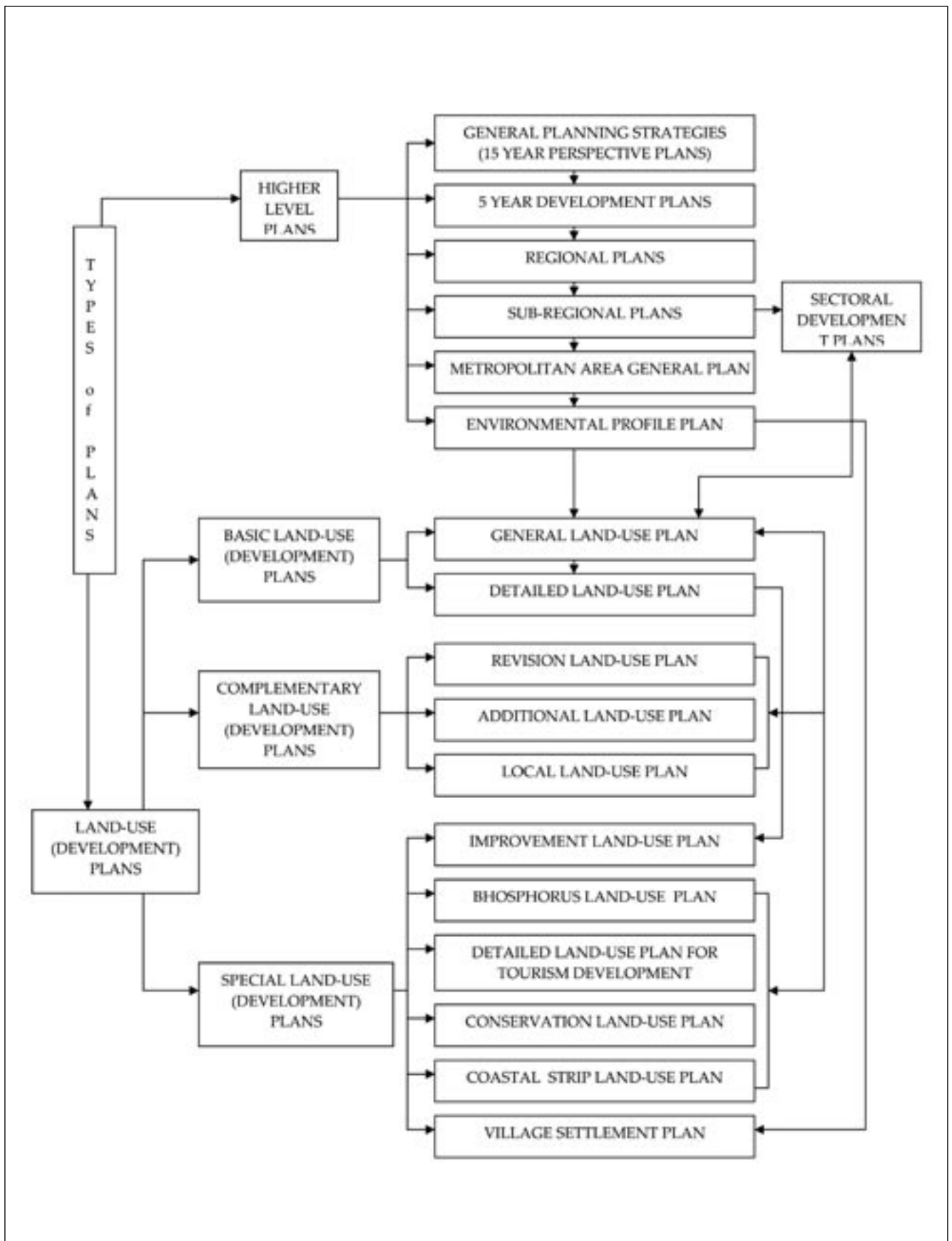


Figure 2.1.6  
The types of plans (land use and other) used in  
Turkey (SPO, 2001b)

Plan Type/Level	Responsible Public Institution	Legal Basis
Regional Plans	State Planning Organisation (SPO)	SPO Establishment Law (1960) Settlements Law (1985-3194)
Environmental Profile Plan Scale: 1/100 000, 1/50 000, 1/25 000	Min. of Settlements and Reconstruction Min. of Environment	Settlements Law (1985-3194) Decree of the Cabinet for Establishment and Responsibilities of the Min. of Environment (1990-443)
Framework Land use Plan Scale: 1/50 000 - 1/25 000 - 1/5 000	Agency for Specially Protected Areas Municipalities or Metropolitan Municipalities within municipal borders and in annexed areas, Governorates in other areas Min. of Tourism in Tourism Areas and Centres Agency for Specially Protected Areas in SPAs South- eastern Anatolia Project (SAP) Regional Development Administration in the SAP Region	Decree of the Cabinet (1989) Settlements Law (1985-1994), Metropolitan Municipalities Establishment and Administration Law (1984-3030) Tourism Incentives Law (1982-2634) Decree of the Cabinet (1989)
Detailed (Application) Land use Plan, Scale: 1/1 000	Municipalities or Metropolitan Municipalities within municipal borders and in annexed areas, Governorates in other areas Min. of Tourism in Tourism Areas and Centres Agency for Specially Protected Areas in SPAs Protection Councils for Cultural and Natural Assets – Min. of Culture in Designated Archaeological and Natural Sites	Settlements Law (1985-1994), Metropolitan Municipalities Establishment and Administration Law (1984-3030)) Tourism Incentives Law (1982-2634) Decree of the Council of Ministers (1989) Law for Protection of Cultural and Natural Assets (1983-2863)
Special Use and Management Plans	National Parks General Directorate in National Parks Forest Management Plans – Min. of Forestry Min. of Environment, Agency for SPAs in Specially Protected Areas.	National Parks Law (1983) Forestry Law Decree of the Council of Ministers (1989)
Determination of the Shore Edge Line, Permit for reclamation of marine areas, construction of harbours, piers, etc.	Min. of Settlements and Reconst. Governorates, Under Secretariat for Maritime Affairs	Shore Law (1990-3621), Decree of the Cabinet for Establishment of Under Secretariat for Maritime Affairs (Decree no 491)
Regional Infrastructural Facilities	General Directorate for the Construction of Harbours, Railways and Airports General Directorate for Highways Turkish Electricity Production and Transmission Inc. (TEDAS A.S.) Turkish Pipeline Transport Inc. (BOTAS)	Shore Law (1990-3621), Law for Establishment of Min. of Transport Law for Establishment of General Directorate for Highways Decree of the Cabinet for TEDAS (1993-4789)
Plans for Dams and Irrigation Systems	State Water Works General Directorate (DSI)	Law No 6200 for establishment of State Water Works General Directorate (DSI)
Other Plans Related to Environment, Clean Air Plans, Plans for State of Emergency and Instant Action	Administrative areas	By-law for Protection of Air Quality (Art. 52) – Environmental Law

Table 2.1.4

Types of plan, their legal basis and the public institutions responsible  
(Modified and translated from the Turkish original, by Sonmez, 2002)

## 2.2 COASTAL MANAGEMENT IN PRACTICE

Several of the development and environmental management tools are closely related to coastal area management. On the other hand, there exist a number of instruments, like the Shore Law and Union of Coastal Municipalities located around bays, which aim to contribute directly to coastal management (Ozhan, 2001). Instruments used for coastal management in Turkey are:

- a. Nationwide development plans: This instrument was described in the previous section.
- b. Sectoral development plans: The countrywide development of several coastal and marine sectors has been carried out in Turkey according to sectoral development plans. These are described in Section 2.2.2.
- c. Land use plans: This most widely used instrument in coastal management is also probably one of the most important in Turkey as discussed in Section 2.2.1.
- d. Specially managed areas: Coastal areas that are bestowed with special protection status such as the SPAs, national parks, cultural sites, drainage areas around fresh water resources, etc. are managed at higher levels than ordinary coastal areas. This has been a traditionally significant tool in Turkey as it was briefly described in the legislation section 2.1.1.
- e. Shore Law: Despite the narrow geographic coverage and limited scope, this piece of legislation is an important instrument for managing the most important part (e.g. the waterfront) of the coastal zone as discussed in Section 1.1.
- f. Environmental impact assessment: Environmental impact assessment is a tool that has been used in Turkey since 1993 for screening and rehabilitating major development projects including several important types located in the coastal zone. Currently, however, the effectiveness of this instrument is limited due to several factors as discussed in Section 2.2.5.
- g. Critical area / endangered species protection: Several important endangered species of coastal and marine biota have been effectively protected in Turkey since the late 1980s. Important examples are the two sea turtle species (Green turtle - *Chelonia mydas* and Loggerhead turtle - *Caretta c. caretta*) and the highly endangered marine mammal, the Mediterranean Monk Seal. These animals and their important breeding areas, some of which are included in the specially protected areas (such as Foca, Dalyan, Fethiye, Patara, Goksu Delta, Belek), are protected through various programmes.

- h. UNEP's Regional Seas Programme: Turkey is the only country in the world which has been a partner in two regional UNEP seas programmes (the Mediterranean since 1975 and the Black Seas since 1993). This instrument, one that has provided noticeable contributions to coastal management in Turkey, is further discussed in 2.2.8.
- i. Union of municipalities around enclosed basins: The municipalities of towns located along the shores of enclosed basins such as the Sea of Marmara, Izmir Bay, Iskenderun Bay, etc. have set up legal regional entities for tackling issues of common concern. Although this instrument has a substantial potential for contributing to management of regional problems such as pollution, land use planning, marine conservation, infrastructure development, it has been used with only limited success.

### 2.2.1 Spatial planning

The types of spatial plans that have been utilised in Turkey were shown in Table 2.1.4 and Figure (2.1.6). These are the “environmental profile plans”, “framework land use (development) plans”, and “detailed land use (application) plans”.

Environmental profile plans, a macro planning effort at scales of 1/100000, 1/50000 and/or 1/25000, are a potentially significant tool for coastal management. The Settlements Law (the By-law on the Principles for Preparing and Changing Land use Plans, as amended on 2 September 1999) defines the “environmental profile plan” as “those plans which indicate the sitting and land use decisions for housing, industry, agriculture, tourism, transportation and alike, in accordance with national and regional planning decisions”. Environmental profile plans for the whole length of the Aegean and the Mediterranean coast, some parts of the Black Sea coast and a number of lakes have already been completed (Sonmez, 2002).

In the coastal zone, such plans could aim towards the (Sonmez, 2002):

- a. application of national and regional policies and decisions;
- b. optimal uses of and benefits from natural and social resource potentials;
- c. protection of natural, cultural and historic resources and values like watersheds, forests and agricultural land, etc;
- d. provision of spatial decisions for location, size, density and distribution of urban centres, industry, tourism, commerce and other uses, as well as for regional infrastructural facilities such as transport, energy production, etc.;

- e. achievement of compatibility of uses (sectors), and of the balance between use and protection and;
- f. description of the principles of collaboration and coordination among different administrations.

Unfortunately however, the past practice of environmental profile plans has so far not been instrumental in initiating the legal and institutional arrangements that are necessary for the successful implementation of these plans.

Over the last few years, there has been a legal debate between two ministries, The Ministry of Reconstruction and Settlements and The Ministry of Environment as to the authority for preparing and approving the environmental profile plans. The Ministry of Environment, by utilising the Article 2c of the Cabinet Decree No. 443 ("Environmental Profile Plans are given to the responsibility of the Ministry of Environment in order to achieve rational resource use that allows joint consideration of economic and ecological decisions towards the purpose of balanced and sustainable development"). The Ministry of Environment issued a circular in 2000 (no: 2000/19) announcing its wish to use this given authority. In 2003 however, the Courts decided that the authority for preparation and approval of the environmental profile plans should be with the Ministry of Reconstruction and Settlements, as is the case with other (higher scale) land use plans.

Several important drawbacks exist in the present practice of preparation and approval of environmental profile plans. One of these is the problem of low-level involvement of the related and concerned parties. These plans are not approved by the municipal councils unlike the other land use plans, but approved directly by the Ministry of Settlements and Reconstruction (Sonmez, 2002). Another problem is the inadequate technical control over the preparation and approval stages of these plans.

The more detailed land use plans that have been utilised in Turkey in general (not only in the coastal zone) for a fairly long period are the framework land use (development) plans", and the "detailed land use (application) plans". The use of both plans has essentially been associated with the growth of urban centres (urbanisation), although they have also been prepared in connection with the tourism development in the so called "tourism areas" and "tourism centres" declared by the Council of Ministers (see the discussion on Tourism Incentives Law in the section 2.1.1 on Coastal Legislation).

The framework land use plans are prepared at the scale of 1/5000, and endorsed by the Ministry of Reconstruction and Settlements. These plans indicate the use densities, the transportation and movement axis, main infrastructural facilities as well as the areas to be protected. The opinions and proposals of local administrations (municipalities) and the Ministry of Tourism in the "tourism regions" are sought both at the stages of preparation and approval of the framework land use plans.

The detailed land use (application) plans are prepared at the scale of 1/1000 in the light of the higher-level framework land use plans of 1/5000 scale. Urban particulars such as the height of the buildings, characteristics (widths) of the roads, parking lots, parks and other green areas etc. are all indicated in the application land use plans. These plans were prepared through the Provincial Bank under the authority of the Ministry of Reconstruction and Settlements until the 1980s. The authority to prepare and approve the application land use plans in and around urban areas was transferred to the municipalities in the early 1980s. However, the control of its conformity with the higher-level framework land use plan (1/5000 scale) and the final endorsement still remains with the Ministry of Reconstruction and Settlements. The application land use plans that aim for the development of tourism centres are approved by the Ministry of Tourism. These plans can be prepared by the ministries, municipalities and the private sector as a contractor to either of the authorities.

The practice of "planned" urbanisation that is directed by the framework and application land use plans has often failed to produce successful results due to the frequent changes made by plan revision especially prior to municipal elections, and by the careless and indiscriminate use of the so-called "local land use plans" as was mentioned in Section 2.1.1 (see the discussion on the Settlements Law).

## 2.2.2 Sectoral policies

An important instrument through which the nationwide sectoral policies are developed is the 5-year national development plan. As outlined in Section 2.1.4, this process facilitates an overview of the state of development and the future forecasts in the most important development sectors. Regional or nationwide planning in some of these sectors has been periodically carried out.

Probably the most important example of sectoral planning is the one for tourism development, which took place in the '70s and early '80s. Tourism development was seen as the primary

sector for the economic development of the coastal areas along the Aegean and the Mediterranean Seas from the province of Canakkale down to the province of Mersin, which were declared as the “tourism region”. Environmental profile plans for tourism development of this coastal band were prepared (Yurteri and Bozkurt, 2001). Important examples of the sub-regional tourism development plans were the Side Tourism Development Project with a bed capacity of 18,000, the Southern Antalya Tourism Development Project with a 65,000 bed capacity, the Koycegiz Tourism Development Project with a 12,000 bed capacity and the Belek Tourism Centre with a bed capacity of 18,000.

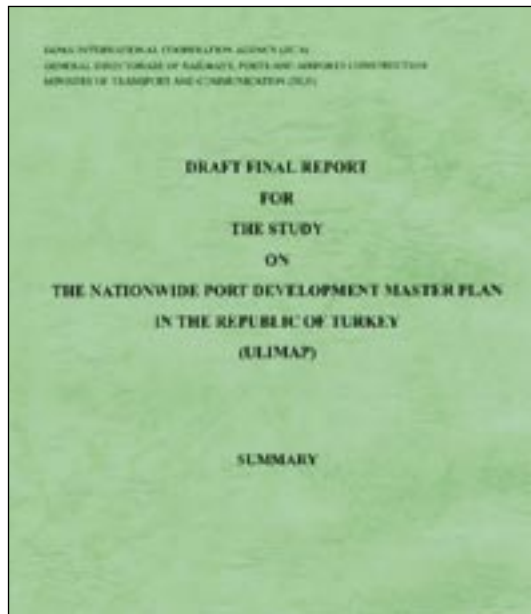


Figure 2.2.1  
Cover of the summary report on the nationwide port development master plan

It is hard to say that the protection of natural and cultural assets was given sufficient care and emphasis in any of the tourism development plans of the 1970s. In the second half of the 1980s, following the debate over the conservation of the nesting beach of the loggerhead sea turtles at Dalyan which was threatened by a major tourism development facility that was envisaged in the Koycegiz Tourism Development Project, the policy for using these coastal areas changed from tourism development to conservation with the declaration of the first three specially protected coastal areas (Gokova Bay; Koycegiz-Dalyan coastal system (lake, river, delta with lagoons and wetlands, and the beach; Fethiye-Gocek Bays). The existing tourism development projects were revised from the late 1980s and several facilities were cancelled in the early 1990s for the sake of the conservation of nature (pristine coasts with very high landscape values and ecologically significant areas) and cultural remains.

Other examples of regional/national sectoral development plans include ports and maritime transport (which was carried out with a grant provided by the Japanese Government, see Figure 2.2.1), yachting tourism and marina development (of the mid 1990s) and fisheries and lagoons.

### 2.2.3 Implementation of management policies and plans

“Implementation” is probably the weakest aspect of coastal management in Turkey. This judgement applies to the implementation of both rules and regulations (legislative instruments) and of management policies and plans.

The “management plan” is not yet one of the successful instruments in Turkey that are used in coastal management. Forest management plans and those for the specially protected areas are examples of the few management plans for coastal areas. The former is a single sector management plan (e.g. forestry), prepared and implemented by a single authority (Ministry of Forestry) that is relatively well equipped for the task. The so-called management plans for specially protected areas are merely documents (reports) that neither describe nor support a real process of “management”. In fact, the Agency for Specially Protected Areas has never been developed enough to possess the capabilities needed for monitoring and the day-to-day managing of these areas.

Problems associated with the implementation of land use plans pose another significant “soft belly” for successful coastal management in Turkey. The ever-changing urban land use plans to satisfy the wishes of voters prior to elections and the misuse of the article for the use of local land use plans in the Settlements Law as the basis for the development of cooperative housing complexes in suburban locations, have resulted in the rapid, unhealthy growth of the major coastal cities such as Antalya and Izmir, as well as resort cities like Bodrum and Marmaris.

Similarly, the land use plans for tourism development in tourism areas and centres have been amended several times to accommodate new facilities and to increase numbers of beds, due to pressures from the developers to invest in areas where tourism infrastructure is already completed. The total bed capacity of the Southwestern Antalya Tourism Development Project that was initially 60,000 beds, has been almost doubled in 20 years. Similar plan revisions for increasing development density are also underway for the Belek Tourism Centre.

## 2.2.4 Tools and methodologies

In Turkey, the use of remote sensing and Geographic Information Systems (GIS) in various applications by public and private institutions, universities and non-governmental organisations has shown noticeable increase since the 1990s. This field has been one of the most popular new subjects in several universities (such as Istanbul Technical University, Dokuz Eylul University, Cukurova University, Hacettepe University, and Middle East Technical University). Remote sensing and GIS units with research and teaching activities have been created in various departments, including marine sciences, earth sciences and geological engineering, topography and cartography, and water resources management. Various student thesis and applied research projects have been carried out in subjects related to coastal management.

Among the public institutions utilising remote sensing in some of their activities are the: Mapping General Directorate (Turkish Army), Rural Affairs General Directorate, State Statistics Institute, General Directorate for Mining investigations and Research, Agricultural Research and Development General Directorate, Forestry General Directorate, State Meteorological Services General Directorate and the TUBITAK's Marmara Research Centre. (TUBITAK, 2002).

Examples of coastal projects where remote sensing and/or GIS were utilized, include the Mersin Coastal Zone Integrated Management Project of the Ministry of Environment (1996), Coastal Erosion at the Mouth of Madra Creek (Dokuz Eylul University), and Coastal and the Marine Resources and Uses Inventory of the Aegean and the Mediterranean (Middle East Technical University). There are also projects of a general nature like the National GIS for Turkey, Orthophoto Town Evaluation Information Support System and The Use of High Resolution Satellite Imagery for Producing Topographic Maps, which have high-level relevance to coastal management efforts. The Mapping General Directorate of the Turkish Army has carried all of these three maps out.

Two Turkish universities (the Middle East Technical University and the Dokuz Eylul University) and later on, the public institutions (TUBITAK's Marmara Research Centre and Ministry of Agriculture and Rural Affairs) have set up ground stations for receiving remotely sensed imagery.

The Turkish Environmental Law that was passed in 1993 pointed out that the EIA By laws were to be prepared and be made effective within one year hence. However this piece of

legislation had to wait for ten years (since it was considered an obstacle to development by the political authorities) until 7.2.1993 when the first version became effective. The EIA By-laws that subsequently twice revised (on 23.6.1997 and 6.6.2002) provide the list of projects for which environmental impact assessment reports are required, outline the contents of the report, and describe the authority and procedure for their approval.

Nowadays, despite several shortcomings inherent within the process, EIA is a standard tool for addressing major development projects in the coastal zone and elsewhere. Coastal developments and activities for which a full EIA study is required, include: thermal (larger than 200 megawatt capacity) and nuclear power plants; refineries; natural gas liquefaction and reverse process (turning back into gas) facilities, ports and harbours (receiving ships larger than 1,350 tons); marinas, petroleum and gas pipelines (having diameters and lengths at least 600 mm and 40 km respectively), and storage facilities; shipyards, ship dismantling facilities; crude oil (with a capacity of 500 tons per day or more) and natural gas (with a capacity of 500,000 cubic meter or more) production; and various heavy industries that may be located on the coast as well as elsewhere. A preliminary EIA investigation is required for the following projects: smaller thermal power plants; boat construction, maintenance and repair facilities; fisheries industry; fishery harbours, tug boat shelters, tourism facilities (with at least 50 rooms), coastal and marine structures; wastewater treatment facilities (for towns with populations larger than 20,000); smaller ports and harbours, quays and piers, coastal erosion prevention works, breakwaters and groins, reclamation of an area of at least 10,000 square meters. If the preliminary EIA study shows that the environmental impacts of these projects may be significant, then a full EIA report, such as the one required for activities given in the earlier group, must be prepared. The EIA By-laws call attention to national and international legislation that aim at the conservation of several types of special areas, such as the Ramsar sites, the Bosphorous, historical and cultural assets and sites, specially protected areas, etc. The By laws for Environmental Impact Assessment give detailed descriptions of the scope and coverage of the preliminary and final studies, and the procedures for their evaluation.

It is difficult to confirm that the present use of EIA in Turkey provides the full range of expected benefits. There are several reasons for this judgement. First of all, EIA projects are often handled by inexperienced private companies with limited capabilities, that are mainly after profit. Even the leading universities have been

involved in disputed EIAs. Environmental Impact Statements (EISs) are often prepared based on information found in existing literature, without the carrying out of field observations for data collection. In many cases, the endangered coastal and marine species and rare coastal and marine habitats are not addressed at all or evaluated based on insufficient and at times even inaccurate information. The EIA Evaluation Commissions do not usually investigate the accuracy of information presented in EISs, and their decisions are often based on scant and inaccurate information. The Evaluation Commission does not usually seek the opinion of the people affected by the development in question and the NGOs that have developed expertise in this field. The “public hearing” which is a compulsory meeting in the EIA process is rarely beneficial. Finally, it is not usually ensured that the remedial measures described in the EIS for minimising the negative impacts of the project are carried out, since the Ministry of Environment does not have the capabilities for monitoring the development of the project.

### **2.2.5 Stakeholders, public participation and the role of NGOs**

In Turkey, the non-governmental professional organisations such as the chambers of architects, city planners, civil engineers, etc. or the chambers of commerce and industry, the Bar, the unions of various professions have been actively performing well recognised functions for rather long time. The contributions of the NGOs, which add an environmental concern edge to governmental functioning, however, have only grown to be significant since the late 1980s.

Three major coastal development issues have contributed to the strengthening of the NGO role in public decision-making. These issues, which should be considered as important milestones in environmental education and the development of Turkish civil society, are the resistance to the construction of the Gokova Thermal Power Plants in the late 1970s, to the internationally owned holiday resort at Dalyan/Iztuzu Beach between 1986-88 and the Aliaga Thermal Power Plant in the early 1990s. Of these three important environmental debates in the coastal zone, the environmentalists lost the Gokova Thermal Power Plants issue while the other two cases were victories for the environmental lobby. The debate on the Gokova Thermal Power Plants contributed immensely to public awareness and environmental education, as it was the first major issue discussed and confronted on a national level. The low quality coal (lignite) burning power plant that was built right on the shores of Gokova Bay, which was then a pristine site with protection

status (and which was also designated in 1988 as one of the first coastal Specially Protected Areas of Turkey), has not been put into operation since its completion early 1990s due to the pressure of the environmental NGOs. The nationwide debate on the conservation of the sea turtle nesting beach in Dalyan was concluded with the declaration of the area as a specially protected area in August 1988 and the cancellation of the internationally owned hotel project to one side of the turtle beach (Iztuzu). The debate on Dalyan beach accelerated the strengthening of the role of environmental NGOs at both the national and local levels in environmental public policy. The third milestone – the Aliaga Thermal Power Plant – was a conflict between central government and local actors (municipalities, NGOs and the public in general) revolving around the construction of a power plant in a small bay along the shores of the larger Nemrut Bay, located north of Izmir. After a lengthy and fierce debate, the government decided to move the power plant to the southern (Mediterranean) shores to a location near Yumurtalik at the entrance of the Iskenderun Bay.

Currently, (in 2003), there exist a good number of environmental NGOs, several of them conducting nationwide activities, and the bulk focusing on regional or local concerns. As illustrated in the previous paragraph, some of these NGOs have been actively involved in coastal zone management issues, such as the locating of power plants, the preservation of important habitats and of endangered species, coastal tourism development, and the management of ecologically significant coastal areas.

Good examples of the NGO role in coastal conservation and integrated management are the national committees for monk seals and sea turtles, set up within the Ministry of Environment and Forestry as formally described in section 2.1.2.

### **2.2.6 Education and access to information**

Educational programmes that could be valuable for improving coastal management may be considered in three groups:

- a. Degree programmes in related fields offered by universities (undergraduate and graduate levels).
- b. Short-term capacity building programmes to develop the knowledge and abilities of the personnel employed by the institutions (departments) that deal with development, protection and management of coastal and marine areas.
- c. Programmes that build public awareness and education.

The undergraduate programmes in disciplines dealing with coastal and marine areas do not usually offer courses on coastal management in their curricula. One exception to this is the elective course that is offered to fourth year undergraduates (in the graduating class) in the Civil Engineering Department of the Middle East Technical University by the faculty of the Coastal Engineering Laboratory. This course has been regularly offered for at least one semester every year since 1988.

Consequently, graduate programmes (master's degree) on integrated coastal management that may be followed by graduates of coast-related disciplines are extremely valuable for producing experts in this field. There are at least two graduate programmes for integrated coastal management offered by the Marine Science (& Technology) Institutes of Istanbul University and Dokuz Eylul University (Izmir). Since these programmes are offered by an "institute", they are interdisciplinary programmes that can be followed by interested graduates who possess a basic degree from a related discipline. According to Turkish Higher Education Law, the graduate programmes that are offered by "departments", are followed mainly by graduates of the same discipline (the same department), since graduates of other disciplines are required to take several undergraduate courses of this discipline in order to first qualify unofficially for the "undergraduate degree" of the department before they can commence graduate education. There are no "coastal institutes" in any of the Turkish Universities at present. A coastal institute that concerns itself with coastal sciences, engineering, policy and management and offers interdisciplinary graduate educational programmes would be extremely useful in a country like Turkey, which has a coastline in excess of 8 300 kilometres and which is adjacent to three separate seas (the Mediterranean, the Aegean and the Black Sea) possessing different characteristics, in addition to having a very valuable inland sea of its own (the Sea of Marmara).

The Mediterranean Coastal Network (MEDCOAST) has been offering international certificate programmes since 1994. One of the two series that have run regularly is called the "MEDCOAST Institute" that offers a 15-day long training in "Integrated Coastal Management in the Mediterranean and the Black Sea". (The second, shorter programme is on "Beach Management in the Mediterranean and the Black Sea"). These international training workshops have been organised six times each so far, and the 7th MEDCOAST Institute is scheduled for 31 August – 14 September 2004. About 230 people representing 34 countries have received training on one of the MEDCOAST certificate programmes.

The target group for the MEDCOAST Institute are "the employees of the central governments holding mid-managerial positions and carrying out responsibilities in coastal development, conservation or management. About one-fifth of the MEDCOAST graduates are from Turkey, representing various ministries including the Ministries of the Environment and Forestry, Tourism and Culture, and Agriculture and Rural Affairs.

Parallel to the MEDCOAST activities, the Turkish National Committee on Coastal Management, which was described in Section 2.1.2, has been functioning as a nodal point in Turkey for coastal management. The National Committee has been organising a national conference series bi-annually since 1997 with the title "Turkish Coast: The National Conference on the Coastal and Marine Areas of Turkey". All papers presented orally or as posters in the Turkish Coast conference series are published in the conference proceedings. The five volumes published so far are widely used and serve as the basic source of information for coastal and marine issues in Turkey. The fifth national conference is scheduled for 4-7 May 2004. Additionally, the National Committee has been functioning as an information centre on coastal and marine issues.

Programmes aimed at public awareness and education have been developed and offered by environmental NGOs. Notable examples are the campaign carried out in the early 1990s by DHKD for the protection of the deltaic environment of the Dalyan River and the nesting beach of loggerhead (*Caretta c. caretta*) sea turtles, the efforts of an Istanbul-based NGO towards public awareness and education on tanker navigation through the Bosphorous and related maritime safety, and the LIFE (the EC Programme) projects of DHKD for coastal management and eco-tourism in Belek (eastern Antalya) and Cirali (south western Antalya).

Data and information on coastal and marine issues are rather scarce throughout Turkey. There has never been a national programme for systematic and comprehensive coastal and marine monitoring. The Office for Navigation, Hydrography and Oceanography (ONHO) of the Turkish Navy has been given by law since the mid 1970s, the task of acting as the National Marine Data and Information Management Centre. However, this function could not have been developed effectively for several reasons. Consequently, the existing data and information are possessed (and owned) individually by different universities (especially by their marine institutes), the Turkish Scientific Research Council (TUBITAK), and various governmental departments. The public institutions

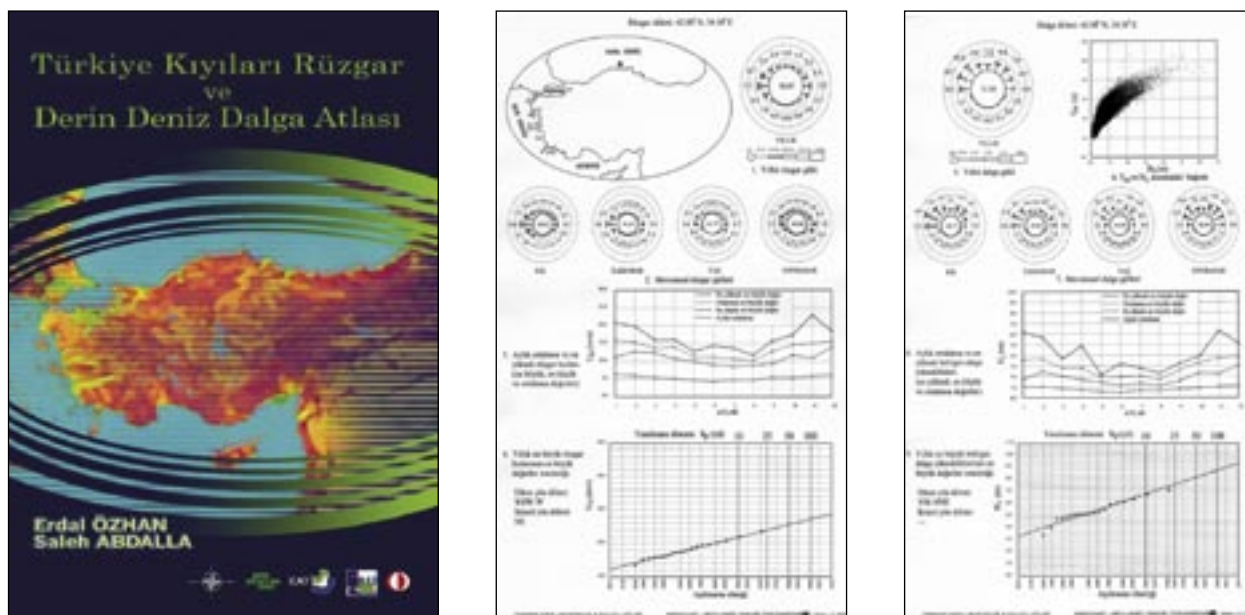


Figure 2.2.2  
The cover and the interior pages of the “Wind and Wave Atlas of the Turkish Coast” (Middle figure: Wind statistics, Right figure: Wave statistics)

(governmental departments such as ONHO, the State Meteorological Services, State Statistics Institute, and universities) usually provide the data and information that they have to users for a fee.

A significant scientific project that was financially supported by NATO, the Science for Stability Programme (Phase III) between 1994-2000, constructed the detailed wind and wave climate of the Turkish coast. The project employed wave measurements, extensive wave modelling and wave hindcasting to produce a detailed atlas (Figure 2.2.2) that provides statistical information on wind speeds and direction, and deep water significant wave height properties along the entire Turkish coastline with a resolution of about 25 kilometres for the Black Sea, Aegean and the Mediterranean, and 10 kilometres for the Sea of Marmara (Ozhan and Abdalla, 2002). The hardcover publication is commercially available from The Turkish National Committee for Coastal Management for a modest fee.

## 2.2.7 International cooperation

Turkey has been a party from the start to two different UNEP regional seas programmes: the Mediterranean Action Plan (1975) and the Black Sea Strategic Action Plan (1996).

The Mediterranean Action Plan, the oldest application of the UNEP Regional Seas Programme, has contributed in various ways to enhancing coastal and marine management in Turkey. In the 1970s, the MEDPOL programme provided significant impetus to the growth of the

finest marine research institution (Marine Sciences Institute of Middle East Technical University at Erdemli, Mersin) at its early years, through funding provided for pollution monitoring activities. Following the Genoa Declaration, the commitment of the Mediterranean governments to setting up 100 specially protected areas along the shores of the Mediterranean was instrumental in initiating the first SPAs in 1988. The SPA designations of the most valuable, pristine coastal areas around the Aegean and Mediterranean coast of Turkey have worked well to shield these areas from the development pressures emanating from mass tourism projects. The Izmir Bay CAMP (Section 2.3.2) of PAP/RAC (Split, Croatia) was one of the first applications of this regional programme for enhancing national ICAM capabilities. More or less concurrently, a project was carried out by the Ministry of Environment in collaboration with MAP's Blue Plan Regional Activity Centre, BP/RAC (Sophia Antipolis, France) on the socio-economic development of the coastal area around the Iskenderun Bay. Finally, several Turkish NGOs and the Ministry of Environment have collaborated successfully with MAP's Specially Protected Areas Regional Activity Centre, SPA/RAC (Tunis, Tunisia) in addressing various issues pertinent to the protection of endangered species such as sea turtles and monk seals, and their habitats. Like all other Mediterranean governments, the Turkish government has benefited from the past and ongoing capacity building activities of the PAP/RAC (Split, Croatia) on various aspects of ICAM.

The international efforts for management of the Black Sea's coastal and marine areas are more recent when compared to those for the

Mediterranean. UNEP's effort at initiating the 10th regional seas programme in the Black Sea produced the Bucharest Convention signed in 1993. However, the work needed for commencing the programme was carried out in the scope of the Global Environmental Facility (GEF) project (Black Sea Environmental Programme – BSEP) between 1995-98. A high level of regional momentum was created for coastal and marine management in the Black Sea by the end of BSEP together with several important products, which included a publication entitled “Transboundary Diagnostic Analysis (a summary document describing the environmental issues and management needs of the Black Sea and the approaches for coping with these), several databases including scientific information, publications, resource people and NGO, and a regionally binding document, “The Black Sea Strategic Action Plan”, was signed by the riparian states on 31 October 1996. Coastal zone management was one of the six components of BSEP. Its activity centre was set up in Krasnodar (Russia). The CZM component of the BSEP included four main issues:

- a. delineation of the national coastal zone boundaries;
- b. creation of the national network for CZM;
- c. preparation of the national report; and
- d. execution of at least one pilot project by each country related to CZM.

Besides the national report, the other three targets could not be achieved in Turkey. Following the conclusion of BSEP in 1998, the regional efforts slowed down although the BSEP Coordinating Unit in Istanbul continued its work, and a new GEF project was later initiated.

Turkey has also been close collaborating with several other international institutions and governments on projects and capacity building in the field of coastal and marine management. Several coastal projects were realised through European Union programmes, such as the MEDCOAST's efforts for ICM education funded by the MED-CAMPUS (1993-96) and three coastal projects funded by the LIFE DC programme (a. Cirali Coastal Management and Tourism Project of DHKD/WWF Turkey (see Section 2.3.1; b. Cukurova Deltas Biodiversity Conservation Project of Cukurova University; and c. Olu Deniz Lagoon Project of Turkish Marine Research Foundation, TUDAV).

Turkey has also collaborated with the Mediterranean Technical Assistance Programme on several coastal projects including the consultant report on ICM, 1990-91 (Marzin et. al., 1991); Bodrum Peninsula Solid Waste Management Project of the Mediterranean Academy Foundation;

and the Belek Coastal Management Project of DHKD / WWF Turkey.

Turkey was chosen as a pilot country for the implementation of the UNDP's Small Grants Programme in 1993, which has provided basic financial support to bolster the efforts of environmental NGOs. Several projects funded by this programme, including the Bodrum Peninsula Coastal Zone Management Project, dealt with coastal and marine management issues. The nationwide study of the State Planning Organisation that produced the “National Environmental Action Plan (1998)” was also financially supported by UNDP.

The Science for Stability and Science for Peace Programmes of NATO have supported very significant research projects on various marine problems since the mid 1980s. These include the projects abbreviated as TU-Fisheries, TU-Black Sea, TU-Waves, and the follow-up project of the TU-Black Sea. Another NATO programme (the CCMS Programme) has supported an academic network lead by Istanbul Technical University on the topic of Sustainable Lagoon Management (1996-2003).

Two Turkish NGOs, WWF Turkey and the Mediterranean Monk Sea Research Group of the Underwater Research Association, have carried out significant coastal and marine conservation projects in collaboration with the WWF Mediterranean Office in Rome on biodiversity conservation (a SMAP project) and on management of large marine ecosystems.

Finally, there have been several collaborative efforts on coastal and marine management issues of Turkey with other governments. For example, the Japanese government through the Japanese International Cooperation Agency (JICA) has supported the Ports National Master Plan project, the turbot mariculture project in the eastern Black Sea coast, the creation of the Coastal Engineering Laboratory under the Ministry of Transportation and wave measurements in the Black Sea. The Italian Government has supported a project of the Ministry of Agriculture and Rural Affairs on the management of coastal lagoons.

## 2.3 EXAMPLES OF COASTAL MANAGEMENT PROJECTS

### 2.3.1 Coastal Management and Tourism in Turkey: Cirali

The Coastal Management and Tourism Project in Cirali (Figure 2.3.1) was initiated by WWF-DHKD in April 1997 and concluded in 2000. The project was financed by the European Union (LIFE DC Programme) and technically supported by The Ministry of Tourism, Environment and Culture (Kuzuturk and Oruc, 2001).



Figure 2.3.1

The rural environment and the pristine beach of Cirali (Photo: DHKD)

Cirali is a small village where traditional activities such as agriculture are still undertaken. Lately, small-scale tourist developments have been realized, while there is growing interest in the construction of secondary houses. The area is significant from natural, historical and socio-cultural perspectives (UNEP/MAP/PAP, 2001a).

The main goal of the project was to promote sustainable development in the area. Particular emphasis was placed on the conservation of biodiversity and natural resources in Cirali (UNEP/MAP/PAP, 2001a). Within this context, two main objectives have been identified and pursued: i) to promote environmentally and socially sound development through integrated planning, by pursuing traditional and alternative economic activities and nature protection; ii) to disseminate

results of the project in order to promote legal enforcement and regulatory development at the national level (DHKD, 2000).

In June 24, 1998, DHKD was commissioned to prepare the Cirali Physical Land Use Plan by the Ministry of Tourism. This was the first instance of such a task being bestowed on an NGO in Turkey. The main objectives of this physical plan were the prevention of illegal development and the finding of solutions to infrastructure problems (DHKD, 2000).

For the elaboration of the Coastal Management Plan for Cirali, several thematic studies were carried out with respect to water quality, fauna, flora, sociological aspects, laws and regulations, city planning, geology, geomorphology, eco-tourism potential, and organic agriculture (UNEP/MAP/PAP, 2001a). For example, one of the major problems encountered in the area was illegal construction. The activities undertaken by DHKD in collaboration with locals that led to inspections and warnings by local authorities, kept illegal development in Cirali largely under control (DHKD, 2000). The field surveys on marine turtle nesting in Cirali as well as conservation efforts have been included in the project activities since 1997. For implementation of the Coastal Management Plan, a Local Coordination Committee was set up in Cirali.

A cooperative was established for the main activities of marketing agricultural products and tourism services, the development of a handbook for organic agriculture, the creation of a brand for Cirali products, and the training of village women and youth for the production and marketing of traditional products (UNEP/MAP/PAP, 2001a).

In the Cirali project, several activities contributed to project dissemination:

- The preparation and distribution of a brochure entitled "Cirali, the Secret Paradise";
- Effective information tools for tourists and the public about Cirali's natural and archaeological wealth;
- The publication of a bimonthly Cirali Bulletin for informing the local community;
- The design, printing and distribution of a new poster outlining inappropriate activities during the marine turtle-nesting season (beginning of May to the end of September);
- The setting up of marine turtle information boards;
- The design of mugs, T-shirts, etc., featuring logos of the loggerhead turtle and marine life;
- The design of a Cirali logo for promoting organic agricultural products as well as other products;

- The production and distribution of a film (VNR and VHS format in Turkish), about project activities, sent to major TV channels and local stations in Turkey;
- The presentation of a paper at the 4th MEDCOAST International Conference that took place in Antalya in 1999;
- Poster presentation during the European Commission's LIFE week, and a presentation in the Med Forum's "International Congress on Sustainable Tourism in the Mediterranean";
- Various press releases.

Several activities have been implemented to facilitate public awareness:

- An environmental education programme in the Cirali Primary School;
- Computer classes and the donation of computers to the Cirali Primary School;
- Outdoor activities, educational activities (i.e. slideshows and video films), for students of the Cirali Primary School;
- English language courses for the young women in the village;
- The local people of Cirali were offered practical training courses conducted by experts on eco-tourism and organic agriculture;
- The first "Cirali Turtle Festival" was organised by DHKD (UNEP/MAP/PAP, 2001a).

The Cirali project, together with other nine best practices, was awarded "Best Practice" by the United Nations Centre for Human Settlements (HABITAT) and the Dubai Municipality in June 2000. The selection criteria were centred on measurable improvements in human life, collaboration, and sustainability. More than 700 projects from 110 countries applied for consideration and Coastal Management and Tourism in Turkey: Cirali project has been awarded for the contribution to the conservation of the nature and improvement of human life quality in Cirali. The award was presented to DHKD on 20 November 2000 in Dubai. This award brought wide recognition to the project both at the national and international level (DHKD, 2000).

The main outputs of the Cirali project are the Coastal Management Plan, the Cirali Physical Plan and the Ulupinar Cooperative. Following the final report of the project, Cirali Physical Plan could not complete the approval stage due to the slow progress of the review and decision mechanisms and the deficiency in coordination among the ministries. This plan is still being held by the Ministry of Public Works and Settlement. Due to the incomplete approval stage of the Physical Plan, the Coastal Management Plan could not become officially valid.

### 2.3.2 Coastal Area Management Programme (CAMP) Projects: The Bay of Izmir

Izmir Bay is one of the largest and most enclosed bays on the Aegean coast of Turkey. The Metropolitan City of Izmir, which is the third largest city in Turkey, is located along the shores of the Bay. There are several sites of very high ecological and cultural significance along the coast of the Izmir Bay. Prime agricultural areas are in evidence, especially along its northern shores. These agricultural lands have been losing out to uncontrolled urbanisation and new industrial developments. The coastal belt of the Izmir Bay, which houses ten small municipalities in addition to the Metropolitan Municipality of Izmir, has very high values for recreation and tourism. The Bay of Izmir has the densest concentration of industrial facilities in the Aegean Region of Turkey. The majority of these are the "polluting industries", and they have been responsible for serious adverse environmental impacts. Marine transportation in the Bay is an important activity since the Port of Izmir is one of the most important export ports in Turkey (Ozhan, 2002).

"The Bay of Izmir" CAMP project was carried out in two phases as two successive projects. In 1987, PAP launched the programme of "Country Pilot Projects (CPPs)". The Izmir CPP was selected in the first (and the only) group of the projects together with three others, and was implemented between 1988 – 89. Major emphasis was given to the pollution of the Izmir Bay throughout Phase I. Several documents on various aspects of water pollution in Izmir Bay were prepared. Furthermore, a detailed oceanographic study of the Bay and an expanded monitoring programme were presented. Towards the end of this project, the issue of integrated planning was dealt with in expert meetings, a document ("Proposal Relating to the Organisation of a Preliminary Study of the Integrated Plan of the Izmir Area"), and a training course (Ozhan, 2002).

The second phase of the project was started following the approval of the preparation of the Coastal Area Management Programme (CAMP) for the Bay of Izmir in the Sixth Ordinary Meeting of the Contracting Parties to the Barcelona Convention (Athens, October 1989). The Turkish Government and the Mediterranean Action Plan (MAP) signed the agreement ("An Agreement Relating to the Preparation of the Coastal Area Management Programme for the Bay of Izmir – Turkey") in June 1990. Following a preparatory period, the "The Bay of Izmir" CAMP commenced in October 1991. A presentation meeting held on 29-30 September 1993 concluded the project. In this phase of the project, the so-called "Integrated Management Study for the Area of Izmir" was

completed (UNEP/MAP/PAP, 2001b).

On the Turkish side of the project, the main participants were the Metropolitan Municipality of Izmir (the Departments of Planning and Environmental Health) and the Ministry of Environment (mainly the Department of Foreign Relations). From the side of the Mediterranean Action Plan, the main contributors were the PAP/RAC and the MAP Coordinating Unit (MEDU) (Ozhan, 2002).

In the final report of the project, the major objectives of the study are restated as follows:

- a. to prepare an environmental profile of the Izmir area based on existing (secondary) data;
- b. to establish, in a rapid and rational way, the framework and elements of the ICAM programme, as well as to perform “on-the-job” training of the local experts by applying an established methodological approach;
- c. to contribute to the mitigation of environmental effects of various development activities, and d. to establish a management framework for the desirable use of coastal resources;
- e. to propose general objectives and policy guidelines for the activities towards a long-term development harmonised with the carrying capacity of the ecosystem and
- f. to propose a methodological and organisational framework for the preparation of the Integrated Coastal Master Plan for the area of the Metropolitan Municipality of Izmir (MMI) (Ozhan, 2002).

The followings are the achievements of the “The Bay of Izmir” CAMP project:

- a. Influence on the resolution of priority environment-development problems
  - The pollution in Izmir Bay
  - EIA of the Izmir Sewage Treatment Project
  - The creation of a database on environmental / development issues and environmental zoning of the area of the MMI
  - Land use pattern and development - environment interactions
  - Integrated coastal and marine area management
  - Integrated Management Study for the Izmir area
- b. An improvement in the institutional capacities of ICAM
- c. The application of tools and techniques (i.e. GIS, EIA) of ICAM
- d. The formulation and implementation of national policies and strategies (Since “the Bay of Izmir” CAMP was a project at the municipal level, its contribution to national policies and strategies was limited)

- e. The dissemination and exchange of experience (local, national, regional/international level)
- f. Training and capacity building

One of the most substantial outputs of the “the Bay of Izmir” CAMP was the study report entitled an “Integrated Management Study for the Izmir Area”, which was said to be “an umbrella document” integrating the results of activities carried out within the framework of “the Bay of Izmir” CAMP. The report summarised the state of the natural resources and the process of development, development/ interaction interactions, and the existing process of decision-making in its first par. It then went on to summarize the elements of integrated coastal and marine management, before offering conclusions and recommendations in the third (Ozhan, 2002). In this final part, urgent measures for the alleviation of acute problems relating to unsustainable patterns of resource use; medium-term measures enabling the preparation of the Integrated Coastal Master Plan; and a methodological framework for the elaboration of the Master Plan were described (UNEP/MAP/PAP, 2001b).

The programme’s final assessment concluded that only half of the operations envisaged were finally performed. However, major positive changes could be observed in the management and the actual development of the Izmir Metropolitan Area, partly attributable to the CAMP initiative. The Master Plan was developed as a land use plan rather than as a management plan, in line with CAMP objectives. Other obstacles included the low level of public participation, the vague time schedule for the Master Plan’s completion, which slowed down its formulation, as well as weak institutional and political support reinforced by changes within local administrations (UNEP/MAP/PAP, 2001b).

## 2.4 THE FUTURE FOR ICAM

The review of coastal management in Turkey presented in the earlier parts of this report reveals the accrue of a significant level of experience in coastal management in Turkey, particularly over the last 20 years. Several tools and instruments that are generally utilised in the process of coastal management have been in use for a significant period of time. The following findings present the important features of the prevailing situation:

- a. A comprehensive legal framework has been in force since the 1980s to address important coastal issues. This legal system however is sectorially structured. Although interaction between ministries with different (sometimes

- conflicting) interests in the development of the coastal areas is required in some of the laws, this is usually through a weak mechanism such as asking for an “opinion” or the “consent” of the relevant institutions (ministries). The present mechanism has not achieved sufficient levels of discussion and negotiation in the past among the parties involved, levels which are essential to integrated management.
- b. Although numerous public institutions are involved in the management of coastal areas from their own perspective, institutionalised coordination mechanisms for the integration of management efforts by different organisations do not exist.
  - c. Following the traditional administrative structure of Turkey, the management system for coastal areas has been highly centralised. The existing system does not provide many opportunities for local management (eg. management by local authorities) and for public participation.
  - d. The development of a single sector (i.e. tourism) has overshadowed that of the others in the coastal areas of the Aegean and the western Mediterranean since the mid-1980s. Although this trend has lost its momentum to some extent in recent years, the extremely favourable environment provided by the Tourism Incentives Law has triggered the rapid development of tourism sectors in extensive coastal areas that were designated as “tourism areas” or “tourism centres”. This process has curbed and slowed down the development of the integrated management concept. In several cases, the rapid development of coastal tourism has been accompanied by the insufficient care and protection of natural and cultural wealth in these areas, and has thus caused significant damage to natural and cultural resources.
  - e. Several important tools and instruments such as land use planning, sectoral development planning, environmental impact assessment, specially protected areas, The Shore Law, and restrictions and penalties brought by other sectoral legislation have been utilised in Turkey in tandem with coastal management for a considerable period. However, the effectiveness in applying these instruments in practice needs to be improved in order to reap expected results and benefits.
  - f. The concept and use of “management plans” for guiding coastal management in Turkey is relatively new. This very important instrument does not yet have widespread and efficient application.
  - g. The available data and information about physical and ecological coastal processes, and the natural and cultural resources present in coastal areas is not sufficient to support rational managerial decisions. Research programmes on coastal issues and the monitoring of the impacts of antropogenic activities on the coastal environment and resources, are not yet given sufficient importance and priority.
  - h. Despite some improvements since the 1990s, the level of interest shown by Turkish universities in the coastal sciences and management issues is still very low. The human resources required for efficient coastal management cannot be sufficiently developed due to the very limited availability of degree programmes in the relevant fields.
  - i. As described in several parts of this report, significant efforts have been made by both international and national organisations by means of “independent projects” over a time span of some twenty years towards improving coastal zone management practices in Turkey and for the “integration” of the management utilised. These have no doubt contributed positively to the process and to the experience acquired in the country, although it has not yet generated the initiation of an “integrated” coastal area management system.
- Coastal management in Turkey will remain an important issue of perhaps increasing magnitude due to the ever-growing developmental pressures on coastal areas. There is no doubt that coastal activities and development in sectors such as recreation and tourism, urbanisation, industry, fisheries, agriculture, marine transportation, and conservation will continue in their expansionist vein. Improvements in coastal management capabilities are essential for addressing the existing problems of environmental deterioration and resource depletion in the already developed coastal areas, and for the rational and sustainable development of the areas that are either totally pristine or at the early stages of development. It is important to reiterate that a good percentage of the coastal areas of Turkey that are basically owned by the public (i.e. under national ownership) remain virtually undeveloped.
- Two significant studies addressing coastal management were carried out under the leadership of two governmental institutions (the State Planning Organisation and the Ministry of Environment) in the late 1990s. The preparation of the National Environmental Action Plan, a document addressing environmental management issues in Turkey including coastal management, was led by The State Planning Institution between 1995-1999. In this study, which was financed by The World Bank, coastal management was addressed by two independent task groups (coastal and marine resources and land use and coastal management). In the final report (SPO, 1999), a project (Enhancement of Coastal Zone Management) is proposed as a “short term” action.

This project, which it suggests be implemented jointly by three ministries (Settlements and Reconstruction-the leading institution-, as well as Tourism and the Environment) together with The Special Provincial Administration (which is the implementation unit in the provinces) and the local administrations (municipalities), is stated to involve the following:

- The determination of the nature of the environmental issues along the sea, lake and river coasts together with their dimensions and causes.
- The determination of the powers and responsibilities of the relevant institutions and organisations in addressing and solving these issues, together with their capacities (personnel, infrastructural capabilities), the existing legal instruments, the scope and contents of the related programmes and the projects underway.
- The development of a democratic management model that allows participation in the decision making process of representatives of various actors with varying levels of interest in the coastal areas.
- The preparation of the legal arrangements that are necessary for giving life to the above management model.
- The preparation and application of coastal management action plans.

This “short-term” action project sets goals that could be viewed as a major change in the system of public administration in Turkey, a country that has traditionally been centralised and sectoral in nature. The geographic coverage of the fifth activity above is not indicated in the project description. As it is formulated however, the project aims high (considering the 8 300 km-long sea coast of Turkey), involves a major change in the administration system, and does not involve several other ministries (such as the Treasury, Transportation, Agriculture and Rural Affairs, Industry, Energy, Forestry and Culture) that have significant interests in and activities based in the coastal areas. No steps have been taken to implement this “short-term” action project over the 5-year period following the publication of the National Environmental Action Plan.

Following the above work, the Ministry of Environment (2000) published a report entitled “National Agenda 21”. Chapter 13 of this report is entitled “The Sustainable Management of Seas and Coastal Areas”. Several facts and features pertaining to the present coastal management practice in Turkey (which have also been described in depth in various parts of this report) are listed in this chapter. The report calls attention to the importance of “a) wide-ranging integration, b) planning with absolute enforcement” and to

the need for a new institution that should be empowered with duties and responsibilities for “regional management”. It rightly mentions that such an institution will necessitate change in the existing administrative structure.

The author’s opinion on the future of integrated coastal management in Turkey is described in the following proposals for enhancing the present management capabilities:

- a) There is a clear need for an “umbrella law” that aims at the integration of coastal management. This new legislation should create an institutionalised mechanism for addressing the coastal area demands of different sectors through a coordinated decision making process. Such a coordinating mechanism would facilitate the development of more rational decisions on coastal land use and development on the one hand, and would minimise the conflicts between different sectors on the other.
- b) A coordinating institution at the same hierarchical level as the ministries should be created to achieve the coordinating role described above.
- c) New regulations should be created to increase the role and involvement of local administrations in coastal management. The capacity of local administrations to use important coastal management instruments such as EIA, land use planning, specially protected areas and the enforcement of laws and regulations needs to be enhanced. Better incentives (financial and other) should be created for the municipalities to ensure the effective use of these instruments (such as levies on polluters and the collection of revenue from the management of special areas).
- d) As a priority action, necessary arrangements should be made for more effective use of existing and available instruments, rather than creating new ones.
- e) As another priority, pilot projects with important targets such as public education and participation, the management of special coastal areas and greater integration in the decision making process would aid in the development of a coastal management culture and strategy by utilising the lessons learned.
- f) The management of special coastal areas requiring higher levels of protection should not be restricted to central administrative institutions. This should be a joint task, shared between institutions at different hierarchical levels, giving more emphasis and responsibilities to local administrations (municipalities) and to the NGOs.



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This document provides a wealth of information contained in the main publications on coastal area management in Turkey issued by governmental and intergovernmental agencies, ministries and specialised national agencies, completed by the personal experience of the author gained during his work on coastal area management in Turkey and in the Mediterranean.

The report consists of four parts which present the characteristics of Turkey's coastal areas and their natural and cultural resources, significant economic activities that take place in the coastal areas and their adverse impacts, and the present system of coastal area management in Turkey. In this, a special attention is given to the existing institutional system and legislation, as well as to the implementation of coastal area management policies and plans, the tools and instruments used to this end, the actors involved, the relevant education and information sources, and the means and examples of international co-operation. Also, two examples of coastal management projects are summarised that were carried out in early and late 1990s. The document concludes with a summary of the most important features of the present situation and gives suggestions regarding the future of the coastal area management in Turkey, which will remain an important issue due to the ever-growing developmental pressures on coastal areas.

The Priority Actions Programme Regional Activity Centre (PAP/RAC) is part of the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP). PAP/RAC is an action-oriented organisation aimed at carrying out practical activities that are expected to yield immediate results contributing to the protection and enhancement of the Mediterranean environment, and to the strengthening of national and local capacities for integrated coastal area management. PAP/RAC co-operates with a large number of organisations in the UN system (UNEP, FAO, IMO, UNESCO, IOC, WHO, IAEA, WTO, UNDP), financial institutions (World Bank, European Investment Bank), other international organisations (European Union, Council of Europe), and national and local authorities in the Mediterranean region.