T.C.
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Bakanlığı

TURKSTAT

ENVIRONMENTAL INDICATORS 2006

REPUBLIC OF TURKEY THE MINISTRY OF ENVIRONMENT AND FORESTRY

TURKISH STATISTICAL INSTITUTE

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FOREWORD

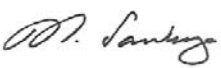
At present, the environment concept is started to percieved as an integration of physical, biological, economical, social and cultural values. The most important factors to determine this development are the rapid and irriversible destruction mechanism of applied policies, which are implemented for materializing social and economic development on environment. Understanding of this fact introduce necessity use of "sustainable and balanced development models" instead of traditional development and unlimited using of natural sources.

After UN Stockholm Environment Conference arranged in 1972, it became clear that the targets have been formed by the necessity of development of national policies on environment.

In Turkish Constitution, it is specified that everybody has the right to live in a healty and well-stabilized environment and that improvement of environment, protection of environment health and prevention of environmental pollution are the duties of government and citizens. It is aimed to harmonize with EU legistation by promulgation of National Programme for Adaptation of the Acquis approved in 2001.

This publication is prepared to reflect the relationship between the environment and sectors and to observe the activities having pressure on environment in time series. The indicators in this book are under 11 headlines and 24 subtitles having affect on nature economic, social and cultural life.

This publication is considered to be useful for decision makers, researchers and other statistics users.



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The Ministry of Environment and Forestry

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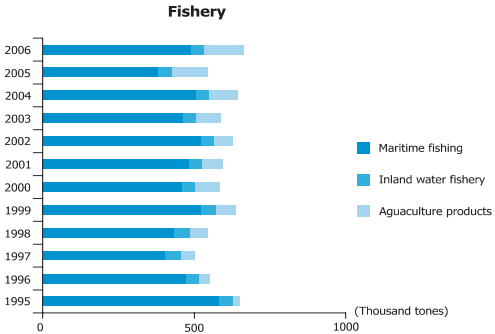
Symbol and Abbreviations

toe	Tones of oil equivalent
ha	hectar
...	Data not available



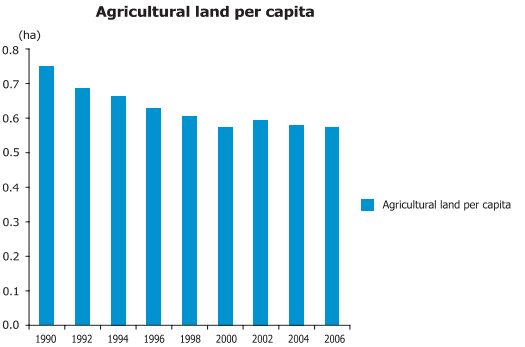
(Thousand tones)

	1995	1996	1997	1998	1999	2000
Total	**650**	**549**	**499**	**545**	**637**	**583**
Maritime Fishing	583	474	404	433	524	461
Inland Water Fishery	45	42	50	55	50	43
Aquaculture Products	22	33	45	57	63	79
	2001	**2002**	**2003**	**2004**	**2005**	**2006**
Total	**594**	**628**	**588**	**645**	**544**	**662**
Maritime Fishing	484	523	463	505	380	489
Inland Water Fishery	43	44	45	46	46	44
Aquaculture Products	67	61	80	94	118	129

Source: TURKSTAT

Turkey is surrounded by sea from three sides and has 8333 kilometers of coastal length, 24 million ha marine area and 1 million ha inland water area (natural lakes, dams and rivers). Fishery is mostly based on hunting and 74% of the fishery products were supplied from maritime fishing in 2006. The share of cultivation, which has showed significant development in last 10 years has been raised by 19% in 2006. Cultivation is carried out using nets and cages in seas and inland waters, and by using pools in lands.

Pollution is one of the most significant factors affecting fishery in marine and inland waters. In order to prevent impact of pollution on reproduction and breeding ecosystems of aquatic animals; measures are taken for preventing the discharge of waste waters to seas and inland waters and preventing the pollution caused by maritime vessels and negative impacts caused by improper hunting.



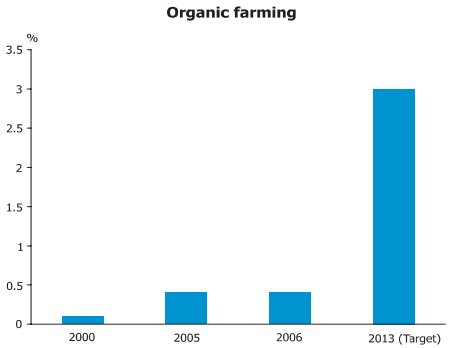
	1990	1992	1994	1996	1998
Agricultural land per capita (ha)	0.75	0.69	0.66	0.63	0.61
Total agricultural area[1] (hax1000)	42 033	39 953	40 049	39 364	39 344
Mid-year population projection (1000)	56 098	58 248	60 417	62 667	65 001
	2000	**2002**	**2004**	**2005**	**2006**
Agricultural land per capita (ha)	0.58	0.59	0.58	0.57	0.55
Total agricultural area[1] (hax1000)	38 757	41 196	41 210	41 223	40 459
Mid-year population projection (1000)	67 420	69 302	71 152	72 065	72 974

Source: TURKSTAT

(1) Starting with 1995 only fruit and olive trees are calculated and the area covered with irregular trees is not included.

In Turkey the population has grown about 16 millions with a 28% between the years 1990 – 2005. During this period; in parallel to economic growth, due to industrialization, urbanisation, and improper land use, agricultural land area decreased by 810 000 ha.

Again in this period; depending on the population growth and decrease in agricultural land; agricultural land per capita decreased to 0.57 person/ha in 2005 while it was 0.75 person/ha in the year 1990.



	2000	2005	2006	2013 (Target)
Proportion of organic farming areas in total agricultural lands (%)	0.1	0.4	0.4	3.0

Source: Ministry of Agriculture and Rural affairs

In Turkey small and parted farming companies are common and organization of producers for organic farming is promoted.

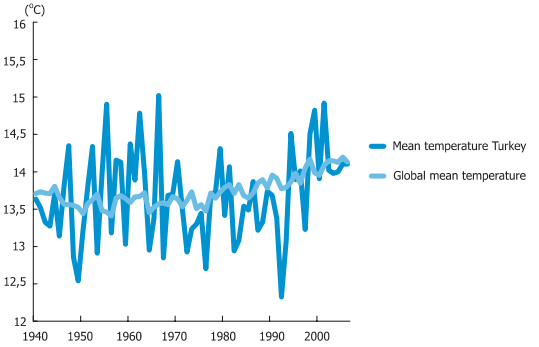
In last years, due to the increase in demand for organic products there has been an emphasis on organic farming. In the year 2005, 288 981 tones of organic products were produced in 175 032 ha area by 9 368 farmers carried out organig farming activities and 4 693 farmers experienced the transition period for organic farming.

In 2006, 5 602 producers experienced the transition period in 30 657 ha, while 8 654 producers implemented organic farming in 162 131 ha area and they produced 309 521 tones of organic product.

While areas used for organic farming decreased by 7.4% in 2006, the amount of products was raised by 7.1% due to the increased productivity.

Parallel to the developments in organic farming, in the 9th Development Plan covering years 2007 - 2013, it is aimed to increase the rate of organic farming within total agricultural activities by 3%.

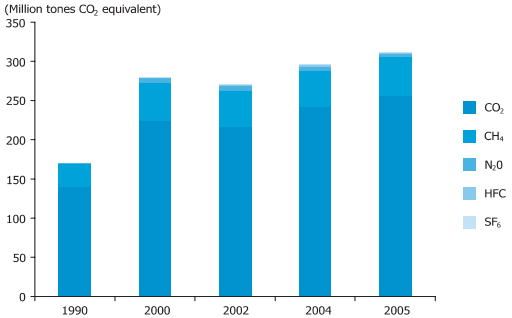
Mean temperature increase



Source: State Meteorological Service

Turkey's annual mean temperature was 13.6 °C between the years 1961-1990. Annual average of maximum temperature was recorded as 15 °C in year 1966 and annual average minimum temperature was recorded as 12.3 °C in year 1992 in Turkey. In last years; especially after 1992 (except 1997) mean temperature was above 1961-1990 averages. This mean temperature trend which has been observed in last years in Turkey shows a parallel trend with the global temperature values.

Greenhouse gas emissions (CO_2 equivalent)



(Million tones CO_2 equivalent)

	1990	2000	2002	2004	2005
Total	**170.1**	**280.0**	**270.6**	**296.6**	**312.4**
CO_2	139.6	223.8	216.4	241.9	256.3
CH_4	29.2	49.3	46.9	46.3	49.4
N_20	1.3	5.7	5.4	5.5	3.4
HFCs	0.0	0.8	1.4	2.2	2.4
SF_6	0.0	0.3	0.5	0.7	0.9

Source : TURKSTAT

The greenhouse gas emissions were increased in Turkey between 1990-2005 due to the population growth and incresing industrialization.

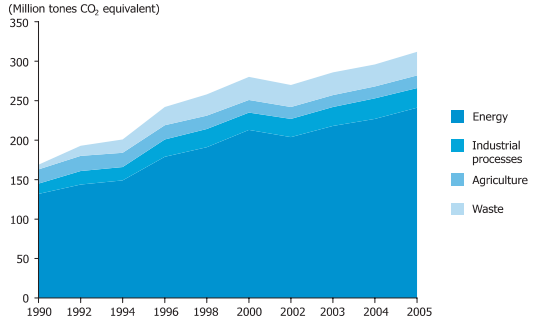
Turkey's total greenhouse gas emissions without land use, land use change and forestry (LULUCF) increased to 312.4 million tones CO_2 equivalent from 170.1 million tones CO_2 equivalent between 1990 – 2005.

In 2005; 92% of the CO_2 emissions were originated from fuel, 60% of CH_4 emissions were from waste disposal, 32% of it were from agricultural activities and 51% of N_2O emissions were from industrial processes. By means of the increase in landfills in severely populated cities, CH_4 emission trend has stabilised.

SF_6 and HFC emissions originated from their consumption in industry are depending on their import amount since they are not produced within the country.

In Turkey, in the context of Montreal Protocol HFCs are used instead of CFCs and their use is limited with usage of HFC-134 only in sectors producing freezers and air conditioners. Usage of HFCs has a share of 76% among all other F gases. (First National Communication on Climate Change, Ministry of Environment and Forestry, January 2007)

Total greenhouse gas emissions by sector (CO_2 equivalent)



(Million tones CO_2 equivalent)

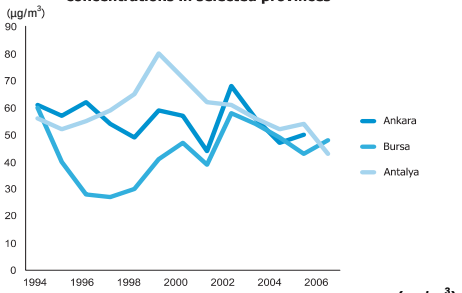
	1990	1992	1994	1996	1998
Total	**170**	**194**	**200**	**242**	**257**
Energy	132	144	149	179	191
Industrial processes	13	17	17	22	23
Agriculture	18	19	18	18	17
Waste	6	13	17	23	27
Increase rate compared to 1990	**-**	**14**	**18**	**42**	**51**
	2000	**2002**	**2003**	**2004**	**2005**
Total	**280**	**271**	**286**	**297**	**312**
Energy	213	204	218	227	241
Industrial processes	22	23	24	26	25
Agriculture	16	15	15	15	16
Waste	29	28	29	28	30
Increase rate compared to 1990	**65**	**59**	**68**	**74**	**84**

Source: TURKSTAT

During the period between 1990-2005 greenhouse gas emissions by energy sector increased to 241 million tones CO_2 equivalent from 132 million tones CO_2 equivalent. In overall 2005 emissions, the energy sector has the largest portion with 77%, the waste with 10%, and the industrial sector with 8% followed it.

When the emission amounts caused by energy sector are reviewed; differences between the amount of emissions and a trend of increase were observed during the period 1990-2005.

Annual average of PM (smoke) concentrations in selected provinces



(µg/m³)

	1991	1992	1993	1994	1995	1996
Ankara	83	...	80	61	57	62
Bursa	107	78	79	60	40	28
Antalya	72	66	89	56	52	55
	1997	**1998**	**1999**	**2000**	**2001**	
Ankara	54	49	59	57	44	
Bursa	27	30	41	47	39	
Antalya	59	65	80	71	62	
	2002	**2003**	**2004**	**2005**	**2006**	
Ankara	68	56	47	50	...	
Bursa	58	54	49	43	48	
Antalya	61	56	52	54	43	

Source: TURKSTAT

Both in the sections of "Annual average PM (smoke) concentrations in selected provinces and "Annual average sulphur dioxide (SO_2) concentrations in selected provinces";

Ankara, being a city in which a notable portion of the national population is concentrated,

Bursa, being an industrial city,

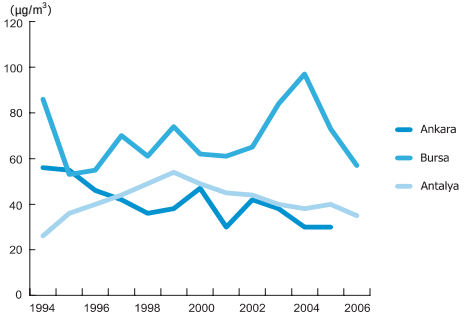
Antalya, by reason of being with dominant residential and service function and with intermediate level of pollutants are selected as samples.

While maximum PM concentration in Ankara has been measured as 83 µg/m³ in 1991, minimum PM concentration has been measured as 44 µg/m³ in 2001. The maximum rate of increase has been observed as 55% in 2002 compared to the previous year.

Annual PM concentrations in Bursa have presented a decreasing trend. While maximum PM concentration in Bursa has been measured as 107 µg/m³ in 1991, it has been measured as 48 µg/m³ in 2006.

In Antalya PM concentration was observed in 1999 with value of 80 µg/m³ and after that it has been decreasing properly and in 2006 it showed the lowest concentration rate with 43 µg/m³.

Annual average of suplhurdioxide (SO_2) concentrations in selected provinces



(µg/m^3)

	1991	1992	1993	1994	1995	1996
Ankara	125	...	72	56	55	46
Bursa	240	181	133	86	53	55
Antalya	38	42	52	26	36	40
	1997	**1998**	**1999**	**2000**	**2001**	
Ankara	42	36	38	47	30	
Bursa	70	61	74	62	61	
Antalya	44	49	54	49	45	
	2002	**2003**	**2004**	**2005**	**2006**	
Ankara	42	38	30	30	...	
Bursa	65	84	97	73	57	
Antalya	44	40	38	40	35	

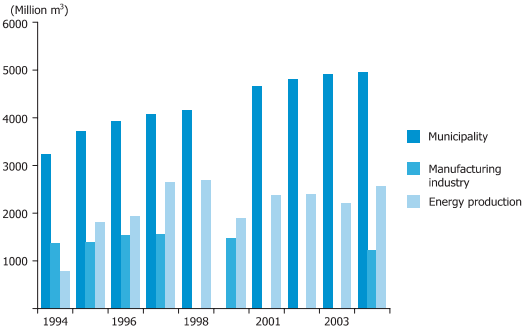
Source: TURKSTAT

Annual SO_2 concentrations in Ankara presented a decreasing trend during the period of 1991-2005. In 1991 the concentration was 125 µg/m^3 and it was measured as 30 µg/m^3 in 2005 with a decrease of 76% compared to 1991.

Annual SO_2 concentrations presented a declining trend in Bursa during the period 1991-2005; when the concentration was measured as 240 µg/m^3 in 1991 and it has decreased to 57 µg/m^3 in 2006 which shows again a decrease of 76% compared to 1991.

Annual SO_2 concentration in Antalya was measured as 38 µg/m^3 in 1991 while it was observed as 35 µg/m^3 in 2006, this presented a rate of 8% decrease during the period 1991-2006.

Amount of water abstracted by sectors



(million m^3)

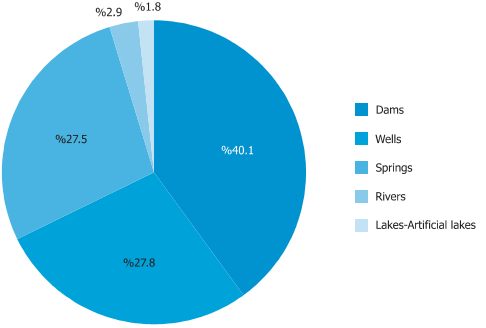
	1994	1995	1996	1997	1998
Municipality	3 235	3 725	3 931	4 073	4 168
Manufacturing Industry	1 387	1 394	1 535	1 563	...
Energy Production	784	1 811	1 946	2 659	2 693
	2000	**2001**	**2002**	**2003**	**2004**
Municipality	...	4 664	4 815	4 920	4 956
Manufacturing Industry	1 470	...	...	...	1 224
Energy Production	1 900	2 386	2 405	2 205	2 581

Source: TURKSTAT

Water consumption in Turkey increased due to population growth, economic growth and improvement of life standards.

When the distribution of water abstraction among sectors is reviewed for the year 2004, water abstraction by municipalities presents the highest amount with 57%, this rate is followed by energy sector with 29% and by manufacturing industry with 14%. During the period 1994 - 2004 water abstraction of municipalities was increased by 53% due to population growth and life quality. In the same period water abstraction by the energy sector was increased by 3.3 times due to investment raise.

Drinking and potable water resources in municipalities

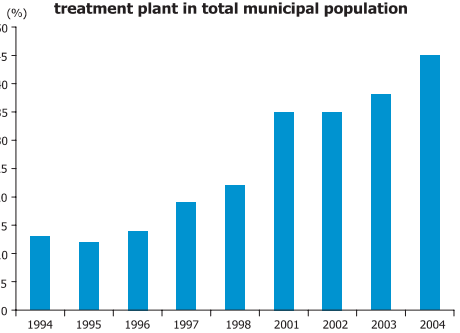


Source: TURKSTAT

According to the results of 2004 Municipal Drinking Water Statistics Survey; it is determined that 3 159 municipalities were served by drinking and potable water networks out of 3 213 municipalities. In 2004, 4.96 billion m^3 of water was abstracted by municipalities in order to be distributed by network systems. Of this amount, 40.1% was abstracted from dams, 27.8% from wells, 27.5% from springs, 2.9% from rivers and 1.8% from lakes and artificial lakes.

2.08 billion m^3 of the total abstraction (4.96 billion m^3) for drinking water networks was treated in water treatment plants in 2004. The rate of physical treatment was realized as 4.8% where the rate of conventional treatment was 95.2%.

Percentage of municipal population connected to wastewater treatment plant in total municipal population



(%)

	1994	1998	2001	2002	2003	2004
Percentage of municipal population connected to wastewater treatment plant in total municipal population	13	22	35	35	38	45

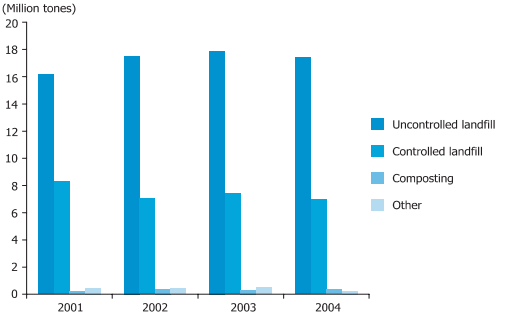
Source: TURKSTAT

According to the Municipal Wastewater Main Indicators; the rate of population connected to wastewater treatment plants increased by approximately 3.5 times during the period 1994-2004.

According to the results of Municipal Wastewater Statistics Survey carried out by Turkish Statistical Institute in 2004; it is determined that 2 226 municipalities out of 3 213 municipalities questionned were receiving sewerage services. Out of 2.92 billion m^3 wastewater collected by sewerage systems, 1.90 billion m^3 was treated in wastewater treatment plants. The rate of biological treatment was realized as 56.3%, the rate of physical treatment was 31.5% and the rate of advanced treatment was 12.2%.

According to data of year 2004, there are 137 treatment plants carrying out secondary and advanced treatment. In order to comply with the requirements of the "EU Urban Wastewater Directive" 2 942 new treatment plants with different capacities should be built for the residential areas having population more than 2 000. Taking into account that Turkey's sewerage system has a length of 65 535 kilometers in 2002, in accordance to the existing situation this number should be raised to 85 200 kilometers by the year 2022.

Disposal of solid waste collected by municipalities



(Thousand tones)

	2001	2002	2003	2004
Total	**25 134**	**25 373**	**26 118**	**25 014**
Composting	218	383	326	351
Controlled landfill	8 304	7 047	7 432	7 002
Uncontrolled landfill	16 167	17 525	17 873	17 405
Other	445	417	487	256

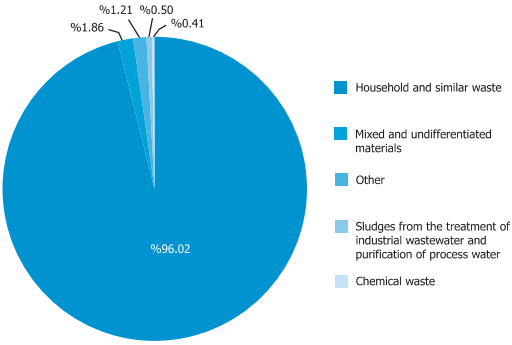
Source: TURKSTAT

According to the 2004 Main Solid Waste Indicators of Municipalities; out of 3 213 municipalities, 3 028 municipalities were supplying solid waste services. During 2004 approximately 25.01 million tones of solid waste was collected by those municipalities and daily amount of solid waste per capita was calculated as 1.31 kilograms.

In 2004, 70% of the municipal waste collected by municipalities disposed of in uncontrolled landfills, 28% was disposed of in controlled landfills, 1% was composted and 1% of this waste was disposed by other disposal methods.

During 2004-2006 period, construction of 10 "integrated solid waste disposal facilities" has been started and again in this period 4 landfill installations have started to operate, when construction of 25 new installations have been initiated. Following the completion of the construction, 46 landfill installations will begin to serve for 611 municipalities with 34 million population.

Distribution of waste brought to controlled landfill sites by type of waste, 2005

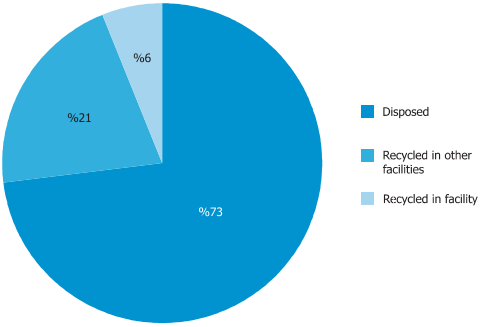


Waste Type	(%)
Household and similar waste	96.02
Mixed and undifferentiated materials	1.86
Sludges from the treatment of industrial wastewater and purification of process water	0.5
Chemical Waste	0.41
Other	1.21

Source: TURKSTAT

Solid waste collected by municipalities or on behalf of municipalities is disposed with composting, controlled landfilling or uncontrolled landfilling methods. Since the number of landfill and composting facilities is not enough for solid waste disposal, the biggest amount of waste is disposed by uncontrolled landfilling. However, the number of controlled landfill facilities is increasing rapidly.

Hazardous waste management in manufacturing industry



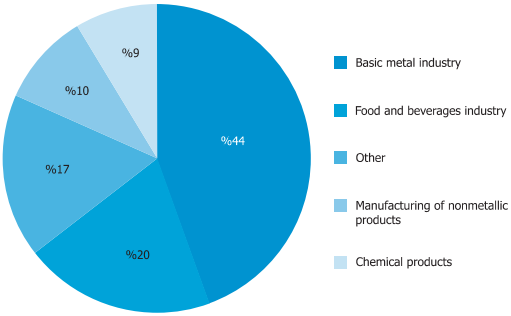
Source: TURKSTAT

In 2004, 1 196 000 tones of hazardous waste has been generated by manufacturing industry establishments in Turkey. Of this amount, 6% was recovered in the facility, 21% was recovered in other facilities and 73% was disposed of.

The only hazardous waste disposal facility giving incineration and controlled landfill services belongs to the İzmit Metropolitan Municipality and it is the industrial and municipal solid waste controlled landfilling, clinical and hazardous waste incineration and energy production facility. Incineration capacity of this facility is 35 000 tones per year and storage capacity is 790 000 m^3. This capacity of the facility is not sufficient for disposing the total amount of hazardous waste.

For hazardous waste inciniration and landfilling; there is 1 facility foreseen to be built in each of the following regions; Marmara Region - Trakya, Aegean Region, Mediterranean Region and Inner Anatolia Region.

Generation of solid waste by sectors in manufacturing industry



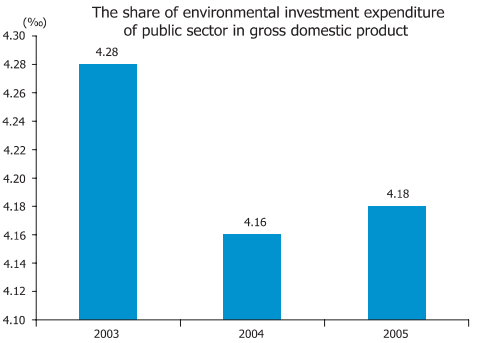
(Thousand tones)

Industry Group	
Total	**17 497**
Basic Metal Industry	7 765
Food and Beverages Industry	3 512
Manufacture of non-metallic products	1 693
Chemical Products	1 496
Other	3 031

Source: TURKSTAT

According to the results of "Manufacturing Industry Waste Statistics Survey" in 2004, the biggest part of the industrial solid waste is generated by basic metal industry with a percentage of 44%. This sector is followed by food and beverages industry with 20% and other sectors with lower rates.

Environmental expenditure of public sector



(Million TL)

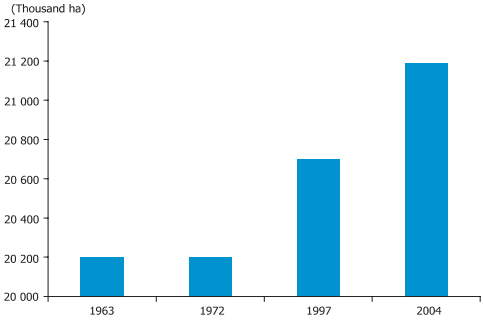
Environmental expenditure of public sector	2003	2004	2005[1]
Total environmental expenditure of public sector	3 969 546 785	4 715 950 128	5 437 161 814
Environmental current expenditure of public sector	2 430 926 442	2 924 502 420	3 399 936 921
Environmental investment expenditure of public sector	1 538 620 343	1 791 447 708	2 037 224 893

Source: TURKSTAT

(1) Data is given as New Turkish Liras (TRY) in 2005.

In 2005, total environmental expenditure by the public sector amounted to 5 437 161 814 TRY and, 62.53% of the environmental protection expenditure was current expenditure and 37.47% of it was investment expenditure. The share of environmental investment expenditure of public sector in gross domestic product was 4.28 ‰ in 2003, 4.16 ‰ in 2004 and 4.18 ‰ in 2005.

Forest value



(ha)

	Forest Area
1963	20 199 296
1972	20 199 296
1997	20 703 122
2004	21 188 747

Source: Ministry of Environment and Forestry

In Turkey 99% of the forestland which approximately covers an area of 21.2 million ha. area belongs to the state. Half of the forestlands (10 567 million ha. of 21.2 million ha.) consist of degraded (infertile) woody areas. On the other hand, one third of the forest lands have low density of trees. In a period of 32 years between 1972 and 2004, while forestlands have been raised by 5%, growing forest volume is increased by 35%.

Oak, red pine, black pine, beech, yellow pine, fir, juniper, cedar, spruce, alder, chestnut are the most common species in Turkey. According to inventory studies on the size and changes of the forests until now; the forestlands have been defined as;

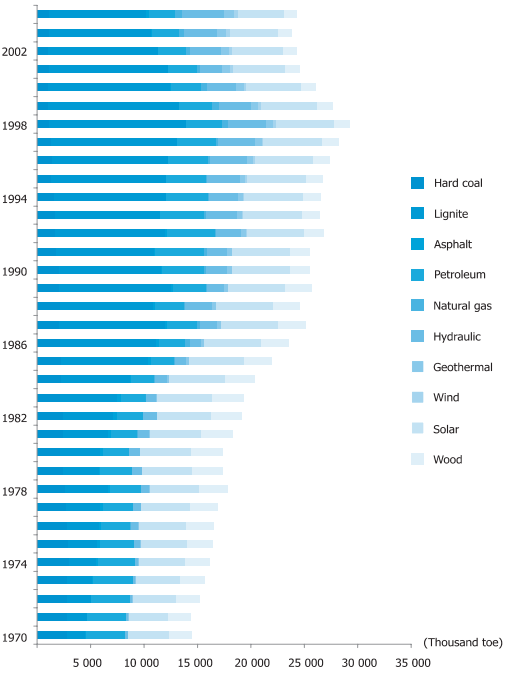
During 1963–1972; 26.1% of the total area,

In 1997; 26.6% of the total area,

In 2004; 27.2% of the total area,

According to the results of this inventory, forestlands were developed by 990 thousand ha in last 30 years.

Primary energy production by sources

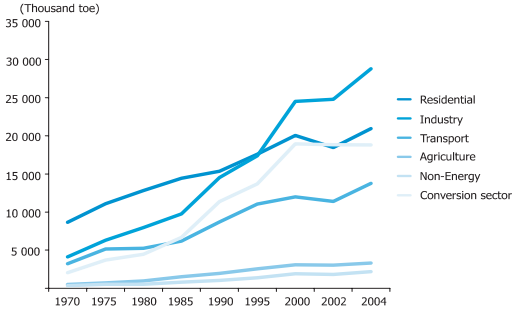


Source: Ministry of Energy and Natural Resources

While wood, plant and animal residues, petroleum and coal were the main energy sources in 1970s, in the year 1976 natural gas, solar power starting with 1987, wind power starting with 1998 are counted as the main energy sources.

In recent years, while a decrease has been observed in energy production by plant, animal residues, wood and petroleum, an increase has been observed in natural gas and solar energy usage.

Total energy consumption by sectors



(Thousand toe)

	Total energy consumption	Residential	Industry	Transport
1970	**18 871**	8 656	4 122	3 208
1975	**27 437**	11 099	6 286	5 148
1980	**31 973**	12 833	7 955	5 230
1985	**39 399**	14 438	9 779	6 195
1990	**52 987**	15 358	14 542	8 723
1995	**63 678**	17 596	17 372	11 066
2000	**80 500**	20 058	24 501	12 008
2002	**78 331**	18 463	24 782	11 405
2004	**87 818**	20 952	28 789	13 775

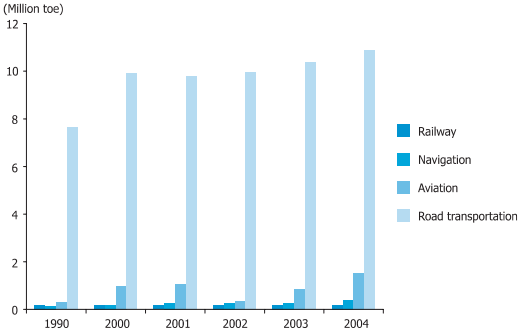
	Agriculture	Non-Energy	Conversion Sector
1970	510	344	2 031
1975	695	517	3 693
1980	963	527	4 465
1985	1 506	812	6 669
1990	1 956	1 031	11 377
1995	2 555	1 386	13 703
2000	3 073	1 915	18 945
2002	3 030	1 806	18 845
2004	3 314	2 174	18 814

Source: Ministry of Energy ve Natural Resources

During 1970-2004 energy consumption was raised in all sectors. Energy consumption has increased to high levels; in households due to population growth and in industry and transport sectors due to increasing amount of investments and to economic development in parallel.

Together with the increasing electric power demand, energy consumption in conversion sector has increased considerably. Taking into account the energy consumption among sectors the highest level is observed in industry sector.

Annual energy consumption for transportation



(toe)

	1990	2000	2001	2002	2003	2004
Total	8 291 759	11 271 291	11 271 490	10 736 589	11 669 649	12 992 129
Railway	187 062	200 000	165 000	172 000	177 000	177 000
Maritime	159 376	195 000	250 000	256 800	278 300	383 300
Airway	292 223	970 991	1 055 046	340 695	850 483	1 526 855
Highway	7 653 098	9 905 300	9 801 444	9 967 094	10 363 866	10 904 974

Source: Ministry of Transport

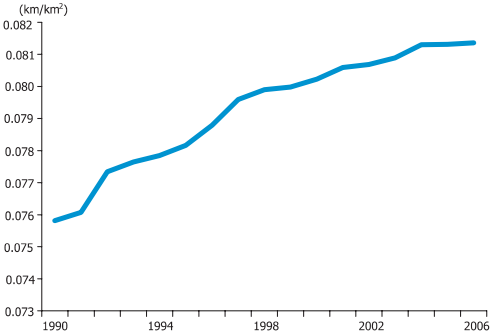
Energy used for transportation has been changed in parallel to the developments in the sector. Together with the developments in highway network, highways become more preferable than the other types of transportation systems.

Taking into account the data from 2004; out of the total amount of energy consumed in transport sector, 83.90% was belonging to highway transportation, 11.75% to air, 2.95% to maritime transportation and finally 1.36% was belonging to railway transportation.

According to the First National Communication on Climate Change; in 2004, the share of CO_2 emissions from road transport in total CO_2 emissions in the transport sector was 84%. It was followed by emissions from civil aviation (12%), shipping (3%) and railways (1%). In the road transport sector, more efficient energy consumption as a result of the shift to new technology in engines and the use of alternative fuel sources led to a decrease in emissions per vehicle km. The total decrease in CO_2 emissions per vehicle km throughout the period 1900-2004 was 8.7%.

Besides, in years 2003 and 2004 due to a tax abatement approximately 320 000 old vehicles were drawn from the traffic and through this, a decrease by 4.9% in CO_2 emissions was reached.

Highway network density



km

	1990	1994	1998	2002	2006
Total	**59 409**	**60 999**	**62 611**	**63 219**	**63 751**
State roads	31 149	31 389	31 345	31 318	31 335
Provincial roads	27 979	28 443	29 540	30 050	30 429
Highways	281	1 167	1 726	1 851	1 987

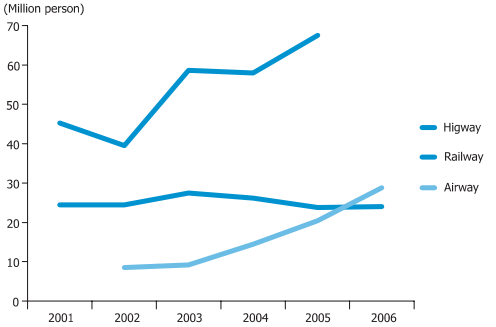
Source: Ministry of Public Works and Settlement

The usage of railways for freight transport and highways for passenger transport have been increased since 1950s.

The length of highway network was 59 409 km in 1990 and in 2006 it has reached to 63 751 km with an increase of 7.3%.

During the period 1990-2006, a significant increase was observed in provincial roads and motorways. Motorway network which was 281 km in 1990 has increased 6.9 times in 2006 and reached to 1 987 km. Besides, provincial way network has developed with an increase of 8.8% and reached to 30 429 km.

Passenger transportation

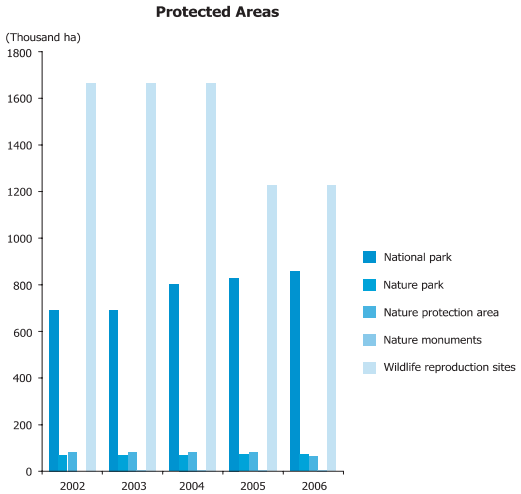


(Person)

	Highway	Railway	Airway
2001	45 217 449	24 423 000	...
2002	39 523 389	24 465 000	8 500 839
2003	58 572 333	27 471 000	9 128 124
2004	57 991 878	26 166 000	14 438 292
2005	67 535 424	23 811 000	20 502 516
2006	...	24 030 000	28 799 878

Source: Ministry of Transport

In Turkey, due to population growth and construction of new highways an increase by 33% was observed in highway transportation, between 2001-2005. In contrary to the increase in highway transportation, railway transportation presented a decrease by 2.01%. Following the development of different air transportation policies a high increase has been observed in number of passengers after 2004.



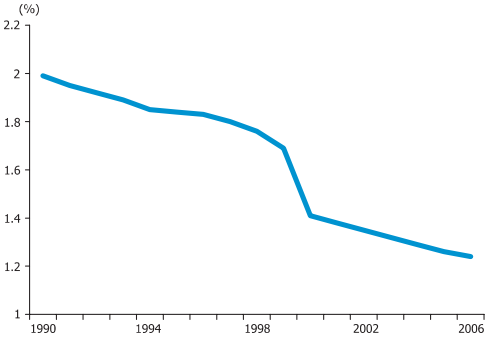
(ha)

Protected areas	2002	2003	2004	2005	2006
Natural Parks	691 722	691 722	802 082	828 699	856 518
Nature Parks	69 551	69 551	69 551	72 315	72 912
Nature Protection Areas	84 230	84 230	84 230	81 861	64 352
Nature Monuments	464	5 284	5 284	5 284	5 894
Wildlife Reproduction Sites	1 667 534	1 667 534	1 667 534	1 227 179	1 227 179

Source**:** Ministry of Environment and Forestry

Turkey has a very important feature in the earth due to high levels of endemism. It has been defined that endemic plant species have a number of 3 925. This number corresponds to 34% of the total number of plant species of Turkey. 75% of plant species of Europe are also grown in Turkey (National Biodiversity Strategy and Action Plan, Ministry of Environment and Forestry, 2007). Turkey has 12 Ramsar Areas (0.2 million ha) and 123 Wetlands with International Importance (2 million ha).

Population growth rate



(%)

	1990	1992	1994	1996	1998
Population growth rate	1.99	1.92	1.85	1.83	1.76
	2000	**2002**	**2004**	**2006**	
Population growth rate		1.41	1.35	1.29	1.24

Source: TURKSTAT

During 1927-1950 period, population in cities did not present a significant change, but after 1950 it has increased constantly. During 1990-2000 period, while population growth rate in cities was 26.8‰, it was 4.2 ‰ in villages.

According to 2000 General Population Census, total population of Turkey was 67 803 927, where urban population (cities and city centers) was 44 006 274 and population of the villages was 23 797 653. The population of 1927 which was approximately 13 600 000 has increased by five times in 73 years.

12. Definitions

1. Agriculture and Environment

1.1 Fishery

Represents the annual quantity of water products such as; sea and other water products (crustaceas, mollusks), freshwater products and also the aquaculture those are caught in marine and inland waters.

Data regarding the production of fishery is calculated with live weight.

In the context of this indicator, a classification for fish types will not be carried out.

1.2 Agricultural Land per Capita

Calculated as the proportion of total agricultural land to total population.

"Agricultural Land" is 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 fallow (less than five years). The abandoned land resulting from differences in farming type not included.

Total population is the estimated number of population that is based in the country in year n.

1.3 Organic Farming

Represents monitoring of the annual change in the size of the area in which organic farming techniques are applied in Turkey.

2.Climate Change

2.1 Mean Temperature Increase

Presentation and comparison of the average surface temperature changes within the time series.

2.2 Greenhouse Gas Emissions

Emissions by sectors such as; energy, industrial processes, agricultural activities and waste disposal are covering direct greenhouse gas emissions which are; carbon dioxide (CO_2) , methane (CH_4), nitrous oxide (N_2O), hydro flouro carbons (HFCs) and sulphur hexafluoride (SF_6) and indirect greenhouse gas nitrogen oxides (NO_X), carbon monoxide (CO), nonmethane volatile organic compound (NMVOC), and sulphur dioxide (SO_2). National Greenhouse Gas Emissions are calculated according to International Panel on Climate Change (IPCC) Manual 1996.

CH_4, N_2O and F gas emissions are presented as CO_2 equivalents with the coefficient of global warming potential (GWP).

2.3 Total Greenhouse Gas Emissions by Sectors

Represents the amount of greenhouse gas emissions by different sectors as CO_2 equivalent.

3. Air Quality

3.1 Annual Average of PM (Smoke) Concentrations in Selected Provinces

This indicator represents the PM concentration in air. Particulate matter is formed by agglomeration and chemical transformation of gaseous emissions. Particulate matters with a diameter between 5-10 micrometers are defined as suspended particulate matter. Generally, heterogeneous mixtures are included and their characteristics differ from one place to another significantly.

3.2 Annual Average of Sulphur Dioxide (SO_2) Concentrations in Selected Provinces

This indicator represents the SO_2 concentration in air. SO_2 is a polluting, suffocating, colourless and acidic gas which is formed naturally during the combustion of fuels containing sulphur compounds.

4.Water-Wastewater

4.1 Amount of Water Abstracted by Sectors

Represents total water quantity abstracted on sectoral basis such as; municipality, manufacturing industry, energy production.

4.2 Drinking and Potable Water Resources in Municipalities

States the percentage of water abstracted, according to the sources from which the drinking and potable water are obtained such as; dams, wells, natural springs, lakes and artificial lakes.

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

States the percentage proportion of the population connected to wastewater treatment plant in total municipal population. These values are calculated as percentage by considering the real number of people rather than appointing other person equivalents.

5.Waste

5.1 Disposal of Solid Waste Collected by Municipalities

States the amount of waste collected by or on behalf of the municipalities and their disposal as kilogram per capita. Municipal waste is the waste that is collected by or on behalf of the municipalities. The main part of this waste is generated by households. In addition to that, it includes the waste of trade companies, office buildings, institutions and small enterprises. Disposal methods are classified as; composting, controlled landfill, uncontrolled landfill and others.

5.2 Distrubution of Waste Brought to Controlled Landfill Sites by Type of Waste

This indicator represents the percentage of the of waste such as; household or similar waste, mixed and undifferentiated materials, industrial wastewater treatment sludge, water purification sludge, chemical waste that are brought to landfill installations.

5.3 Hazardous Waste Management In Manufacturing Industry

This indicator represents the percentage of recovery and disposal types of hazardous waste from manufacturing industry establishments on national basis.

5.4 Generation of Solid Waste by Sectors in Manufacturing Industry

States the sectoral annual waste production grouped as; basic metal industry, food and beverages industry, manufacture of non-metallic products, chemical products and others.

6. Environmental Expenditure

6.1 Environmental Expenditure of Public Sector

Environmental protection expenditure is the money spent on all purposeful activities directly aimed at the prevention, reduction and elimination of pollution or nuisances resulting from production processes or from the consumption of goods and services. For the public sector administrative, monitoring, and enforcement expenditure are included. The scope of environmental protection expenditure is defined according to the Classification of Environmental Protection Activities (CEPA) prepared by United Nations European Economic Commission and EUROSTAT.

Environmental expenditure of the public sector covers the environmental expenditure of governmental organizations, private provincial administrations and municipalities.

7. Land Use

7.1 Forest Value

This indicator is related to the surface area of natural or planted forests and its evolution in time series. Forests are lands with a minimum tree crown cover (planting density) of more than 10% of the area.

The definition of "forest" and "other woodland" proposed by the FAO varies according to the country.

8. Energy

8.1 Primary Energy Production by Sources

Expression of sources used for energy production in terms of oil equivalent unit.

The proportion of usage of natural gas, coal, oil, nuclear, hydraulic or other sources that are used for energy production to the annual production of the country.

8.2 Total Energy Consumption by Sectors

This indicator represents the total energy consumption for residential, industry, transport, agriculture, non energy, conversion sector; by petroleum equivalents.

8.3 Annual Energy Consumption for Transportation

Indicates the annual total energy consumption for transport sector. Consumption of energy is indicated by Mtoe (million tones oil equivalents)

9. Transport

9.1 Highway Network Density

This is the proportion of the total length of roads (motorways, main roads or national roads, secondary or regional roads and other roads) in the country to the total area of the country.

9.2 Passenger Transportation

This indicator shows the distribution of travels per person within the country as a percentage over three modes of transport. These modes are Highways (public and private), Railway and Airway (internal flights).

10 Biodiversity

10.1 Protected Areas

The comparison of the total surface area of the national parks, nature parks and nature protection areas within the time series.

National Park: From scientific and aesthetical point of view; it states the national and international rare natural and cultural values and also the nature pieces with protection, recreation and tourism areas.

Nature Park: States the nature pieces available for public to rest and enjoy with a whole picture including characteristics of vegetation and wildlife.

Nature Monuments: States the nature pieces which have the characteristics and scientific values brought up by nature or natural events and protected through the natural park principles.

Nature Protection Area: Represents the nature pieces which include areas of importance for science and education and which include rare, threatened ecosystems and species and should be protected constantly.

Wildlife Reproduction Sites: Represents the areas in which the wild animals and wildlife is protected and enhanced, ground game animals are bred, measures for remediation of the habitat are taken and when necessary special plans for game and hunting are created for.

11. General

11.1 Population Growth Rate

Average annual increase of the population magnitude in a particular period or a year. Presented as increased population annually, for each 1000 people.

Population growth rate; is an indicator that is obtained from the national population projections. Population projections are calculated based on generation components method. Generation components method is based on the principle of observing the generations that are in the same age group; according to the components of fecundity, mortality and migration. Generations are 5 yearly birth generations (age generations). Components are births, deaths and migrations. Projections are made for five- year periods. Each period is independent from the previous period. The assumptions related to the components are kept stable during five year period.