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MINISTRY OF ENVIRONMENT AND FORESTRY
General Directorate of EIA and Planning

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Ministry of Environment and Forestry

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The principle of "right to live in a healthy and balanced environment" guaranteed to all by the Constitutional Law of Republic of Turkey forms a legal basis for environmental issues and very clearly defines the target for future environmental principles and policies.

Environmental problems which are daily becoming even more complex due to contemporary requirements, industrial developments and new technologies can only be solved by approaching the problems through new and integrated perspectives. For this purpose, in addition to provision of data, the first step is the sharing of available environmental data. The sharing of information at a certain level in the community ensures the formation of a general level of awareness. It is inevitable that all shareholders maintain information exchange in order to form and implement permanent and balanced development models.

In order to form a basis for above mentioned information exchange, the target of this publication is to offer an insight as to how community health, environmental quality and economic potential can be enhanced by reflecting on the relationship between the environment and other sectors. Intersectoral and comparative annual statistical information and the details of changes evolved through time have been explained in the subtitles in order to reach the target.

I believe that the second edition of the booklet "Environmental Indicators-2006" which was first prepared in 2007, shall be a source of useful information regarding general trends for decision makers, researchers, other users and friends of the environment.

I hope that the second edition of this publication, printed under the title "Environmental Indicators-2008" will be a mentor for environmental decisions and wish to extend my gratitude to all persons, agencies and institutions which contributed to the preparation of this publication, notably the General Directorate of Environmental Impact Assessment and Planning and the personnel of Department of Environmental Inventory.

Prof. Dr. Veysel EROĞLU
Minister of Environment and Forestry

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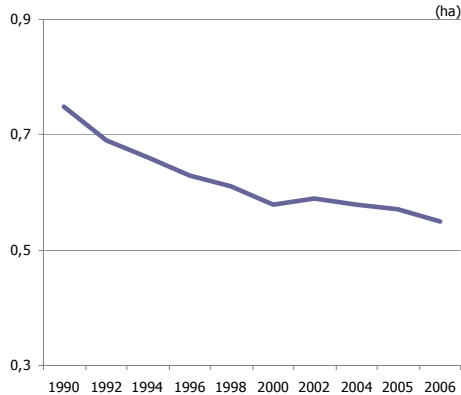
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1. Agriculture, Forestry and Fisheries

1.1 Agricultural Area Per Capita



During 1990-2006 the population of Turkey has increased by approximately 17 million people, that is 30%. At the same time, parallel with the economic development, industry, urbanization and misguided land use, the agricultural per capita land has decreased approximately 1,5 million ha.

While a decreasing trend in population growth was observed towards the end of this same period, the growing population and losses in arable land decreased the arable land from 0,75 per capita/ha in 1990 to 0,55 per capita/ha in 2006.

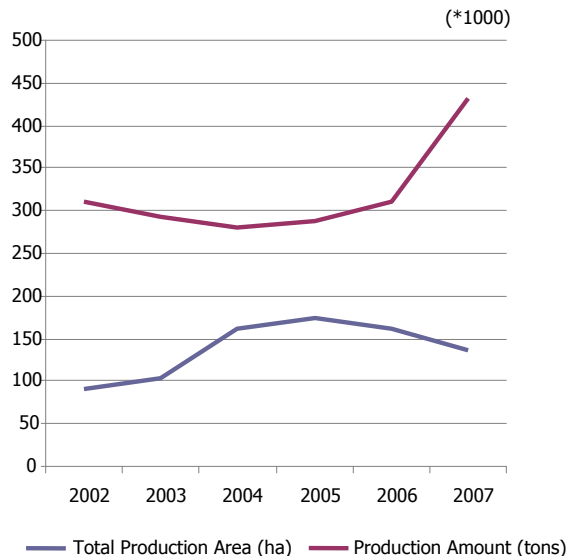
	1990	1992	1994	1996	1998	2000	2002	2004	2005	2006
Agricultural Area Per Capita (ha)	0,75	0,69	0,66	0,63	0,61	0,58	0,59	0,58	0,57	0,55
Total Agricultural Area ¹ (ha x1000)	42.033	39.953	40.049	39.364	39.344	38.757	41.196	41.210	41.223	40.496
Midyear Population Projection (x1000)	56.098	58.248	60.417	62.667	65.001	67.420	69.302	71.152	72.065	72.974

Source: TURKSTAT

(1) Since 1995, only areas containing fruit and olive trees have been included while areas with dispersed trees have been excluded.

1. Agriculture, Forestry and Fisheries

1.2 Organic Farming



The demand for organic agricultural implementation which started with 8 product types to satisfy import demand in 1985 has escalated and as a result reached 201 products. In Turkey, where farming establishments are small and sectional, organic farmers are encouraged to organize. In 2007, 5,723 producers transitioned to organic farming on 38,924 ha, while 10,553 producers organically farmed 135,360 ha to produce 431,203 tons of organic products. In parallel with the developments in organic farming, the target of the 9th Development Plan which covers the period 2007-2013, is to increase the proportion of organic farming land to 3 % of total farm land.

Although the acreage of organic farm land decreased by 16% in comparison with the values of 2006, as a result of increased productivity, there has been an increase of 39% in produce.

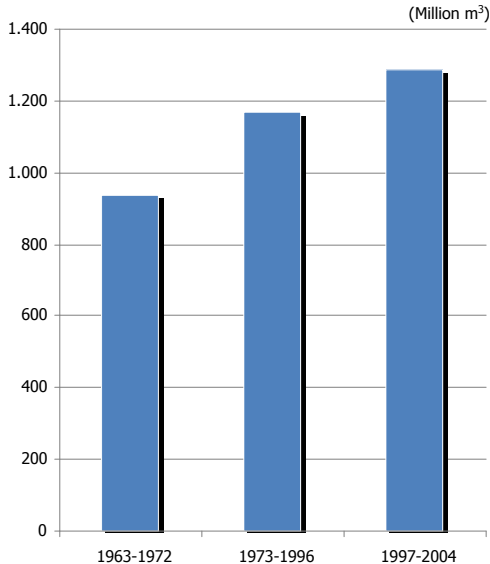
Years	Total Production Area ¹ (*1000 ha)	Production Amount ¹ (*1000 tons)
2002	90	310
2003	103	292
2004	162	280
2005	175	289
2006	162	310
2007	135	431

(1): Transition time has not been included.

Source: Ministry of Agriculture and Rural Affairs

1. Agriculture, Forestry and Fisheries

1.3 Forest Value



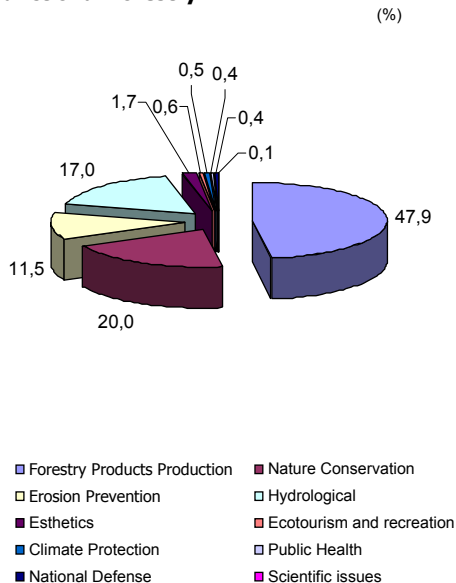
A general evaluation reveals that while forestry areas and its value and running annual increment increases in comparison with the situation in the past, the lumber revenue planned to be gained from forests decreases. This trend has been brought on by planning and implementation activities which attach importance to other service functions as well as lumber production and the resulting developments, while forest conservation and development applications have an additional effect. A review of the last 30 year period reveals that forest areas have increased in size from 20,2 million ha to 21,2 million ha, increasing the forest areas by 1 million ha which is an approximate increase of 1%. During the same period, forest value increased 11%.

Years	m ³
1963-1972	936.000.000
1973-1996	1.167.000.000
1997-2004	1.288.000.000

Source: General Directorate of Forestry

1. Agriculture, Forestry and Fisheries

1.4 Functional Forestry



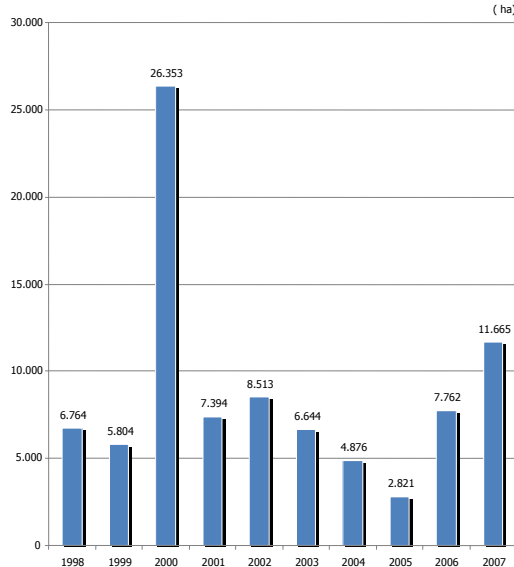
While decisions regarding the prioritization of functions in an area where multiple functions are intertwined may cause technical and social problems, national forestry policy the since beginning of the year 2000 has been to prioritize functional planning logic and planning works.

	(*1000 ha)
Forestry Products Production	10.139
Nature Conservation	4.251
Erosion Prevention	2.430
Hydrological	3.599
Esthetics	364
Ecotourism and recreation	118
Climate Protection	102
Public Health	87
National Defense	76
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Source: General Directorate of Forestry

1. Agriculture, Forestry and Fisheries

1.5 Forest Fires



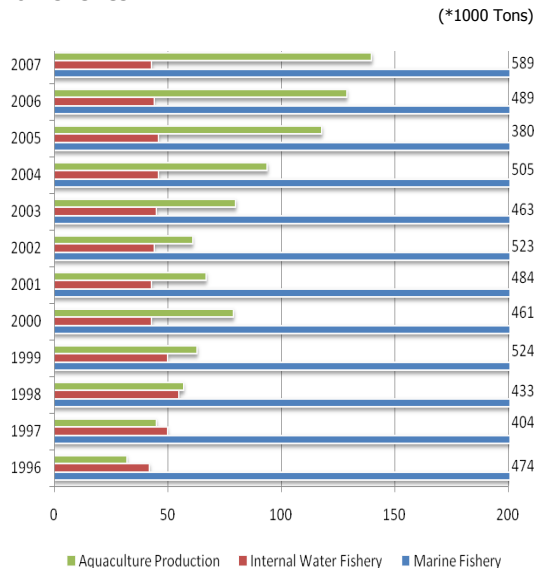
Source: General Directorate of Forestry

Forest fire statistics in Turkey reveal that in 2007, out of a total of 2.829 forest fires, 1.642 were caused through negligence, 292 were arson, while 895 were caused by natural and unknown sources.

During the past decade the total forest area to succumb to forest fires is 0,4% of the total forest area (88.596 ha). This ratio shows that Turkish forestry authorities are quite successful in combating forest fires. The forest areas in Turkey which are lost to fires are re-forested and this is usually carried out within one year of the fire in which it was lost. A review of forest fires in Western Mediterranean countries and proportion of forest areas lost in forest fires reveals that during the same period France lost 1,5% of its forests, Greece 9,0%, Italy 5,5%, Spain 5,2% and Portugal lost 48,4% of its forest areas.

1. Agriculture, Forestry and Fisheries

1.6 Fisheries

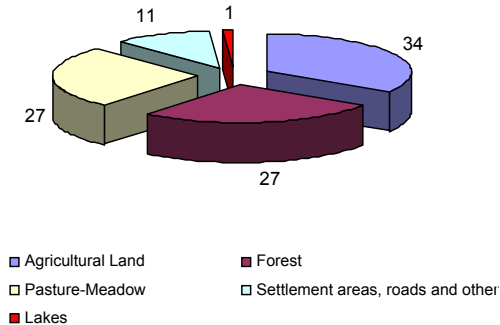


Source: TURKSTAT

Turkey is bordered by seas on three sides having a total coastline of 8.333 km, 24 million ha of marine space and 1 million ha of internal waters (natural lakes, dam reservoirs and rivers). Our fishery production is based on marine fishery which produced 76% of the production for 2007. The share of aquaculture production, which has shown major development during the past decade, was 18% in 2007. Aquaculture is carried out in nets and cages in marine and internal waters while inland production is carried out in pools. The amount of fishing carried out in 2007 in our seas exceeded 500 thousand tons. For the main part the fishing carried out in our seas consisted of 385 thousand tons of anchovies, 21 thousand tons of sardines, 13 thousand tons of haddock, nearly 32 thousand tons of mackerel and the remainder of other marine produce. The amount of freshwater production in 2007 was around 43 thousand tons. One of the major impact factors effecting marine and internal water fisheries is pollution. In order to prevent pollution from having a negative effect on the reproduction and feeding environments of our fisheries, necessary action must be taken to ensure that wastewater is not discharged into our seas and internal waters without treatment, sources are not polluted by marine vehicles and the negative effects of excessive fishing are avoided.

2.1 Land Use

(%)

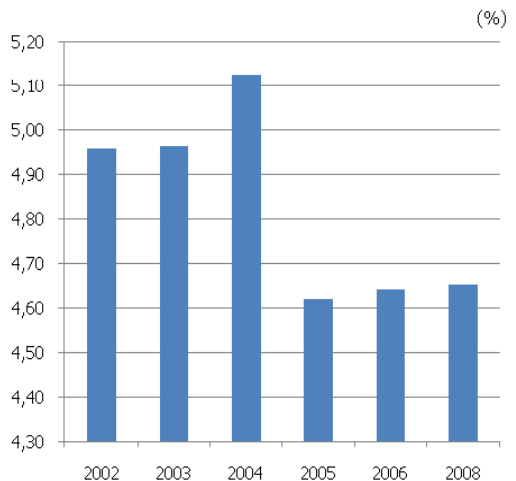


The total surface area of the Turkey is 77.846.000 ha consisting of 34% agricultural land, 27% forest, 27% pastures and meadows, 11% settlement areas and other areas, while 1% consists of lakes. Turkey, being rich in natural resources and developing rapidly, gives major importance in planning to enable the rich potential of the country to be revealed and further enhance its economy. During the last decade, efficient precautions have been put into practice regarding soil conservation and land use because the total of highly efficient arable land used for other purposes than agriculture has reached major amounts.

Source: General Directorate of Forestry

3. Biological Diversity

3.1 Protected Areas



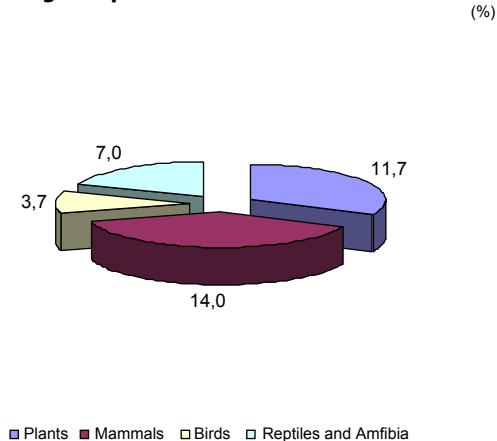
Total protected area in ratio to Turkey's general area

Source: Ministry of Environment and Forestry

With the latest addition of Yumurtalık Lagoon being given National Park status, the total number of National Parks in Turkey has reached 40, while there are 30 Nature Parks, 31 Nature Conservation Areas, 105 Nature Monuments and 14 Special Environmental Protection Areas. There are over 1000 wetlands in Turkey, bringing the total wetland area to the excess of 1 million hectares. Taking into consideration International Ramsar Convention criteria, there are 135 wetlands in Turkey which qualify for international importance. Out of these, 12 have been declared Ramsar Areas. In order to protect wildlife species and their habitats, which are our natural heritage, 80 areas in 41 cities have been declared wildlife development areas.

Since the end of 2008, the acreage for National Parks, Nature Parks, Nature Conservation Areas, Nature Monuments, Wildlife Development area, Special Environmental Protection Area and Ramsar Area are 897.657 ha., 79.047 ha., 46.575 ha., 5.541 ha., 1.201.285 ha., 1.211.254 ha., 179.482 ha. respectively.

3.2 Ratio of Endangered Species and Total Indigent Species



Because of the diversity of its geographical structure, Turkey is placed at the intersection of gene centers. This situation has made Anatolia one of the major gene centers of the world and the native land of a major part of plant species which are cultured. To counter the 80.000 animal species inhabiting the European continent, Anatolia alone is host to 60.000 species. 161 species of mammals, 466 species of birds and 141 species of reptiles are among major species inhabiting in Turkey.

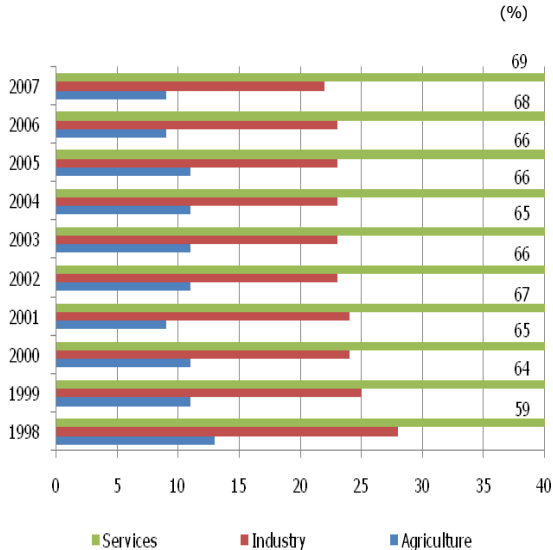
While the European continent is home to 12.500 gymnosperm and angiosperm plants, Anatolia hosts 11.000 plant species, out of which 3.925 are endemic.

In Turkey, necessary conservation works for the protection of endangered species and habitats and various sensitive ecosystems is carried out by commissions and through action plans prepared in the framework of international agreements.

Source: Ministry of Environment and Forestry

4.Economy

4.1 Distribution of GDP



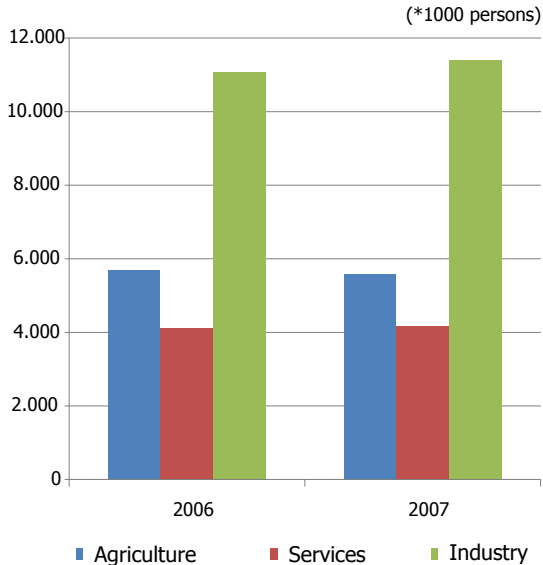
Since 1980's the share of the service sector within GDP has increased considerably and has exceeded 50% in 1995. This ratio has climbed to 70% during the 1998-2007 period.

It can be observed that the GDP share of the industry sector increased until 1985, after which it remained stationary. The stationary trend of the industry sector has continued during the 1998-2007 period.

While the GDP share of the agricultural sector was 40% in the 1970's, it receded to 10% during the 2000's.

Source: TURKSTAT

4.2 Sectoral Distribution of Employment



While the share of employment in the agricultural sector in 1990 was 47%, employment in industry was 20,2% and the share of employment in the service sector was 33%, in 2007 these figures materialized as 26% for agriculture, 20% for industry and 54% for the service sector. Although the share of employment in the agricultural sector has receded along with its economic development during 1990-2007, the present employment rate is still high and since the year 2000 there has been a transition from a predominantly agricultural structure into a predominantly service oriented structure. In other words it can be observed that the decreasing employment in the agricultural sector has been balanced by the increase in the service sector, the share of the service sector, growth and employment generating capacity of the service sector have increased.

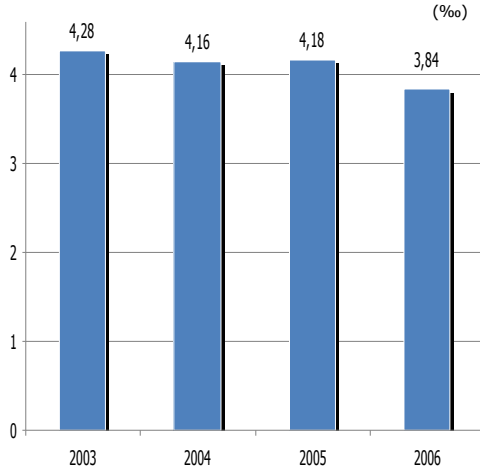
	2006 ¹		2007 ¹	
	*1000 persons	(%)	*1000 persons	(%)
Total	20.954		21.189	
Agriculture	5.713	27	5.600	26
Industry	4.134	20	4.185	20
Services	11.107	53	11.404	54

Source: TURKSTAT

(1): Revised according to address based population registry of 2006.

4. Economy

4.3 The Share of Total Environmental Expenses of Public Sector in GDP (Running and Investments Costs)



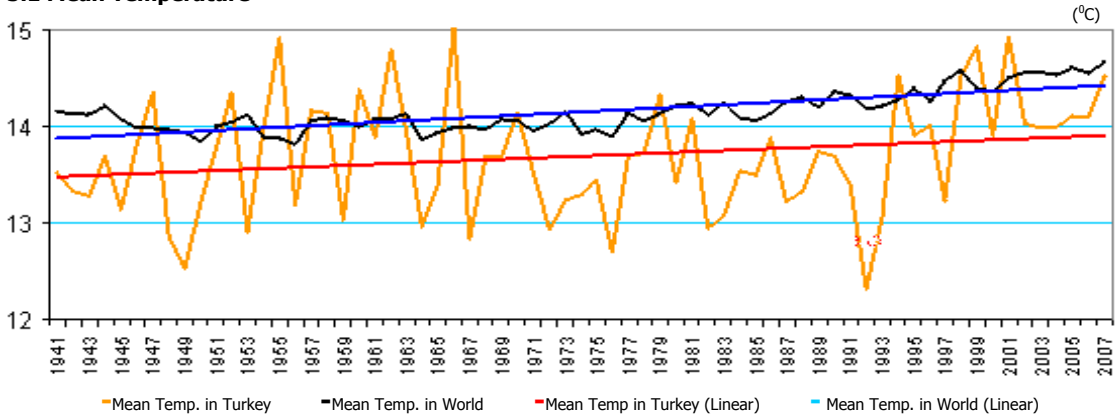
Source: TURKSTAT

In 2006 the total environmental expenditures of the public sector were 6.770.723.111, out of which 57% were running costs and 43% were investments costs. In 2003, while the share of public sector environmental investments costs was 4,28 per mille of gross national product, in 2004 it was 4,16, in 2005 4,18, and in 2006 it was 3,84 per mille. A look at the total environmental expenditures of the public sector in 2006 reveals that approximately 84% of the funds dedicated to environmental expenditures from GDP were utilized by municipalities, while 16% were utilized by other public organizations and institutions.

Although the total environmental expenditure portion of GDP utilized by the public sector has decreased, actually since the GDP expands each year, the budget amount dedicated to public sector environmental expenditures actually continuously increases.

5. Temperature, Precipitation and Combating Desertification

5.1 Mean Temperature

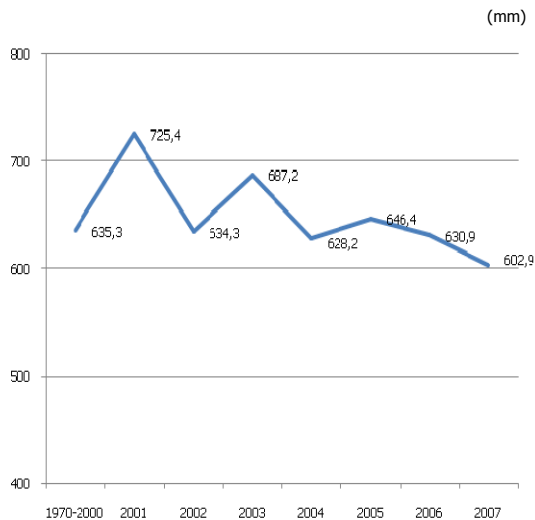


Source: General Directorate of State Meteorological Works

During the 1961-1990 climate period the mean world temperature was 14,0°C, while the mean temperature in Turkey was 13,6°C. The highest mean annual temperature measured in Turkey was 15,0°C in 1966 while the lowest mean annual temperature was 12,3°C measured in 1992. Global mean temperature increase trend for the years 1941-2007 was 0,83°C/100 year, while the mean temperature increase trend in Turkey was 0,64°C/100 year. In recent years, especially since 1993 (with the exception of 1997) mean temperatures have been above 1961-1990 mean temperatures. The upward trend in mean annual temperature in Turkey parallels the global temperature increase which is affecting the world.

5. Temperature, Precipitation and Combating Desertification

5.2 Mean Precipitation in Turkey



Source: General Directorate of State Meteorological Works

The precipitation in Turkey shows many variations. Generally the coastal areas receive precipitation in the excess of 1.000 mm and Rize which is on the Black Sea coast receives 2,300 mm, whereas Central Anatolia receives only around 300 mm of precipitation. As a result of increased heat and evaporation during summer months Central Anatolia experiences draught.

The mean precipitation in Turkey is (1970-2000) 635,3 mm. In 2007 Turkey had 602,9 mm of precipitation. In comparison with normal values this precipitation shows a decrease of 5,1% and compared with the precipitation of 2006 this means a decrease of 4,4%.

As a result of studies carried out in 88 meteorological stations in Turkey, 40% of annual precipitation which differs according to regions, takes place in winter, 27% in spring, 10% in summer and 23% in autumn. Generally, in Turkey the most marked changes in precipitation take place during winter precipitation. A review of the precipitation during recent years shows a substantial decrease in winter precipitation.

5. Temperature, Precipitation and Combating Desertification

5.3 Combating Desertification

	1998	2000	2002	2004	2006	(ha) 2007
Forestation	25.959	24.494	28.647	34.016	25.319	18.228
Rehabilitation	3.135	6.502	2.093	48.013	285.177	313.659
Erosion Control	29.430	30.449	18.608	42.136	60.776	42.984
Pasture Improvement	2.885	4.995	440	3.240	5.315	4.163
Special Forestation	7.245	4.189	2.199	8.624	11.002	8.190
Artificial Regeneration	13.502	13.824	14.034	15.737	13.579	12.972
Energy Forest Facility	10.274	12.627	13.100	13.577	0	0

Source: Ministry of Environment and Forestry

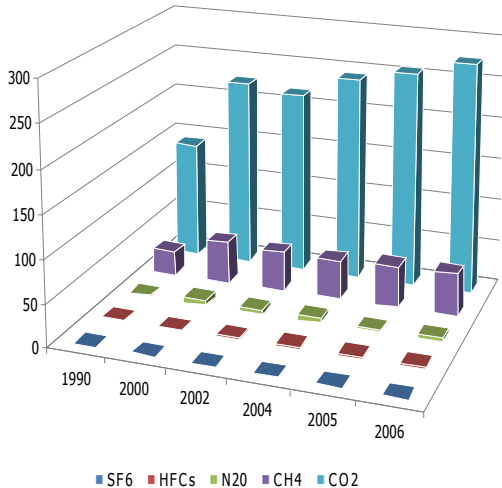
86% of Turkey's territory is under the threat of erosion. Erosion is considered one of the main reasons for desertification. This means that practically all of the country's land is under the threat of desertification. According to climate data Iğdır Plain in East Anatolian Region and Konya Plain in Central Anatolia and the whole Southeast Anatolia Region are the most sensitive regions regarding draught and desertification.

During 2008-2012 the Ministry of Environment and Forestry prepared and operated the "National Forestation Campaign Action Plan" within the desertification combat scope. Within the scope of this action plan it was planned to complete forestation, rehabilitation, erosion control and pasture improvements on a 2,3 million ha area within 5 years. The works for 2,164 million ha on the 2,3 million ha area were realized by Ministry of Environment and Forestry, while the works on 136.000 ha area were completed by other public organizations and institutions.

6. Air, Atmosphere and Climate

6.1 Greenhouse Gas Emissions

(Million tons CO₂ equivalent)



During 1990-2006 land use and changes in land use have increased the total greenhouse gas emissions from 170,1 million tons CO₂ equivalent to 331,8 million tons CO₂ equivalent not including forestry gases.

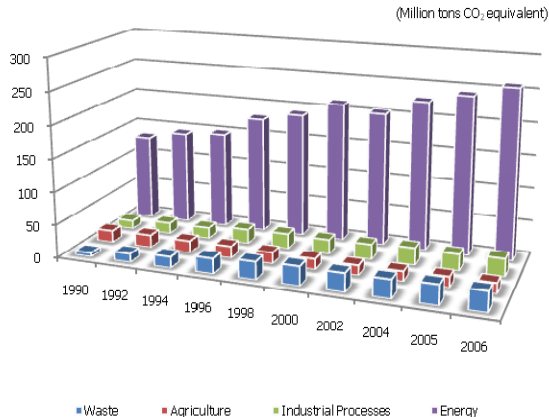
In 2006 the source of almost 92% of CO₂ emissions were caused by fuels, 60% of CH₄ emissions resulted from waste and 32% from agricultural activities, while 66% of N₂O emissions were caused by industrial processes. As a result of increasing controlled landfill sites in highly populated urban areas, CH₄ emission trend has become more stable.

(Million tons CO₂ equivalent)

	1990	2000	2002	2004	2005	2006
Total	170,1	280,0	270,6	296,6	312,4	331,8
CO ₂	139,6	223,8	216,4	241,9	256,3	273,7
CH ₄	29,2	49,3	46,9	46,3	49,4	50,3
N ₂ O	1,3	5,7	5,4	5,5	3,4	4,6
HFCs	0,0	0,8	1,4	2,2	2,4	2,7
SF ₆	0,0	0,3	0,5	0,7	0,9	0,0

Source: TURKSTAT

6.2 Total Greenhouse Gas Emissions According to Sectors



During 1990-2006, the greenhouse gas emissions from energy sector sources increased from 132 million tons CO₂ equivalent to 258 million tons CO₂ equivalent. Similar to the global situation, the majority of greenhouse gas emissions are sourced from the energy

sector and the emission share of CO₂ equivalent of the energy sector in 2006 was 78%, while the percentages for solid waste disposal was 9%, industrial processes 8% and the agriculture sector's share was 5%.

In inspection of emission amounts sourced from the energy sectors reveals that although there are differences between the years, there is an upward trend and this trend has also continued to increase in 2006.

(Million tons CO₂ Equivalent)

	Waste	Agriculture	Industrial Processes	Energy ¹
1990	6	18	13	132
1992	13	19	17	144
1994	17	18	17	149
1996	23	18	22	179
1998	27	17	23	191
2000	29	16	22	213
2002	28	15	23	204
2004	28	15	26	227
2005	30	16	25	241
2006	30	16	27	258

Source: TURKSTAT

(1): Transport sector is included.

7. Energy

7.1 Primary Energy Production by Sources

In the 1970's, while sources such as wood, plant and animal surplus, petroleum and coal stood out as basic energy sources, in 1976 natural gas became utilized, in 1987 solar energy sources and wind energy since 1998 have taken their place among basic energy sources.

In the year 2000, a decrease was observed in energy produced from animal and plant surplus, while a major increase was observed in the utilization of natural gas. Total solid fuel usage still nominally continues.

(*1000 TOE)

	2002	2003	2004	2005	2006	2007
Coal	1.047	1.132	1.081	1.184	1.348	1.089
Lignite	10.311	9.501	9.141	9.648	11.545	13.372
Asphaltite	2	144	310	382	195	336
Wood	4.684	4.497	4.318	4.146	4.023	3.880
Animal and Plant Surplus	1.290	1.251	1.214	1.179	1.146	1.116
Petroleum	2.564	2.494	2.389	2.395	2.284	2.241
Natural Gas	344	510	644	816	839	827
Hydraulic	2.897	3.038	3.963	3.402	3.886 ¹	3.217 ¹
Geothermal Electricity	90	76	80	81	2 ²	-
Wind	4	5	5	5	11	31
Geothermal heat	730	784	811	926	898	914
Solar	318	350	375	385	403	420

Source: Ministry of Energy and Natural Resources

(1) Hydroelectric+geothermalelectric

(2) Bio-fuel

7.2 Consumption Share of Renewable Energy Sources

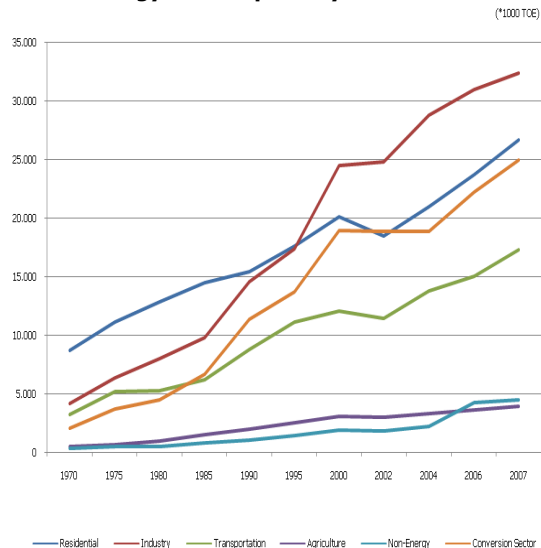
Although the renewable energy sources among Turkey's energy sources have the potential to supply a major part of the country's energy requirements, it is evident that either these sources are not sufficiently used or they are utilized way below their potential. In 1990, while the renewable energy contribution was 18% of total energy consumption in Turkey, this receded to 10% in 2006 as a result of increasing energy demand and this demand being compensated with other energy sources. The decrease in wood consumption, which is one of the renewable energy sources has increased the necessity to incline towards other renewable energy sources and that is the reason for the transition period in Turkey. Plans and investments to increase the share of total consumption of renewable energy sources in Turkey (with the exception of wood) are continuing.

	1990	1992	1994	1996	1999	2001	2003	2005	2006
									(%)
Wood	10,12	9,56	9,27	7,89	7,13	6,47	5,37	4,55	4,04
Animal and Plant Surplus	3,49	3,15	2,75	2,19	1,91	1,77	1,49	1,29	1,15
Hydraulic	3,76	4,03	4,45	4,98	4,02	2,74	3,62	3,74	3,90
Geothermal heat	0,69	0,68	0,70	0,67	0,83	0,91	0,94	1,02	0,90
Solar	0,05	0,11	0,22	0,23	0,32	0,38	0,42	0,42	0,40

Source: Ministry of Energy and Natural Resources

7. Energy

7.3 Total Energy Consumption by Sectors



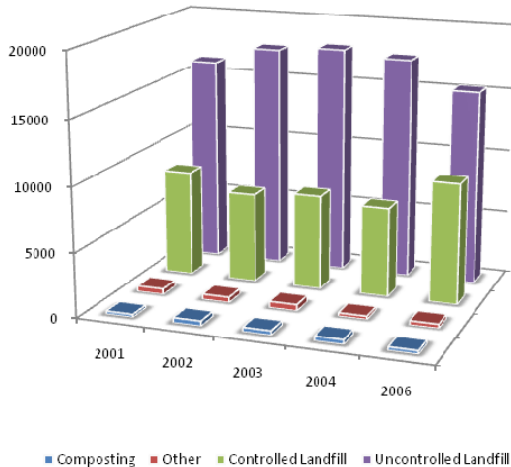
Although the sectors and energy consumption showed a decrease or with the stagnation of consumption upward trends during 2000-2002, generally, all sectors have shown an increase in energy consumption during 1970-2007. With the increasing population, residential energy consumption has shown a steady increase, while the increasing investments in the industrial and transportation sectors and economic developments have paralleled these trends with high level growth. Together with increasing electricity demand the electricity consumption in the conversion sector has doubled and while this increase among the other sectors has been remarkable, a comparison of energy consumption numbers of among the sectors shows that the highest consumption is realized by the industrial sector.

For 1970, the figures for thousand TOE energy consumption for residential are 8.656, 4.122 for industry, 3.208 for transportation, 510 for agriculture, excluding energy 344, and 2.031 thousand TOE of energy have been consumed in the conversion sector, while 26.645 thousand TOE of energy have been consumed by residentials, 32.371 by the industry, 17.282 by transportation, 3.945 by agriculture, non-energy 4.430, and the conversion sector have consumed 24.953 thousand TOE of energy during 2007.

Source: Ministry of Energy and Natural Resources

8.1 Disposal of Solid Waste Collected by Municipalities

(*1000 tons)



According to Municipal Solid Waste Basic Indicators for 2006, out of 3.225 municipalities which were sent questionnaires, 3.115 municipalities were providing solid waste services and municipalities providing solid waste service had collected approximately 25,3 million tons of solid waste, determining the per capita solid waste daily average as 1,21 kg.

Uncontrolled landfill was implemented to 60% of the solid waste collected by municipalities in 2006, while 37% had controlled landfill sites, 1% was composted and 1% was disposed of by other methods.

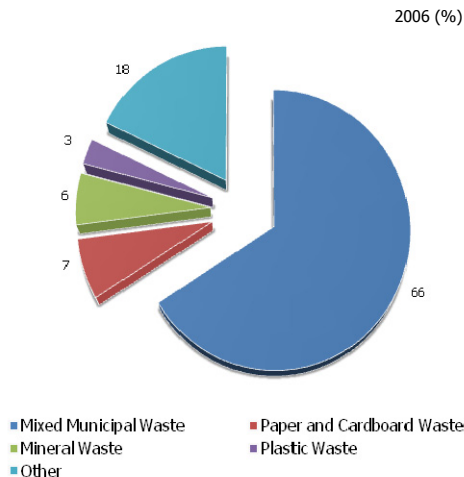
25% of total environmental expenditures made by municipalities in 2006 were utilized for waste management.

	(*1000 Tons)				
	2001	2002	2003	2004	2006
Total	25.134	25.373	26.118	25.014	25.280
Composting	218	383	326	351	255
Controlled Landfill	8.304	7.047	7.432	7.002	9.428
Uncontrolled Landfill	16.167	17.525	17.873	17.405	15.280
Other	445	417	487	256	316

Source: TURKSTAT

8.Waste

8.2 Distribution of Waste Disposed in Controlled Landfill Sites by Waste Type



66% of the waste disposed of in controlled landfill sites during 2006 consisted of mixed municipal waste, 7% consisted of paper and cardboard waste and 6% was mineral waste. According to the statistics for 2005 96% of the waste brought to controlled landfill sites consisted of residential and similar waste, while 4% consisted of other wastes.

Although Turkey does not have a sufficient level of disposal facilities, the number of controlled landfill sites and their capacity is rapidly increasing. Since 2008, 34 controlled landfill sites are serving 450 municipalities with a population of 29 million and until the year 2012 the number of controlled landfill sites serving a population of 57 million is planned to be 130 controlled landfill sites in 1.130 municipalities.

Source: TURKSTAT

9.1 Water Amount Abstracted by Sectors

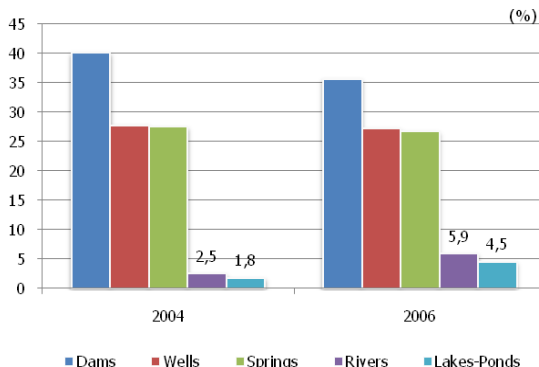
	Municipality	Manufacturing Industry	(Million m ³) Energy Production
1995	3.725	1.394	1.811
1996	3.931	1.535	1.946
1997	4.073	1.563	2.659
1998	4.168	...	2.693
2000	...	1.470	1.900
2001	4.664	...	2.386
2002	4.815	...	2.405
2003	4.920	...	2.205
2004	4.956	1.224	2.581
2006	5.163	...	2.720

Source: TURKSTAT
 (...): No data available.

During 1995-2006, increasing population numbers and water consumption related to living standards have shown a major increase in abstracted water amount. When the amounts of water abstracted by municipalities in 1995 are compared with those in 2006, it is evident that there has been a 39% increase in water abstraction and a 50% increase in the amount abstracted for energy production. It is evident that water abstraction amount by the manufacturing industry in 2004 is 12% less than in 1995.

9. Water-Wastewater

9.2 Drinking and Potable Water Sources in Municipalities



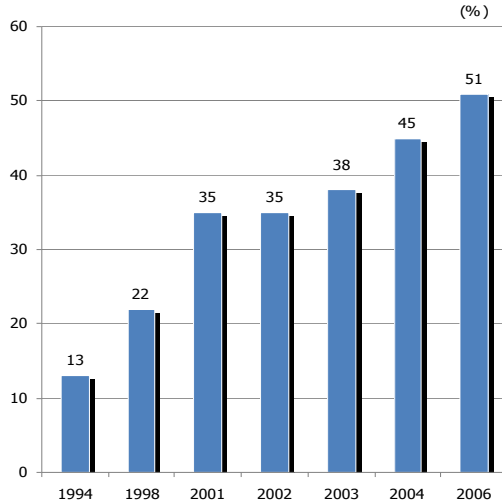
Source: TURKSTAT

The changes taking place in the winter and spring precipitation regime of Turkey have a major effect on water sources. In order to continue the existence of groundwater and surface water, the amount of precipitation and its pattern have major importance. During the recent period, especially winter precipitation

has decreased and as a result there has been a decrease in our water reserves.

According to results of Municipal Drinking and Potable Water Statistics Survey for 2006, out of 3.225 municipalities who were the recipients of the Survey, 3.167 municipalities were providing drinking and potable water supply services. During 2006, 36% of total abstracted water to be distributed by drinking and potable water supply network was obtained from dam reservoirs, 27% from wells, 27% from springs, 6% from rivers, 5% from lakes and ponds to total 5,16 million m³ of abstracted water. 2,43 billion m³ of abstracted water was treated in drinking and potable water treatment plants. 2,62% of the treated drinking and potable water was treated with physical treatment while 97,35% was treated with conventional treatment and 0,03% with advanced treatment. In comparison with 2004, a decrease in the amount of water abstracted from dams, springs and wells during 2006 is evident, whereas there is an increase from water abstracted from rivers, lakes and ponds. 32% of the total environmental expenditures realized by municipalities in 2006 were used for water supply and services.

9.3 Percentage of Municipal Population Connected to Wastewater Treatment Plant in Total Municipal Population



Source: TURKSTAT

According to Municipal Wastewater Main Indicators, the rate of population connected to wastewater treatment plants increased by approximately 4 times during the period 1994-2006.

According to the results of Municipal Wastewater Statistics Survey carried out in 2006, it has been determined that 2.321 of 3.225 municipalities surveyed were receiving sewerage services. Out of the 3,37 billion m³ wastewater collected by sewerage systems, 2,14 billion m³ were treated in wastewater treatment plants. The rate of biological treatment for treated wastewater was 43,3%, while 33,4% received physical and 23,3% received advanced treatment.

10. Definitions

1. Agriculture, Forestry and Fisheries

1.1 Agricultural Area Per Capita

It is calculated as the Arable Land/Total Population ratio.

“Arable land” is the land allocated to temporary crops (double-cropped areas are counted only once), temporary meadows for mowing or grazing, land under market and kitchen gardens and land temporarily left to fallow (less than five years). Land which has been abandoned as a result of changes in land processing are not included.

Total population is the actual or estimated number of population living in the country in the year n.

1.2 Organic Farming

Represents the total areas in Turkey where organic farming methods are used and total crops obtained by organic farming methods.

1.3 Forest Value

This indicator represents the tree volume of total forest area.

1.4 Functional Forestry

This indicator represents the areas dedicated to forest produce production, nature conservation, erosion prevention, hydrology, esthetics, ecotourism and

recreation, climate protection, public health, national defence and scientific usage in ha or % of total forest area.

1.5 Forest Fires

This indicator represents the accumulation according to years of forest fire areas in total forest area.

1.6 Fisheries

Represents the annual quantity of aqua products hunted in our seas such as fish and other aquatic creatures (crustaceans and mollusks), freshwater products hunted in our internal waters and aquaculture.

The total captured amount ideally consists of both captured and scrap fish. However, since the scrap fish cannot be registered with the healthy amount, the environmental impact of the sources is determined only with the captured fish.

Data regarding the production is represented by the live weight at capture.

A classification of fish species will not be carried out in the context of this indicator.

2. Geography

2.1 Land Use

This indicator represents the percentage of nation wide agricultural lands, forests, pasture-meadows, settlement areas, roads and other facilities and lakes within the total land area.

3. Biological Diversity

3.1 Protected Areas

National Park: Represents protected national and international rare natural and cultural source values and pieces of protected nature, recreation and tourism areas from a scientific and aesthetic point of view.

Nature Park: Represents components of nature, appropriate for rest and recreation of the public, with panoramic views, vegetation and wildlife.

Nature Monument: Represents nature and such components of nature which have been created by natural phenomena and have the characteristics and scientific values of nature and which are protected within the scope of national park principles.

Nature Protection Area: Represents such components of nature containing ecosystems, species which are rare, endangered or fading into oblivion and containing distinguished examples of such pieces of

nature which have been formed by natural phenomena and are dedicated to scientific and educational purposes.

Wildlife Development Area: Represents areas where game and wildlife are protected, developed, where game is preserved, enhancing action is taken to improve habitats, and areas in which, when necessary, hunting is permitted within the framework of a special hunting plan.

Ramsar Area: Represents especially areas which are protected within the scope of Agreement regarding Marsh Areas with International Importance as Water Fowl Habitats (Ramsar Agreement). The Agreement was undersigned in Ramsar, Iran in 1971. 145 countries have become a party to the Agreement. The Agreement came into force in Turkey on 13th November 1994.

Special Environmental Protection Areas: Represents sensitive land and water areas which have been declared ecologically important on a national and international scale and which must be protected from environmental pollution and deterioration because of their biological diversities, natural sources and relevant cultural sources.

10. Definitions

3.2 Ratio of Endangered Species and Total Indigent Species

This indicator measures the ratio of endangered species and total indigent species. As described by International Nature Conservation Union, the endangered species include endangered species facing extinction, defenceless, rare and unknown species.

4. Economy

4.1 Distribution of GDP

This indicator represents the contribution made by the agricultural, industrial and services sector to the GDP.

4.2 Sectoral Distribution of Employment

This indicator represents the ratio of the active population within the total active population in each of the main economic sectors which are agriculture, industry and the service sector.

4.3 The Share of GDP in Total Public Sector Environmental Expenses

Environment protection expenditures are expenditures for activities to prevent, minimize and eliminate pollution incurred during production processes and caused by consumption of materials and services. In

the public sector, these include expenditures mad for administrative, monitoring and legislative implementations. The Classification of Environmental Protection Activities (CEPA) prepared by United Nations European Economic Commission and Eurostat for definition of environmental protection expenditures.

The public sector environmental expenditures consist of environmental expenditures incurred by public institutions, special provincial administrations and municipalities.

5. Temperature, Precipitation and Combating Desertification

5.1 Mean Temperature

Represents the monitoring of surface temperature changes within a time series.

5.2 Mean Precipitation in Turkey

Represents mean precipitation on a given unit area.

5.3 Combating Desertification

Represents the total area where important tools such as forestation activities, rehabilitation, erosion control, pasture improvement, special forestation, artificial rejuvenation of forest areas, energy forest facilities are carried out to combat desertification.

6. Air, Atmosphere and Climate

6.1 Greenhouse Gas Emissions

Includes emission caused by energy, industrial processes, agricultural activities and waste disposal, direct greenhouse gasses such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), Hydrofluorocarbons (HFCs) and Sulfur hexafluoride (SF₆) and indirect greenhouses gasses such as nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs) and carbon monoxide emissions. Calculations were made by using the Intergovernmental Panel on Climate Change (IPCC) Guide National Greenhouse Gas Emissions 1996.

Represents CH₄ and N₂O emissions as CO₂-equivalent by using 20 year Global Warming Potential (KIP - GWP) as correction coefficient.

6.2 Total Greenhouse Gas Emissions according to Sectors

Represents the greenhouse gas emissions from energy, industrial processes, agriculture and waste sectors as CO₂ equivalent.

7. Energy

7.1 Primary Energy Production by Sources

Represents the petroleum equivalent units for sources used for energy production.

Specifies the amounts of coal, lignite, asphaltite, wood, animal and plant surplus, petroleum, natural gas, hydraulics, geothermal electricity, wind, geothermal heat, solar, bio-fuel sources used by the country annually for energy production.

7.2 Consumption Share of Renewable Energy Sources

This indicator represents the total energy consumption obtained from renewable energy sources.

Renewable energy sources correspond to existing external environment energy flows or energy obtained from matter derived from them.

7.3 Total Energy Consumption by Sectors

This indicator represents petroleum equivalents of total energy consumption for housing, industry, transport, agriculture, non-energy, conversion sector.

10. Definitions

8.Waste

8.1 Disposal of Solid Waste Collected by Municipalities

This indicator represents waste amounts and disposal methods for waste collected by or on behalf of municipalities. Most of municipality waste consisted of residential waste. In addition, it consists of waste from purchase and sale and trade organizations, office buildings, establishments and small businesses. Disposal methods are classified as composting, controlled landfill, uncontrolled landfill and others.

8.2 Distribution of Waste Treated in Controlled Landfill Sites by Waste Type

This indicator represents the percentage of waste amounts consisting of mixed municipality waste, paper and cardboard waste, mineral waste, plastic waste and other waste delivered to controlled landfill site.

9.Water- Wastewater

9.1 Water Amount Abstracted by Sectors

This indicator represents the total amount of water abstracted from sources on a sectoral basis by the municipality, manufacturing industry and energy production.

9.2 Drinking and Potable Water Sources in Municipalities

Reflects the percentage of water abstracted by municipalities according to sources supplying drinking and potable water such as dam reservoirs, wells, natural springs, lakes and ponds.

9.3 Percentage of Municipal Population Connected to Wastewater Treatment Plant in Total Municipal Population

This indicator represents the percentage of municipal population connected to wastewater treatment plant in total municipal population. These values are calculated as percentage by taking into consideration the real number of persons instead of appointing other human equivalents.