



# Turkey's Environment

*A Review and Evaluation of Turkey's Environment and its Stakeholders*

Edited by  
**KEREM OKUMUS**

Szentendre, Hungary  
**MAY 2002**

Funded by  
**European Commission, Directorate General Environment**



**THE REGIONAL ENVIRONMENTAL CENTER**  
*for Central and Eastern Europe*



### **About the REC**

The Regional Environmental Center for Central and Eastern Europe (REC) is a non-partisan, non-advocacy, not-for-profit organisation with a mission to assist in solving environmental problems in Central and Eastern Europe (CEE). The Center fulfils this mission by encouraging cooperation among non-governmental organisations, governments, businesses and other environmental stakeholders, by supporting the free exchange of information and by promoting public participation in environmental decision-making.

The REC was established in 1990 by the United States, the European Commission and Hungary. Today, the REC is legally based on a Charter signed by the governments of 27 countries and the European Commission, and on an International Agreement with the Government of Hungary. The REC has its headquarters in Szentendre, Hungary, and local offices in each of its 15 beneficiary CEE countries which are: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, FYR Macedonia, Poland, Romania, Slovakia, Slovenia and Yugoslavia.

Recent donors are the European Commission and the governments of Albania, Belgium, Bosnia and Herzegovina, Bulgaria, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Italy, Japan, Latvia, Lithuania, the Netherlands, Poland, Slovenia, Sweden, Switzerland, the United Kingdom, the United States and Yugoslavia, as well as other inter-governmental and private institutions.

The entire contents of this publication are copyright  
©2002 The Regional Environmental Center for Central and Eastern Europe

No part of this publication may be sold in any form or reproduced for sale  
without prior written permission of the copyright holder

ISBN: 963 9424 09 9

Published by:  
The Regional Environmental Center for Central and Eastern Europe  
Ady Endre ut 9-11, 2000 Szentendre, Hungary  
Tel: (36-26) 504-000, Fax: (36-26) 311-294, E-mail: [info@rec.org](mailto:info@rec.org), Web site: [www.rec.org](http://www.rec.org)

This and all REC publications are printed on recycled paper or paper produced  
without the use of chlorine or chlorine-based chemicals

<b>Preface</b>	<b>5</b>
<b>Introduction</b>	<b>7</b>
General Country Information	7
Environmental History	10
<b>The State of Turkey's Environment</b>	<b>13</b>
Air	13
Water	15
Waste	16
Soil	17
Nature Protection	19
<b>The European Union, Turkey and the Environment</b>	<b>21</b>
<b>Environmental Stakeholders</b>	<b>25</b>
Governmental Institutions	25
Local-level Governmental Institutions	26
Non-governmental Institutions	27
Academics (University/Science)	29
International and Donor Organisations in Turkey	30
<b>Environmental Management and the Main Challenges in Turkey</b>	<b>37</b>
Law Enforcement	38
Environmental Information	38
Participation	38
Environmental Financing	39
Environmental Education	39
<b>Conclusions</b>	<b>41</b>
<b>Endnotes</b>	<b>43</b>



# Preface

*Turkey's Environment: A Review and Evaluation of Turkey's Environment and its Stakeholders* was written as part of the REC Extension to Turkey project and supported by the European Commission, DG Environment. Several members of the REC staff contributed to this report, along with the REC's chief consultant in Turkey, Kerem Okumus, Director General of MERKAT — Energy-Environment-Industry Manufacturing, Marketing, Consulting and Representation Inc.

The report is composed of the following chapters: background information about Turkey's demographic situation and an introduction to the Turkish environmental sector; the current state of the environment in Turkey; the European Union, Turkey and the envi-

ronment; national and international environmental institutions and donor organisations; and the main challenges of environmental management in Turkey.

With respect to EU accession, this report deals with broad concepts. However, it deals more precisely with accession priorities whereby the REC could assist Turkey in this process. In this respect, Turkey would have to:

- adopt or change national laws, rules and procedures so that the requirements of the EU are fully incorporated into national legislation;
- provide the institutions and budgets needed to carry out these laws and regulations; and
- provide the controls and penalties to ensure that the law is being complied with.



# Introduction

## General Country Information

Turkey has a unique geographic position at the crossroads between Europe and Asia. The country covers an area of 779,452 square kilometres. Turkey's 8,333-kilometre coastline extends along the Black Sea, the Sea of Marmara, the Aegean Sea and the Mediterranean Sea.

The country has a vibrant, young population of more than 65 million, 68.6 percent of which live in urban centres. In 2000 Turkey's gross national product (GNP) was about USD 200 billion — roughly USD 2,900 per capita. Agriculture accounts for some 16 percent of gross domestic product (GDP), industry 24 percent, and services 60 percent. Turkey's investment rate is in the range of 24 percent of GNP, while imports and exports together represent about 50 percent of GNP.<sup>1</sup> Turkey entered into customs union with the European Union in 1996 and became a candidate for EU membership at the Helsinki Summit in December 1999. Turkey is the world's 17th most industrialised nation, but ranks 86th out of 180 countries as measured by the 1999 United Nations Development Programme (UNDP) human development indicators. While 84 percent of Turkey's total adult population is literate, only 75 percent of adult females are literate.

Turkey's population reached an estimated 66.3 million in 2001 and its annual growth rate of 1.7 percent was one of the highest in the world for several years. Between 1980 and 1998, the population increased by 46 percent.<sup>2</sup> Only recently has it declined to 1.49 percent.<sup>3</sup> According to the UN population growth projections, the population of Turkey is expected to reach 92 million in 2025.

High population growth leads to high migration rates to the largest cities in the country. The rate of urbanisation was estimated to be about 4.8 percent in 2001. Industrial cities, especially Istanbul, Izmit, Izmir, Adana and Mersin are the most attractive cities to rural migrants. This current accelerated migration from rural areas to urban centres reflects major environmental changes. Unplanned urbanisation, which leads to the transfer of rich agricultural land for urban use, has had severe environmental impacts, including salinisation, soil erosion and pollution of surface waters.

Turkey's longest rivers, the Kizilirmak, the Yesilirmak and the Sakarya, flow into the Black Sea. The Dicle and Firat Rivers originate in Eastern Anatolia and flow south into the Persian Gulf.

Forests cover 27 percent of the country and arable and permanent cropland covers 35 percent. Roughly 4.5 million hectares of land is irrigated in Turkey. The South Eastern Anatolia Project (GAP)<sup>4</sup> is expected to foster growth in the region, irrigating 1.7 million hectares by 2010. The project is based on the concept of sustainable development, which aims at creating an environment in which future generations can fully support themselves. Equitable development, participation, protection of the environment, employment generation, spatial planning and infrastructure development are the basic strategies of GAP.<sup>5</sup>

Turkey shows great diversity in geological structure, climate and environmental concerns. The country is divided into seven geographical regions: four of them are coastal zones, namely the Black Sea, Marmara, Aegean, and the Mediterranean regions and the remaining three are Central Anatolia, Eastern Anatolia and South Eastern Anatolia.

TABLE 1

## Unofficial populations of large Turkish cities in 1997 and 2000

<i>City</i>	<i>1997</i>	<i>2000</i>
<b>Istanbul</b>	9,198,809	10,041,477
<b>Ankara</b>	3,693,390	4,018,278
<b>Izmir</b>	3,114,859	3,610,000
<b>Bursa</b>	1,958,529	2,096,144
<b>Konya</b>	1,931,773	2,443,000
<b>Adana</b>	1,682,483	1,890,142
<b>Antalya</b>	1,509,616	1,800,700
<b>Icel</b>	1,508,232	1,832,279
<b>Sanliurfa</b>	1,303,589	1,697,218
<b>Diyarbakir</b>	1,282,678	1,500,000

Turkey is divided into 81 administrative provinces. Almost 34 percent of the population lives in rural areas. The last census counted 3,048 cities (more than 2000 inhabitants) containing a total of almost 46 million people. In the 53 largest cities (more than 100,000 inhabitants) there is a concentration of more than 26.4 million people (40 percent of the total population). Another group of 243 towns (from 20,000 to 100,000 inhabitants) represents 16.5 percent of the total population.<sup>6</sup>

In recent decades, the biggest cities (Istanbul, Ankara, Izmir) have grown so fast that an imbalance has appeared in the urban network of Turkey. Though some cities (Kayseri, Eskisehir, Konya, Gaziantep, Erzurum, Samsun) still have high employment capacity, the more agriculturally oriented cities show signs of decline, leading to even further internal migration.

Table 1 shows the major populated cities in Turkey according to the last two censuses, held in 1997 and 2000 (the official results have not been released yet):<sup>7</sup>

In 2000, the official unemployment rate in Turkey was 10.4 percent.<sup>8</sup> Actually, the figure is probably considerably higher because many unemployed workers are not registered with the social insurance system. These figures do not take seasonal unemployment in rural areas into account.

High unemployment rates affect the implementation of environmental policies. Factory closures through enforcement of legislation cause negative public reaction to the threats of unemployment. On

the other hand, due to the recent economic recession, pollution rates declined. Although Turkey is in an intense privatisation process, the main state-owned enterprises (see Table 2) are some of the country's biggest polluters.<sup>9</sup> Their technologies are largely obsolete, inefficient and polluting. Municipal authorities find it difficult to impose environmental measures on these enterprises because the central authorities protect them.

The size and topography of the country, the growth of the population, and its drift to urban areas create not only environmental problems but also pose major challenges to the administrative make-up and capacity of governmental authorities at central, provincial and municipal levels.

The Republic of Turkey is a democratic and secular state. The president of the republic is the head of state. The Grand National Assembly of Turkey (the Assembly) elects the president. Presidential elections were most recently held by the Assembly in 2000 and occur every seven years.

There are 81 appointed governors, all affiliated with the Ministry of Interior Affairs. The governor is the head of the provincial local government. Provincial special administrations, municipalities and villages are the three types of local administration systems operating in Turkey. Most important are the municipalities, set up in all provincial and district centres. The municipal administration is elected by popular vote every five years. There are 3,228 municipalities in Turkey (as of October 2001), of which 16 are structured as the "Greater City Municipality."<sup>10</sup>



TABLE 2

## Main state-owned enterprises in Turkey

<i>Enterprise</i>	<i>Activity</i>	<i>State Share (%)</i>
Atakoy Otelcilik A.S.	Tourism	56.49
Atakoy Turizm Tesisleri ve Tic. A.S.	Tourism	58.59
Cay İşletmeleri Genel Müdürlüğü	Tea	100.00
Celbor Çelik Çekme Boru San. A.S.	Steel Pipe Industry	99.99
Devlet Hava Meydanları İşletmesi	Airline	100.00
Ditas Deniz. İşlet. Ve Tankercilik A.S.	Marine transport of crude oil	50.98
Ebas Et ve Balık Ürünleri A.S.	Meat, fish, poultry	100.00
Eregli Demir Çelik Fabrikaları A.S.	Iron and steel	46.12
Eti Alüminyum A.S.	Aluminum	100.00
Eti Bakır A.S.	Copper	100.00
Eti Bor A.S.	Mining	100.00
Eti Elektrometalurji A.S.	Electrometallurgy	100.00
Eti Gümüş A.S.	Silver	100.00
Eti Krom A.S.	Chrome	100.00
Eti Pazarlama ve Dis Ticaret A.S.	Marketing and foreign trade	100.00
Gerkonsan A.S.	Iron and steel construction	99.95
Gönen Gıda Sanayii A.S.	Food	49.00
IGSAS	Fertiliser	99.99
İSDEMİR	Iron and steel	100.00
Karadeniz Bakır İşletmeleri A.S. (KBI)	Copper	99.99
Kıyı Emniyeti ve Gemi Kurtarma İşletmesi	Coastal zone management (maritime)	100.00
Makine ve Kimya Endüstrisi Kurumu	Machinery (chemical)	100.00
PETKİM Petrokimya Holding A.S.	Petrochemicals	88.86
Petrol Ofisi A.S. (POAS)	Gasoline and fuel-oil marketing and distribution	42.30
SUMER Holding A.S.	Textile, leather, ceramics, carpets	100.00
TAKSAN	Machinery	100.00
Tarım İşletmeleri Genel Müdürlüğü	Agriculture	100.00
TEKEL	Alcohol and tobacco products	100.00
THY	Airline	98.17
Turban Turizm A.S.	Tourism	100.00
Türkiye Demir Çelik İşletmeleri	Iron and steel	100.00
TUGSAS	Fertiliser	100.00
Tumosan Türk Motor Sanayii A.S.	Machinery	99.99
TUPRAS	Petroleum refining	65.76
Türkiye Denizcilik İşletmeleri	Maritime	100.00
Türkiye Elektrik Dağıtım A.S.	Electricity	100.00
Türkiye Elektrik Üretim A.S.	Electricity	100.00
Türkiye Gemi Sanayii A.S.	Vessel construction	100.00

TABLE 2 continued

**Main state-owned enterprises in Turkey continued**

<b>Türkiye Kömür İşletmeleri</b>	Coal	100.00
<b>T.P.A.O</b>	Petroleum	100.00
<b>SEKA</b>	Pulp and paper production	100.00
<b>Türkiye Şeker Fabrikaları A.Ş.</b>	Sugar processing	99.99
<b>Türk Telekomünikasyon A.Ş.</b>	Telecommunication	100.00

The prime minister is selected from the members of the Assembly and appointed by the president; the ministers, who are not required to be deputies, are selected by the prime minister and appointed by the president. Turkey has a multi-party political system. The power to legislate is vested in the Assembly, whose 550 members are elected every five years. Legislative elections were last held in April 1999.

## Environmental History

Turkey began addressing environmental concerns during the 1970s. In 1978 the Prime Ministry Undersecretariat for Environment was founded as an extension of a state ministry responsible for the coordination of all national and international activities concerning the environment. The Undersecretariat was the institution expected to set environmental policy, to coordinate and prepare regulations, and to cooperate with other ministries. However, the adaptation of environmental policies was not able to keep pace with Turkey's industrial development. This issue was not considered a priority for a long time.

In August 1991, the Undersecretariat for the Environment was replaced by the Ministry of Environment. This change led to a diversification of the Ministry's responsibilities and an expansion of its staff, and empowered the administration with authority to implement and enforce policies for the protection and conservation of the environment.

Today, the activities of the Ministry of Environment cover issues such as appropriate land use, conservation of natural resources, protection of plant and animal species, prevention of pollution and raising public awareness. Setting environmental policies and strategies; coordinating environmental activities on local, national and international levels; issuing environmental licenses; collecting information; and organising training activities are among the other

duties of the Ministry. All these activities are conducted in close cooperation with other ministries, related institutions, local governments and non-governmental organisations. The Ministry of Environment employs about 800 staff members.

The Environmental Law of 1982, which came into force in 1983, also endorsed many additional measures. The aim of the law, which considers the environment as a whole, is not only to prevent and eliminate environmental pollution, but also to allow the management of natural resources and the land. According to the basic principles that govern the application of the Environmental law, as stated in the Constitution, citizens as well as the state bear responsibility for the protection of the environment. It is also stated in the Law that in all economic activities every measure should be taken to minimise pollution.

In line with the Environment Law, several regulations have been issued since 1983:

- Air Quality Control Regulation (1986)
- Water Pollution Control Regulation (1988)
- Noise Control Regulation (1986)
- Control of Solid Waste Regulation (1991)
- Environmental Impact Assessment Regulation (1992)
- Regulation on Control of Medical Waste (1993)
- Control of Toxic Chemical Substances and Products Regulation (1993)
- Control of Hazardous Wastes Regulation (1993)

Complementary to the Environmental Law and its regulations, other laws and international conventions governing the protection of the environment have been put into force (see Annex I).

Within the framework of sustainable development, Turkey today faces the challenge of balancing economic growth with environmental progress. A number of institutional and legislative elements of environmental reform have been put on the agenda as part of the environmental planning in the country. This will require strengthened environmental efforts and cooperation between the central government, municipalities and the private sector, which will create the necessary environmental infrastructure in urban and industrial areas.

In the coming years, Turkey must therefore find ways to:

- implement environmental policies and strengthen enforcement capabilities;
- invest in an environmental infrastructure;
- provide for public participation and increase public awareness of environmental problems;
- integrate environmental concerns into economic decisions;
- meet the country's international commitments; and
- complete harmonisation with EU standards.



# The State of Turkey's Environment

## Air

The legal framework related to air pollution and air quality management in Turkey is the Air Quality Control Regulation, which came into force in 1986. The provincial offices of the Ministry of Health, in cooperation with the Ministry of Environment, carry out air quality tests.

Turkey has ratified international conventions on long-range trans-boundary air pollution and ozone layer depletion, but has not yet signed the Convention on Climate Change.

The responsible public authorities for the improvement of air quality are the the ministries of Environment, Health, Energy and Natural Resources, Industry and Trade; the State Planning Organisation; provincial offices of the relevant ministries; municipalities; the State Institute of Statistics; and the Turkish Standards Institute.

In urban areas there has been a decrease in concentrations of sulphur dioxide (SO<sub>2</sub>) and particulates during the late 1990s. This is largely due to the major changes in the fuel mix used in these areas: domestic coal with high sulphur content has been prohibited for heating and replaced by imported coal with a lower sulphur content (the illegal use of domestic coal for heating is a significant contributor to urban air pollution), and natural gas has been supplied to several cities. Today gas makes up about 10 percent of Turkey's total energy supply.<sup>11</sup>

Industrial exhaust, coupled with emissions attributable to industrial power use, was responsible for almost 40 percent of the total SO<sub>2</sub> pollution in Turkey. Motor vehicles are still a significant source of carbon monoxide, hydrocarbons, nitrogen oxides (NO<sub>x</sub>) and particulates, especially in big cities.

About 60 percent of the total electricity consumption is generated in thermal power plants, almost half of which burn lignite and hard coal with an average sulphur content between 1.3 and 3.5 percent.<sup>12</sup>

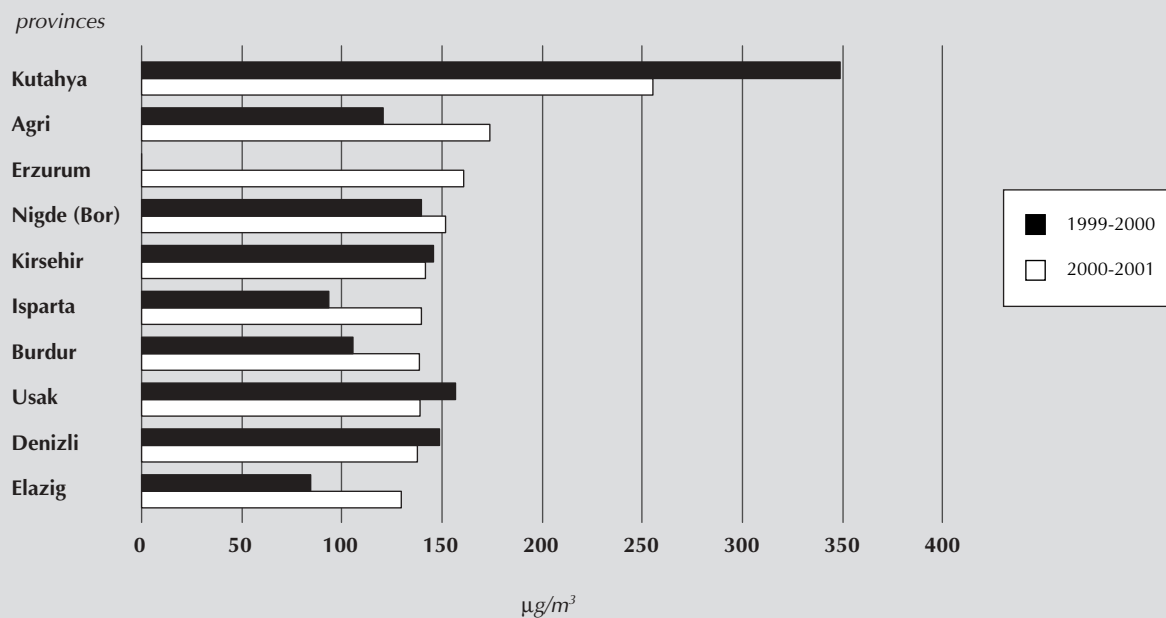
As a result of rapid economic development, uncontrolled urbanisation and high growth rates in air pollution are still an emerging environmental problem in some cities.<sup>13</sup> Graphs 1 and 2 show provincial and district centres with high concentrations of sulphur dioxide and particulate matter (smoke) in the winter season of 1999-2000 and 2000-2001 (in descending order).<sup>14</sup>

The keys to alleviating air pollution in Turkey are:

- More comprehensive information on air emissions and air quality should be compiled.
- Enforcement of air quality regulations should be strengthened.
- The use of economic instruments should be developed to increase the cost effectiveness of air quality management.
- Energy efficiency studies should be conducted and the use of renewable energies and cleaner fuels should be introduced.

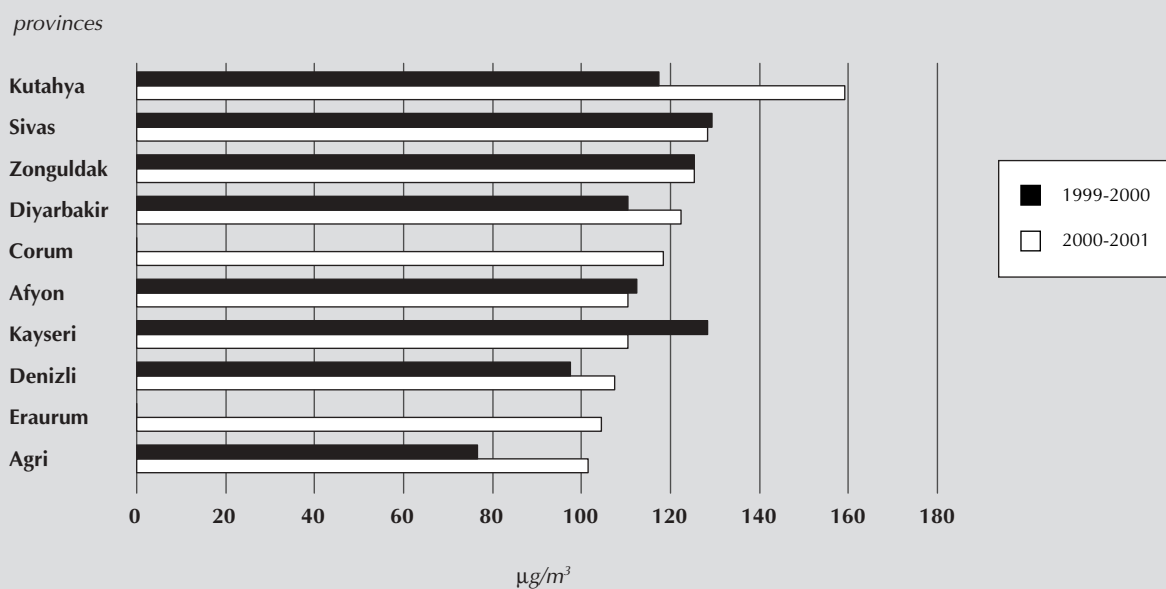
There is no procedure at the national level to calculate and publish periodic emission inventories of pollutants including sulphur oxides (SO<sub>x</sub>), NO<sub>x</sub>, volatile organic compounds (VOCs) and particulates. Air quality monitoring systems in industrial and urban areas should be extended and the system should be strengthened. Greater clarity on institutional responsibilities among all national and local

GRAPH 1

Concentrations of SO<sub>2</sub> in various Turkish provinces

GRAPH 2

## Concentrations of particulate matter in various Turkish provinces



authorities is necessary. A local master plan for transport should be developed for every town, which would take account all the economic activities in the region. Technologies minimising air pollution should be promoted.

## Water

The quality of water is legally managed by the Regulation on the Control of Water Pollution. The Regulation puts forward the principles for the discharge of wastes into ground and surface waters and strategies to protect the water basins used for drinking water. It also lists the regions under protection. The Drinking Water Standard (TS 266) determines the recommended maximum limit values. The Regulation on Water Products also delineates the water quality standards for goods containing water.

The responsible authorities for the protection and management of water quality are the ministries of Environment, Energy and Natural Resources, Agriculture and Rural Affairs, Tourism, Health; the Undersecretariat of Maritime Affairs; the State

Hydraulic Works; the Bank of Provinces; the Coast Guard; the Coastal Safety and Vessel Rescue Administration; and the State Maritime Enterprise.

Economic developments, including increased irrigation for agricultural production, and high population growth rates have increased the industrial and domestic demand for water. These developments not only increase the demand for water but also threaten the existence and quality of water resources.

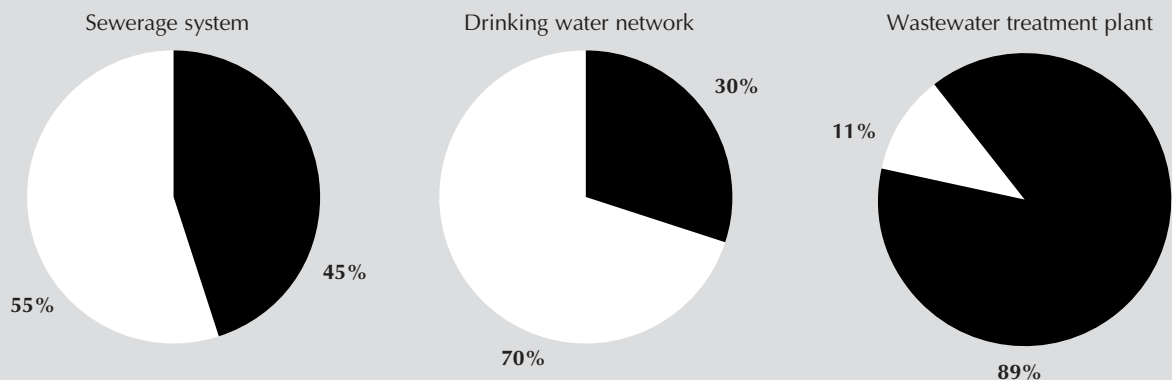
Regarding surface waters, Turkey is geographically divided into 26 water basins. There are 200 natural lakes covering an area of about 1 million hectares.

The total annual groundwater supply is 41 billion cubic metres, of which 12 billion cubic metres could be exploited. Currently 8 billion cubic metres are being exploited, of which 55 percent is used for irrigation and 45 percent for drinking and industrial purposes.

In 1996 total water consumption was 34 billion cubic metres. It is calculated that 95.20 percent of the municipal population (2,113 municipalities) is served by a drinking water network, 2.45 percent (312 municipalities) by supply water from wells, 1.67 percent (333 municipalities) by water from public fountains and 0.65 percent (232 municipalities) by water from natural springs.

GRAPH 3

### Percentage of total population served by drinking water network, sewerage plants and treatment plants



Source: Environment Inventory for Municipalities, 1996

Annual consumption of drinking water was almost 74 cubic metres per capita when the EU average was about 100 cubic metres. Water consumption increased 8 percent between 1980 and 1997. Among rural residents, 62 percent of have access to safe drinking water and nearly 70 percent of the urban population is connected to safe drinking water. It is significant that 50 percent of the total drinking water potential is lost in the supply networks. The population of Turkey is expected to reach 87 million in 2020 and the total capacity of consumable water resources per capita is foreseen as 1,042 cubic metres per year.<sup>15</sup>

It was estimated that a drinking water network served 91.34 percent of the municipal population, i.e. 69.60 percent of the total population, in 1996. In terms of drinking water treatment plants, those ratios are 31.93 and 24.33 percent respectively. According to the same evaluation, 71.82 percent of the municipal population, i.e. 54.73 percent of the total population is connected to sewerage; 13.78 percent of the municipal population, i.e. 10.50 percent of the total population, is connected to a wastewater plant.<sup>16</sup>

Financing for the construction of urban water, sewerage and treatment plants is largely provided by the central government via the Municipalities Fund of the Bank of Provinces. These funds usually fall short of what is required to complete the infrastructure. External resources for finance shift the burden to foreign debt. Therefore, financing of investments for water supply, sanitation, sewage treatment and solid waste disposal is still a burden for the central government. Provisions regarding financial autonomy of the municipalities and increasing their revenues are planned for inclusion in the revised Law for Local Authorities.

Currently, about 55 percent of the population is connected to the sewerage system in municipalities having a population of more than 3,000, whereas only 11 percent has a wastewater treatment system. These are usually in greater municipalities. The other municipalities do not have any treatment system, only primary (physical) treatment or they do not have the capacity to operate the established sewage treatment plants. Seventy-five percent of the industrial wastewater is discharged without any treatment (mainly into seas and rivers), 20 percent is treated and the remaining 5 percent gets preliminary treatment only. Approximately half of the 190,000 industrial enterprises<sup>17</sup> (employees less than 25) are active in highly polluted industries, and of those 1.4 percent are established in organised industrial zones.<sup>18</sup>

Many steps remain in order to improve the sustainable management of water resources in Turkey. Specific actions need to be taken to increase the share of the population connected to sewage treatment, which currently stands at only 12 percent. The price structure of the water services should be developed to cover the investment and maintenance costs as well as to achieve a rational use of water. Priority should be given to investment in the water infrastructure in order to develop public-private cooperation for financing. Strategies for the management of water resources in water basins need to be developed. Relevant legislation needs to be better enforced. Monitoring and measurement of water quality should be properly implemented and recorded.

## Waste

Waste is controlled by regulations on Control of Solid Wastes, Control of Medical Wastes, and Hazardous Waste Control Management with the aim of assessing any adverse impacts.

The responsible authorities for solid waste management in Turkey are the ministries of Environment, Industry and Trade, Interior Affairs, Public Works and Settlement; municipalities; the chambers of trade and industry; and the Turkish Standards Institute.

A total of 22.8 million tonnes of solid waste was collected and disposed of from 2,157 municipalities in Turkey in 1996.<sup>19</sup> (Table 3.0 breaks down solid waste disposal by size of city.) From this amount, 42.83 percent (9.8 million tonnes) was disposed of in municipal dumps, 31.75 percent (7.2 million tonnes) in metropolitan municipal dumps, 12.76 percent (2.9 million tonnes) taken to landfills, 3.75 percent (857,000 tonnes) buried in the ground, 1.96 percent (447,000 tonnes) dumped into rivers, 1.96 percent (447,000 tonnes) burned in the open, 1.69 percent (387,000 tonnes) dumped into streams and 0.45 percent (103,000 tonnes) disposed of in composting plants.

Municipal waste volumes are increasing, following the increase in the country's population and the changes in lifestyle, from 15 million tonnes in 1991 to 22.8 million tonnes in 1996. Composting plants have been installed in some cities while in other centres disposal practices vary from landfilling to dumping in quarries, streams and even the sea. Strategies on the management of municipal waste need to be developed and technical support should be provided.



TABLE 3

**Solid waste produced per capita in Turkey**

<i>Population</i>	<i>Solid waste (Kg/day/capita)</i>
<b>More than 1,000,000</b>	0.5-2.0
<b>100,000 – 1,000,000</b>	0.5-1.5
<b>Fewer than 100,000</b>	0.5-1.0
<b>Tourist towns</b>	1.0-2.0

\* Hospital waste is estimated at 1.5-4.0 kilograms per day per bed.

Of 1,544 municipalities which cannot satisfy the Solid Waste Regulations, 974 blamed finances, 639 claimed insufficient staff, 533 indicated insufficient vehicles, 487 referred to technical problems and 521 claimed ignorance of the regulations.<sup>20</sup>

Although most of the material is recycled through “picking over” from waste containers in the streets, an anticipated increase in the urban population will result in the phasing out of this practice.

Industrial wastes for 1995 amounted to 17.5 million tonnes of which 7 to 8 million tonnes were hazardous waste. Mostly industrial solid waste is stored in waste disposal dumps and mixed with municipal waste in landfill sites. Concerning clinical waste the existing data is incomplete, however, calculations based on hospitals' capacity estimate the annual amounts to be around 7.5 million tonnes.<sup>21</sup>

Since clinical waste is not measured properly, the nature of its disposal is not quite clear. The principal management option adopted is incineration. The number of incineration plants is limited (six such facilities operating in Turkey) due to their high operational cost. However, it is believed that much medical waste gets mixed with municipal refuse. There are 1,120 hospitals in Turkey and the total number of beds is 160,884.<sup>22</sup>

There is only one hazardous waste disposal facility in Turkey, obviously inadequate for the current level of waste production. The lack of infrastructure results in large percentages of hazardous waste reported as sold (25 percent) or disposed of in uncontrolled ways (66 percent).

The recycling of industrial waste could be improved if organisations such as the chambers of industry established waste exchange inventories and other schemes to facilitate the use of one enterprise's waste as an input to another.

Such a project has been developed by the chambers of industry in Izmit and Istanbul. The lack of enforceable laws has encouraged some attempts to import hazardous waste into the country, which are then disposed of in illegal dumps. The traditional disposal methods of on-site incineration or immediate cover in landfill sites are not effective tools used in Turkey. The local capacity, including financial resources, equipment and staff, is too low to cope with the problems of rapid urbanisation. The level of public awareness and public participation in activities surrounding solid waste management strategies is limited and, most importantly, are not on the current agenda.

## Soil

Among the responsible institutions for the prevention of soil pollution in Turkey, the driving institutions are the Ministries of Environment, Forestry, Agriculture and Rural Affairs, Public Works and Settlement, General Directorates of Rural Services and the State Hydraulic Works.

The main problem with soil in Turkey is erosion. Soil losses are estimated at 1 billion tonnes, most of it washed out to sea. Erosion affects 81 percent of the total land surface in Turkey.<sup>23</sup> Severe erosion is more of a problem in areas where agricultural activities are carried out without any environmental precautions.

Turkey should prevent the use of agricultural lands for other purposes. Land use decisions should be coupled with soil capacity classifications, therefore an inventory should be prepared of land and its soil capacity and the new pasture law should be implemented. Policies supporting agriculture should be integrated with efforts to protect land resources, methods should be developed to include farmers in eco-regional decision-making; and the overuse or misuse of synthetic fertilisers, agricultural chemicals and hormones should be prevented. Furthermore, the method of air spraying of agricultural disinfectants should be abandoned; research and application of non-chemical pest control methods and integrated pest management should be supported; drainage activities have always damaged ecological balance and for this reason these projects have to undergo an environmental impact assessment (EIA) at the decision-making stage. There is a need to protect forests and developing new ones should be promoted; burning stubble should be restricted and laws should be developed on this.

TABLE 4

National parks in Turkey<sup>26</sup>

<i>Name</i>	<i>Province</i>	<i>Area (ha)</i>
1. Yozgat Camligi	Yozgat	264
2. Karatepe-Aslantas	Adana	7,715
3. Soguksu	Ankara	1,195
4. Kuscenneti	Balikesir	64
5. Uludag	Bursa	12,732
6. Yedigoller	Zonguldak	2,019
7. Dilek Peninsula	Aydin	27,675
8. Mt. Spil	Manisa	5,505
9. Kizildag	Isparta	59,400
10. Termessos	Antalya	6,702
11. Kovada Lake	Isparta	6,534
12. Munzur Valley	Tunceli	42,000
13. Olympus-Beydaglari	Antalya	34,425
14. Gelibolu Peninsula	Canakkale	33,000
15. Koprulu Kanyon	Antalya	36,614
16. Mt. Ilgaz	Kastamonu	1,088
17. Baskomutan	Afyon	35,500
18. Goreme	Nevsehir	9,572
19. Altindere Valley	Trabzon	4,800
20. Bogazkoy-Alacahoyuk	Corum	2,684
21. Mt. Nemrut	Adiyaman	13,850
22. Beysehir Lake	Konya	88,750
23. Mt. Kaz	Balikesir	21,300
24. Mt. Kackar	Rize	51,550
25. Hatila Valley	Artvin	16,988
26. Altinbesik Cave	Antalya	1,156
27. Karagol-Sahara	Artvin	3,766
28. Mt. Honaz	Denizli	9,219
29. Aladaglar	Nigde	54,524
30. Marmaris	Mugla	33,350
31. Saklıkent	Antalya	12,390
32. Troy	Canakkale	13,350
<b>TOTAL</b>		<b>649,680</b>

Only 24 percent of the total land surface of Turkey is suitable for agriculture. Due to the lack of environmental measures, 83 percent of all agricultural production suffers from environmental problems.

Because of a lack of incentives, penalties, training, awareness and participation in the decision-making process, farmers lack incentives to conserve land and water resources.

TABLE 3.2

**Ramsar sites in Turkey<sup>27</sup>**

<i>No.</i>	<i>Name</i>	<i>Region</i>
1	Sultan Marsh	Kayseri
2	Goksu Delta	Icel
3	Gediz Delta	Izmir
4	Seyfe Lake	Kirsehir
5	Uluabat Lake	Bursa
6	Manyas Lake	Balikesir
7	Burdur Lake	Burdur
8	Kizilirmak Delta	Samsun
9	Akyatan Lagoon	Adana

Poor control of soil and water contamination is another problem straining Turkey's water supplies. A firm policy should be established for the provision of sewerage and appropriate waste treatment for all communities with populations over 20,000. Industrial and urban wastewater constitute a very important pollutant source for soils in Turkey.

Industrial emissions, solid waste and wastewater also affect the natural ecosystem of the soil. As a result of industrial emissions, various hazardous substances reach the soil.

## Nature Protection

Turkey has become a party to international conventions of Bern, Ramsar, International Trade of Endangered Species (CITES) and Biodiversity. The legal framework for the protection of nature is established by the Laws on Land Hunting (No: 3167), on Forestry (No: 3116) on Natural Parks (No: 2873) and on National Parks (No: 2873).

Protection of natural resources in Turkey falls to the ministries of Environment, Forestry, Agriculture and Rural Affairs, Culture, Public Works and Settlement; the State Hydraulic Works; the Scientific and Technical Research Council of Turkey (TUBITAK);<sup>24</sup> and the universities.

Turkey's unique location between the continents of Europe and Asia give it a rich variety of ecological characteristics. Varied climate conditions also contribute to biological diversity.

A range of protected areas such as national parks, nature parks, Ramsar sites, etc. have been designated and their number has increased over the last few years. In Turkey, there are 32 national parks, 35 nature protection zones, 15 nature parks and 54 nature monuments, 13 specially protected environment areas, 118 wildlife protection areas and nine Ramsar sites declared as protected areas. Table 4 lists the national parks and Table 5 lists the Ramsar sites.

In Turkey, there are more than 9,000 plant species. Of these, 3,000 are endemic.<sup>26</sup> Its varied ecology and diverse ecosystems have made Turkey home to a wider variety of species and subspecies peculiar to the region and therefore defined as endemic.

Some of these endemic species are localised in specific mountain ranges. Others are more widespread, which is mostly the case in the eastern part of the country. Population growth and economic development present significant threats to endemic plant species. On the other hand, clearing ground for fields, overgrazing, forest fires, construction of dams and power plants, use of pesticides together with intensive pollution related to industrialisation and unplanned urbanisation have had a major adverse impact on Turkey's flora and fauna.

Twenty-seven percent of Turkey is forested, though that figure is shrinking due to illegal cutting and clearing, illegal settlement and grazing, fires and pests. Fires are a growing threat particularly in the Mediterranean and Aegean regions where forestlands are also subject to competitive land uses such as urbanisation and tourism.

Twenty-eight percent of Turkey is pasture and this number is also declining. Pastures and grasslands are important because they support animal husbandry, which accounts for one-third of the country's agricultural production.

Two percent of the total land is represented as wetlands in Turkey. These are rich in variety and they delineate a crucial route for migrant birds. Seventy-five percent of Turkey's 250 wetlands are larger than 100 hectares, 60 percent of the marshes are freshwater ecosystems, and 20 percent are saltwater. Seventy percent of the wetlands in Turkey are less than 6 metres deep. There are almost 400 species of birds found in Turkey, of which 250 are migratory.<sup>27</sup>

The destruction of biodiversity is continuing largely as a result of the rapid development in tourism, urbanisation, and major investment projects (dams, power plants, etc.) in rural areas. Protected areas, which suffer from tourism projects, irrigation,

pollution of wetlands, forest fires, etc., cover only 2 percent of the total surface area of Turkey. In this respect, there is a need to strengthen the network of specialists, scientists and NGOs dealing with flora and fauna in order to conduct the inventory of endangered species and publish a “red list” of threatened species. There is a need for greater cooperation and partnership among ministries and relevant institutions responsible for nature conservation. Furthermore, it is necessary to increase public awareness and reinforce information and education programmes on nature conservation, and also the capacity to develop a national biodiversity action plan.

# The European Union, Turkey and the Environment

In July 1959, Turkey made its first application to join the then recently formed European Economic Community. The EEC's response to Turkey's application in 1959 was to suggest the establishment of an association until Turkey's circumstances permitted its accession. The ensuing negotiations resulted in the signature of the Agreement Creating an Association Between The Republic of Turkey and the European Economic Community (the Ankara Agreement) on September 12, 1963. This agreement, which entered into force on December 1, 1964, aimed at securing Turkey's full membership in the EEC through the establishment of a customs union in three phases, to serve as an instrument to bring about integration between the EEC and Turkey.

On January 1, 1996 the Customs Union between the European Union and Turkey came into effect, creating the closest economic and political relationship between the EU and any non-member country.

Upon establishment of the Customs Union Decision, Turkey eliminated all duties and equivalent charges on imports of industrial goods from members of the EU. Furthermore, Turkey harmonised its tariffs and equivalent charges on the import of industrial goods from "third countries" with the Common External Tariff of the EU, and would progressively adopt EU commercial policy and preferential tariff policies until the end of 2001.

The Helsinki European Council held on December 10-11, 1999 produced a breakthrough in Turkey-EU relations. At Helsinki, Turkey was officially recognised, without any precondition, as a candidate state on an equal footing with the other candidate states. While recognising Turkey's candidate status, the Presidency Conclusions of the Helsinki European Council endorsed the proposals of the

Commission made on October 13, 1999.<sup>28</sup> Thus, Turkey, like other candidate states, became eligible for a pre-accession strategy to stimulate and support its reforms. This includes an Accession Partnership, combined with a National Programme for the Adoption of the Acquis.

Turkey's environmental situation presents a considerable obstacle in its EU accession efforts, mainly due to questions regarding compliance costs and funding sources for investments. There are questions about the costs of compliance with EU legislation and the difficulty of finding money to fund the necessary investments. However, there has been little discussion between the environmental stakeholders about the benefits that EU environmental directives would imply for Turkey both in environmental and economic terms. An analysis of the benefits resulting from implementing EU environmental legislation in Turkey is necessary to get a full understanding of the real effects of its accession to the EU.

Turkey faces a considerable task in adopting EU environmental directives into its national legislation and implementing and enforcing them. At the same time Turkey is aligning with EU legislation in other policy areas as well. In many of these areas, there are also considerable needs, but the resources, both financial and administrative, are limited.

With these factors in mind, some of the main challenges in the environmental sector with respect to EU accession are:<sup>29</sup>

- improving and extending water supply networks;
- improving and extending wastewater collection and treatment plants;

- ensuring that air emissions from large combustion plants are reduced;
- improving air quality in many urban centres;
- ensuring that dangerous substances released from installations are controlled and risks of accidents are minimised;
- collecting, treating and disposing of waste from households, industry and hospitals;
- cleaning up contaminated land and rivers where water quality is unacceptable;
- protecting ecosystems, habitats and species from economic and environmental pressures;
- reducing emissions of pollutants from economic sectors; and
- ratifying the Aarhus Convention and implementing its provisions.<sup>30</sup>

Having also in mind that Turkey is a country with full EU membership orientation, the application of EU environmental regulation, and therefore the Eco-Management and Audit Scheme (EMAS)<sup>31</sup> is more than relevant.

The last regular report prepared by the European Commission for Turkey was published on November 8, 2000.<sup>32</sup> Chapter 22 of the Report defines environmental problems and requested progress in adopting the relevant environmental acquis accordingly. It highlights the following specific areas:

- Waste management is one of the most problematic areas, particularly regarding implementation of the related legislation.
- There is a need for a new legal framework law on water resources in order to allow water basin management by relevant stakeholders and to bring drinking water standards and wastewater discharge in line with the acquis.
- Nature protection needs to be paid particular attention in the pre-accession process, for which Turkey should adopt relevant EC nature protection legislation.
- Industrial pollution control and risk management laws in line with the acquis should be introduced.
- Relevant Turkish regulation on chemicals is not compatible with the EC legislation.

- The provisions on risk assessment and classification systems are lacking.
- Turkey does not have regular inventories of chemical substances that are produced, consumed, stored and transported.
- Environmental rules are not always enforced due to the involvement of various bodies and institutions at different levels, resulting in conflicting interests and responsibilities, limited numbers of trained and specialised staff, a shortage of financial resources and a lack of necessary equipment.
- Awareness of environmental issues and know-how is extremely low.
- Municipal capacity needs to be strengthened for EU integration.

The so-called Accession Partnership,<sup>33</sup> which was proposed by the EC in November 2000, identified the priorities and intermediate objectives and conditions for Turkey in the integration process.

Within the Accession Partnership, the European Commission also underlines environmental priority areas to be taken into account in the accession process for Turkey. These priority areas are: implementation and enforcement of the EU environmental acquis — in particular through developing a framework of sector legislation and strengthening the institutional, administrative and monitoring capacity — to ensure environmental protection; implementation of the acquis with particular attention to the framework legislation, horizontal legislation, and legislation on nature protection, water quality and waste management; implementation of a waste management strategy; establishment of monitoring networks and permitting procedures, as well as environmental inspectorates; integration of sustainable development principles into the definition and implementation of all sectoral policies, and implementation and enforcement of the Environmental Impact Assessment Directive.<sup>34</sup>

In response to the Accession Partnership document prepared by the European Commission for Turkey's candidacy, Turkey submitted to the European Commission its National Programme for the Adoption of the Acquis.

After a screening process designed to outline the list of EC environmental legislation to be integrated into the national legislation within the process of EU membership, Turkey published the relevant list in the National Programme (Annex II).

There are very significant benefits to be gained by Turkey from fully implementing EU directives. When taken all together, the annual value of benefits for Turkey is estimated between EUR 3.1 and 15 billion. This corresponds to between EUR 49 and 233 per capita in Turkey.<sup>35</sup>

In addition, many benefits of EU directives have not been fully covered when assessing the monetary values. This includes the protection of sensitive ecosystems and biodiversity. Some environmental investments might also lead to benefits not directly related to the environment in Turkey. They can improve economic efficiency and boost productivity, for example, by facilitating the take-up of modern technology, by lowering production and maintenance costs for companies through improved discharge water quality and energy efficiency, and by providing savings in the form of more efficient waste management.<sup>36</sup>





# Environmental Stakeholders

## Governmental Institutions

The General Directorate of Rural Services conducts projects on issues such as water supply in rural areas, irrigation and water treatment.

Municipalities conduct projects on environmental infrastructure, drinking water and sewerage services, waste collection, disposal of wastes and appropriate land use development plans in urban areas.

The State Hydraulic Works is responsible for the development and management of water resources. It is the primary executive state water agency, and is charged by law to develop all water resources in the country. The institution puts into effect surface and groundwater projects that are technically and economically feasible.

The State Planning Organisation, under the authority of the Prime Ministry, can make strategic choices in all areas of economic activity where public interest is a factor. It develops five-year national development plans, which are the main instruments for coordinating government policies. The State Planning Organisation also allocates resources for public investment. Since the third five-year development plan (1973-1977), these plans include environmental management. The sixth development plan adopted the concept of sustainable development. As part of the seventh development plan (1996-2000), the institution coordinated and supervised the preparation of the National Environmental Action Plan (NEAP) in cooperation with the Ministry of Environment. The 8th Five Year Plan, covering 2001-2005, has gone into effect.

The Authority for the Protection of Special Areas is an affiliated institution to the Ministry of Environment. It is responsible for protection and

improvement of the 13 specially protected areas<sup>37</sup> in Gocek, Dalyan, Patara, Kekova, Goksu, Golbasi, Pamukkale, Ihlara, Foca, Belek, Datca, Gokova, and Tuz Golu (Salt Lake).

The Bank of Provinces supplies financing and credit as well as technical assistance in project preparation to the municipalities for infrastructure projects regarding sewerage and wastewater treatment plants and, recently, solid waste disposal.

The Ministry of Agriculture and Rural Affairs is responsible for the protection and development of natural resources, water pollution and control, as well as the fisheries. The Ministry also prepares and conducts research, investigations, plans, programmes and projects to protect and improve consumption and input needs and soil, water, plant and livestock assets, and similar natural resources, in accordance with the requirements of environmental protection.

The Ministry of Culture is responsible for managing 54 protected natural monuments in Turkey.

The Ministry of Environment was established in 1991 with the aim of developing and protecting the environment. The Ministry of Environment is responsible for the coordination of all national and international activities pertaining to the environment. The activities of the Ministry cover subjects such as appropriate land use, protection of natural resources, plant and animal species, prevention of pollution and raising public awareness. The other activities are environmental policy and strategy development, coordination of environmental activities on local, national and international levels, issuing environmental licenses, data collection, etc. The Ministry employs around 800 staff, of which 500 are working in provincial branches. Provincial branches have been recently extended to 81 provinces. The Reference

Laboratory based in Ankara is a very well equipped establishment, but it has not achieved the expected efficiency and it is still under the process of accreditation.

The main environmental divisions of the Ministry<sup>38</sup> are (the structure of the Ministry is attached as Annex III):

- Directorate General of Prevention and Control of Environmental Pollution
  - Air Management Department
  - Water and Soil Management Department
  - Waste Management Department
  - Chemical Department
  - Measurement and Observation Department
- Directorate General of Environmental Protection
  - Plant Protection and Erosion Department
  - Animal Protection Department
  - Environmental Standards and Strategies Department
  - Receptor Areas Protection Department
  - Sensitive Eco-Systems Protection Department
- Directorate General of Environmental Impact Assessment and Planning
  - Environmental Planning Department
  - Infrastructure Investment Department
  - Industrial Investments, Environmental Impact Assessment Department
  - EIA Observation and Control Department
  - Environmental Inventory Department

The Ministry of Forestry and its department, the General Directorate of National Parks, Game and Wildlife (GDNP), are responsible for projects related to water pollution in forests, conservation of wildlife, and the protection and management of 32 national parks, 31 natural reserves, 11 natural parks and other protected areas. These do not include 13 specially protected areas managed by the Authority for the Protection of Special Areas.

The Ministry of Health and its department, the Environmental Health Services, are responsible for monitoring, reducing and preventing environmental

pollution that affects human health. The Ministry is responsible for drinking and bath water quality and air quality monitoring. Refik Saydam Hygiene Centre, affiliated with the Ministry of Health, works with laboratory based studies to prevent the adverse impacts of the environment to health.

The Ministry of Industry and Commerce is the responsible authority for industrial matters and for the development of industrial policy including those policies concerning the environment.

The Turkish Accreditation Council is authorised to accredit national and foreign organisations to conduct laboratory services, certification and inspection.

Under-secretariat for Maritime Affairs deals with the aquaculture field concentrating especially on sea traffic arrangements regarding the protection of natural harbours and small bays, tourist facilities, other coves in the vicinity and effects to the environment.

## Local-level Governmental Institutions

Provincial Branches of the Ministry of Environment represent the Ministry at the local level. The main functions of the provincial branches are: to take measures in order to prevent and minimise pollution caused by land based polluters and to inspect any activity that might threaten the ecology and cause sea pollution; to control facilities approved by local authorities and their waste collection, refining and discharge systems according to the standards set by the Environmental Law and related regulations; to observe and control every activity within the local area that affects the environment and to start necessary processes to stop these activities and to inform the Ministry about the requests of the institutions; and to carry out administrative tasks of the Ministry.

Environmental protection foundations are established in every city where provincial branches of the Ministry of Environment are available. They are established by the Ministry and headed by governors. They work much like local environmental funds. Their revenues are from paid services such as industrial emissions, vehicle exhaust emissions and noise level measurements. Local environmental projects are financed through the financial sources of these funds.

Municipalities are responsible for making general layout plans and to build large parks and green areas, specifying spots for the collection of household and

industrial wastes and establishing facilities for their disposal, and conducting services such as water, sewerage, natural gas and public transportation.

## Non-governmental Institutions

Environmental protection activities mostly seen in the last decade have led to the development of many national and regional environmental non-governmental institutions in Turkey. The main national NGOs, which are actively involved in many environmental problems in order to create public awareness consciousness and to encourage public participation, aim to propose efficient solutions providing a basis as a pressure group on the decision-making process.

The administrative and financial capacity of NGOs at the national and regional levels is a matter of concern. Awareness and effective approaches to environmental concerns and knowledge of recent developments in the environmental sector are low due to a lack of trained and specialised staff. There is also a need for establishing networks between the relevant NGOs to bring an integrated approach to the environmental questions on the agenda.

The UN Habitat II Conference started the main Turkish NGO movement and it was a turning point for civil society initiatives in Turkey, which was held in 1996 with the participation of 15,000 people from 165 different countries. Habitat II was the culmination of the previous conferences of the last decade: the women's conference in Beijing, the Earth Summit Conference in Rio, the Children's Summit in New York City, the Social Summit in Copenhagen, and the Population Conference in Cairo. This was the first civil society initiative in Turkey that convened NGOs, the business community and community-based organisations at the same platform.<sup>39</sup>

Turkish NGO involvement in the Conference was also facilitated through logistical and financial assistance of UNDP. Support was also provided to various NGOs active in the field of human settlements in realising project proposals that tackled problems ranging from the rehabilitation of squatter settlements to the preparation of a Turkish NGO data bank.

The devastating earthquakes of August 17, 1999 and November 12, 1999 in Turkey also reinforced the development of the consciousness of civil society and changed the understanding of civil initiatives.

The citizens who united in the rebuilding after the earthquakes have maintained the cooperative and constructive civic spirit.

In recent years there have been increases in the number of NGOs such as foundations, associations and citizens' initiatives engaged in subjects such as science, technology, research, democracy, environmental protection, etc. In 1967, the Council of Ministers was given the authority to grant tax exemptions to the foundations, and the donations made to the foundations were encouraged with various incentives in the tax laws. The number of foundations, which was only 72 in the period between 1926-1967, reached 4,534 as of May 2000. Today, the number of associations is around 72,800. Membership dues and donations form a significant portion of the financial resources of the associations, in addition to revenues collected from publications, lotteries, exhibitions, etc. The donations made to the associations are subject to tax.

The Council of Ministers can grant an association the status of "Association Beneficial for the Public" to allow tax exemptions and receipt of financial assistance from the state. Associations are more dependent on the government than foundations, because the Ministry of Interior controls the associations.

Since the Ottomans, the Turkish state has looked kindly on foundations. The popularity of establishing a foundation in Turkey is a result of this historical driving force, despite the fact that establishing a foundation is hampered by financial limitations. However, associations have considerable legal limitations starting from the establishment procedures, which include limitations on membership depending on the permission of government bodies for students, soldiers, civil servants, academics, etc. The cooperation of associations with international agencies and other countries, as well as with other organisations such as syndicates, political parties and professional chambers are also limited by legal restrictions. Grants to associations and membership fees are strictly controlled and limited by law.

In general, civil society in Turkey lacks professionalism. The constantly evolving NGO sector in the world is one that has developed into a sector that creates employment and affects GNP. For example, more than 4 percent of the national income in Germany is derived from this sector. In Turkey, employment and a full-time approach are still lacking. As a result, organising and establishing at the grassroots level are extremely difficult. This means

that most NGOs are organised somewhat around the larger cities in Turkey, leaving out a vast majority of Anatolia. Secondly, there is a lack of focus in the NGO sector as the approach is general, not issue-based with clear missions and goals. There is, therefore, a lack of consistency, and the motivation behind actions tends to be tied to political scandals or earthquakes. There are many associations and foundations in Turkey, with a majority of them lacking a clear mission. Thirdly, the almost entirely short-sighted attitude that has evolved in Turkey creates a tremendous barrier for an NGO to succeed. The fourth factor undermining NGOs is the shortage of financial resources and the cultural obstacles for fund-raising. NGOs, which are for the most part deal with the priorities of the day, tend to have problems even collecting their membership fees. Fund-raising is a concept that does not exist in Turkish NGO culture and individuals consider it shameful to ask for money. The fifth factor hindering NGOs is the lack of international relations and cooperation, an obstacle to keeping pace with international standards and to raising project funds, as most NGOs in Turkey do not know how to solicit international project funds or even whom to ask.

The main national NGOs of Turkey representing civil society in the environmental field are listed below in alphabetical order:

The Environment and Culture Agencies Cooperation Association (CEKUD) aims to create a society that cooperates with associations that are sensitive to the environment and culture and have an understanding of ethics and an ideal of living in a clean environment. In addition, it aims at restoring the social and ecological balance that has been disrupted by natural disasters and accidents.

The Environment Foundation of Turkey (TCV) was established in 1978. The Foundation promotes the environment through research, publication of books, newsletters, brochures and other information media, and emphasises creating public awareness. The TCV has been a member of the UNEP National Committee since May 1992.

The Association of Physicians for the Environment of Turkey was founded in 1998. The Association aims to organise those doctors sensitive to ecology, to investigate health problems stemming from environmental hazards and the deterioration of ecological equilibrium. They conduct scientific studies regarding the environment and health of ecosystems and create an archive of information for the

community. In addition, the association provides medical and scientific consultation and participates in educational activities.

The Society for the Protection of Nature (DHKD) was founded in 1975. The society works for the conservation of biological diversity and natural resources, encourages sustainable use of natural resources, increases public awareness of nature conservation, carries out projects aimed at protecting significant and threatened ecosystems and lobbies official institutions and agencies in support of these goals. It has 12,000 supporting members. The Society is an associate member of the World Wide Fund for Nature (WWF), Bird Life Partner of Turkey.

The Turkish Foundation for Combating Soil Erosion for Reforestation and Protection of Natural Habitats (TEMA) was founded in 1992. The chief aim of the foundation is to raise public awareness of several environmental issues posing great danger to Turkey's future. Land erosion, deforestation, loss of farmland productivity, and threats to biodiversity are their main concerns. TEMA develops and carries out model projects in rural development, rangeland rehabilitation, and reforestation. TEMA currently has 50,000 members and 288 volunteer representatives throughout the country. Institutions and companies have been invited to join as special members with donations ranging from USD 2,000 to USD 88,000. The 1998 budget was USD 2.5 million.

The Turkish Marine Environment Protection Association (TURMEPA) was founded in 1994. The objective of the Association is the protection of marine pollution.

Other national environmental NGOs are:

- Association for the Protection of Consumers and the Environment, CETKO (1990)
- Blue Marmara Association to Save Marmara (1991)
- Clean Energy Foundation, TEMEV (1994)
- Environment Protection and Research Foundation, CEV-KOR (1991)
- Environmental Education Foundation of Turkey, TURCEV (1993)
- Environmental Protection and Greening Council of Turkey, TCKYK (1972)
- Environmental Technology Applicators' Association, CEVRETED (1991)

- Expert Environmentalists Foundation, UCEV (1996)
- Foundation for the Protection and Promotion of Environmental and Cultural Assets, CEKUL (1990)
- Friends of Ecology and Environment Association, ECED (1993)
- International Solar Energy Society Turkish Section, UGET-TB (1992)
- Turkish Association for the Conservation of Nature and Natural Resources, TTKD (1955)
- Bosphorus University, Institute of Environmental Sciences
- Celal Bayar University, Environmental Sciences Research Centre
- Cumhuriyet University, Environmental Sciences Research Centre
- Dicle University, Environmental Sciences Research Centre
- Dokuz Eylul University, Institute of Marine Sciences and Technology
- Dumlupinar University, Environment Sciences Research and Development Centre
- Hacettepe University, Environmental Research and Application Centre
- Istanbul Technical University, Energy Sciences and Technology Research and Development Centre
- Istanbul Technical University, Environment and Urbanisation Research Centre
- Marmara University, Environmental Sciences Research and Application Centre
- Marmara University, Nature Plants and Water Products Research and Development Centre
- Middle East Technical University, Environmental Research Centre
- Mugla University, Environmental Problems Research Centre
- Selcuk University, Environmental Sciences Research and Application Centre
- Trakya University, Environmental Sciences Research and Application Centre
- Tubitak, Marmara Research Centre, Environmental and Energy Technologies Research Centre
- Uludag University, Environmental Research and Application Centre
- University of Mediterranean, Biological Variety Research, Development and Application Centre
- University of Ondokuz Mayıs, Environment Sciences Research and Development Centre

## Academics (University/Science)

Twenty different universities have environmental engineering departments in Turkey. Most of these universities have also established multi-disciplinary environmental research and application centres. The main objectives of these centres are to conduct research and development projects in cooperation with the public and private sector and to offer consultancy services as well as to serve for education and training on the following issues: identifying environmental pollution, preventing environmental pollution and protecting the environment; chemical, biological, microbiological, toxicological, hygienic, legal and economic studies on polluted resources (water, land, air); carrying out environmental impact assessments; physical, chemical and biological treatment plants that aim to prevent environmental pollution, flue gas and exhaust treatment tools; environmental planning, landscape design, legal and economic issues; new environmental technologies; and environmental hygiene.

Some of these centres that are established in the coastal regions of Turkey are focused on marine geology, physical oceanography, water basins, coastal and near shore processes, marine structures and coastal zone management.

These academic centres are as follows:

- Aegean University, Environmental Sciences Research and Application Centre
- Anadolu University, Environmental Sciences Research and Development Centre
- Bosphorus University, Institute of Environmental Sciences
- Celal Bayar University, Environmental Sciences Research Centre
- Cumhuriyet University, Environmental Sciences Research Centre
- Dicle University, Environmental Sciences Research Centre
- Dokuz Eylul University, Institute of Marine Sciences and Technology
- Dumlupinar University, Environment Sciences Research and Development Centre
- Hacettepe University, Environmental Research and Application Centre
- Istanbul Technical University, Energy Sciences and Technology Research and Development Centre
- Istanbul Technical University, Environment and Urbanisation Research Centre
- Marmara University, Environmental Sciences Research and Application Centre
- Marmara University, Nature Plants and Water Products Research and Development Centre
- Middle East Technical University, Environmental Research Centre
- Mugla University, Environmental Problems Research Centre
- Selcuk University, Environmental Sciences Research and Application Centre
- Trakya University, Environmental Sciences Research and Application Centre
- Tubitak, Marmara Research Centre, Environmental and Energy Technologies Research Centre
- Uludag University, Environmental Research and Application Centre
- University of Mediterranean, Biological Variety Research, Development and Application Centre
- University of Ondokuz Mayıs, Environment Sciences Research and Development Centre



## International and Donor Organisations in Turkey

### BIRDLIFE INTERNATIONAL

BirdLife International is a global partnership of non-governmental conservation groups. The Society for the Protection of Nature of Turkey (DHKD) is a BirdLife international partner for Turkey.

### BSEP (BLACK SEA ENVIRONMENTAL PROGRAM)

The programme is supported by UNDP under the financial programme of Global Environment Facility (GEF). The most important achievements of BSEP were the Trans-boundary Diagnostic Analysis (TDA) and the regional Strategic Action Plan for the rehabilitation and protection of the Black Sea (BSSAP). BSSAP was signed on behalf of countries by the ministries of environment of the riparian countries on October 31, 1996.

BSEP has three primary objectives: to strengthen and create regional capacities for managing the Black Sea ecosystem, to develop and implement an appropriate policy and legal framework for the assessment, control and prevention of pollution and the maintenance and enhancement of biodiversity, and to facilitate the preparation of sound environmental investments. Activities are funded with associated contributions from the European Union's Phare and TACIS programmes, as well as bilateral contributions from Canada, the Netherlands, Switzerland and France. Sub-Groups are Bulgaria, Georgia, Romania, Russian Federation, Turkey and the Ukraine.

### FAO (FOOD AND AGRICULTURAL ORGANISATION)

Turkey has been a member of FAO since 1945. Among the main counterparts and collaborators of FAO in Turkey are the Ministry of Foreign Affairs, the Ministry of Agriculture and Rural Affairs, the Ministry of Forestry, the South Eastern Anatolia Project (GAP) Regional Development Administration, the Ministry of Environment, the General Directorate of Rural Services, and also several universities, NGOs, organisations, agencies, institutions, foundations and the private sector.

There is ongoing close cooperation between FAO and Turkey on all matters of mutual interest, ensured by the FAO Representative in Turkey and the Turkish Permanent Representative to FAO in Rome.

FAO assists Turkey in reforming its sector policies, plans and programmes in order to modernise Turkish agriculture. An example is the in-depth evaluation of policies vis-à-vis the requirements of GATT, WTO and the EU, and training for requisite agricultural planning in various provinces of the country.

Advocacy on sustainable agriculture, forestry and rural development and the promotion of appropriate projects and programmes are the main focal areas of FAO in the environmental field in Turkey. Some of the projects financed by FAO in Turkey in the environmental field, are:<sup>40</sup>

**Development of Modern Forest Fire Prevention and Control Strategies:** An average of 1,500 fires break out in Turkey per year. Of these, 25 percent are due to negligence, 26 percent are set intentionally, 1 percent are caused by lightening or other natural causes and 48 percent have unknown causes. For this reason a well-integrated and coordinated approach to forest fire prevention and control is urgently needed. The strategies developed for modern forest management include the prevention, monitoring, detection and suppression of fires and the development of an information system, public awareness raising and training.

**National Parks:** The project aims to provide international cooperation to enhance the capacity of The General Directorate of National Parks, Game and Wildlife (GDNP) for planning and managing protected areas. The project has been prepared and implemented for fulfilling the demand for trained staff, for planning and managing of protected areas, improving the knowledge of participatory approaches to management and for promoting public awareness of nature conservation. It is also responsible for developing appropriate methodologies for the identification, designation, establishment, planning and management of national parks and protected areas, and for preparing and executing a master plan.

### GERMAN DEVELOPMENT COOPERATION AGENCY (GTZ)

GTZ has been operating as a service company in international development since 1975. The primary goals of GTZ's operations are to improve the living and working conditions of people in partner countries and to sustain the natural basis for life.

In order to support the cooperation with Turkey a German Development Cooperation Office (GTZ), was opened in Ankara in 1996. Since 1998, Kreditanstalt für Wiederaufbau (KfW) has also been represented in this office. Since 1998, the German Federal Ministry for Economic Cooperation and Development has allocated DEM 16 million for technical cooperation with Turkey. Support was mainly on strengthening municipal services, income generating measures in rural areas as well as advisory programmes for key institutions of the Turkish Government. The total allocation, since the beginning of the technical cooperation with Turkey, amounts to DEM 507 million. Projects and programmes of GTZ related to the environment in Turkey presently concentrate on the following key areas: 1) environmental protection and resource conservation: GTZ advisory services have focused on two areas: industrial environmental protection (via the Chambers of Industry and Commerce) and on municipal environmental protection (solid waste, wastewater, air, transport, etc.); 2) rural development: support in the agricultural sector gives emphasis to dairy and meat production and to training in irrigation techniques.

#### ISDE (INTERNATIONAL SOCIETY OF DOCTORS FOR THE ENVIRONMENT)

ISDE is an environmental NGO of physicians. It is an independent, non-governmental, non-profit organisation. It was created on November 25, 1990 and today has national and regional member organisations in over 35 countries. The main purpose of ISDE is to protect the environment to prevent illnesses, ensure the basic conditions for health and improve the quality of life. It fosters contacts and cooperative efforts with international organisations such as UNO, UNEP, UNESCO, WHO, the EU, and many NGOs to support projects of international relevance, and to bring together national groups working on local projects. The Association of Physicians for the Environment of Turkey has been a member of ISDE since 1998.

#### JICA (JAPAN INTERNATIONAL COOPERATION AGENCY)

The Government of Japan established a JICA office in Ankara in 1995 in order to enable more appropriate response to emerging assistance needs in

the country. The main targets of the JICA Turkey office are to support the ongoing activities and projects, to monitor and evaluate activities and to seek opportunities for further cooperation in the identified fields.

On March 4, 1997, the governments of Turkey and Japan held policy dialogues on JICA's aid guidelines. According to the aid guidelines of the JICA Turkey Office, the area of focus in the environmental field for assistance is developed under the Improvement of Urban Infrastructure and Environment Programme: improvement of urban infrastructure and facilities, recovery of urban environment and reduction of pollution of the international waters.<sup>41</sup>

#### MAP (UNEP-MEDITERRANEAN ACTION PLAN)

The Mediterranean Action Plan (MAP) strives to protect the environment and to foster development in the Mediterranean Basin. It was adopted in Barcelona, Spain in 1975 by 16 Mediterranean states and the EC, under the auspices of the UNEP. Since its adoption by all Mediterranean states and the EC, MAP has served as the basis for the development of a comprehensive environment and development programme in the region. MAP covers coastal zone management, pollution assessment and control, protection of ecosystems and preservation of biodiversity. A unit established in 1982 coordinates MAP. The contracting parties meet every two years on a ministerial level.

Within MAP, the activities related to the assessment and control of marine pollution are organised and coordinated by the MED POL programme. Its main task is to assist the contracting parties in formulating programmes and measures to control and eliminate marine pollution. Through MED POL, the parties formulate and implement pollution trend and compliance monitoring as well as research activities to be used as an essential element for appropriate coastal management.

MAP Coastal Areas Management Program (CAMP) is a form of advanced collaboration between MAP, national and local authorities and institutions, as well as international financial institutions. It is based on the principles of sustainable development, integrated planning, and the management of Mediterranean coastal areas. Thirteen CAMP proj-

ects have been implemented since 1989 in various parts of the Mediterranean region. One of the projects was implemented in Izmir Bay in Turkey.

The Mediterranean Environment and Development Observatory (MEDO) was established in order to contribute to a better understanding of the relationship between environment and development and to provide decision-makers with objective information and data in support of sustainable development in the Mediterranean countries. Turkey has not established a Turkish environment and development observatory yet.

#### MEDITERRANEAN ENVIRONMENTAL TECHNICAL ASSISTANCE PROGRAM (METAP)

Supported by the European Commission, the European Investment Bank (EIB), UNDP and the World Bank, METAP was established in 1990 to bring together the Mediterranean countries to cope with and reduce environmental degradation.

METAP III (1996-2000) mobilised approximately USD 30 million to finance activities related to three priorities: capacity building; arresting and controlling emerging pollution; and integrated water and coastal resources management. In addition to support from the partner organisations (EC, EIB, UNDP, World Bank), METAP III received donor support from Switzerland, Japan, Canada, Luxembourg and Italy. An agreement for donor support from Finland is also in the final stages of negotiations. Turkey is one of the partner countries to METAP III.<sup>42</sup>

Activities are supported by the framework programme Regional Capacity Building Program (RCBP). The programmes, developed to build the capacity of stakeholders in environmental hot spots in the region and to initiate policy dialogues on key themes such as urban environmental management and planning, and water legislation, are: Building Regional and National Capacity in Hot Spots (MED-BRANCH); Program Performance and Monitoring (PPM); METAP EIA Initiative; MED-ECOMEDIA and MEDCITIES Networks; and NGO Small Grants Facility (SGF).

#### EUROPEAN COMMISSION

Since 1963, by the Ankara Agreement, Turkey has been officially cooperating with the European Union. In 1974, a press and information office of the

European Commission was opened in Ankara. After this, full diplomatic status was granted to the office on the basis of an "Agreement on the Establishment of the Representation of the Commission of the European Communities in Turkey and on its Immunities and Privileges," signed in Brussels on February 4, 1987. Several financial instruments have been developed for Turkey. The European Commission proposed a new regulation for the pre-accession financial assistance to Turkey. The draft regulation will ensure that this assistance is coordinated under a single, efficient programme, and that all funding is targeted at addressing the pre-accession priorities set out in the Accession Partnership with Turkey (Annex IV). Today in the field of environment, the financial programmes available for Turkey<sup>44</sup> are given below:

#### LIFE-THIRD COUNTRIES

During the period 1992-1995 EUR 3.8 million was allocated for 10 environmental projects. In 1999, 22 projects were selected for LIFE funding and three projects were from Turkey: ecosystem management for threatened plants, sustainable network for lake management and the Cukurova Delta biosphere reserve. All of them aimed at integrating notions of environmental protection and sustainable development in Turkey. The LIFE-Third Countries project proposals should aim to contribute to the establishment of capacities and administrative structures necessary for the environmental sector and in the development of environmental policy and action programmes.

#### THE SHORT AND MEDIUM-TERM PRIORITY ENVIRONMENTAL ACTION PROGRAM (SMAP)

SMAP is a framework programme of action for the protection of the Mediterranean environment, within the context of the Euro-Mediterranean Partnership. It was adopted unanimously by the Euro-Mediterranean Ministerial Conference on the Environment, held in Helsinki on November 28, 1997. The SMAP is intended to become the common basis for environmental purposes (as regards both policy orientation and funding) in the Mediterranean region. Therefore, efforts need to be concentrated at both national and regional levels; coherence and synergies need to be ensured with



existing multilateral programmes and legal instruments, with respect to each specific forum; chances to attract more funding for the environment in the region need to be increased while optimising the use of existing ones; and transparency and broad public support of the SMAP, including civil society, need to be secured in view of ensuring its full implementation.

## THE WORLD BANK

Turkey is a member of the World Bank Group and its constituent parts: the International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation, the Multilateral Investment Guarantee Agency and the International Centre for Settlement of Investment Disputes.

The World Bank supports Turkey in the fields of social protection and public health, water supply and sanitation, environment, agriculture, infrastructure, legal reform, public sector management, and power sector reforms.

Within the environmental framework some projects supported by the World Bank are: Antalya Water Supply and Sanitation Project; Bursa Water and Sanitation Project; Cesme-Alacati Water Supply and Sewerage Project; Eastern Anatolia Watershed Management Project; Marmara; Participatory Privatisation of Irrigation Management and Investment Project; Second Phase-Out of Ozone Depleting Substances Project; and Turkish Agricultural Research Project (TARP)<sup>44</sup>.

As of January 2001, the World Bank had a portfolio of 23 ongoing projects in Turkey, including two grants: a Biodiversity Project funded by the Global Environment Facility and an Ozone-Depleting Substance Phase-Out Project supported by Montreal Protocol Funds.

For future assistance, the World Bank's support for Turkey is outlined in the Country Assistance Strategy (CAS) approved on December 21, 2000. The CAS is built around five themes:

- 1) implementing reforms for growth and employment generation;
- 2) improving public management and accountability;
- 3) expanding social services and social protection;
- 4) strengthening environmental management and disaster mitigation; and

- 5) accelerating connectivity and technological capabilities.

## UNITED NATIONS DEVELOPMENT PROGRAM

UNDP in Turkey has cooperated with the government for over 30 years. UNDP's development cooperation efforts have focused on national capacity building, policy support to key development sectors and institutional and human resources development. UNDP's programme for the 1999-2002 period has a financial portfolio of USD 17 million. The Government of Turkey donated USD 12 million to the UNDP Country Program for the same period. In addition to UNDP core resources and government cost-sharing funds, UNDP in Turkey has been managing a Management Services Agreement (MSA) portfolio of USD 37 million. Under this arrangement, UNDP provides management services to various components of World Bank sector loan programmes for the period 1999-2002. Similarly, UNDP manages trust funds in the amount of USD 3.8 million allocated to Turkey under the Poverty Alleviation, Capacity 21, Global Environment and ECHO Trust Fund Programs, respectively.

The activities of UNDP related to the environment in Turkey are: Southeast Anatolia Sustainable Human Development Program (GAP); Urbanisation and Habitat II; Local Agenda 21: People's Participation in Local Development; and the Global Environment Facility/Small Grant Program (GEF SGP).<sup>45</sup>

## GLOBAL ENVIRONMENT FACILITY/ SMALL GRANT PROGRAM

To be eligible for GEF SGP support, a proposed project for funding must suit the country programme strategy for Turkey. GEF SGP in Turkey can get funding for its projects under GEF focal areas of "biodiversity" and "international waters."

The second country cooperation framework (CCF) for Turkey for the period 2001 to 2005 has been approved by the UNDP. CCF for Turkey is based on national priorities identified in the eight-year development plan (2001-2005). Under the CCF for Turkey several programmes were created in order to finance the projects with the aim of social, eco-

conomic and environmental development. The programmes, which will finance environmental projects, are given below:

The Environment and Development Program's main objectives are integrating environmental concerns into social and economic development, and environmental capacity building. The programme will concentrate on: sustainable use and management of natural resources; integration of environmental concerns into the sectoral policies; promotion and implementation of local environmental planning; and implementation of the national environmental action plan particularly in the less developed regions of Turkey.

This Governance Program complements the others. It supports national capacity building for civil society reform and the decentralisation process; civil society involvement and networking initiatives under various areas including environment; and promotion, facilitation and organisation of policy dialogues and training for participatory development. Support will be provided to NGOs and to local initiatives that foster capacity building, local and civil networking, and promotion of good governance practices.

#### UNITED NATIONS ENVIRONMENT PROGRAM

The mission of UNEP is to encourage partnership in protecting the environment by enabling nations and peoples to participate in improving the quality of life. The Environment Foundation of Turkey has represented the UNEP National Committee of Turkey since May 1992.<sup>46</sup> UNEP's experiences have demonstrated the benefits of working at the regional level, where immediate neighbouring states can more efficiently collaborate, often through existing regional institutions.<sup>47</sup> Turkey is a member of the European Regional Office, which consists of industrialised states of Western Europe, countries awaiting accession to the European Union, those of Central and Eastern Europe in transition and the Newly Independent States. Its regional office, ROE, based at the International Environment House in Geneva implements UNEP's programme in Europe. With a comparatively small office and budget and in order to maximise impact and delivery, ROE addresses the environmental concerns of governments through partnerships with other United Nations bodies, international organisations, regional and sub-regional intergovernmental organisations, as well as NGOs.

#### UNIDO (UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION)

The UNIDO Centre for Regional Cooperation in Turkey is dedicated to promoting sustainable industrial development in Turkey. The UNIDO field office in Ankara was established in 1967 for the purpose of providing technical assistance to Turkey, and became a Regional Centre in February 2000. The Centre is responsible for developing and actively supporting the overall cooperation between UNIDO headquarters and governments, academic communities, private sectors, and civil societies of the region for promoting industrialisation and encouraging environment friendly products and production methods.

Since 1967, technical support projects of UNIDO in Turkey have varied from genetic engineering to metrology, protecting the environment to assisting SMEs. Promoting investments and developing entrepreneurs are other functions. The Small and Medium Sized Industry Development Organisation (KOSGEB), and GAP-GIDEMS (entrepreneur support centres established in Southeast Turkey) were established with the technical assistance of UNIDO. UNIDO also played a role in implementing the Montreal Protocol (MP) in Turkey, which includes the UNIDO agreement with the Technology Development Foundation of Turkey (TTGV) that aims to phase out ozone depleting substances.<sup>48</sup>

UNIDO has also conducted In Plant Group Training Programs (IPGTPs) for industrial pollution assessment and control.

In the field of environment, UNIDO is implementing the following specific programmes:

- Sustainable Industrial Sector Support programme;
- Integrated Coastal Zone Management (ICZM) programme;
- Environmentally Sustainable Industrial Development (ESID) programme; and
- Area-wide Environmental Quality Management (AEQM) programme.

Within the framework of pollution control and waste management, UNIDO offers three services:

Raising awareness: This is accomplished through seminars, conferences, workshops, media coverage, demonstration projects, etc. The focus of these activities is to explain which pollution control and waste

management services are available, when they should be used and what opportunities are likely to arise for people interested in going into business in these fields.

**Training:** Training is offered to decision-makers in industry and commerce, consultants, industry and trade associations, managers of industrial parks and estates, and any other people and groups likely to benefit from it. The training programme covers issues on identifying and evaluating options technically, assessing risks and costs for financing the investments. Training is also available in operating pollution control and waste management technologies. In addition, there are courses on how to estimate demand for services at the city level for municipal authorities and at metropolitan, regional and national levels for the commercial pollution control and waste management sectors.

**Information management and dissemination:** As with UNIDO's services on cleaner production, training is also available for relevant personnel on how and where to obtain and disseminate data and information on pollution control and waste management. An important part of this is information networking, where modern communications technology is exploited to keep fully abreast of emerging trends and continuing developments. There are many institutes and databases worldwide with information on pollution control and waste management.

## WORLD WIDE NATURE FUND (WWF)

WWF's mission is to protect the natural environment and to build a future in which humans live in harmony with nature, by:

- conserving the world's biological diversity;
- ensuring that the use of renewable natural resources is sustainable; and
- promoting the reduction of pollution and wasteful consumption.

Since it was founded in 1961, WWF has become one of the world's largest and most effective independent organisations dedicated to the conservation of nature. WWF now operates in around 100 countries.

The Society for the Protection of Nature of Turkey (DHKD) is an associate member of WWF and represents the institution in Turkey. In cooperation with WWF and DHKD, various projects and environmental programmes have been developed and implemented in Turkey so far.

**Freshwater and wetlands programme:** WWF/DHKD aimed at protecting wetland ecosystems and promoted the wise use of water. Wetlands subject to the programme are the Uluabat Lake and the Konya Basin. In cooperation with the Turkish Ministry of Environment, WWF/DHKD prepared a management plan for Uluabat Lake. In 2000, they performed an ecological assessment of water quality, fish, vegetation and birds, as well as a socio-economic survey. WWF/DHKD promoted integrated water management within the Konya Closed Basin and worked on protecting its biodiversity, which is one of the richest in Turkey. Using the basin as a case study, the organisation initiated and encouraged the preparation of environmentally sustainable Water and Agricultural Policy for Turkey.<sup>49</sup>

Other projects in which WWF is cooperating with DHKD in Turkey include the implementation of the Goksu Delta Management Plan, monitoring Ramsar sites and actions against the Esmekaya Dam.



# Environmental Management and the Main Challenges in Turkey

Turkey is in a stage of rapid and dynamic change and it is confronted with the challenge of harmonising environmental conservation and unprecedented development. Population growth is very high and accompanied by largely uncontrolled urban growth.

Environmental policies in Turkey need further improvements, particularly in two directions, to face the challenge and foster both environmental progress and sustainable development:

- integrating environmental concerns in all appropriate sectors of economic activity and in all relevant governmental policies; and
- implementing and enforcing environmental laws and policies effectively including efficient enforcement and related institutional and financial measures.

Turkey is a highly centralised country and government is heavily involved in all aspects of economic life. This centralisation is largely designed to promote economic growth and to provide an economic infrastructure for it is not sufficient in itself to ensure sustainable development. It is obvious, however, that the privatisation process, which is on the agenda of the Turkish Government today, will give market forces a much greater role.

The integration of economic and environmental policies could reduce economic and environmental losses today in Turkey and provide preventative policies for the coming years. There are many laws, regulations, fiscal and other measures, which are in force to direct the economy and protect environment. They are often not well coordinated or enforced and in some cases conflicting.

At the strategic level, the Turkish government has the opportunity to demonstrate its stated commitment to sustainable development making some key decisions. One way to do this would be to formally adopt a number of concrete environmental policy objectives as part of the sustainable development strategy within the environmental framework of National Program for the Adoption of the Acquis, which outlines the general environmental policy areas in the EU integration process.

The role of the Ministry of Environment is crucial in all aspects of environmental policy. In this respect, the Ministry needs to be strengthened with financial and other appropriate expertise to fulfil many objectives. It also needs to face expanding international responsibilities such as negotiating agreements, monitoring their implementation and participating in international environmental policy decision-making processes.

The State Planning Organisation has an equally important role as it prepares five-year development plans and decides on investment priorities based on investment requirements. To provide better integration within this planning process, sectoral planning methods should be abandoned, the decision-making process must be opened to all stakeholders, environmental expertise should be strengthened, the implementation of the plan should be checked — not only with economic and social indicators but also with some environmental indicators.

The SPO has the power to require that environmental considerations be incorporated into investment proposals which are totally or partially financed from public funds. Links between the SPO and the

Ministry of Environment should be incorporated whereby environmental considerations are integrated into major government investment projects.

Environmental policies are implemented at the provincial level by the coordination of relevant municipalities or government institutions. Turkey being a centralised country, there is a strong presence in all provinces of all major government ministries. The governor of each province under the Ministry of Interior is responsible for coordination between municipalities and government institutions and providing for policies that are implemented according to the policy guidelines of the government.

Integration among municipalities<sup>50</sup> separated by areas under the direct control of the governor and that are coming from different political backgrounds is difficult where no specific environmental cooperation is supplied. In this respect, associations of district municipalities should be fostered.

Another challenge in Turkey is to transpose environmental policies into daily environmental management improvements and related economic and social benefits. Turkey should move to further de-centralisation in its environmental administrative structure in order to take the environmental central administration closer to the local problems. Turkey should also allow for a greater involvement of the local people and authorities in environmental administration.

## Law Enforcement

Turkey already has in place many elements required for the efficient implementation of environmental policies, regulations and standards. For example, there is already a set of legislative measures that fully recognise the principles for environmental management. However, there is a lack of enforcement capability. Fines and penalties for non-compliance with environmental regulations would need to be revised in order to have some effectiveness. The Ministry of Environment also needs to develop an inspection and enforcement branch and strengthen its local capability. Given the gap between regulations and enforcement, a prerequisite to enforcement of regulations and standards is their clear definition. To this end, the enforcement of regulations is effectively carried out when assigned to a specific institution, and when the role does not contradict with any other institution. This is not the case in Turkey. Different

institutions have the right to interfere in the decision-making process for enforcement of environmental regulations and, therefore, decrease its effectiveness.

## Environmental Information

Information plays a vital role in all stages of the environmental management process. Resource inventories are required in order to formulate standards; monitoring of emissions and discharges will show whether permit conditions are being met; monitoring of air and water quality will show the state of the environment. Despite significant advances in environmental monitoring and the provision of environmental information by many environmental and non-environmental institutions such as State Institute of Statistics and State Planning Organisation, there is no regular, comprehensive environmental information available (environmental data, environmental indicators, state of the environment reports, etc.). Establishment of an environmental observatory and preparation of a nationwide environmental information strategy and action plan (METAP) are pending projects. Because these projects have not progressed far, Turkey has not yet signed the Aarhus Convention.

There are no clear estimates of public and private environmental investment expenditures.

## Participation

Mechanisms for public participation in Turkey need to be presented at different levels. It is important for citizens to be heard when projects are at the proposal stage. Permit and consent procedures involved in physical planning and in the protection of water and air quality also need to be open and easily accessible to the public without undue cost or legal obstacles. Although participation mechanisms such as local environment committees, the environmental impact assessments, and councils for the environment and forestry, public participation is a relatively new process in Turkey. The absence of environmental reporting and information by the stakeholders leads to many conflicts with NGOs and in general, the public. Environmental NGOs representing civil society in general will need to address a range of issues in order to establish themselves as stimulating and constructive partners for environmental progress.



In Turkey, the constructive role of environmental NGOs should be recognised by inviting them to participate more closely in the policy formulation process. At all levels, or in all areas, the government can assist in developing public participation by providing relevant and timely information to the public. This is not a problem arising only from governmental policies in Turkey. Environmental NGOs as with other similar organisations, lack trained, specialised and skilled staff, sufficient financial sources, access to foreign funds, project cycle management and public participation.

## Environmental Financing

Financing of environmental measures in both public and private sectors will depend on the type of financing instruments used, on the determination of the government to raise sufficient funds and the ability of the economy to generate funds.

Turkey should aim to reduce future financing requirements to a minimum by putting maximum emphasis on preventive policies in industrial investments, energy production and use, etc. For each sector a specific strategy needs to be developed with the aim of preventing pollution and increasing and sustaining resource use. A start has already been made in some areas in Turkey. The use of natural gas in some urban areas has significantly reduced pollution in terms of SO<sub>2</sub> and particulate matter. Associated costs are relatively low and largely on individual households who benefit from clean air. But on the other hand, such a strategy must include the enforcement of pollution control investment and the introduction of low emission technologies in new industrial plants in Turkey. This will shift the burden of financing to the private sector. The incentives to the enterprises for environmental investments are usually on end-of-pipe technologies. Mechanisms for promoting clean technologies must be developed.

The environmental services provided to the public such as water and sewerage systems and solid waste management is considerable and the need for sufficient financial sources is especially urgent in Turkey since public health is in danger and serious damage has been caused to water resources and coastal regions. In order to restructure the current situation, there needs to be additional funds for the environment and mechanisms for funding municipalities to enhance their urban environmental projects. The Bank of Provinces must be restructured to

accommodate this and funding of municipalities must be interlinked with cost effectiveness, transparency and performance measures. Mechanisms should be revised for public participation both in decision-making and implementation of environmental projects at the local level. Penalties and fees for non-compliance should be more strictly enforced and 100 percent of the revenue could go to the municipalities that impose them. The funds should then be spent on environmental investments.

Surcharges could be imposed on certain polluting products both to discourage their use and to generate funds for waste disposal and treatment. There needs to be an expansion of the use of economic instruments to contribute to more cost-effective management of the environment and to ensure appropriate pricing of natural resources such as water and energy, while taking social conditions into consideration. Turkey should also expand and diversify public, private and international sources of funding for environmental protection and enhance the role of banks in supporting environmental investment.

Large capital projects such as sewerage and water treatment are mostly financed through credit and it is the responsibility of the government and local authorities to raise these funds from either domestic or international sources. Although Turkey is facing a considerable economic and financial crisis at the moment, this should not be used as an excuse to delay such investments. Currently the Turkish Treasury does not give guarantees to international financing institutions for the financing of environmental investments, which were planned to be constructed by several municipalities.

Economic instruments used for the implementation of environmental policies are insufficient in Turkey and their outcomes are not scientifically analysed. An Environmental Cleansing Tax and the prices set for unleaded gasoline are examples of insufficient use of economic tools for environmental protection. There has to be a considerable difference in price in order to encourage people to change their consumption patterns.

## Environmental Education

In Turkey, the disciplines dealing with the environment are generally architectural planning, some branches of engineering (construction, chemistry, physics etc.), sociology, economics, biology and geog-



raphy. During recent years, due to the foundation of the Department of Environmental Engineering, a new professional branch named environmental engineering has emerged. In medicine, there are such branches as Environmental Health and Public Health and Medicine. However, ecology as a stand-alone discipline is still missing from the university curriculum. Environmental concepts are studied only in a limited fashion in the departments of Economics and Law.

The General Directorate of Secondary Education of the Turkish Ministry of National Education continues to study the implementation of environmental education. They plan to develop environmental subjects in biology, geography and philosophy courses. The outline of an environmental curriculum will encourage specific action. Students must be able to identify their living natural resources, and be capable of using them for the most appropriate purposes within the framework of the new curriculum.

University education for the environment in Turkey is beginning to establish itself. Today, there are 22 environmental research centres in Turkey. Eleven environmental engineering departments have been established within the last 15 years.

There are Masters Programmes in environmental studies. The only Bio-politics course is in the Urban and Environmental Sciences Ph.D. Programme as a two-semester seminar at Ankara University. Students of various professions such as urban planners, architects, biologists, lawyers and social scientists participate in this Ph.D. programme. Many other university departments deal with environmental sciences, conservation planning, and threshold analysis, while other departments such as architecture, landscape design, chemistry, construction engineering, physics and medicine offer environmental courses.

# Conclusions

Turkey has been undergoing major economic changes in recent years, combined with rapid economic growth and structural changes. Privatisation of state enterprises, price liberalisation, integration to the European economy via customs union, candidacy to the EU membership and taking part in the global economy are all examples of these structural changes.

Turkey's population has reached 65 million and remains one of the fastest growing in the OECD. Major migration from rural areas to urban, industrial and tourist areas continue.

Turkey now faces the challenge of balancing this economic growth with environmental and social development. During the last decade Turkey experienced increasing environmental pressures on the decision-making process and has made significant advances in the energy, industry and tourism sectors.

A number of institutional and legislative reforms have been made: the Ministry of Environment was established; environmental legislation and instruments for environmental protection have been reformed; EIA was introduced; and the National Environmental Action Plan (NEAP) was prepared by the State Planning Organisation with the financial support of the World Bank and adopted in 1998 as part of the national development plan.

However, most of the necessary environmental infrastructure has yet to be created in urban and industrial areas.

The road towards environmental consciousness will require strengthened environmental efforts from the central government, municipalities and the private sector as the environment had a relatively low priority in Turkey in the past.

The challenge for Turkey, therefore, is to:

- implement environmental policies and strengthen environmental management infrastructure in order to provide enforcement capacity;
- integrate environmental concerns in economic decisions as well as in daily life;
- complete environmental investments for pollution prevention and sustainable resource use; and
- meet the country's international commitments by ratifying international environmental conventions and by providing effective implementation of the provisions accordingly.

Other areas where progress is clear include a significant increase in the powers of the provincial and local governments in regard to environmental matters and environmental protection efforts such as certification of environmental management systems made by the export intensive industries. However, these advances are not enough to address the increased pressures from unregulated industrialisation and unplanned urban growth.

Enforcement of environmental laws, lack of environmental information and public participation in environmental concerns, insufficient environmental financing and limited institutional capacity are the problems that urgently need to be addressed. It will take time and considerable effort, and strong commitment is needed to transform environmental management practices, as well as to mobilise appropriate financial resources for placing environmental concerns high on the agenda.

The motivation for EU membership is likely to stimulate efforts and focus the targets for an environmentally friendly economy and society in Turkey. Benefits resulting from implementing EU environmental legislation and adoption of environmental practices in Turkey are undeniable and it is now on the agenda as the Turkish Government has endorsed the national programme.

# Endnotes

1 <[www.worldbank.org/tr/eca/eca.nsf/countryoffice/turkey](http://www.worldbank.org/tr/eca/eca.nsf/countryoffice/turkey)>.

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

3 Annual Program 2002, SPO, Ankara.

4 GAP is a multi-sectoral and integrated regional development project based on the concept of sustainable development. Its basic aim is to eliminate regional development disparities by raising income levels and living standards, and to contribute to such national development goals as social stability and economic growth by enhancing the productive and employment generating capacity of the rural sector. The project area covers nine provinces in Southeastern Anatolia in Turkey (Adiyaman, Batman, Diyarbakir, Gaziantep, Kilis, Mardin, Siirt, Sanliurfa and Sirnak).

5 <[www.gap.gov.tr](http://www.gap.gov.tr)>.

6 Statistical Yearbook of Turkey 2000, State Statistics Institute, August 2001, p.52.

7 Milliyet Newspaper, 25 October 2000.

8 Statistical Yearbook of Turkey 2000, State Statistics Institute, August 2001, p.231.

9 Republic of Turkey Prime Ministry Privatisation Administration; <[www.oib.gov.tr/portfoy.htm](http://www.oib.gov.tr/portfoy.htm)>, State Planning Organisation; <[www.ekut-up.dpt.gov.tr/kit](http://www.ekut-up.dpt.gov.tr/kit)>.

10 Adana, Adapazari, Ankara, Antalya, Bursa, Diyarbakir, Erzurum, Eskisehir, Gaziantep, Istanbul, Izmir, Izmit, Kayseri, Konya, Mersin, Samsun.

11 PetroGas Magazine, July-August 2001, p.51.

12 The Energy Information Administration < [www.eia.doe.gov](http://www.eia.doe.gov)>.

13 The present air-quality measurement system does not produce reliable data, therefore no useful records exist of past air quality anywhere in the country. The revised air quality legislation calls for the development of an integrated, nationwide system for the measurement and observation of air quality. Equipment, personnel, training and infrastructure should all be in keeping with plans for the system, thus preventing Turkey from becoming a wasteland of equipment. Mechanisms should be included for the collection of meteorological data and air-quality parameters should be set as should conditions for the declaration of air-quality warnings. In a region such as the Southeast Anatolia, where the interaction between air, water and soil are important, establishing an observation system in concert with a geographical data system is needed for the sustainable management of natural resources.

14 State Statistics Institute; <[www.die.gov.tr/english/sonist/cevre/e31052001.htm](http://www.die.gov.tr/english/sonist/cevre/e31052001.htm)>.

15 National Environmental Action Plan, State Planning Organisation, Ankara, May 1998, p.32-33.

16 <[www.die.gov.tr/english/sonist/cevre](http://www.die.gov.tr/english/sonist/cevre)>.

17 National Programme for the Adoption of the Acquis, Turkish Environment Review, March 2001.

18 Organised industrial zones are instruments aiming at overcoming the problems caused by unsystematic city planning and unbalanced regional development. Since the first establishment in Turkey (Bursa, 1962), OIZs have grown in number and importance, representing a significant part of the Turkish industrial activity. Nowadays, they account for more than 3,300 enterprises, in 43 Organised Industrial Zones, providing jobs to about 540,000 people.

19 State Statistics Institute; Environmental Statistics, Environment Inventory for Municipalities, 1996.

20 State Statistics Institute; Environmental Statistics, Environment Inventory for Municipalities, 1996.

21 <[www.die.gov.tr/english/sonist/cevre/cevre.html](http://www.die.gov.tr/english/sonist/cevre/cevre.html)>.

22 National Environmental Action Plan, State Planning Organisation, Ankara, May 1998, p.35.

23 [www.tema.org.tr](http://www.tema.org.tr).

24 Founded in 1963, the Scientific and Technical Research Council of Turkey is the supreme organisation put in charge of promoting, developing, organising and coordinating research and development in the fields of exact sciences in Turkey in line with the national targets of economic development and technical progress.

25 [www.milliparklar.gov.tr/p1-1.htm](http://www.milliparklar.gov.tr/p1-1.htm).

26 GEF/SGP Country Program Strategy Paper — Turkey 2000, p.8.

27 Environmental Profile of Turkey, Environment Foundation of Turkey, Ankara, February 1999, p.177.

28 Helsinki European Council 10 and 11 December 1999 Presidency conclusions, Doc/99/16.

The Helsinki European Council had taken a number of decisions marking a new stage in the enlargement process. Steps had also been taken to ensure that the Union itself would have effective, reformed institutions, a strengthened common security and defence policy and a competitive, job-generating, sustainable economy.

29 The Benefits of Compliance with the Environmental Acquis for the Candidate Countries, Research Paper, ECOTEC, 2001, p.3.

30 Aarhus Convention; The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters was adopted at the 4th Ministerial Conference, Environment for Europe, in Aarhus, Denmark, on June 25, 1998. Thirty-nine countries and the European Community have signed it.

31 EMAS is a European initiative which was adopted by the Council of Ministers on June 29, 1993 and has been open for participation since April 1995. The EMAS Regulation (EMAR) provides for the compliance with all relevant regulatory requirements regarding the environment with a view to reduce environmental impacts to levels not exceeding those corresponding to the economically viable application of best available technologies. The scheme does not replace existing environmental legislation or technical standards and it does not release companies from their legal obligations.

32 The Commission presented its first regular report on Turkey in October 1998, together with the regular reports for the other candidate countries; a second report was adopted in October 1999, with a view to the Helsinki European Council. The Helsinki European Council noted that the next regular reports for the candidate countries would be presented before the European Council in December 2000.

33 Adopted by the European Council on March 8, 2001. The purpose of the Accession Partnership was to set out priority areas for further work identified in the Commission's 2000 regular report on the progress made by Turkey towards membership of the EU. The Accession Partnership provides the basis for a number of policies which will be used to help the candidate states in their preparations for membership.

34 The main aims should be to increase the efficiency of the environmental impact assessment (EIA) process, harmonise with the EU acquis, and develop the necessary infrastructure. Therefore studies on the revision of the EIA regulation, which was accepted on February 7, 1993, should be finalised. EIA is an approach accepted for every investment project that is likely to harm the environment. For the preparation of sound EIA reports in Turkey, a detailed and reliable database on the environment should be produced and an Environmental Information DataBank should be established. After developing EIA reports the provincial administrations of the Ministry of Environment should be furnished with laboratories, equipment and staff for better observation and control of activities. Observation of EIA reports and activities should be open to public and civil institutions. Thus local sensitivity and responsibility can be increased. Public pressure and civil organisations are not powerful enough in Turkey and this is a risk for auditing.

35 The Benefits of Compliance with the Environmental Acquis for the Candidate Countries, Research Paper, ECOTEC, 2001, p.23-25.

36 Implementation of EMAS in Turkey, Final Report of the Life Third Countries Project, Merkat Inc., Istanbul, 1999.

37 <[www.ekoloji72.com/ozelkoruma.htm](http://www.ekoloji72.com/ozelkoruma.htm)>.

38 <[www.cevre.gov.tr](http://www.cevre.gov.tr)>.

39 <[www.un.org.tr/undp/undp.htm](http://www.un.org.tr/undp/undp.htm)>.

40 <[www.un.org.tr/fao/fao.html](http://www.un.org.tr/fao/fao.html)>.

41 <[www.jica.org.tr](http://www.jica.org.tr)>.

42 <[www.mio-ecsde.org](http://www.mio-ecsde.org)>.

43 <[www.deltur.cec.eu.int](http://www.deltur.cec.eu.int)>.

44 <[www.worldbank.org.tr](http://www.worldbank.org.tr)>.

45 <[www.un.org.tr/undp/undp.htm](http://www.un.org.tr/undp/undp.htm)>.

46 <[www.cevre.org](http://www.cevre.org)>.

47 <[www.unep.org](http://www.unep.org)>.

48 <[www.un.org.tr/unido/unido.htm](http://www.un.org.tr/unido/unido.htm)>.

49 <[www.dhkd.org.tr](http://www.dhkd.org.tr)>.

50 Local authorities are under pressure to provide more services, ranging from the disposal of immense amounts of solid waste to the supply of safe drinking water and the construction of wastewater treatment plants. Due to their financial dependency on the central government and legislation limiting their capacity in decision-making, local authorities in Turkey are unable to meet demand.